MIDDLE FORK AMERICAN RIVER RELICENSING BACKGROUND REPORT

PCWA

OCTOBER 2003

team MWH

PLACER COUNTY WATER AGENCY

MIDDLE FORK AMERICAN RIVER PROJECT
FERC PROJECT NO. 2079

BACKGROUND REPORT
(FINAL)

Prepared For:

Placer County Water Agency
144 Ferguson Road
Auburn, CA 95604

Prepared By:

MWH Americas
Surface Water Resources, Inc
Kearns & West

October 2003

PLACER COUNTY WATER AGENCY
MIDDLE FORK AMERICAN RIVER PROJECT
RELICENSING PLAN
BACKGROUND REPORT

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY ES-1
INTRODUCTION ES-1
MISSION STATEMENT AND RELICENSING OBJECTIVES ES-1
Mission Statement ES-1
Relicensing Goals ES-2
RELICENSING PROCESSES ES-2
Traditional Licensing Process ES-4
Alternative Licensing Procedure ES-4
Integrated Licensing Process ES-5
Licensing Process Recommendation ES-5
LICENSING SCHEDULE ES-6
Early Licensing Activities ES-6
Notice of Intent and Pre-Application Document ES-6
Study Execution ES-7
Preparation of License Application ES-7
Settlement Process ES-7
FERC Application Processing ES-7
RELICENSING ISSUES ES-10
STAKEHOLDERS ES-10
STAKEHOLDER INVOLVEMENT PLAN ES-10
STUDY PLAN DEVELOPMENT AND IMPLEMENTATION ES-13
INFORMATION MANAGEMENT AND DOCUMENT CONTROL ES-14
OTHER RELICENSING CONSIDERATIONS ES-14
RELICENSING COSTS ES-14
AGENCY RELICENSING STAFFING STRUCTURE ES-15
RISK ASSESSMENT ES-17
RECOMMENDATIONS ES-17

1. INTRODUCTION 1

2. PLACER COUNTY WATER AGENCY 1

3. MISSION STATEMENT AND RELICENSING OBJECTIVES 2
3.1 MISSION STATEMENT 2
3.2 RELICENSING GOALS 4

4. RELICENSING PROCESSES 4
4.1 PRE-APPLICATION DOCUMENT 5
4.2 TRADITIONAL LICENSING PROCESS 5
4.2.1 Notice of Intent, PAD, and Study Plans 6
4.2.2 Studies and Draft License Application 6
4.2.3 Application Processing, Scoping and FERC's NEPA Document 6

4.2.4 Enhanced Traditional Licensing Process 7
4.3 ALTERNATIVE LICENSING PROCEDURE 8
4.3.1 Notice of Intent, PAD, and Study Plans 9
4.3.2 Studies, Draft License Application, and Settlement 9
4.3.3 Application Processing and NEPA Document Preparation 9
4.4 INTEGRATED LICENSING PROCESS 10
4.4.1 Schedule Overview 10
4.4.2 Notice of Intent and PAD 10
4.4.3 Scoping and Study Plan Development 11
4.4.4 Studies 11
4.4.5 Draft License Application 11
4.4.6 Filing of Application 11
4.4.7 Application Processing 11
4.5 COMPARISON OF ALTERNATIVE PROCESSES 12

5. RELICENSING ISSUES 12
5.1 GENERAL CONSIDERATIONS 13
5.1.1 Designation of the Affected Environment 13
5.1.2 Four Reservoir Index Alterations 13
5.2 AQUATIC RESOURCES 14
5.2.1 Coldwater Pool Resource in Folsom Reservoir 14
5.2.2 Species Composition and Abundance 14
5.2.3 Physical Riverine Habitat 16
5.2.4 Habitat-Flow Relationships (IFIM) 17
5.2.5 Physical Reservoir Habitat 17
5.2.6 Resident Fish Passage 18
5.2.7 Anadromous Fish Passage 19
5.2.8 Flow Fluctuation 19
5.2.9 Macroinvertebrates and Microorganisms 20
5.2.10 Predation 20
5.2.11 Entrainment 21
5.2.12 Fish Disease 21
5.2.13 Recreational Goals 22
5.3 WATER QUALITY 22
5.3.1 Designated Beneficial Uses 22
5.3.2 Contamination of Sediments 23
5.3.3 Water Temperature 24
5.3.4 Natural Restorative Processes 24
5.3.5 Sediment Load, Recruitment, and Deposition 25
5.3.6 Land Use Practices 25
5.4 TERRESTRIAL RESOURCES 26
5.4.1 Riparian Areas, Wetlands, and Floodplains 26
5.4.2 Upland Plant Community 27
5.4.3 Noxious Weeds 27
5.4.4 Biodiversity of Vegetative Species 28
5.4.5 Fire Management 29
5.4.6 Wildlife and Wildlife Habitat 30
5.4.7 Undesirable Wildlife Species 30

5.4.8 Recreation-Wildlife Conflicts 31
5.5 RECREATIONAL RESOURCES 32
5.5.1 Enhancement of Campgrounds, Boat Docks and Launching Facilities, and Day Use Areas 32
5.5.2 Recreational Boating Flows 32
5.5.3 Reservoir and River Angling Opportunities 33
5.6 LAND MANAGEMENT 33
5.6.1 Land Management 33
5.7 CULTURAL RESOURCES 34
5.8 ENGINEERING AND OPERATIONS 34
5.9 FRENCH MEADOWS INTERTIE 34
5.10 SUMMARY OF RESOURCE ISSUES 35

6. STAKEHOLDER INVOLVEMENT PLAN 37
6.1 GENERAL PLAN 37
6.2 STAKEHOLDER ORGANIZATION ANALYSIS 40
6.2.1 Overall Strategies 40
6.2.2 Army Corps of Engineers (ACOE) 40
6.2.3 The Bureau of Indian Affairs (BIA) 41
6.2.4 The Bureau of Reclamation 42
6.2.5 CA Department of Fish and Game 42
6.2.6 California Resources Agency 43
6.2.7 CA State Water Resources Control Board 44
6.2.8 The Federal Energy Regulatory Commission 45
6.2.9 National Marine Fisheries Service 46
6.2.10 The National Park Service 47
6.2.11 The US Fish and Wildlife Service 48
6.2.12 USDA Forest Service 49
6.2.13 Local Economic Organizations 51
6.2.14 Local Recreation Interests 52

7. STUDY PLAN DEVELOPMENT AND IMPLEMENTATION 53
7.1 STUDY PLAN CONSIDERATIONS 53
7.2 STUDY PLAN ELEMENTS 54
7.3 TIMING OF STUDIES 55
7.4 STUDY EXECUTION 55

8. INFORMATION MANAGEMENT AND DOCUMENT CONTROL 55
8.1 GEOGRAPHIC INFORMATION SYSTEM UTILIZATION 55
8.2 QUALITY ASSURANCE AND QUALITY CONTROL 56
8.3 PROCEDURES MANUAL 56

9. OTHER RELICENSING CONSIDERATIONS 56
9.1 COMPLIANCE AUDIT 56
9.2 PREPARATION OF THE LICENSE APPLICATION, ENVIRONMENTAL IMPACT REPORT AND WATER QUALITY CERTIFICATION APPLICATION (401) 56
9.3 SETTLEMENT 57
9.4 LEGISLATIVE AND POLICY CONSIDERATIONS 57

10. RELICENSING TASKS, SCHEDULE, AND COSTS 57
10.1 EARLY LICENSING ACTIVITIES 66
10.2 PRE-APPLICATION DOCUMENT AND STUDY PLANS 66
10.3 STUDY EXECUTION 66
10.4 PREPARATION OF LICENSE APPLICATION 66
10.5 SETTLEMENT PROCESS 67
10.6 FERC APPLICATION PROCESSING 67
10.7 PUBLIC AND STAKEHOLDER INVOLVEMENT 67
10.8 PROJECT AND INFORMATION MANAGEMENT 67
10.9 RELICENSING COSTS 67

11. PLACER COUNTY WATER AGENCY RELICENSING STAFFING STRUCTURE 69

12. RISK ASSESSMENT 72

13. RECOMMENDATIONS 74
13.1 ESTABLISH INFRASTRUCTURE 74
13.2 DEVELOP AND IMPLEMENT STAKEHOLDER COMMUNICATION PLAN 74
13.3 COMPLETE THE PRE-APPLICATION DOCUMENT 75
13.4 PLAN FOR THE INTEGRATED LICENSING PROCESS 75

List of Acronyms 76
Glossary 78
Appendix A A-1

LIST OF TABLES

Table 1. Middle Fork Project List of Potential Relicensing Issues ES-11
Table 2. Middle Fork Project List of Potential Stakeholders ES-12
Table 5-1. Potential Environmental Considerations Matrix 36
Table 10-1. Middle Fork American River Project – Estimated Relicensing Costs 58
Table 10-2. Relicensing Process Costs 68
Table 12-1. Relicensing Risks 73

LIST OF FIGURES

Figure 1. Middle Fork Project Facilities ES-2
Figure 2. Middle Fork Project Relicensing Schedule ES-7
Figure 3. Middle Fork Project Relicensing Integrated Licensing Process Preliminary Draft Schedule ES-8
Figure 4. Middle Fork American River Project – Estimated Relicensing Costs ES-16
Figure 2-1. Middle Fork American River Project – Relicensing Issues 3

LIST OF EXHIBITS

Exhibit 10-1 Middle Fork Project Relicensing Integrated Licensing Process Preliminary Draft Schedule 62
Exhibit 10-2. Middle Fork Project Relicensing Traditional Licensing Process Preliminary Draft Schedule 64

EXECUTIVE SUMMARY

INTRODUCTION

The Federal Energy Regulatory Commission (FERC or Commission) license for the 211 MW Middle Fork American River Project (Middle Fork Project or MFP) expires on February 28, 2013 (FERC Project No. 2079). Placer County Water Agency (Agency), the licensee for the project, intends to file an application for a new license. The project is an integral part of the Agency's infrastructure to meet the water supply needs of its customers.

The Agency has developed this plan for successfully relicensing the MFP (Relicensing Plan or Plan) based upon the relicensing objectives presented to and modified by the Agency's Board of Directors and the Placer County Board of Supervisors (County) in May 2003.

The Agency was created in 1957 under a state legislative act entitled the "Placer County Water Agency Act." The Agency is self-governed with policy and regulatory decisions determined by an independently elected five member Board of Directors. Since its inception the Agency has been actively involved in Placer County's 1,500 square miles on a wide variety of water and energy issues.

The Agency's Power System was established with the construction of the Middle Fork American River Project that began in 1963 and was completed in 1967 (Figure 1). The Middle Fork Project generates at 244 megawatts peak power, and averages 1.1 million megawatt hours (MWH) annually.

To finance the original construction of the MFP, the Agency formed a partnership with Pacific Gas and Electric Company (PG&E) in which PG&E agreed to pay all of the operating costs for the project and pay off the debt in return for all of the power produced until the bonds are retired in 2013. The Agency, for its part, agreed to issue tax-free revenue bonds for the construction of the project and received the rights to all of the water developed by the project.

The annual operating cost of the MFP over the past five years, including non-routine maintenance and capital improvements which can vary considerably from year to year, has ranged from $8 to $12 million. The debt service, including principal and interest, is another $5 million per year. The Middle Fork Project is the eighth largest public power project in California.

MISSION STATEMENT AND RELICENSING OBJECTIVES

The Relicensing Plan is consistent with the mission statement and objectives presented to and modified by the Agency's Board of Directors on May 15, 2003. The Agency's Mission Statement and relicensing objectives follow:

Mission Statement

The mission of the relicensing project is to successfully relicense the Middle Fork American River Project for the benefit of the people of Placer County to ensure reliable water and energy supplies with stewardship of recreational and watershed resources in partnership with stakeholders.

Relicensing Goals

The specific goals of the relicensing are:

- Retain the license for the project.
- Obtain a license that provides for the long-term integrity of the project facilities.
- Improve and upgrade project facilities, including capacity, energy and water supply where feasible based upon good economic and environmental principles.
- Secure the benefits of the project for the people of Placer County and the State of California
  - Water – Preserve and maintain a reliable water supply for the health, security and economic benefit of Placer County.
  - Power – Manage the power and energy benefits of this renewable resource in a reliable manner.
    - Maximize the value of the available hydroelectric power and energy output.
    - Contribute to statewide need for reliable, renewable energy sources.
  - Environment – Be a responsible long-term steward of the watershed resources in partnership with the resource agencies and stakeholders.
    - Balance the values of the community.
    - Protect and enhance the environment within the project watershed.
  - Recreation – Respond to the diverse recreation needs of the public by utilizing the project's inherent capabilities and attributes, recognizing the need for public safety.
- Assure consistency with Placer and El Dorado county General Plans, Forest Service Plans, environmental and recreational policies and comply with regulatory requirements and applicable laws.
- Engage the stakeholders in an open, effective and efficient relicensing process.
- Provide public education opportunities regarding watershed resources within the project area.

RELICENSING PROCESSES

On February 20, 2003, FERC issued a Notice of Proposed Rulemaking (NOPR) designed to improve the relicensing process. The rule was finalized on July 23, 2003. These new regulations will govern the MFP relicensing.

The new regulations provide for three alternative processes to relicense projects: (1) traditional process; (2) alternative licensing procedure (ALP); and (3) integrated licensing process, (ILP). An enhanced traditional approach can be considered as a subset of the traditional approach. The ILP is the default process, but an applicant can petition FERC to use the Traditional Process or ALP when it files its Notice of Intent (NOI).

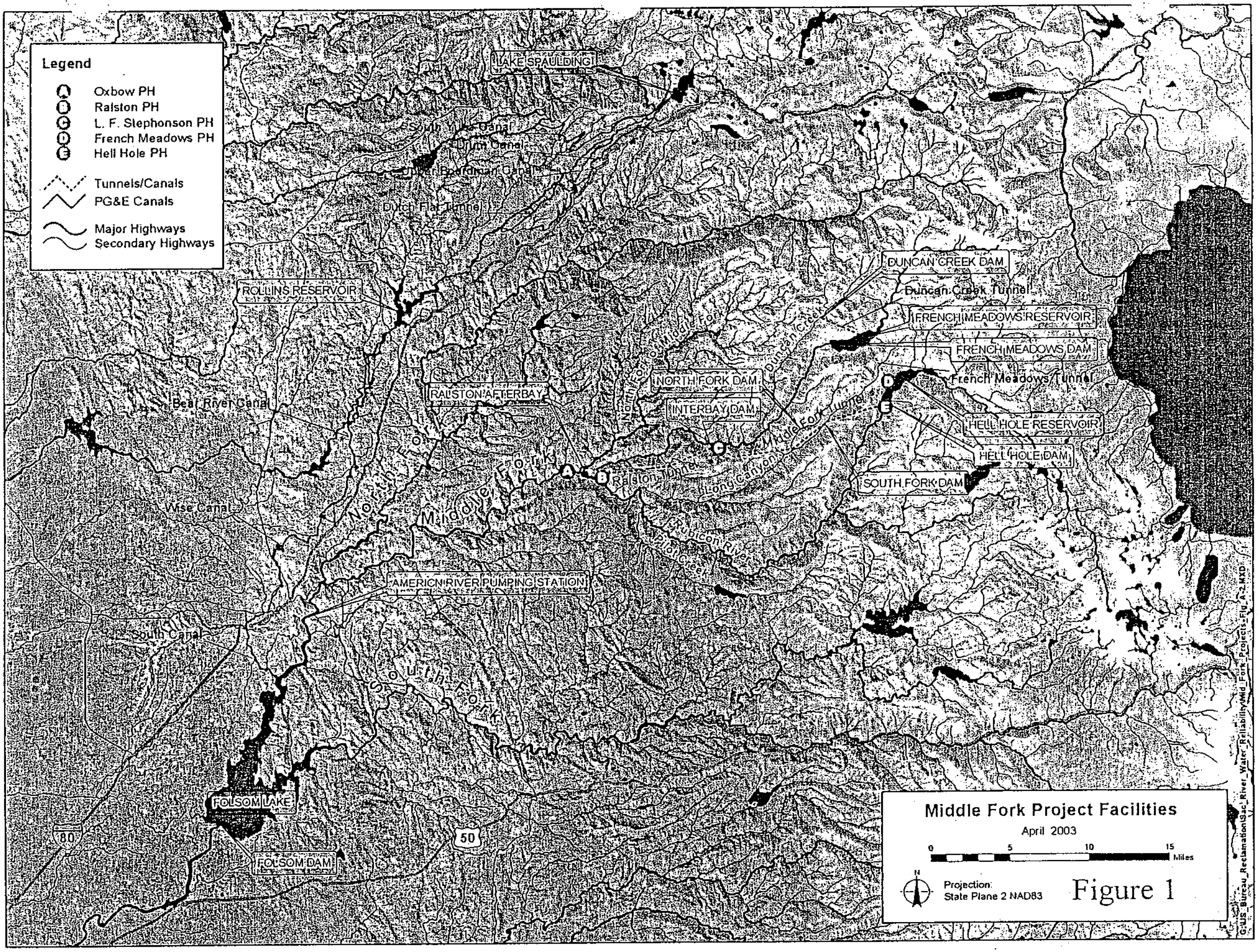

Legend
Oxbow PH
Ralston PH
L. F. Stephonson PH
French Meadows PH
Hell Hole PH
Tunnels/Canals
PG&E Canals
Major Highways
Secondary Highways
LAKE SPAULDING
South Yuba Canal
Drum Canal
Dutch Flat Tunnel
ROLLINS RESERVOIR
Bear River Canal
Wise Canal
South Canal
RALSTON AFTERBAY
NORTH FORK DAM
INTERBAY DAM
DUNCAN CREEK DAM
Duncan Creek Tunnel
FRENCH MEADOWS RESERVOIR
FRENCH MEADOWS DAM
French Meadows Tunnel
HELL HOLE RESERVOIR
HELL HOLE DAM
SOUTH FORK DAM
Ralston Tunnel
Long Canyon
Middle Fork Tunnel
Rubicon River
North Fork
Middle Fork
South Fork
AMERICN RIVER PUMPING STATION
FOLSOM LAKE
FOLSOM DAM
80
50
Middle Fork Project Facilities
April 2003
0
5
10
15
Miles
N
Projection:
State Plane 2 NAD83

Figure 1

Traditional Licensing Process

The originally established licensing process is the Traditional Licensing Process. FERC's rulemaking at 18 CFR Section 5.3 requires that an applicant wishing to use the Traditional Process make a formal request to file a license application pursuant to Parts 4 and 16 of FERC's regulations (i.e., the Traditional Process regulations).

Advantages of this process include:

- Reduced process and associated costs up front; and
- Greater autonomy for the applicant to develop study plans and conduct studies.

Disadvantages of this process include:

- Less involvement of Commission staff during the development of the license application;
- A scoping and initiation of the National Environmental Policy Act (NEPA) process that takes place after the filing of the application;
- A higher likelihood of being required to conduct post-application studies;
- Uncertainty on whether studies being conducted as part of the application will be acceptable to resource agencies, tribes, other stakeholders and the Commission; and
- A longer process for the Commission to prepare its NEPA document after the application is filed with a greater probability that an annual license may need to be issued to extend the license pending completion of the NEPA document.

Alternative Licensing Procedure

The ALP was introduced to try to address some of the difficulties with the Traditional Licensing Process. Similar to the Traditional Process, under the new FERC regulations, applicants who desire to use the ALP are required to request use of the ALP when filing their Notice of Intent.

Advantages of this process include:

- Early Commission staff involvement;
- Greater coordination with resource agencies, tribes and other stakeholders in the development and execution of studies than in the Traditional Process;
- Increased public involvement in the relicensing process itself;
- Informal scoping during the pre-filing consultation process;
- Potential for mandatory conditions to be developed and requested by FERC prior to application filing; and
- Decreased likelihood for post-application study requests, but a greater likelihood than for the Integrated Licensing Process.

Disadvantages of this process include:

- Scoping must be redone and new issues can still be raised after filing of the application if stakeholders are not satisfied;
- An expansive collaborative process without deadlines and clear decision points to assure efficient progress;
- Study plans are not formally approved by the Commission prior to the studies being conducted; and
- The process still conducts the licensing in essence twice, first by the applicant, then by FERC, which potentially lengthens the process and creates opportunities for reopening issues, requiring new studies, and creating uncertainty in the process.

Integrated Licensing Process

The ILP has been developed to address the flaws of the above processes; however it is still new.

Advantages of this process include:

- Increased involvement of Commission staff with the applicant and stakeholders earlier in the process, during the development of a license application;
- Greater coordination among the Commission and federal and state agencies with mandatory conditioning authority;
- Application preparation in conjunction with the Commission's environmental scoping process;
- Significantly increased public participation in the pre-filing consultation process;
- Establishment of firm schedules and deadlines for all participants;
- Development of a Commission-approved study plan by the applicant and resolution of study disagreements; and
- No need for post-application study requests.

Disadvantages of this process include:

- It's an unproven process so unanticipated process concerns may evolve.

Licensing Process Recommendation

We believe that the benefits of the ALP can be achieved through the ILP or an Enhanced Traditional Process. Both the ILP and Enhanced Traditional Process can be conducted without the need for endless meetings, as has occurred on many ALPs if the process is properly structured. The ILP has the added benefit of early FERC scoping and having FERC approve the study plans, resulting in less risk to the applicant. Therefore, at this time we recommend that the Agency plan for the ILP, but since this process is untested we further recommend that the Agency monitor other ILPs to determine their likelihood for success before committing to a specific approach.

LICENSING SCHEDULE

We recommend the licensing schedule summarized in Figure 2 on Page 8, and presented in more detail in the Gantt chart, Figure 3 on Page 9. The schedule is based upon the Integrated Licensing Process. Key elements of the schedule are discussed below.

Early Licensing Activities

Early Licensing Activities consist of those activities that will enable the Agency to meet its relicensing goals and efficiently conduct the relicensing process. These activities will take place from the present through 2005. Key activities are:

- actively maintaining the relicensing plan;
- developing a business plan for relicensing;
- tracking other neighboring relicensings;
- monitoring of, and participation in, regulatory and legislative activities;
- establishing stakeholder relationships that will be important throughout the relicensing process;
- collecting baseline data to develop a database that includes different hydrological conditions;
- establishing the infrastructure to support and facilitate Relicensing;
- conducting preliminary studies to identify the potential for increasing project generating capacity and energy production;
- preparing preliminary public information materials and a video/CD to provide an overview of the project and Relicensing;
- hiring agency staff for the relicensing process and to implement the conditions of the new license; and
- selection of a consultant team.

Notice of Intent and Pre-Application Document

The Notice of Intent (NOI) must be filed 5 to 5 ½ years before the license expires. It is at this point that FERC staff becomes involved under the new Integrated Licensing Process (ILP) and the official relicensing process begins. To maximize the potential for the Agency to complete the relicensing on time and not require annual license extensions, we recommend that the NOI be filed at the earliest allowable date, August 31, 2007.

A Pre-Application Document (PAD) must be filed at the time an applicant files its NOI. The PAD requirements are common to each of the alternative licensing processes. Because the PAD is a comprehensive document, it will require a substantial effort to complete. A one to one-and-one-half year period has been allotted given the comprehensive nature of this document and the importance that is being placed on it under the new FERC regulations. Because of the complexity of the project, we recommend that the PAD be started at least seven years before the license expires, or no later than February 2006.

Study Execution

Detailed studies should be conducted in 2008 and 2009. The study results should be available in a timely fashion for use in preparing the license application and conducting the settlement process. The schedule allows for adjustments to the study plans in early 2009, after the first year of study. Some limited studies could be conducted in 2010, but with early baseline data collection and focused studies, the need for follow on studies should be greatly diminished.

Preparation of License Application

Preparation of the license application entails not only the application itself, but other documents that will support the license application and the decision making process. The Agency will need to prepare the License Application, a Biological Assessment, an Essential Fish Habitat Assessment, an Historic Properties Management Plan, and the 401 Water Quality Certification Application. A Preliminary Licensing Proposal or a draft license application should be prepared in 2009, concurrent with the second year of studies, and should be completed early in the second quarter 2010. After a mandatory 90-day review, the license application can be finalized for transmittal to FERC prior to February 28, 2011. Also, the License Application should be prepared to meet the California Environmental Quality Act (CEQA) requirements. The Environmental Impact Report (EIR) should be finalized after FERC issues notice of acceptance of the license application and that it is ready for environmental analysis. The EIR may need to be supplemented if the FERC license differs from what is proposed in the application.

Settlement Process

We envision that the Agency will need to engage in a structured collaborative process early on to identify issues, develop study plans, and monitor implementation of the studies. This will evolve to conducting a settlement process to resolve issues prior to the filing of the application. This process is scheduled to take place during 2009 and 2010. The first year of studies will have been completed prior to initiation of the settlement process. This will permit meaningful negotiations to take place early in 2009. The first part of the settlement process will be to establish settlement protocols. A conceptual settlement agreement must be completed late in 2010 to enable the settlement to be included in the License Application.

FERC Application Processing

After the License Application is filed with FERC in February 2011, the FERC will have two years to process it and issue a licensing decision. For the Integrated Licensing Process, FERC expects to have its processing completed within 18 months.

Figure 2. MIDDLE FORK PROJECT RELICENSING SCHEDULE

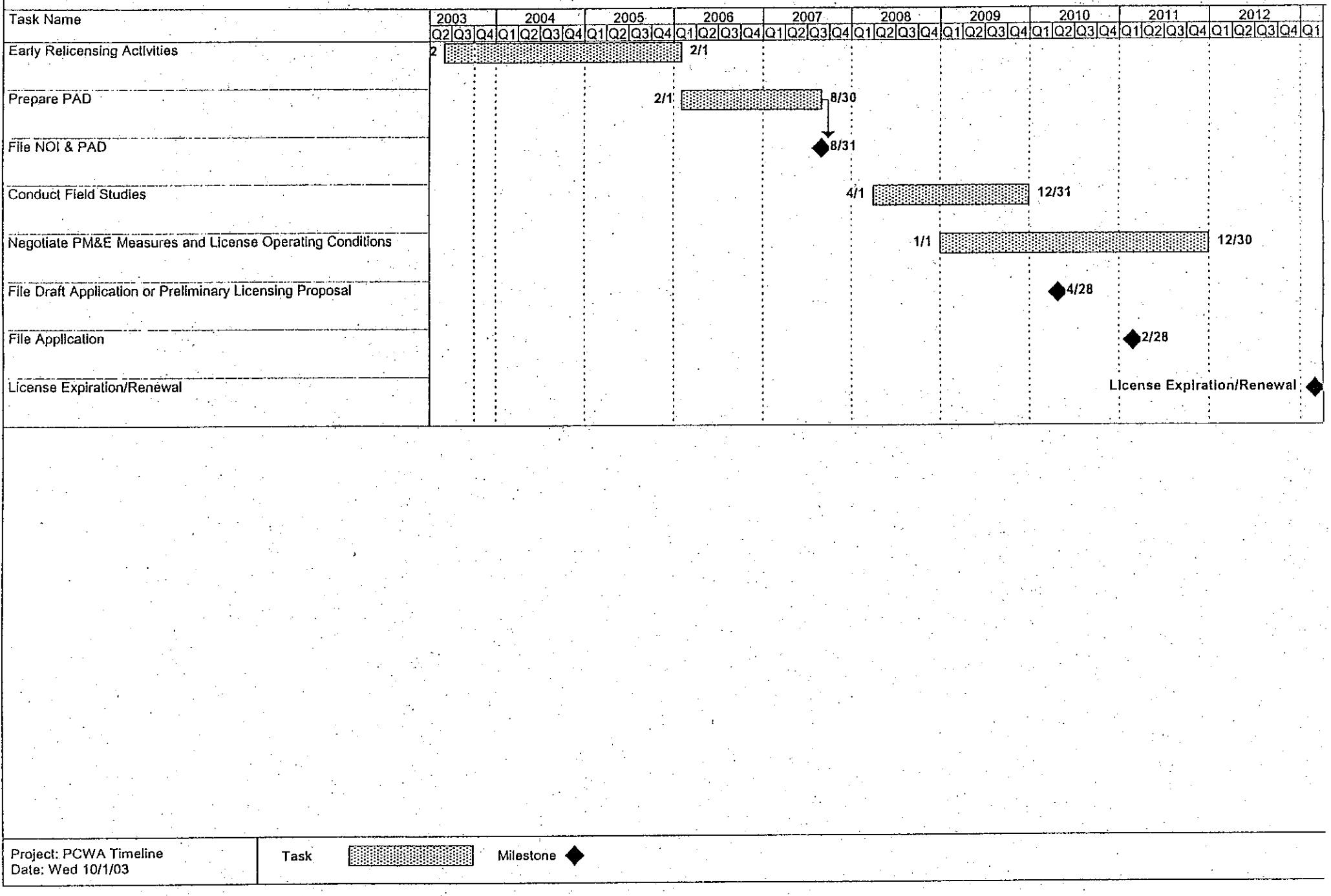
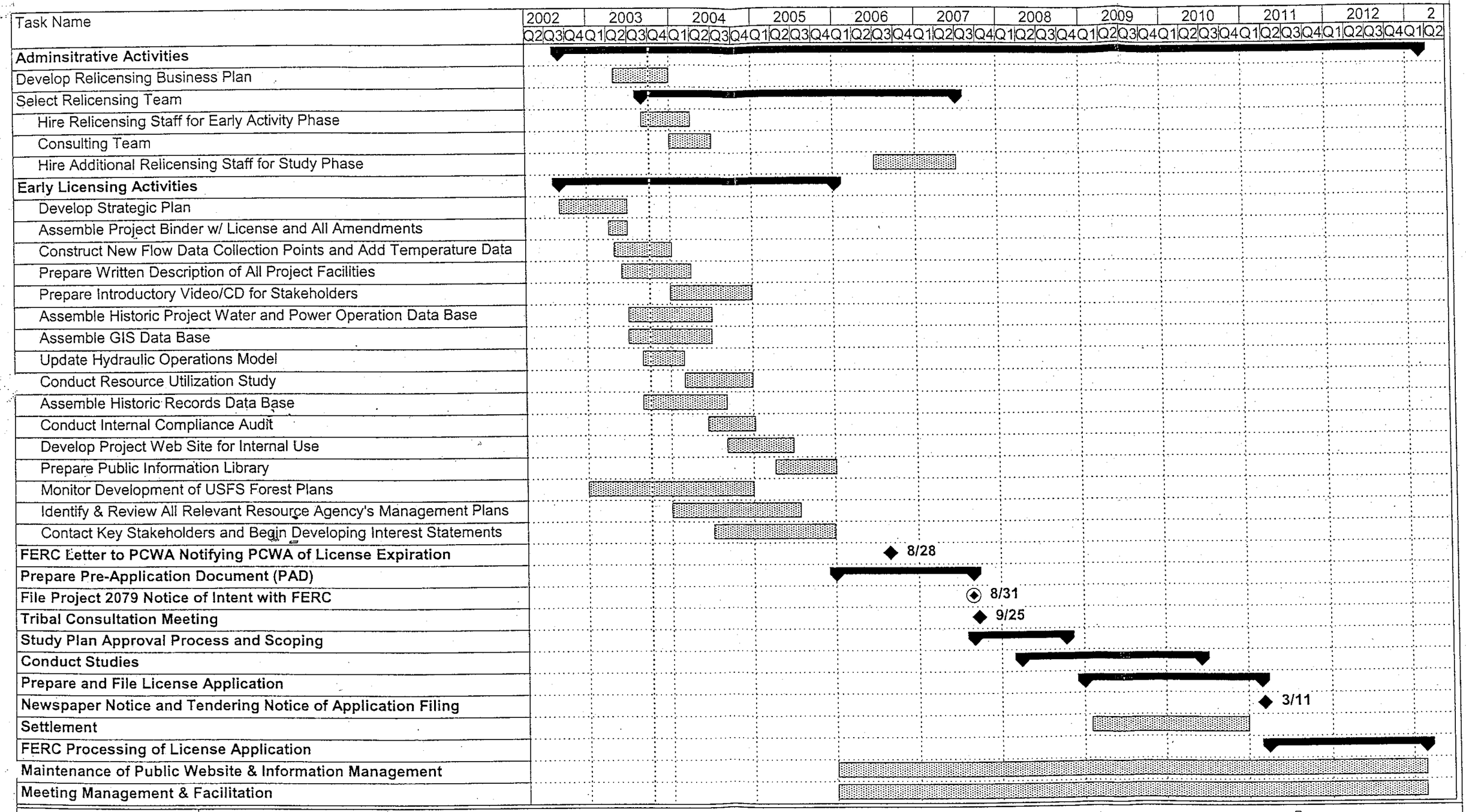


Figure 3. MIDDLE FORK PROJECT RELICENSING
INTEGRATED LICENSING PROCESS
PRELIMINARY DRAFT SCHEDULE



RELICENSING ISSUES

Sections 4.51(f) and 5.18 of 18 CFR require reporting of certain types of information in the FERC application for license of major hydropower projects, including a discussion of water resources; fish and aquatic resources; wildlife and botanical resources; wetlands, riparian, and littoral habitat; rare, threatened, and endangered species; recreational and land use; aesthetic resources; and cultural resources in the vicinity of the project. The application needs to identify the potential impacts of the project on these resources, including a description of any anticipated continuing impact for on-going and future operations. Table 1 illustrates the issues that will likely need to be addressed during the relicensing process.

The issues were identified based upon the types of considerations encountered during similar FERC relicensing programs in Northern California, including the relicensing efforts of Sacramento Municipal Utility District's (SMUD) Upper American River Project (FERC Project No. 2101), El Dorado Irrigation District's (EID) El Dorado Project (FERC Project No. 184), and California Department of Water Resources' (DWR) Oroville Facilities (FERC Project No. 2100), as well as information acquired during informal consultations with various stakeholders.

STAKEHOLDERS

Because of the complex nature of the relicensing and the large number of issues to be addressed, numerous stakeholders will undoubtedly be involved in the relicensing process. These stakeholders include Federal, State, Tribal, and Local Agencies, conservation and recreation groups, and local groups with an economic interest in the project. A preliminary list of stakeholders is presented in Table 2.

STAKEHOLDER INVOLVEMENT PLAN

The Agency has experience in effective collaboration through the Water Forum and has achieved positive results. This experience, combined with the extensive licensing experience held by the planning team, leads to the following recommendations for the Agency's public involvement plan. This plan will need to evolve as practices and expectations of stakeholders shift over time.

We recommend that the Agency seek to achieve the following in the public involvement program:

- *A robust process* - enables all interested stakeholders ways to be involved.
- *A transparent process* – the process and issues addressed are open and accessible to all interested stakeholders.
- *An easy access process* – there are a range of ways and degrees to participate serving a variety of needs.
- *An inclusive process* – all feel welcomed to participate.
- *A well-run process* - systems are established up front to support communications and information access.
- *A content-driven process* – meeting discussions and the process focus on addressing and resolving issues fairly and effectively. Meetings are held as needed, but the process respects that participants' time is a precious, respected resource and their time should be used wisely.

Table 1. Middle Fork Project List of Potential Relicensing Issues[1]

Water Resources
Contamination of Sediments Designated Beneficial Uses Land Use Practices Natural Restorative Processes Sediment Load, Recruitment and Deposition
Fish and Aquatic Resources
Anadromous Fish Passage Entrainment Fish Disease Flow Fluctuation Habitat-Flow Relationships (IFIM) Macroinvertebrates and Micoorganisims Physical Reservoir Habitat Physical Riverine Habitat Predation Recreational Goals Resident Fish Passage Species Composition and Abundance Water Temperatures in the Middle Fork American River
Wildlife and Botanical Resources
Biodiversity of Vegetative Species Fire Management Non-Native (Undesirable) Wildlife Species Noxious Weeds Recreation-Wildlife Conflicts Riparian Resources, Wetlands and Fire Management Floodplains Upland Plant Communities Wildlife and Wildlife Habitat
Recreational Resources
Campgrounds, Boat Docks and Launching Facilities, and Day use Areas Recreation Boating Flows Reservoir and River Angling Opportunities
Cultural Resources
Archeological and Historic Resources Traditional Cultural Properties

[1] Order of presentation of relicensing issues follows FERC's regulations.

Table 2. Middle Fork Project List of Potential Stakeholders

Federal Agencies
Army Corps of Engineers (ACOE)
Bureau of Land Management (BLM)
Bureau of Indian Affairs (BIA)
Bureau of Reclamation (USBR)
Environmental Protection Agency (USEPA)
Federal Emergency Management Agency
Federal Energy Regulatory Commission (FERC)
Fish and Wildlife Service (USFWS)
Forest Service (USFS)
National Marine Fisheries Service (NMFS)
National Park Service (NPS)
Natural Resource Conservation Service (NRCS)
Local Agencies/Government
City of Folsom
City of Roseville
City of Sacramento
El Dorado County Board of Supervisors
El Dorado County Water Agency
Foresthill Forum
Placer Legacy Group (formed by Placer County)
Sacramento County Board of Supervisors
Town of Loomis
Local Economic Interests
All Placer Chambers of Commerce
Building Industry Association
Sacramento Metropolitan Chamber of Commerce
Sierra Pacific Industries
Local Recreation
American River Recreation Association
California 4WD Association
Local Rafters (ex: Mariah Wilderness Expeditions, American Whitewater Expeditions, Whitewater Voyages)
Off-road Vehicles Groups (ORV Grps) (ex: California Off-Roach Vehicle Assoc.)
Trout Unlimited
Native Americans
Foothill Indian Education Alliance
Maidu Native Americans (Maidu)
Miwok Native Americans (Miwok)
Washoe Tribe

NGOs
American River Operations Group (AR Ops Grp)
American River Watershed Group (ARWG)
American Rivers
American Whitewater
California Native Plant Society
California Outdoors (CA Outdoors)
California Sportfishing Protection Alliance (CSPA)
California Trout (Cal Trout)
Center for Sierra Nevada Conservation
El Dorado Citizens for Water
Friends of the River (FOR)
Natural Resources Defense Council (NRDC)
Protect American River Canyons (PARC)
Save the American River Association (SARA)
Sierra Club
Western States Trail Association
State Agencies
California Department of Boating and Waterways
California Department of Conservation
California Department of Fish and Game (CDFG)
California Department of Forestry
California Department of Parks and Recreation
California Department of Water Resources
California Energy Commission (CEC)
California Environmental Protection Agency
California Office of Historic Preservation
California Resources Agency
California State Park Service (CSPS)
California State Water Resource Control Board (SWRCB)
Utility Interests
El Dorado Irrigation District
Georgetown Divide Public Utility Dist.
Grizzly Flats Community Service District
Nevada Irrigation District
Pacific Gas & Electric (PG&E)
Regional Water Authority
Sacramento Municipal Utility District (SMUD)
Sacramento Suburban
San Juan Water District
South Tahoe Public Utility District
Tahoe City Public Utility District

We suggest three types of public involvement opportunities to achieve these characteristics:

- High-Intensity Involvement and Structured Collaborative Process

  This group of stakeholders will work with the Agency to develop mutually acceptable study plans, oversee study implementation, and consider proposed protection, mitigation and enhancement measures (PM&E measures).

- High-Intensity Outreach at Key Milestones

  These will be stakeholders who may not have the time to be regular participants but want to be informed as key milestones are reached. There should be outreach activities planned that provide for interactive exchange between the Agency and these stakeholders.

- Information Communication

  Through a periodic newsletter to a database of stakeholders, utilization of a web site and other communication vehicles, information can be made available to general public interests.

STUDY PLAN DEVELOPMENT AND IMPLEMENTATION

The Agency should develop study plans based on information needed to address issues raised by relicensing participants. The issues themselves should be tied to resource management goals and should be related to project impacts. It is in the Agency's interests to help relicensing participants clearly articulate what their resource goals are and their hypothesis of how the project might affect those resource goals. This information provides the basis or rationale for clearly defined studies.

We recommend the following principles be applied to relicensing studies: The scope and protocols for each study should be agreed upon before fieldwork begins. The study effort should reflect the importance of the issue, the effect the project might have on the resource, and the Agency's ability to address the issue. The Agency should rely on existing literature where possible to address issues. Studies should be used to analyze alternatives and to build an administrative record to support licensing decisions and meet NEPA and CEQA requirements. Following a structured study planning and execution process should minimize the disputes over the data results.

We recommend that the Agency try to complete all studies prior to submittal of the license application. Delayed or inconclusive studies run the risk that the FERC and resource agencies will err on the conservative side by prescribing overly protective mitigation and enhancements. Although many licenses being issued by the Commission include adaptive management provisions, we believe that it is often preferable for an applicant to gather sufficient information to address relicensing issues so that adaptive management provisions are either not required or have narrowly defined limits.

INFORMATION MANAGEMENT AND DOCUMENT CONTROL

Information management and document control are key elements of the relicensing program. A poorly designed information management system will result in significant additional expense in non-productive undertakings such as document retrieval. As part of the recommended information management system, a Geographic Information System (GIS) can be very helpful to conduct analysis and present data.

OTHER RELICENSING CONSIDERATIONS

As a public agency, the Agency has the responsibility to prepare an EIR. To maximize process efficiency, we recommend that the EIR and License Application be prepared as a single document that serves both purposes. Also, the document will serve as the supporting document for the Water Quality Certification application.

The Commission strongly encourages applicants to resolve issues with licensing participants. We recommend that the Agency work with stakeholders to craft a settlement agreement that meets the Agency's relicensing objectives. The settlement process should not begin until study information is available to allow alternatives to be evaluated and trade offs considered. The process should be completed prior to application filing.

A settlement would provide certainty for the Agency. Not settling would leave decisions up to FERC and the mandatory conditioning agencies. This could result in a higher risk of not meeting relicensing objectives.

We highly recommend that the Agency remain actively involved in policy and legislative actions that might affect the outcome of the relicensing. Because the Agency has an important public responsibility, it will be important to keep legislators and regulators apprised of the relicensing progress.

RELICENSING COSTS

There are two cost components to relicensing the Middle Fork Project: (1) relicensing process costs; and (2) Protection, Mitigation, and Enhancement Costs. Relicensing process costs are estimated to range from $10 to 20 million (2003 dollars), depending upon the studies required and their associated level of effort, the intensity of the public involvement program, the number of Agency relicensing staff, and the intensity of the settlement process. Figure 4, Page 16, presents an upper level estimate of the annual relicensing costs. The costs are based upon conducting comprehensive studies to address all potential issues identified in Table 1.

Protection, mitigation, and enhancement costs are difficult to estimate. Based upon our experience with other similar sized projects with complex issues, these costs could be highly variable over the life of the new license. These costs include both capital and operating and maintenance costs, such as reduced generation because of increased operating constraints. We recommend that an operations model be developed and operated to evaluate alternative operating scenarios.

AGENCY RELICENSING STAFFING STRUCTURE

To successfully relicense the MFP, the Agency will need to select a staffing structure to meet its needs. Licensees for other projects have used various models. On projects the size of the MFP, and for which there is currently not a dedicated staff of professionals from which to draw upon, different licensees have chosen to both staff up and rely more heavily on consultants.

The primary benefits of increasing staff is to develop institutional knowledge within the organization, both bringing current operations knowledge into the licensing process and preparing staff for compliance with the new license conditions, and to exercise more direct control over the relicensing outcome. However, during relicensing there is an intermittent need for the many different professional skills that can best be provided by consultants. We recommend that the Agency hire a few additional key staff but rely on consultants to complete much of the relicensing tasks.

In an effort to balance salary costs and develop in-house capability, we recommend the following staffing structure:

- Project Manager - The project manager is responsible for overall management of the program including strategy, project organization and administration, oversight of consultants, program implementation, participant involvement, and development of protection, mitigation and enhancement measures. The project manager reports to Agency management who, in turn, report to the Board of Directors. Skills needed include project management, environmental resource management and stakeholder/negotiation management expertise.

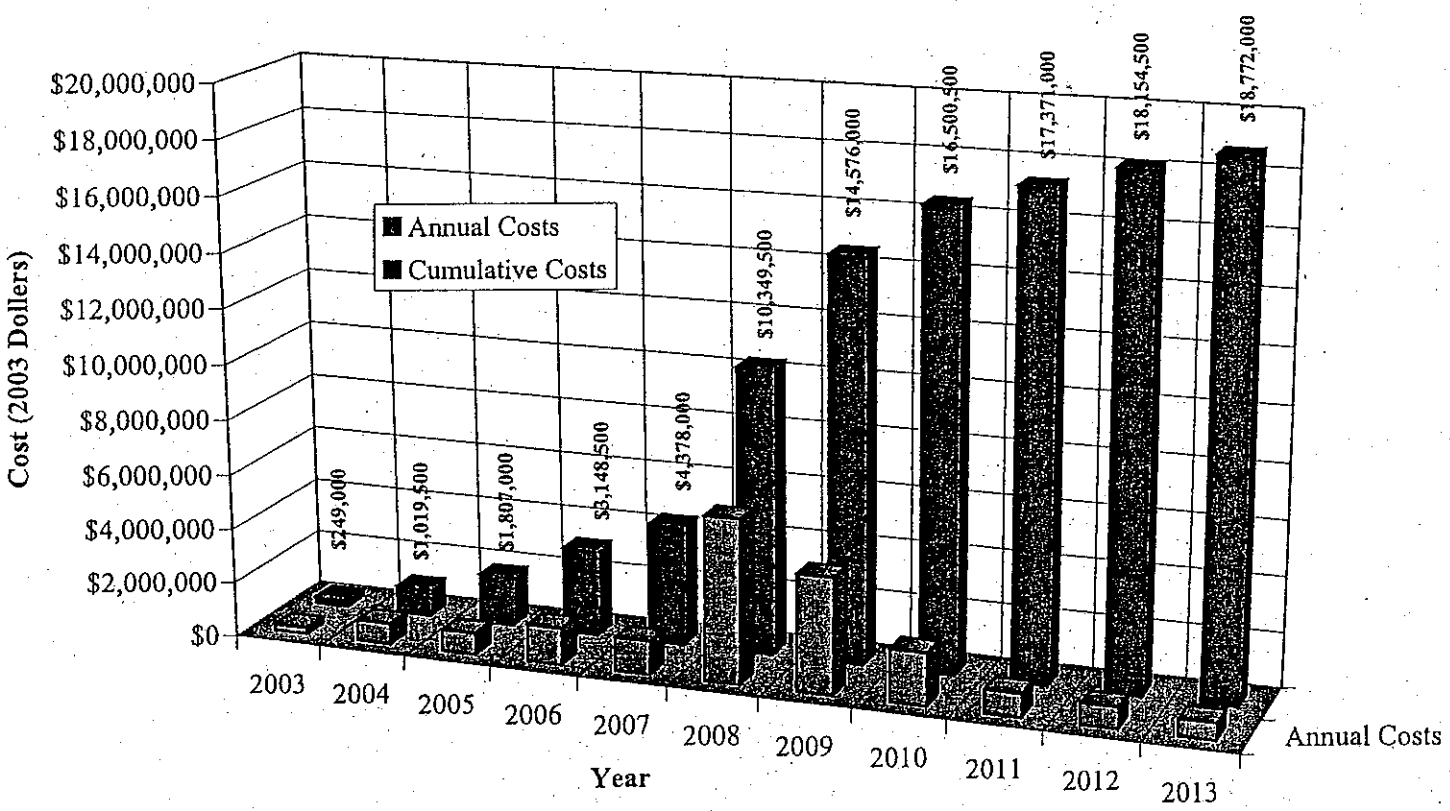
- Environmental Coordinators (2) – These positions are responsible to manage the consultants and engage the stakeholders on the technical environmental issues of the relicensing. Each of the two coordinators should be a specialist in a relevant resource area (e.g., one to address aquatics, fisheries, water quality, and the other to address recreation, cultural and land use). It may be appropriate to phase in the second position since both won't likely be needed full time from the start. This staff needs both technical skills and stakeholder management/negotiation skills.

- Information/Records Management Coordinator – This position is responsible for preparing, organizing and distributing all of the written information developed for the project. Duties include maintaining the project web site, keeping and providing records and notices to the public in accordance with FERC requirements. This is likely a part time position.

- Engineering Technician – This position develops all needed technical information regarding the physical assets of the project, historical project information and operational capabilities of the project. Duties include conducting in house modeling scenario studies, directing the preparation of maps and exhibits and assisting the other team members as needed, writing up/editing the analysis and results from field studies and generally managing the work of consultants. This is likely to also be a part-time position.

- Secretarial (1) – Records storage, phone, mail, database management, etc.

Figure 4. Middle Fork Project Estimated Relicensing Costs



We suggest complementing the internal team with a consulting team with environmental and process management expertise. There should be an overall consulting team lead working closely with the internal project manager to guide and direct the overall process. As part of the "core team" with internal staff we suggest also including a lead environmental resource manager and a process manager. These consulting leads need to bring extensive licensing expertise, resource expertise and process management expertise. Various subconsultants may also be added on an as-needed basis to support the process.

RISK ASSESSMENT

As the Agency embarks on its relicensing process for the MFP, it will be faced with a number of risks. Each risk factor has a potential to impact the Agency. Key risk areas include potential legislative changes, future regulatory changes, relicensing trends, study costs, protection, mitigation and enhancement costs, changes in capacity and energy values, and competition.

RECOMMENDATIONS

In order to achieve the Agency's relicensing goals, we recommend that the Agency commit to the following actions:

1. **Establish, prior to January 2006, the infrastructure necessary to monitor, report, and document the progress of all relicensing activities.**

   Specifically, the following actions should be taken:

   - Establish a geographic information system (GIS) consistent with the USFS and Placer County GIS protocols.
   - Develop a web site linked to the Agency and Placer County general web sites to service an array of informational needs.
   - Develop in-house relicensing capability through the hiring or assignment of: (1) Project Manager; (2) two Environmental Coordinators; (3) Information/Records Management Coordinator; (4) Engineering Technician; and (5) Secretary.
   - Hire an environmental and process management consulting team to complement the in-house team.
   - Develop and implement an information management and document control system.
   - Develop a quality assurance and quality control plan.
   - Develop a Procedures Manual for use by project personnel.
   - Develop a process protocol during the initial stages of the process.
   - Develop a structured relicensing process supported by as many stakeholders as possible.
   - Establish a structured collaborative process facilitated by a neutral facilitator.

2. **Develop and implement a stakeholder communication/involvement plan in 2004 to identify and track relicensing issues, build relationships and inform the public.**

Associated with the stakeholder involvement plan, the Agency should:

- Provide information on the project, the affected environmental and social resources, and the relicensing process in a convenient manner, such as a video/CD.
- Develop fact sheets on the resource areas addressed in relicensing.
- Monitor resource agency activities in the region that could affect the MFP relicensing.
- Identify stakeholder issues as early as possible so that they may be addressed and resolved efficiently and in a timely manner.
- Informally consult with resource agencies, tribes and key stakeholders during the development of the PAD.
- Develop Agency interest statements regarding the Agency's potential responsibility on various issues, such as downstream water uses, and balancing the public interest needs.
- Plan outreach activities at key milestones in the relicensing process to provide for interactive exchange between the Agency and interested stakeholders.
- Publish a quarterly or semi-annual newsletter.

3. **Perform activities necessary to complete the Pre-Application Document (PAD) by August 2007.**

To accomplish this, the Agency should utilize existing literature, and as appropriate, obtain the following information for development of the PAD:

- Collect water temperature and discharge data.
- Conduct appropriate baseline studies.
- Develop and run an operations model to evaluate alternative operations.
- Conduct a compliance audit.
- Assess the feasibility to improve and upgrade project facilities including capacity, energy, and water supply, based upon sound engineering, economic, and environmental principals.
- Develop specific study plans that have clearly defined objectives, scope, approach, and schedule.

4. **Plan to utilize the Integrated Licensing Process (ILP) while maintaining the flexibility to adopt other relicensing processes until August 2007.**

In connection with the process selection, the Agency should:

- Monitor and influence, as appropriate, policy and legislative actions that might affect the outcome of the relicensing and the electrical industry.
- Estimate potential protection, mitigation, and enhancement costs after preliminary discussions with key stakeholders on issues of interest and desired outcomes.
- Adopt a cooperative approach if the Agency elects to go with an Enhanced Traditional Process.
- File the Notice of Intent at the earliest allowable date, August 31, 2007.

1. INTRODUCTION

The Federal Energy Regulatory Commission (FERC or Commission) license for the 211 MW Middle Fork American River Project (Middle Fork Project or MFP) expires on February 28, 2013 (FERC Project No. 2079). Placer County Water Agency (Agency), the licensee for the project, intends to file an application for a new license. The project is an integral part of the Agency's ability to meet the water supply needs of its customers.

The Agency has developed this plan for successfully relicensing the MFP (Relicensing Plan or Plan) based upon the relicensing objectives presented to and modified by the Agency's Board of Directors and the Placer County Board of Supervisors (County) in May 2003. The Plan includes background information on the Agency, a mission statement for the relicensing and the joint Agency-County relicensing objectives as a context for the Relicensing Plan.

The relicensing requirements and alternative processes available to relicense the project are summarized, including a new approach approved by the Federal Energy Regulatory Commission on July 23, 2003.

The Plan identifies an extensive preliminary list of issues, presented in the context of goals and objectives, which the Agency can expect will need to be addressed in its relicensing. Recommended courses of actions are presented as part of the issues discussion. Other relicensing requirements are also discussed and recommended approaches to address studies and information management are provided.

Since stakeholders are key to resolving relicensing issues, a stakeholder involvement plan is presented.

To implement the program, a staffing structure and options for consultant participation are presented. Based on the identified elements and recommended actions, the tasks, schedule, and estimated relicensing costs are presented. The Plan concludes with an assessment of relicensing risks. The Plan is intended to be a living document and should be updated as frequently as necessary.

2. PLACER COUNTY WATER AGENCY

The Agency was created in 1957 under a state legislative act entitled the "Placer County Water Agency Act." The Agency is self-governed with policy and regulatory decisions determined by an independently elected five member Board of Directors. Since its inception the agency has been actively involved in Placer County's 1,500 square miles on a wide variety of water and energy issues.

The Agency holds extensive surface water entitlements. Water is retailed to over 36,000 customers located in the Agency's zones. Water is also sold wholesale to various water purveyors who retail it to their customers. The Agency is involved in water issues affecting the Lake Tahoe and Truckee River system, the American River system, the Yuba/Bear Rivers system, the Central Valley Project, and the Bay/Delta system. The Agency is involved in numerous activities, including watershed planning, groundwater management, and regional

infrastructure and conjunctive use projects. Advocacy for Agency water entitlements and energy resources for Placer County are at the forefront of Agency interests and activities.

The Agency's Power System was established with the construction of the Middle Fork American River Project that began in 1963 and was completed in 1967 (Figure 2-1). The Middle Fork Project generates at 244 megawatts peak power, and averages 1.1 million megawatt hours (MWH) annually of hydroelectric power that is wholesaled to Pacific Gas and Electric Company. Although the future value of project energy is unknown, at current power rates, the project energy has an estimated value of $30 to 40 million annually.

To finance the original construction of the MFP, the Agency formed a partnership with Pacific Gas and Electric Company (PG&E) in which PG&E agreed to pay all of the operating costs for the project and pay off the debt in return for all of the power produced until the bonds are retired in 2013. The Agency, for its part, agreed to issue tax-free revenue bonds for the construction of the project and received the rights to all of the water developed by the project.

The annual operating cost of the MFP over the past five years, including non-routine maintenance and capital improvements which can vary considerably from year to year, has ranged from $8 to $12 million. The debt service, including principal and interest, is another $5 million per year. The Middle Fork Project is the eighth largest public power project in California.

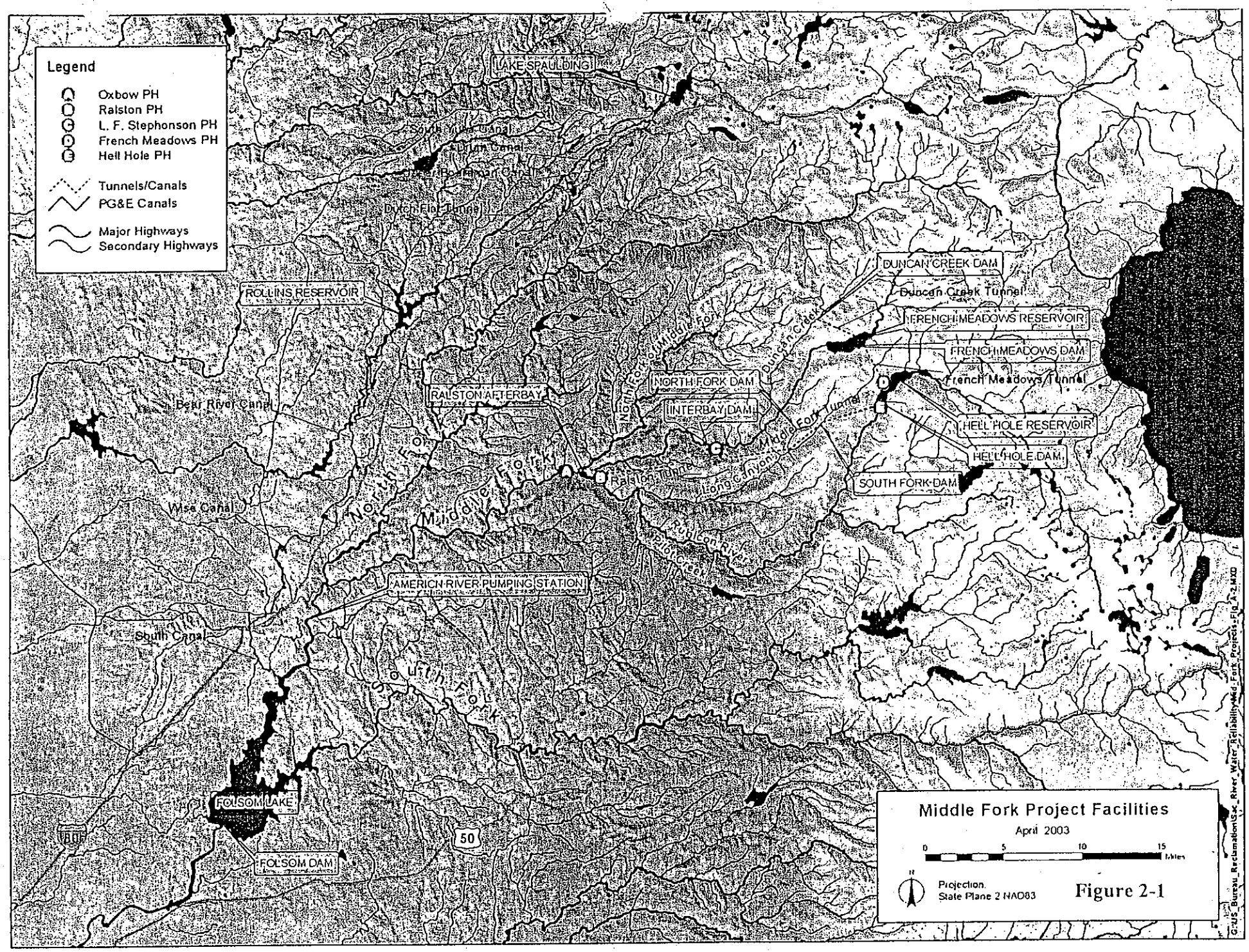
The Agency's retail Water System was established in 1968. It has become the largest water purveyor in the County serving more than 36,500 water accounts in five water service zones. The Agency owns and operates 165 miles of canals, ditches, flumes and several small reservoirs, most of which were built in the gold rush era. The Agency owns and operates eight water treatment plants, 23 water tanks and more than 435 miles of treated water pipelines. Treated surface water is sold directly to Agency customers residing in Auburn, Colfax, Loomis, Rocklin, portions of Roseville and throughout various unincorporated areas of Placer County. Agency treated water is also sold wholesale to the City of Lincoln and others who retail it directly to their customers. The Agency utilizes groundwater for customers in a few unincorporated areas of Placer County. The Agency also wholesales untreated water to Roseville, San Juan Water District, Sacramento Suburban Water District and several other smaller purveyors.

3. MISSION STATEMENT AND RELICENSING OBJECTIVES

The Relicensing Plan is consistent with the mission statement and objectives presented to and modified by the Agency's Board of Directors on May 15, 2003. The Agency's Mission Statement and relicensing objectives follow:

3.1 MISSION STATEMENT

The mission of the relicensing project is to successfully relicense the Middle Fork American River Project for the benefit of the people of Placer County to ensure reliable water and energy supplies with stewardship of recreational and watershed resources in partnership with stakeholders.


Legend
Oxbow PH
Ralston PH
L. F. Stephonson PH
French Meadows PH
Hell Hole PH
Tunnels/Canals
PG&E Canals
Major Highways
Secondary Highways
LAKE SPAULDING
South Yuba Canal
Drum Canal
Bear River Canal
Dutch Flat Tunnel
ROLLINS RESERVOIR
DUNCAN CREEK DAM
Duncan Creek Tunnel
FRENCH MEADOWS RESERVOIR
FRENCH MEADOWS DAM
French Meadows Tunnel
HELL HOLE RESERVOIR
HELL HOLE DAM
SOUTH FORK DAM
RALSTON AFTERBAY
NORTH FORK DAM
INTERBAY DAM
Ralston Tunnel
Long Canyon
Middle Fork Tunnel
North Fork Middle Fork
Duncan Creek
Rubicon River
Pilot Creek
Wise Canal
North Fork Middle Fork
AMERICAN RIVER PUMPING STATION
South Canal
South Fork
FOLSOM LAKE
FOLSOM DAM
80
50
Middle Fork Project Facilities
April 2003
0 5 10 15 Miles
Projection:
State Plane 2 NAD83
Figure 2-1
G:\25_Bureau_Reclamation\Sac_River_Water_Reliability\Mid_Fork_Projects\Fig_A-2.MXD

3.2 RELICENSING GOALS

The specific goals of the relicensing are:

- Retain the license for the project.
- Obtain a license that provides for the long-term integrity of the project facilities.
- Improve and upgrade project facilities, including capacity, energy and water supply where feasible based upon good economic and environmental principles.
- Secure the benefits of the project for the people of Placer County and the State of California.
  - Water – Preserve and maintain a reliable water supply for the health, security and economic benefit of Placer County.
  - Power – Manage the power and energy benefits of this renewable resource in a reliable manner.
    - Maximize the value of the available hydroelectric power and energy output.
    - Contribute to statewide need for reliable, renewable energy sources.
  - Environment – Be a responsible long-term steward of the watershed resources in partnership with the resource agencies and stakeholders.
    - Balance the values of the community.
    - Protect and enhance the environment within the project watershed.
  - Recreation – Respond to the diverse recreation needs of the public by utilizing the project's inherent capabilities and attributes, recognizing the need for public safety.
- Assure consistency with Placer and El Dorado county General Plans, Forest Service Plans, environmental and recreational policies and comply with regulatory requirements and applicable laws.
- Engage the stakeholders in an open, effective and efficient relicensing process.
- Provide public education opportunities regarding watershed resources within the project area.

4. RELICENSING PROCESSES

On February 20, 2003, FERC issued a Notice of Proposed Rulemaking (NOPR) designed to improve the relicensing process. The rule was finalized on July 23, 2003. These new regulations will govern the MFP relicensing.

The new regulations provide for three alternative processes to relicense projects: (1) traditional licensing process (TLP); (2) alternative licensing procedure (ALP); and (3) integrated licensing process (ILP). An enhanced TLP can be considered as a subset of the TLP. The ILP is the new process promulgated in the new rulemaking. The ILP will become the default process on July 23, 2005. However, an applicant will be permitted to petition FERC to use the traditional or alternative approaches when it files its Notice of Intent (NOI).

Since a Pre-Application Document (PAD) must be filed at the time the Notice of Intent is filed, or between five and five and one-half years before the license expires, the PAD requirements pertain to all licensees intending to file an application for license. To maximize the potential for the Agency to complete the relicensing on time and not require annual license extensions, we recommend that the NOI be filed at the earliest allowable date, August 31, 2007. Because the PAD is a comprehensive document, it will require a substantial effort to complete. A one to one

and one half year period should be allotted given the comprehensive nature of this document and the importance that is being placed on this document under the new FERC regulations. Therefore, because of the complexity of the project, we recommend that the PAD be started at least seven years before the license expires, or no later than February 2006.

It will be necessary for the Agency to complete its relicensing planning process and install the necessary infrastructure (hire staff, set up its web site, document management and mapping/GIS systems, and begin field data collection) before 2006 to efficiently begin the development of the PAD and conduct the relicensing.

4.1 PRE-APPLICATION DOCUMENT

The Pre-Application Document is intended to provide interested parties with comprehensive engineering, economic, and environmental baseline information available at the time the applicant files the NOI. The PAD provides the basis for identifying resource issues and information needs, developing study requests, study plans, and the Commission's environmental scoping document under the National Environmental Policy Act (NEPA). It is a precursor to Exhibit E, the Environmental Report, of the draft and final license application and the Commission's NEPA document. The PAD is much more comprehensive than pre-filing documents previously required by the Commission. The Commission's purpose in requiring the PAD to be more comprehensive is to provide the opportunity for meaningful engagement by the resource agencies earlier in the relicensing process so that new licenses can be issued on time. Although no specific studies are required to complete the PAD, it is in the Agency's interest to collect baseline data prior to the issuance of the PAD in those resource areas where data can be collected in a cost-effective manner and can provide meaningful information that can lead to issue resolution. For example, we recommend the collection of water temperature and discharge data in the streams and Middle Fork River downstream to Folsom Dam. (See Table 10-1 for a list of PAD requirements.)

4.2 TRADITIONAL LICENSING PROCESS

The TLP is the originally established licensing process. FERC's rulemaking at 18 CFR Section 5.3 requires that an applicant wishing to use the TLP make a formal request to file a license application pursuant to Part 4 and Part 16 of FERC's regulations (i.e., the Traditional Process regulations). The request to FERC occurs at the same time that the applicant files its NOI. The applicant would also be required to prepare the PAD as described above. It is not clear what decision criteria FERC will use in allowing an applicant to select the TLP. In our opinion, an applicant will need to demonstrate that many relicensing participants support the TLP before FERC will grant the request.

The advantages of the TLP are:

- Reduced process and associated costs up front; and
- Greater autonomy for the applicant to develop study plans and conduct studies;

Disadvantages of this process include:

- Less involvement of Commission staff during the development of the license application than for other relicensing processes;
- Preparation of an Exhibit E, Environmental Report, as part of the license application with no changes from current regulations and no requirement to prepare the Exhibit E consistent with the Commission's guidelines for preparing NEPA documents, thereby making it more likely that the NEPA document will be much different that the Exhibit E;
- A scoping and initiation of the National Environmental Policy Act (NEPA) process that takes place after the filing of the application;
- A higher likelihood of being required to conduct post-application studies;
- Uncertainty on whether studies being conducted as part of the application will be acceptable to resource agencies, tribes, other stakeholders, and the Commission; and
- A longer process for the Commission to prepare its NEPA document after the application is filed with a greater probability that an annual license may need to be issued to extend the license pending completion of the NEPA process.

4.2.1 Notice of Intent, PAD, and Study Plans

The TLP consists of three stages. In the first stage, the applicant prepares the PAD as described above and distributes it to resource agencies and key stakeholders. The applicant conducts a joint meeting with resource agencies and the public to identify issues and necessary studies for relicensing. (The FERC staff are not likely to participate in the joint meeting.) The applicant then prepares a study plan that is circulated to the agencies. If the applicant and the agencies disagree on the studies, the FERC can be asked to mediate and determine which studies must be conducted. Alternatively, the applicant can unilaterally decide not to conduct certain studies and then submit a license application absent the results of the studies not conducted. However, the applicant is required to explain why the studies are not needed. With this approach, the applicant runs the risk of having to perform these studies later in the process at potentially higher cost (e.g., due to inflation, remobilization, and a more detailed study scope) and at risk of upsetting FERC for not having completed reasonable studies.

4.2.2 Studies and Draft License Application

During the second stage, the applicant conducts the studies. The agencies may or may not be involved in conducting the studies and the FERC is typically not involved. After the studies are completed, the applicant prepares the draft license application and distributes it to the resource agencies and public for a 90-day review and comment period. If there are disagreements with the resource agencies, an attempt is made to resolve the disagreements through a meeting(s) with the agencies. The applicant then finalizes and submits the application to the FERC and a Water Quality Certification application to the state-certifying agency. This initiates the third stage of the process.

4.2.3 Application Processing, Scoping and FERC's NEPA Document

The FERC notices the application after it is filed and reviews it for deficiencies. The FERC invites resource agencies and the public to review the application and request any additional studies (Additional Study Requests [ASRs]) that may be needed to resolve outstanding issues.

The FERC then makes a determination of whether these ASRs are necessary and issues an Additional Information Request (AIR). The allotted time to complete each component of the AIR may differ depending upon the complexity of the information request.

When the FERC is satisfied with the additional information supplied by the applicant, the FERC will make a determination that the application is Ready for Environmental Analysis and publish notice that they will be preparing a NEPA document. This triggers the FERC's NEPA process. The FERC then prepares and circulates a Scoping Document, conducts a public meeting in which the agencies and public are invited to identify issues, and prepares a Draft Environmental Impact Statement (DEIS) or a Draft Environmental Assessment (DEA). The public is given a 45-day period to review and comment on the DEIS or DEA. During the comment period the FERC usually holds a hearing. Subsequent to the comment period the FERC prepares and circulates a final EIS or Final EA.

If there are any unresolved fish and wildlife issues at this point in the process, the FERC attempts to resolve them through what is termed 10(j) negotiations (so named after 10(j) of the Federal Power Act) with the disagreeing resource agency. The FERC then prepares a Safety and Design Assessment report based on the NEPA document and a subsequent license order.

After this process is complete and the 401 Water Quality Certification and the Section 4(e) and 18 conditions have been issued by the appropriate resource agencies, the Director of Office of Energy Projects or the Commission, if there is intervention on the project, may act on the application. If there are no objections, the licensing order becomes final 30 days after the FERC decision.

Basic criticisms of the TLP are: (1) the process essentially starts over when FERC commences its NEPA process and is therefore redundant, time consuming and costly; (2) the lack of FERC involvement in study plan development and implementation results in additional studies when the FERC gets involved because the FERC often has different ideas of what studies are needed than agencies or the public; (3) the lack of FERC involvement results in potential study disputes; (4) agencies are less likely to actively participate early in the three stage consultation process when they know they will get another opportunity to ask for studies during the NEPA process; and (5) although the public is afforded opportunities to participate, they are really not engaged in the process.

4.2.4 Enhanced Traditional Licensing Process

An Enhanced Traditional Licensing Process has the same basic elements as the TLP. The key difference is the involvement of the resource agencies and the public. The Enhanced TLP has more consultation and cooperation with resource agencies and the pubic, as well as FERC involvement. Most applicants attempt to reach settlement with the resource agencies when they use the Enhanced TLP.

The relationships with resource agencies can have a profound effect on the studies that the applicant is required to conduct and on the positions the agencies take on the various issues in settlement. The mission of the resource agencies is to protect and enhance the environment. They are less willing to compromise on matters of significance to them if they believe that a resource is being harmed or is in danger of being harmed. However, the amount of protection

and enhancement a resource requires is a gray area. Experience has shown that by maintaining good relationships with resource agencies, it is more likely that an agency will give more weight to the applicant's position if they trust the applicant and understand the financial implications of the decision. (This also applies to NGOs.) Because the agencies have a different mandate than the applicant, it is a virtual certainty that there will be differences of opinion in studies to be conducted, the detail of the studies, and the preferred alternatives and enhancements. The applicant can look at the information and take a hard line position if it wants to drag out the process or if it believes that that the evidence supports its position. Alternatively, the applicant can take a conciliatory view, stating its position and trying to convince the agencies to alter their position and sometimes agreeing with the agencies' position if the cost impacts are outweighed by the environmental benefits and by the goodwill gained. However, the danger here is that an agency may never be satisfied and will continue to ask for more.

In numerous projects licensed during the 1990s, applicants who had taken a hard line approach with resource agencies often ended up with an adversarial position and probably spent more on studies than they otherwise would have had to because FERC has usually supported the positions of the resource agencies on study requests. The Agency has a history of balancing environmental effects with developing water supplies and in working cooperatively with agencies like the Forest Service. We recommend that this cooperative approach be continued during the relicensing process if the Agency elects to use the Enhanced TLP. Each difference of opinion in studies or level of resource protection should be assessed on a case-by-case basis. As long as the position of the resource agencies is respected, the Agency should openly disagree when the facts support the Agency's position. Such an approach has helped maintain a balanced decision-making process on other relicensing projects.

In the Enhanced TLP, securing FERC's participation would also help to maintain an appropriate balance between environmental protection and energy generation. For example, FERC has weighed in on the issue of induced growth and openly rejected this as an issue on projects that were able to provide increased energy generation or on projects that provide water supply. Virtually all parties (e.g., resource agencies, NGOs, and licensees) agree that early FERC participation has facilitated the relicensing process. We strongly endorse the concept of requesting early FERC involvement if the TLP is adopted. On projects in which FERC staff have participated in the process prior to application filing, NGOs and agencies have demonstrated greater reasonableness in their requests for studies and their preferred alternatives.

4.3 ALTERNATIVE LICENSING PROCEDURE

The ALP was introduced to try to address some of the difficulties with the TLP. Similar to the TLP, applicants who use the ALP are required to prepare a PAD and request use of the ALP when filing their Notice of Intent. The ALP includes many of the features of the Enhanced TLP and the Integrated Licensing Process.

Advantages of this process include:

- Early Commission staff involvement;
- Greater coordination with resource agencies, tribes, and other stakeholders in the development and execution of studies than in the TLP;

- Increased public involvement in the relicensing process itself;
- Informal scoping during the pre-filing consultation process:
- Potential for mandatory conditions to be developed and requested by FERC prior to application filing; and
- Decreased likelihood for post-application study requests, but a greater likelihood than for the Integrated Licensing Process.

Disadvantages include:

- Scoping must be redone and new issues can still be raised after the filing of the application if the stakeholders are not satisfied:
- An expansive collaborative process without deadlines and clear decision points to assure efficient progress;
- Study plans are not formally approved by the Commission prior to the studies being conducted; and
- The process still conducts the licensing in essence twice, first by the applicant, then by FERC, which potentially lengthens the process and creates opportunities for new issues, requiring new studies, and creating uncertainty in the process.

4.3.1 Notice of Intent, PAD, and Study Plans

The ALP requires the development of a PAD and a Communications Protocol on how the ALP will be undertaken administratively. The applicant works with the relicensing participants to develop the study plans and conduct studies. Typically, the relicensing participants are very involved in the development of study plans and execution of studies. This process often requires numerous meetings of the participants. Those participants that disagree on studies can hold the process hostage.

4.3.2 Studies, Draft License Application, and Settlement

The ALP participants continue to work closely with one another as studies are completed, alternatives for the license application developed and the application prepared. As part of the process, the applicant works with the participants to achieve settlement on the issues. The objective is to submit an application to the Commission that is endorsed by most, if not all, parties.

4.3.3 Application Processing and NEPA Document Preparation

Once the application is filed, the Commission publishes a schedule for processing the application. If there is a settlement, the Commission can process the application in as little as six months. However, more typically the Commission has issued a draft NEPA document and then a final NEPA document, particularly if a settlement has not been reached at the time of filing. In some cases, the Commission may require additional studies.

4.4 INTEGRATED LICENSING PROCESS

The ILP has been developed to address the flaws of the above processes; however, it is still new. Its advantages include:

- Increased involvement of Commission staff with the applicant and stakeholders earlier in the process, during the development of a license application;
- Greater coordination among the Commission and federal and state agencies with mandatory conditioning authority;
- Application preparation in conjunction with the Commission's environmental scoping process;
- Significantly increased public participation in the pre-filing consultation process;
- Establishment of firm schedules and deadlines for all participants;
- Development of a Commission-approved study plan by the applicant and resolution of study agreements; and
- No need for post-application study requests.

Disadvantages include:

- It's an unproven process so unanticipated process concerns may evolve.

4.4.1 Schedule Overview

Time before license exp	Date	Action
7 years	February 2006	Begin preparation of PAD
5 ½ years	August 30, 2007	File NOI & PAD
		Conduct Field Studies
2 years + at least 150 Days	April, 2010	File draft Application
2 years	February 28, 2011	File Application
0	February 28, 2013	License expiration/renewal

4.4.2 Notice of Intent and PAD

The ILP essentially begins with the filing of the NOI and the PAD. Although there is no regulation precluding a filing of the PAD prior to the NOI, there may be little to be gained by filing early because FERC does not initiate the ILP until the NOI is filed. However, once filed there will be considerable pressure on the applicant to maintain schedule. Therefore, it will be imperative for the Agency to have a well-written PAD that will require little revision and will have reasonably developed study plans that are not likely to be challenged by resource agencies. In order to accomplish this, informal consultation with resource agencies is highly recommended prior to and during the development of the PAD.

4.4.3 Scoping and Study Plan Development

Within 60 days of the filing of the NOI, the FERC notices the PAD and issues Scoping Document 1. Within 30 days thereafter, FERC holds a scoping meeting and site visit. The meeting includes a discussion of the issues, PAD, management objectives, existing information, information needs, and process plan and schedule for pre-filing activity. After receipt of comments on the PAD, an applicant is required to file a proposed study plan with the Commission. This occurs within 75 days of the scooping meeting and site visit. Comments on the study plan are due within 90 days and the applicant has an additional 30 days to revise the study plan for Commission approval. The Commission resolves any disputes on the study plans through a dispute resolution process, culminating, if necessary, in a written decision by the Director of Energy Projects.

4.4.4 Studies

The applicant is required to conduct the approved studies during the two to two and one half years following the filing of the NOI and PAD and prior to the deadline for filing the relicensing application, which is two years before the expiration of the existing license. At an appropriate time, such as following the first season of studies, the applicant shall provide an initial study report containing study results and analyses to date. Appropriate modifications are made to the study plans in light of the initial study results and analyses.

4.4.5 Draft License Application

Following completion of the initial study report and an update of the study plans, the applicant is required to file a preliminary licensing proposal or a draft license application no later than 150 days prior to the license application filing deadline, which is two years before the expiration of the existing license. Specific Exhibit E requirements are spelled out in Section 5.18 of the new regulations. Stakeholders have 90 days to file comments on the proposal or draft application, similar to current regulations.

4.4.6 Filing of Application

The final application must be filed no later than 24 months before the existing license expires. The Environmental Document must follow the Commission's "Preparing Environmental Assessments: Guidelines for Applicants, Contractors, and Staff."

4.4.7 Application Processing

Once the application is filed, the Commission will notice the filing and provide a preliminary schedule for expeditious processing of the application. The Commission will make a determination of whether the application is complete and the project is deemed ready for the Commission to prepare its environmental analysis. During the Commission processing resource agencies must file their recommendations, preliminary terms and conditions, and prescriptions. An applicant may be required to submit any additional information that the Commission considers necessary for them to make a final informed decision, but information requests are expected to be limited in the ILP. Under certain conditions the Commission may prepare a final

environmental assessment without a draft environmental assessment, may prepare a draft and final environmental assessment or may prepare an environmental impact statement.

4.5 COMPARISON OF ALTERNATIVE PROCESSES

When the ALP became available to applicants in the mid 90s, the ALP was preferred to the TLP because the process was not duplicated after the application was filed. In a number of instances, participants were able to agree on studies with few meetings and the Commission was able to process the applications and complete their NEPA documents in less than a year. However, as the ALPs evolved, participants have become much more active in the process and many have resisted reaching agreement on study plans until all aspects of their concerns have been addressed. The Commission has determined that it should prepare a draft NEPA document and then a final NEPA document, thus negating some of the savings resulting from an applicant preparing a draft NEPA document. In effect, there is now little savings in processing time because an applicant prepares a draft preliminary environmental assessment and a preliminary environmental assessment. The Commission then prepares a draft environmental assessment and a final environmental assessment. When resource agencies review drafts of the applicant's draft sections of the NEPA document, even more drafts are produced. The increase in both meetings and numerous drafts of the NEPA document has negated many of the benefits seen in the ALP and has increased process costs. However, if trust among participants is high, the close working relationship can result in considerable saving in protection, mitigation and enhancement measures. Unless good relationships can be maintained with key stakeholders for the entire relicensing process, we do not recommend the ALP.

We believe that the benefits of the ALP can be achieved by the ILP and the Enhanced TLP. Both the ILP and Enhanced TLP can be conducted without the need for endless meetings, as has occurred on many ALPs if the process is properly structured. The ILP has the added benefit of early FERC scoping and having FERC approve the study plans, resulting in less risk to the applicant. Therefore, at this time we recommend the Agency plan for the ILP. Since the ILP will become the default relicensing process, it will not require compromises on the Agency's part to obtain concurrence on the relicensing approach. Nonetheless, since this process is untested we further recommend that the Agency monitor other ILPs to determine their likelihood for success before committing to a specific approach.

5. RELICENSING ISSUES

Section 4.51(f) of 18 CFR requires reporting of certain types of information in the Federal Energy Regulatory Commission (FERC) application for license of major hydropower projects, including a discussion of water use and quality; fish, wildlife and botanical resources; recreational resources; land management and aesthetics; and cultural resources in the vicinity of the project. The discussion needs to identify the potential impacts of the project on these resources, including a description of any anticipated continuing impact for on-going and future operations.

The following list of resource considerations intends to preliminarily address the FERC requirements by outlining potential general, aquatic resource, water quality, terrestrial resource (both botanical and wildlife), recreation, land use and cultural resource considerations which may arise during the process. Aquatic resource issues (e.g., fisheries and water quality) are

expected to be the primary issues addressed during relicensing, although terrestrial, cultural, recreation, and land management issues will also be important.

The information that follows represents the types of considerations encountered during similar FERC relicensing programs in Northern California, including the relicensing efforts of Sacramento Municipal Utility District's (SMUD) Upper American River Project (FERC Project No. 2101), El Dorado Irrigation District's (EID) El Dorado Project (FERC Project No. 184), and California Department of Water Resources' (DWR) Oroville Facilities (FERC Project No. 2100), as well as information acquired during informal consultations with various stakeholders. For each consideration topic, the potential stakeholder interest, possible procedures to address the issue, and potential approaches to minimize risk to the Agency are discussed.

5.1 GENERAL CONSIDERATIONS

5.1.1 Designation of the Affected Environment

Although MFP operations and maintenance activities only occur on a small portion of the entire Middle Fork American River watershed (these lands herein called "project" lands or facilities), many waters bodies within the watershed have the potential to be affected by project operations (these waters herein called "affected" areas). Potentially affected streams or rivers associated with the MFP may include reaches of Duncan Creek, the Rubicon River, North and South Long Canyon creeks, the Middle Fork American River, and the North Fork American River downstream of its confluence with the Middle Fork American River. Reservoirs potentially affected by the MFP may include Hell Hole Reservoir, French Meadows Reservoir, the small impoundments created by Duncan Creek Diversion Dam and the diversion dams on North and South Long Canyon creeks, the Ralston Interbay and Afterbay, and possibly Folsom Reservoir.

The geographic boundaries of the affected environment associated with the MFP will likely be negotiated with the stakeholders. The Agency should propose and then collaborate with the stakeholders to designate a boundary consisting of those environments which, based on hydrologic and modeling information, have a reasonable likelihood of being affected by project operations, either through flow release, flow fluctuation, or release water temperatures. In addition, terrestrial lands adjacent to the affected waters have the potential to be included in the affected environment, as these lands may become inundated during high flow events. Because releases from Ralston Afterbay can potentially influence the instream characteristics of the Middle Fork American River and the North Fork American River, the affected environment of the MFP may extend downstream to Folsom Dam, due to the consideration that the timing and temperature of inflow to Folsom Reservoir may potentially affect USBR's operational flexibility for releases to the lower American River.

5.1.2 Four Reservoir Index Alterations

Because storage at Hell Hole and French Meadows reservoirs is utilized to calculate various Central Valley water operations indices, various stakeholders including USBR, NMFS, and USFWS may suggest that the MFP relicensing effort identify potential alterations to Central Valley Project and Delta operations due to the potential changes in the management of Hell Hole and French Meadows reservoirs. For example, the Four Reservoir Index (FRI) currently utilizes the storage and projected inflow at Hell Hole and French Meadows reservoirs, in conjunction

with Union Valley and Folsom reservoirs, as an indicator of potential water-year characteristics. The FRI is then used, along with numerous other factors, to designate a water year-type classification for the prescription of Delta inflow/outflow and water quality requirements, and as an informal guide for local and regional water delivery schedules. Furthermore, the proposed Flow Management Standard for the lower American River will utilize the FRI to prescribe minimum flows during the fall months. Therefore, special consideration should be given to alterations in the operations and management of these two reservoirs, because such changes have the potential to impact the operations of regional coordinated agreements and regulatory compliance.

5.2 AQUATIC RESOURCES

5.2.1 Coldwater Pool Resource in Folsom Reservoir

Preliminary indications suggest that NMFS has identified potential alterations in the operation of the MFP as a tool to supplement the limited coldwater pool resource in Folsom Reservoir. NMFS, along with USFWS, CDFG, USBR, and ACOE, may suggest investigating the potential effects of current and reasonable alternative project operations on the maintenance and replenishment of the coldwater pool in Folsom Reservoir, and the potential resulting effects on anadromous salmonids in the lower American River. Such an evaluation could be conducted by modeling a variety of alternative MFP operational schedules using the Folsom Reservoir Coldwater Pool Management Model developed by Surface Water Resources, Inc. However, we recommend that the Agency resist such studies on the basis that operation of Fosom Reservoir is the responsibility of the USBR. The Agency may be held partially responsible for managing flows and water temperatures into Folsom Reservoir.

The lower American River supports two species of anadromous salmonids-steelhead and fall-run Chinook salmon. Because anadromous fish are recreationally important, commercially valuable, and steelhead are listed as "threatened" under the federal Endangered Species Act (ESA), issues surrounding their management often become paramount to management agency resource objectives. Hence, this issue could become one of the most important issues regarding the MFP relicensing to the management agencies involved. Therefore, it will be very important for the Agency to develop a strong position regarding its potential responsibility to downstream water uses, and balancing the needs of downstream uses with the needs of the fish in the affected environment of the project. Because the affected environment of the MFP may only extend to Folsom Dam, where MFP water is re-regulated by the USBR, the Agency should not be responsible for the potential considerations to anadromous fish in the lower American River; rather, any Agency analysis should focus on the influence of MFP operation on USBR's operational flexibility at Folsom Dam.

5.2.2 Species Composition and Abundance

Several stakeholders involved in the MFP relicensing, including CDFG, USFS, SWRCB, and the fish-oriented NGOs, are likely to suggest characterizing the fish species composition and abundance in each of the affected streams, rivers, and reservoirs. Composition and abundance may first be evaluated using existing literature and technical reports regarding the affected waters. For instance, an initial review of species composition reports suggest that rainbow trout and brown trout communities may dominate the affected environment. Hell Hole Reservoir may

also support lake trout and Kokanee salmon populations. Existing species abundance estimates performed by the management agencies within the affected waters may be utilized to the extent possible. However, existing abundance investigations are likely to be limited and inconsistent, and the collection of field data may be needed.

During similar FERC relicensing efforts, CDFG, USFS, and SWRCB have suggested conducting at least three years of fish abundance evaluations prior to the submittal of a FERC relicensing application. Multiple-pass depletion electrofishing estimates at various characteristic stream and tributary sites would likely be the most efficient and constructive methodology to estimate abundance in the affected streams and rivers. Depletion electrofishing entails bounding a particular characteristic stream segment (normally 30 to 50 meters) with nets, which creates a closed system by inhibiting movement of fish in or out of the selected segment. An electrofishing wand, which temporarily stuns fish using an electric field created by a backpack generator, is then passed through the entire stream segment from upstream to downstream, and stunned fish are netted and collected from the downstream net. The stunned fish are keyed to species, enumerated, and placed in a bucket to recover. The passes are repeated 3 to 5 times, and the proportional catch from each pass is utilized, along with an index of effort (normally time fishing), to statistically estimate the number of fish existing in the selected stream segment. As the streams and rivers become larger (some even becoming too large for net placement) and fish can more easily evade the electric field, estimation of abundance can become relatively less reliable. Assuming the stream segment is characteristic of the entire river (e.g., there are no significant differences in physical habitat, elevation, predation indices, etc.), the abundance estimate can be expanded to the entire stream or river length. However, because streams and rivers often vary in habitat availability and other pertinent parameters with location within the watershed, multiple study sites may be required within the same watershed.

Reservoir abundance sampling, to the extent required, may include a combination of seining and hydro-acoustic methodologies, and may entail limited gillnetting investigations. Using the determined sampling technique, stratified random locations would be sampled, and the species composition and abundance estimates for these locations would then be expanded to the entire strata, or the areas with similar habitat as those sampled. Numerous distinct habitat types (e.g., littoral, open-water, or cover features) would be sampled in this manner in order to capture the variation in species habitat preferences.

While the Agency should attempt to identify existing species composition and abundance evaluations, it is anticipated that such information will not be sufficiently specific or contiguous to address the stakeholder concerns. For instance, during EID's El Dorado Project relicensing, stakeholders suggested sampling 19 different locations in 14 different tributary and mainstem streams and rivers, a level of examination which has not likely been conducted for three contiguous years by the management agencies themselves. Therefore, it is possible that the Agency may need to incur the responsibility of conducting composition and abundance surveys. These investigations, if required, should involve careful selection of priority representative sites to balance the utility of the information collected with the cost of the collection effort. A substantial cost may be associated with conducting composition and abundance investigations on all of the streams, rivers, and tributaries within the affected environment of the MFP, as may be suggested. Therefore, the Agency should collaborate with the concerned stakeholders to determine the rivers, streams, and tributaries, and specific reaches with these waters, which are both characteristic of the riverine environments within the affected area of the MFP, and

represent the highest biological value to the local ecosystem. In addition, concerted consideration should be given to populations of special status fish species potentially existing within the affected waters, which may include hardhead and Sacramento roach populations. The development of study plans should focus on the high priority stream reaches and outline a procedure for expanding the information collected to the entire affected environment. An attempt to gain agreement among stakeholders regarding methodology will facilitate acceptance of study results.

5.2.3 Physical Riverine Habitat

It is likely that many of the stakeholders involved, including CDFG, USFS, USFWS and fisheries- and ecosystem-related NGOs, will suggest performing a physical stream habitat assessment for the riverine environments within the affected waters. A variety of physical habitat evaluation methodologies exist, including representative reach evaluations and the Basinwide Visual Estimation Technique (BVET). Representative reach extrapolations entail evaluating and quantifying the characteristics of the physical habitat of particular sections of a stream, typically 30 to 300 meters long. These sections must be carefully selected to represent overall characteristics of the entire watershed, so that data collected from these reaches can be expanded for the entire watershed. However, the identification of representative reaches relies heavily on professional experience and intuition, which makes establishing the accuracy of the habitat evaluation difficult. The BVET is another common physical habitat characterization technique, utilized by the USFS and academia. Unlike a representative reach survey approach, the BVET entails visually characterizing and documenting the habitat characteristics of an entire stream, thereby evaluating all habitat types in all stream reaches. At randomly selected sites, quantitative data related to the area of stream features and habitat types is collected, and the visual and quantitative measurements are then used to calculate calibration ratios to correct for observational estimation and to evaluate statistical variances.

To the extent possible, the Agency should attempt to satisfy stakeholder concerns with existing physical habitat data. For example, CDFG may have survey information available regarding instream fisheries and wildlife habitat. If field data are needed, due to the large number of rivers, streams, and tributaries within the affected environment of the MFP, a significant cost would be associated with conducting physical habitat characterizations on all stream and river reaches, as suggested by the BVET. The field characterization of physical habitat should include careful selection of priority reaches to balance the utility of the information collected with the cost of the data collection effort. The Agency should collaborate with the concerned management agencies to determine the rivers, streams, and tributaries, and specific reaches with these waters, which are both representative of the riverine environments within the affected area of the MFP, and represent the highest biological value to the local ecosystem. The methodology to evaluate instream habitat should be negotiated with the stakeholders, but may utilize representative reach sampling techniques. The development of study plans will then focus on these high priority stream reaches and outline a procedure for expanding the collected information to the entire affected environment.

5.2.4 Habitat-Flow Relationships (IFIM)

During similar FERC relicensing consultations, stakeholders have suggested characterizing the relationship between aquatic habitat and instream flows. CDFG, USFS, and the SWRCB have suggested that the Instream Flow Incremental Methodology (IFIM) represents the most comprehensive fish habitat assessment procedure, particularly when used in conjunction with an evaluation of the flows required for maintenance of riparian and fluvial processes. IFIM can be described as a collection of computer models and analytical procedures that are designed to predict the variation in fish habitat availability resulting from incremental flow changes within a specified range. The determination of habitat quantity is based on the availability of suitable water depth, water velocity, substrate, and cover. These parameters are measured in representative reaches which, when physically described in the field, will characterize habitat conditions for the fish inhabiting the affected environment of the MFP. The product of this analysis is normally a graph illustrating the relationship between fish habitat availability (expressed as weighted usable area (WUA)) and discharge. The accuracy and applicability of the relationship will depend on the quality of the hydraulic model simulation and the accuracy of the predetermined characteristics of trout habitat.

While the Agency should attempt to identify existing habitat-discharge information, even if not presented in an IFIM format, which may sufficiently address the issues of the management agencies, it is anticipated that the stakeholders will request further information than currently exists. The development of a relationship between fish habitat availability and discharge using IFIM, if required, should involve careful selection of priority representative sites to balance the utility of the information collected with the cost of the exercises. There would likely be a great cost associated with conducting IFIM investigations on all of the streams, rivers, and tributaries within the affected environment of the MFP, as may be suggested. Therefore, the Agency should consult with the concerned stakeholders to determine the rivers, streams, and tributaries, and specific reaches with these waters, which are both characteristic of the riverine environments within the affected area of the MFP, and represent the highest biological value to the local ecosystem. The development of study plans will then focus on these high priority stream reaches and outline a procedure for expanding the information collected to the entire affected environment. An attempt to gain agreement between all of the stakeholders regarding the trout habitat criteria will ensure the validity of the final results.

5.2.5 Physical Reservoir Habitat

Numerous stakeholders, including CDFG, USFS, and the fisheries-related NGOs, may emphasize the evaluation of the fish habitat within the project reservoirs to support recreational fisheries. The habitat characterization techniques that may be suggested include reservoir depth profiles to evaluate the availability of littoral habitat at various reservoir levels. In addition, dissolved oxygen and water temperature profiles may also be suggested to assess fluctuations in the habitable zones of the reservoirs due to operational and seasonal factors.

To the extent possible, existing reservoir habitat information should be utilized; it is likely that reservoir depth profiles, for instance, may already exist, possibly as topographic maps of the flooded valley as measured before the MFP construction. If field habitat surveys are suggested, the Agency should attempt to construct investigations, which involve careful selection of the most useful habitat evaluation techniques at priority reservoirs to balance the utility of the

information collected with the cost of the exercises. In addition to evaluating the potential effects of current operations on the reservoir habitat, using a reservoir management model, in conjunction with a hydrologic system model such as the Upper American River Model (UARM), the Agency can attempt to illustrate the potential impacts of any suggested PM&E to the reservoir habitat availability. For instance, depending on the specifics of the PM&E, the maintenance of relatively high instream flow requirements, or alteration of release down ramping criteria may have substantial potential impacts to reservoir fish and fish habitat, by reducing the total quantity and quality of fish habitat or by dewatering redds, especially for lake trout. In addition, a relatively rigid water temperature requirement downstream of a project reservoir may reduce the availability of the coldwater within the reservoir. It is important for all parties involved to understand the totality of the consequences for a potential PM&E, including potential negative impacts to project reservoir habitats.

5.2.6 Resident Fish Passage

Many of the project facilities, including the seven project impoundments, may influence the movement opportunities for the resident fish inhabiting the affected waters. As a result, stakeholders involved in the MFP relicensing, such as CDFG, may suggest evaluating the potential for providing passage for salmonids upstream of each impoundment, dam, or other physical passage barrier associated with the project. This evaluation would first identify and characterize the potential physical passage barriers associated with the project, including impoundments, dams, and other obstructions. Potential natural physical passage barriers would also be located and characterized to determine the potential extent of available habitat if passage were restored. Characterization of these potential barriers would include measurements of barrier height and depth, as well as staging and landing pool considerations, and these characteristics would then be compared to known physiological leaping ability criteria for resident-sized salmonids in an attempt to elicit whether a resident salmonid could pass the potential barrier. In addition, the fish habitat existing upstream of each potential barrier should be evaluated, following the same methodology as the habitat surveys of the primary stream and river evaluations (e.g., BVET), and compared to the habitat suitability requirements for each relevant species. Also, an evaluation of the species composition and population abundance may be estimated for each fish species currently existing in the habitats upstream of the potential barrier.

The resident fish passage study could then evaluate the potential effects of providing fish passage over each impoundment, dam or other physical passage barrier associated with the project. Preliminary topics for consideration associated with improved resident movement may include: (1) genetic flow between natural and domesticated hatchery populations; (2) disease dispersal between natural and hatchery populations; (3) colonization of unpopulated or under-populated suitable habitat; (4) competition between desired and non-desired game fish; and (5) the potential impacts on the ability to meet current fisheries management objectives. After determining the design requirements and feasibility of providing passage over the project facilities, a cost/benefit analysis could be conducted to address the fish passage concerns.

The Agency should consider several factors when determining its ability to provide adequate passage conditions. The project impoundments do likely inhibit resident fish movement. However, the potential environmental effects of this potential impact may not be significant, and, in some cases, may benefit local populations through inhibition of hatchery stock gene flow or

disease transmission. Therefore, upon characterizing the potential movement barriers, determining the availability of habitat upstream of the barriers, and considering the potential impacts of creating movement opportunities or enlightening various positive impacts of the movement barriers, if PM&Es are being suggested by stakeholders, it may be in the Agency's best interests to collaborate with the management agencies to develop PM&E measures to address the potential reduction in movement opportunities.

5.2.7 Anadromous Fish Passage

While the construction of the MFP began after the completion of Folsom and Nimbus dams, it is plausible, or even likely, that various stakeholders, including NMFS or the fisheries-oriented NGOs, may suggest that an evaluation of the passage for anadromous fish be included in the MFP relicensing effort. This evaluation could be conducted in conjunction with the resident fish passage evaluation, by considering anadromous fish leaping criteria and habitat preferences.

The Agency should consider several factors in its response to this potential suggestion. First, PCWA does not own or operate the facilities downstream of the MFP, such as Nimbus and Folsom dams, which currently block anadromous fish from the habitat influenced by the MFP operation. These facilities were constructed before the construction of the MFP. Second, a fairly detailed timeline and history of anadromous fish existence in the upper American River exists, and this information suggests that anadromous fish may not have historically inhabited much of the affected environment. The likely extent of anadromous fish inhabitation should be evaluated and presented to the stakeholders. Third, feasible plans to reintroduce anadromous fish into the upper American River basin are not currently planned by any public trust resource agency. By combining these factors, the Agency may establish a strong reasoning against the need for an evaluation of anadromous fish passage or habitat availability within the affected environment.

5.2.8 Flow Fluctuation

Several stakeholders, including CDFG and the fisheries-oriented NGOs, may suggest addressing the current flow fluctuation standards. The current FERC license for the MFP provides that the Oxbow Powerplant releases to the Middle Fork American River shall not cause vertical fluctuations in stream stages (measured in representative section) greater than one foot per hour. Flow fluctuation standards from other project facilities are not detailed in the license. Because flow fluctuations can potentially create beach stranding of juvenile fish, or isolation of channels or pools and their inhabitants, the stakeholders may suggest studying the potential effects of these events.

The potential effects of flow fluctuation events can be addressed in numerous ways. First, the Agency should attempt to identify technical reports and literature, as well as anecdotal information, which can illustrate the occurrences of past fish stranding or isolation events. A determination that the flow fluctuation events of the past have not manifested large fish stranding or isolation events may be sufficient to address stakeholder concerns. However, more extensive field investigation may be required. In this instance, a field investigation could identify locations in which isolation and stranding events would be most likely to occur, and evaluation of these sites, or a subset of these sites, under various flows, and after sufficient flow down-ramping, could illustrate the extent of the effects of flow fluctuation events on the local fish populations.

5.2.9 Macroinvertebrates and Microorganisms

Several stakeholders, including CDFG, USFS, and SWRCB, will likely be interested in the potential MFP effects to macroinvertebrate and microorganism communities in the affected area of the project. These potential issues can be addressed through the review of pertinent literature related to: (1) the composition and abundance of microorganism and aquatic macroinvertebrate communities residing within project waters; (2) the life history requirements of these aquatic communities; (3) the relationship between species water quality tolerances, and current water quality conditions within the project streams, rivers, and reservoirs; and (4) the relative proportion of the macroinvertebrate and microorganism prey species in the diet of the fish species of management concern. The application of this literature, depending on its scope, quality, and methodology, may sufficiently develop qualitative and quantitative relationships between project operations and the aquatic microorganism and macroinvertebrate communities inhabiting project waters. However, field investigations may also be needed to satisfy stakeholder concerns. For instance, aquatic macroinvertebrate and microorganism communities may be quantitatively evaluated using the Rapid Bioassessment Protocols (RBP), as utilized by the USEPA. This methodology entails collecting macroinvertebrate and microorganism community samples from the substrate at representative sampling sites, which then serve to indicate species composition, relative abundance, and water quality characteristics.

The Agency should attempt to utilize existing literature and technical reports to satisfy the potential management agency concerns. For instance, recent efforts by Jones and Stokes Associates in the Middle Fork American River downstream of Oxbow Reservoir may provide useful information regarding the species composition, abundance, and distribution of benthic macroinvertebrates. If further field data are required, the Agency should carefully select investigation sites that could provide the most pertinent and applicable information. For instance, a stepwise procedure may be developed where the downstream locations within each watershed are sampled as an indicator of the water quality conditions, and presumably composition and abundance, existing upstream. If this sample collection indicates that no water quality problems exist within the drainage, this may be sufficient to satisfy stakeholder concerns. Conversely, if RBP or similar investigations indicate a potential water quality consideration, then a more specific and detailed methodology would then be employed in an attempt to identify the location of the point or non-point degradation of water quality. This type of process would then focus the investigation on sites of potential concern, and eliminate redundant sampling.

5.2.10 Predation

The potential exists for several stakeholders, including CDFG and the fisheries-oriented NGOs, to suggest evaluating the potential effects of the project facilities, operations, and maintenance on the predation of recreationally important fish species. These entities may maintain that the facilities or operations of the project may increase the amount of habitat or provide the appropriate conditions for predatory species. The methodology for addressing the predation issue may entail characterizing the life history and habitat requirements for both predator and prey species of particular management concern existing within the affected waters. Potential prey species in the affected waters may include sub-adult rainbow trout, sub-adult brown trout, Kokanee salmon, and brook trout. Potential predatory species existing within the affected waters may include various centrarchids (bass and sunfish), adult lake trout, and adult brown trout. Information regarding the composition, abundance and distribution of these predator and prey

species within the affected environment can then be compiled. If needed, field crews may evaluate and characterize the potential predator habitat associated with the areas adjacent to or influenced by project facilities, as well as the habitat potentially created or enhanced through project operations. An estimate of the predation on juvenile salmonids and other recreationally and ecologically important fish associated with project facilities and operations may be calculated using existing literature from analogous drainages.

The Agency must consider several factors in its response to this potential suggestion. Field investigation regarding the predator/prey relationship can be time-consuming and costly ventures, and often produce inconclusive results. Therefore, upon determining the potential predatory species within the project waters, a rough estimation of their abundance (which may be conducted during the composition and abundance investigations), and an indication of the potential habitat created or affected by the project (e.g., reservoirs, impoundment, and backwater habitats), it may be in the Agency's best interest to collaborate with the management agencies to develop a PM&E measure to address the potential increase in predation. At this time, the Agency may illustrate that some of the potential creation of predator habitat, such as for lake trout in Hell Hole Reservoir, may be desirable, as lake trout are a highly-regarded game fish.

5.2.11 Entrainment

Various stakeholders, including CDFG, USFWS, and USFS, may suggest evaluating the potential impacts of entrainment of sub-adult fish in diversions and intakes associated with the MFP. If required, this investigation would entail identifying the diversions and intakes associated with the project, and determining the temporal period in which these diversions operate. In addition, the screening method, if present, and the screen effectiveness should also be determined. Based on the screening parameters and the distribution of sub-adult fish during the operation of the diversion or intake structure, an assessment of the potential influence entrainment may have on fisheries populations can be established.

To the extent possible, the Agency should utilize existing information for the evaluation of entrainment in the affected environment. For instance, the Agency or CDFG may have information on the screening method and parameters associated with the project diversions and intakes. Also, information regarding fish distribution during operation of diversions may have been collected by CDFG, or may be collected during other tasks associated with the MFP relicensing. Because it is likely that several intake structures associated with the MFP are currently unscreened, the Agency may need a rationale for leaving the structures unscreened, which may be developed through establishment of the fisheries distribution during the primary diversion season. However, stakeholders may still suggest screening the diversions. If needed, screening criteria may be established for the screens in the affected environment. The Agency should attempt to establish screening criteria that meet or exceed appropriate parameters to reduce the risk of entraining sub-adult fish, while being mindful that ever-stricter screening criteria will reduce operational diversion flexibility and increase screen costs.

5.2.12 Fish Disease

It may be suggested by various stakeholders, such as CDFG, that the MFP relicensing effort evaluate the potential effects of the project facilities, operations, and maintenance on the development of suitable conditions for fish disease occurrences. If required, this investigation

would require the review of pertinent literature related to fish disease vectors and characteristics, past introductions or occurrences of fish diseases in the affected waters, and the identification of factors associated with the project which could potentially increase the likelihood for fish disease occurrences, such as fish stocking programs in the affected waters.

As fish stocking requirements are not part of the FERC license, and the most likely cause of fish disease occurrences within the affected environment, the Agency may establish that the introduction of disease associated with fish stocking procedures are not their responsibility, and therefore do not require Agency-sponsored PM&Es.

5.2.13 Recreational Goals

The CDFG and USFS have outlined recreational management goals for the upper American River watershed including the project waters and affected environment. For instance, the Rubicon River has been designated as a "Wild Trout" river and such a designation often elicits specific management efforts, which may include providing suitable flow and water temperature particularly for spawning, as the wild trout populations are not supplemented with hatchery stock. Therefore, various stakeholders including CDFG, USFS, and angling-oriented NGOs, may request that the relicensing effort evaluate the ability of the MFP operations to achieve recreational and environmental goals using current and viable alternative fish management strategies in the affected area. To this end, the fisheries management goals for the streams, rivers, and reservoirs of the project area should be determined, and the historical and present ability to meet these goals should be evaluated. Reasons for success and failures for individual years, if possible, may be outlined as well. For waters supplemented with hatchery stocks, an evaluation of the achievement of the recreational and ecosystem function goals provided by the fish stocking programs may be considered, as well as the potential for and effects of the interaction between stocked hatchery fish and wild-spawned fish.

To the extent possible, the Agency should attempt to satisfactorily complete a recreational management evaluation with existing information, as well as information collected from other fisheries and water quality evaluations associated with the MFP relicensing and outlined in this document. In addition, while the Agency may be responsible for complying with water temperature and instream flow standards as they relate to recreational management, the Agency has no responsibility for improper or mistaken fish stocking procedures, as fish stocking is not a part of the current MFP license.

5.3 WATER QUALITY

5.3.1 Designated Beneficial Uses

Several stakeholders, including the USEPA and SWRCB, are likely to suggest that the MFP relicensing effort include provisions to evaluate the potential effects of project facilities, operation, and maintenance on the water quality for designated beneficial uses of surface waters. In addition to water quality regulation agencies, the water quality monitoring may also be important to those entities diverting water from the MFP for beneficial use, including Nevada Irrigation District, Placer County water treatment facilities, the City of Roseville, San Juan Water District, and numerous other water users. This task could be completed by developing a list of representative sampling sites in each of the streams, rivers, and reservoirs within the affected

environment and monitoring the physical, chemical, and biological water quality parameters at each site. The monitoring sites would be visited several times at a standard interval throughout a year to capture potential seasonal variations in water quality parameters. Field parameters, including dissolved oxygen, conductivity, pH, and turbidity, can be measured during each site visit using properly calibrated instrumentation. In addition, water temperature at each site can be recorded at 15-minute intervals using continuous-logging water temperature recorders. Using standardized EPA collection protocols and testing samples at an appropriate water quality laboratory, other water quality parameters may be monitored at the field sites, such as: (1) inorganic chemical constituents including minerals, nutrients, and metals; (2) organic chemical constituents including organic pesticides, oils, and greases; (3) pathogens; (4) phytoplankton and zooplankton; (5) periphyton; and (6) macroinvertebrate water quality indicators. It is important to recognize that both excesses and deficiencies in water quality parameters are possible, especially when considering proper ecosystem functioning. The water quality data will then be evaluated in relation to USEPA, California Department of Health Services, and Basin Plan water quality criteria and objectives for beneficial uses.

To the extent possible, the Agency should attempt to utilize existing literature and technical reports to satisfy potential management agency concerns. If field data are required, the Agency should carefully collaborate with the management agencies to select monitoring sites that could provide the most pertinent and applicable information. For instance, a stepwise procedure may be developed where the downstream locations within each stream are sampled as an indicator of the water quality conditions existing upstream, and upstream monitoring would occur when water quality parameters do not meet or exceed water quality objectives. In addition, monitoring locations may be needed at each point of water diversion. If water quality deficiencies were found, the monitoring efforts would then attempt to converge on the point or non-point source of water quality degradation by increasing the number and distribution of sampling sites. This type of process would focus the investigation on sites of potential concern, and eliminate redundant sampling.

5.3.2 Contamination of Sediments

Stakeholders, including the USEPA, SWRCB, and USFS, may suggest evaluating the potential effects of the project facilities, operation, and maintenance on the accumulation of contaminants in sediment and the aquatic food chain. To address this suggestion, a list of sediment sample locations would be determined, which may likely include various sites within each project reservoir, as well as large pools and backwater locations of the affected streams and rivers. Each site would be assessed for the metal contaminants (arsenic, cadmium, chromium, mercury, lead, and others) and organic contaminants (organophosphates, organochlorides, polynuclear aromatic hydrocarbons, polycholorinated biphenyls, and others) in the sediments through sample collection and analysis. Analytical procedures may follow the protocol outlined in the Toxic Substances Monitoring Program adopted by SWRCB and CDFG. In addition, resident fish species would be collected from these waters and analyzed for bioaccumulation of metal and organic contaminants within their tissues, using the California Office of Environmental Health Hazard Assessment protocols. If metal and organic contaminant concentrations are sufficiently high in a particular water body, the temporal and spatial characteristics of the water quality data collected during other MFP relicensing endeavors will be evaluated in order to restrict or identify the project and non-project locations, operations, or actions which may potentially result in downstream contaminant deposition.

To the extent possible, the Agency should attempt to utilize existing literature and technical reports to satisfy potential management agency concerns. If field data are required, the Agency should carefully collaborate with the management agencies to select monitoring sites that could provide the most pertinent and applicable information. For instance, the most likely sites of contamination within the affected environment are within reservoirs, as they serve as sinks for sediment. Hence, the surveys related to sediment and bioaccumulation should focus on these locations. If sediment or food chain contamination issues were identified, the monitoring of upstream tributary locations would then attempt to converge on the point or non-point source of water quality degradation.

5.3.3 Water Temperature

The water temperature in the affected streams and rivers is likely to be one of the most important issues for many of the stakeholders, including CDFG, SWRCB, and numerous NGOs. Water temperatures are important for proper growth and reproduction of fish, as well various water quality parameters. An extensive water temperature-monitoring program will likely be needed to evaluate water temperatures in the affected streams, rivers, and reservoirs, and identify potential factors that significantly influence water temperatures. Water temperatures can be recorded at various representative stream locations using continuous-logging water temperature recorders, which can sample at 15-minute intervals. The information must be downloaded from the recording device to a data logger or laptop computer approximately two times per year.

The Agency has shown interest in developing a water temperature-monitoring program to serve a variety of purposes, including for application in the MFP relicensing. The monitoring program developed should satisfy the needs of these various purposes, while balancing the monitoring requirements with the costs of the endeavor. The cost of the water temperature monitoring recorders is actually quite reasonable, and operations and maintenance costs associated with the collection of the data can be substantially reduced if the water temperature monitoring were simultaneously conducted with existing monitoring programs. For instance, water temperature monitoring devices could be placed near flow monitoring stations, which are currently serviced on a monthly basis, or near project facilities. Other water temperature monitoring station locations should be carefully selected based on tributary inflows and areas of potential warming, including reservoirs and impoundments. The specifics of a water temperature-monitoring program will be extensively discussed in a separate document, which will be provided at a later date.

5.3.4 Natural Restorative Processes

The potential effects of the project facilities and operation on natural water quality restoration features, such as riparian areas, wetlands and riffles, is likely to be of concern to the CDFG, USFS, USFWS, SWCRB, and NRCS. These areas provide conditions for the decomposition, inactivation, or oxidation of many water contaminants. It may be suggested that the riparian areas, wetlands, and riffles within the affected environments be identified and mapped. These areas could be monitored to evaluate any potential disruptions, including disruptions from project facilities or operations. For instance, groundwater levels may be monitored as they pertain to the establishment, replenishment, and maintenance of wetland areas. Specifically, the wet meadow formed by a seep at the base of Hell Hole Dam merits special protection, as mandated in the current FERC license.

The Agency should attempt to identify existing information regarding the condition of riparian areas, wetland, and riffles. Depending on the scope and details, this literature may sufficiently address the issues of the management agencies. However, it is anticipated that the stakeholders may request further information than currently exists, including recent monitoring data. Any potential riparian and wetland monitoring program should involve careful selection of priority representative sites to balance the utility of the information collected with the cost of the exercises. Therefore, the Agency should collaborate with the concerned management agencies to determine the specific sites that are both characteristic of the aquatic environments within the affected area of the MFP, and represent the highest biological value and restorative value for water quality concerns. The development of the monitoring program will then focus on these high priority stream reaches and outline a procedure for expanding the information collected to the entire affected environment.

5.3.5 Sediment Load, Recruitment, and Deposition

The potential effects of project facilities, operations, and maintenance on the suspended sediment load, sediment recruitment, and sediment deposition in the project waters will be of concern to a variety of stakeholders, including the CDFG, USFS, SWRCB, and fisheries-related NGOs. Particular attention may be given to potential sediment recruitment from burned-area runoff. For instance, because nearly 50 percent of the 17,000 acres of the 2001 Star Fire burned at a moderate to high intensity, and the burned area is characterized by very steep terrain, the potential exists for these burned lands to contribute a relatively high quantity of sediment to the affected streams, rivers, and reservoirs. In addition to burned areas, other sources of sediment to the affected waters may need to be identified, as well as the sediment sinks within the project areas. It is likely that the seven project impoundments capture much of the sediment recruited from sources within the project area. An evaluation of the reduction in reservoir storage would identify the magnitude of historical and current sediment recruitment.

To the extent possible, the Agency should attempt to utilize existing data to evaluate the sources and sinks of sediment within the affected environment. A sediment monitoring program, if needed, can be constructed which could narrow the locations of potential sediment sources, by evaluating the distribution and extent of water suspended sediment and turbidity measurements within the affected environment, and should involve careful selection of useful monitoring sites to balance the utility of the information collected with the cost of the exercises. Because sediment recruitment may occur at locations or be influence by activities not associated with the MFP, including developments, poor land use and management, burned areas outside the project boundaries, and a variety of other actions, the Agency can only be responsible for studying the sediment concerns associated with the project facilities, lands, operations, and maintenance.

5.3.6 Land Use Practices

While lands within the project boundary make up only a small portion of the overall Middle Fork American River watershed, stakeholders involved with the MFP relicensing, such as the USFS, SWRCB, and ecosystem-oriented NGOs, may request that the relicensing effort evaluate the potential effects of the existing and future land use practices within the watershed on the water quality of the project waters. To this end, land uses types, locations, and magnitudes can be identified within the watersheds associated with the affected environment, and these uses can be assessed based on their potential to influence water quality of the affected waters. In addition, to

the extent possible during the water quality assessments, sources or regions of point and non-point source water quality degradation may be identified.

Because much of the total watershed acreage is not owned or operated by the MFP, the Agency has limited ability to manage or regulate land use practices. To the extent that the land practices fall on Agency property, every practicable action should be evaluated and implemented to assure compliance with water quality standards in affected waters. On non-Agency land, the Agency should establish that most land management activities occur independent of project factors. The Agency may offer to collaborate with local land managers, including local landowners and the USFS, to develop and recommend land management plans for the lands within the watersheds. These recommendations may include implementation of watershed regulations (e.g., BMPs) and water quality restoration projects to meet water quality standards in the affected waters. However, these non-Agency land activities are not the responsibility of the Agency.

5.4 TERRESTRIAL RESOURCES

5.4.1 Riparian Areas, Wetlands, and Floodplains

Numerous stakeholders, including USFS, USFWS, CDFG, and SWRCB may suggest that the relicensing effort evaluate the potential effects of the project facilities, operations, and maintenance on riparian resources, wetlands, and floodplains within the project boundaries and affected environments. The current riparian and wetland conditions within the project and affected environments could be evaluated, to the extent possible, by collecting, reviewing, and applying existing habitat information, or by collecting onsite hierarchical vegetation habitat type classification data in representative sampling sites in the field. Hierarchical habitat typing involves characterizing a particular habitat by first identifying the general vegetative assemblage (e.g., forest, shrub-environments, or grasslands), and then progressively refining the characterization into more specific classifications. For instance, while a general vegetative assemblage in a typical California riparian area may be deciduous forest, it may be more specifically defined as a cottonwood/shrub-willow habitat type. Habitat typing can provide a general indication of the ecosystem response to specific management and land use practices, as well as likely wildlife inhabitants. After typing the riparian habitat, using information on instream flow, riparian and wetland vegetation life history requirements, and river stage-discharge relationships, in conjunction with an operations model (i.e., the UARM), the potential effects of the current and viable alternative project operations on the riparian and wetland conditions can be evaluated. In addition, the potential effects of the current and viable alternative project operations on the reservoir shoreline vegetation within the affected environment of the MFP can be investigated using the riparian and wetland vegetation life history requirements and the relationship between reservoir level, modeled using the UARM, and littoral vegetation habitat. The potential effects the project operations have on groundwater levels and the resulting production of isolated wetland habitats within the project area may be another suggested topic for investigation. This task would require an understanding of the local groundwater hydrology with the affected environment, and the mechanisms for wetland development within the affected environment.

Due to the proximity of riparian and wetland habitat to the project affected waters, much of the land upon which riparian and wetland vegetation exists may have the potential to be affected by project operations. To the extent possible, the Agency should evaluate these potential impacts

through literature review and application. If field data are needed, due to the large number of rivers, streams, and tributaries within the affected environment of the MFP, the field characterization of riparian and wetland habitat should include careful selection of priority habitats or reaches to balance the utility of the information collected with the cost of the exercises. The Agency should collaborate with the concerned stakeholders to determine specific survey reaches, which are both representative of the riparian, wetland, and nearshore reservoir environments within the affected area of the MFP, and represent the highest biological value to the local ecosystem. The development of study plans will then focus on these high priority areas and outline a procedure for expanding the collected information to the entire affected environment.

5.4.2 Upland Plant Community

While a majority of the lands within the project boundary and affected environment are likely populated with riparian vegetation, various stakeholders, including the USFS and the ecosystem-oriented NGOs may suggest an evaluation of the potential effects of project features and operations on upland plant communities. The upland plant communities within the affected environment could be characterized by utilizing existing habitat information from various resources (including USFS surveys), or by collecting onsite hierarchical upland vegetation habitat type classification data in representative sampling sites. A preliminary survey of existing information suggests that many of the watersheds associated with affected waters likely range from canyon live oak to white fir dominated mixed conifer forests at low to mid elevations, to red fir dominated forests in the higher elevations. By applying existing literature, an assessment of the manner and intensity in which the project facilities, current and viable alternative operations, and maintenance may potentially impact the upland vegetation communities could be conducted.

Because much of the upland vegetation acreage within the watersheds associated with the MFP are not owned, operated, or existing within the affected environment of the MFP, the Agency has limited ability to manage upland areas, and the project has limited opportunity to affect these upland areas. To the extent that the upland environments exist within Agency property or upon the affected environment, the Agency may evaluate the condition of the upland vegetation and the means by which the project operations may potentially impact this condition. On non-Agency land and lands unaffected by the MFP, the Agency should establish that the condition of the upland vegetation is independent of project factors. The Agency may offer to provide input into the development of upland vegetation monitoring and management plans for the upland habitats within the watersheds; however, these activities should not be associated with the MFR relicensing activities and are not the responsibility of the Agency.

5.4.3 Noxious Weeds

The abundance, distribution, and dispersal of noxious weeds have become important topics in the management of terrestrial and aquatic ecosystems. Because most noxious weeds are non-native, they have the potential to grow unchecked by native vectors (i.e. disease and herbivores), and can quickly multiply and overwhelm a native vegetative assemblage. They often grow in disturbed environments, such as along roads or near facilities. Therefore, the potential effects of project facilities, operations, and maintenance on the abundance, distribution, and dispersal of noxious terrestrial and aquatic plant species may be an important topic of investigation suggested

by the USFS and ecosystem-oriented NGOs. The noxious weed investigation request could be addressed by developing of a list of high priority noxious plant species expected to occur within the project boundaries. A preliminary investigation of existing literature indicates that the following noxious species may be of concern within the project boundary: (1) yellow starthistle; (2) tree of heaven; (3) red brome; (4) Italian thistle; (5) Himalayan blackberry; and (6) numerous other species. Field crews could conduct surveys and map the locations for the identified species of concern. These weed inventory surveys would follow a standardized methodology, such as those outlined in the California Weed Mapping Handbook adopted by the California Department of Food and Agriculture. In addition, field surveys should be supplemented, or if possible, replaced by the review and application of pertinent literature regarding weed species distribution and abundance from the affected environment.

Because the activities within the affected environment of the MFP may have the potential to cause disruption to the surrounding environments, noxious weeds may have the opportunity to become established within the affected environment. To the extent possible, the Agency should attempt to alleviate management agency and NGO concerns through literature review and application. For instance, the USFS may regularly conduct vegetative surveys on their lands, including assessments of noxious weeds. If field data are needed, field characterization of noxious weed distribution and dispersal should include careful selection of priority investigation sites to balance the utility of the information collected with the cost of the exercises. The Agency should collaborate with the concerned management agencies to determine specific locations that are both representative of the potential weed establishment sites within the affected area of the MFP, and represent the highest biological value to the local ecosystem. Potential disturbance zones associated with the project may include open land near facilities, such as earthen dams, power plants, generators, pump houses, tunnels and pipelines, and roads, and the development of study plans will then focus on these high priority areas and outline a procedure for evaluating the potential of dispersal from these sites to the entire affected environment.

5.4.4 Biodiversity of Vegetative Species

Biodiversity of vegetative species is an important topic in contemporary land management. It is possible for various stakeholders, including USFS, the Native Americans, and the ecosystem-oriented NGOs, to suggest an evaluation of the potential effects of project features and operations on the biodiversity of vegetative species. This task could be completed by preparing or locating ortho-rectified aerial photographs of the affected environment, which will be required to develop a GIS base coverage for the project evaluation. Plant community locations, as determined through plant community habitat typing, would then be digitized into GIS coverage and field crews could ground-truth a subset of the coverage patterns to ensure accuracy. During these actions, it would be appropriate to obtain a list of culturally important plant species from the local Native American community or native plant societies, conduct ground surveys for these species, and incorporate the species locations into the GIS. Using the GIS and knowledge about the means by which the project has the potential to influence the biodiversity of vegetative species, based on life history requirements of the species and project operational scenarios, a conclusion as to the potential project effects could be determined.

Because much vegetative biodiversity occurs in the riparian zones found along streams and rivers, the biodiversity of vegetative species may potentially be a concern within the affected environments of the MFP. To the extent possible, the Agency should attempt to satisfy

stakeholder concerns with existing information. For instance, the USFS may have existing literature regarding the vegetative communities within the affected environment, and academic and technical literature can suggest the diversity of species and communities that may exist under natural conditions. Also, existing literature may suggest the manners in which project operations may affect vegetative biodiversity in the affected environments. If field data are needed, the Agency should collaborate with resources agencies to identify areas of high priority for survey, in order to balance the usefulness of the information collected with the cost of the investigations. Investigations should focus on specific locations that are both representative of the vegetative biodiversity within the affected area of the MFP, and represent the highest biological value to the local ecosystem, and development of study plans will then concentrate on these high priority areas and outline a procedure for expanding this data to the entire affected environment.

5.4.5 Fire Management

Under the current FERC license for the MFP, the Agency is responsible for fire suppression and the reduction of fuel loads within the project boundaries. Various stakeholders, including the USFS and ecosystem-oriented NGOs, may suggest an evaluation of the existing fire management and identification of potential effects associated with project features and operations on fire management techniques in the affected environments, to ensure consistency with current Tahoe and Eldorado National Forest protocols. This evaluation would entail collecting and reviewing data regarding fire ecology and the fire history of the lands within and adjacent to the project area and affected environment. For example, several resources are available regarding the Star Fire, which burned nearly 17,000 acres of steep terrain in the Tahoe and Eldorado National Forests, much of which was within the watersheds which drain into the affected waters of the project, such as Duncan Creek, North Fork Long Canyon Creek, and Middle Fork American River watersheds. In addition, information regarding plant community habitat typing and wildlife habitat mapping being developed in other tasks of the relicensing project could be collected and reviewed, and the potential ecological effects of the historical and current fire prevention and suppression practices on each of the major plant communities present within the project area would be estimated. The plant community changes resulting from fire prevention practices in relation to the availability of wildlife habitat would also be evaluated.

While the Agency may be responsible for fire suppression and fuel management activities on project lands as mandated by the current MFP license, most of the land affected by fire management activities within the watersheds associated with the MFP are not owned, operated, or existing within the affected environment of the MFP, and the Agency has limited ability or responsibility to manage these environments. Therefore, the Agency may be responsible for an evaluation of their fire management activities on Agency property and the affected environment, which may include the vegetative community alterations due to fire suppression activities or the means by which the project operations may potentially impact fire management on Agency lands. However, on non-Agency land and lands unaffected by the MFP, the Agency should establish that fire management is not their responsibility. The Agency may offer to provide input into the development of fire management monitoring for the upland habitats within the watersheds; however, these activities should not be associated with the MFR relicensing activities and are not the responsibility of the Agency.

5.4.6 Wildlife and Wildlife Habitat

Various stakeholders, including CDFG, USFWS, USFS, and the ecosystem-oriented NGOs, may suggest an evaluation of the potential effects of project facilities, operations, and maintenance on wildlife, particularly those retaining special status, and wildlife habitat within the affected environment. This task could be completed by obtaining plant community habitat mapping and identifying wildlife species that could potentially utilize these habitats. Initial information obtained from a literature review suggests several special status species may utilize the affected area, including California spotted owl, bald eagles, western pond turtles, foothill yellow-legged frogs, and California red-legged frogs. Existing literature related to wildlife habitat and biodiversity for the land within the affected environment should be further collected and reviewed, and field reconnaissance surveys could be conducted to improve the information base regarding wildlife in the project area. An analysis would then be conducted to identify specific areas and habitats where project operations have the potential to influence wildlife species, and the potential current and future project effects on wildlife and wildlife habitat related to operations, maintenance, and management of project facilities and properties, designating each potential impact as site-specific or area-wide.

Due to the ecologic importance and high profile of the wildlife species of concern listed above, and their possible inhabitation or periodic use of the affected environment of the MFP, it is likely that the Agency may evaluate the potential effects of the project operations on wildlife, particularly those retaining special status. To the extent possible, the Agency should attempt to satisfy stakeholder concerns with existing information. For instance, the USFS, USFWS, and CDFG may have existing literature regarding the distribution and abundance of many wildlife species within the affected environment, and academic or technical literature may indicate the manners in which these species could be influenced by project operations. If field data are needed, the Agency should collaborate with resources agencies to identify areas of high survey priority, in order to balance the utility of the information collected with the cost of the investigations. Investigations should focus on specific locations that are both representative of the wildlife habitat within the affected area of the MFP, and represent the highest biological value to the local ecosystem. Development of study plans will then concentrate on these high priority areas and outline a procedure for expanding this data to the entire affected environment. Furthermore, the Agency's potential study responsibility should only extend to the wildlife species and their habitat within the affected environment, and should not drift beyond this scope.

5.4.7 Undesirable Wildlife Species

Undesirable, normally non-native, wildlife species have the potential to cause severe disturbance to native vegetation and wildlife assemblages. As a result, numerous stakeholders, including the USFS, USFWS, CDFG, and ecosystem-oriented NGOs, may suggest an evaluation of the potential effects of project features and operations on undesirable non-native wildlife species. To conduct this evaluation, a list of high priority undesirable species expected to occur within the affected environment would be developed. Preliminary literature review suggests that the undesirable species currently inhabiting the project lands may include bullfrogs, feral pigs, exotic rodents, and European starlings, as well as numerous other species. Literature searches and reviews could be conducted to gather information related to the species biology, habitat requirements, and life history requirements of the identified undesirable species. Specific project operations, which have the potential to influence non-native undesirable wildlife species, would

be identified. Literature identifying potential management guidelines for undesirable species would also be beneficial in addressing the undesirable wildlife species evaluation. The information gathered would be evaluated to determine the potential impacts of the project operations on the development of proper conditions for undesirable wildlife species.

The abundance and distribution of various undesirable wildlife species may have the potential to be influenced by project operations, through the creation of appropriate habitat. For instance, undesirable bird species could roost or nest in the eaves of project facilities, rodents could over-winter within project facilities, or aquatic pests such as bullfrogs could be affected by project operations. Therefore, the MFP relicensing may need to evaluate the potential effects of project operations on undesirable wildlife species. To the extent possible, the Agency should attempt to satisfy stakeholder concerns with existing information. For instance, the USFS, USFWS, and CDFG may have existing literature regarding the distribution and abundance of undesirable wildlife species within affected environment, and academic or technical literature may indicate the manners in which these species could be influenced by project facilities or operations. If field data are needed, the Agency should collaborate with stakeholders to identify areas of high survey priority, in order to balance the utility of the information collected with the cost of the investigations. Investigations should focus on specific locations that are both representative of the disturbance created by undesirable wildlife within the affected area of the MFP, and represent the highest biological value to the local ecosystem, and development of study plans will then concentrate on these high priority areas and outline a procedure for expanding this data to the entire affected environment.

5.4.8 Recreation-Wildlife Conflicts

Recreational use has the potential to influence wildlife behavior and wildlife habitat. Because construction of the MFP may have provided numerous recreational opportunities, various stakeholders, including CDFG, USFS, USFWS, and ecosystem-oriented NGOs, may suggest an evaluation of the potential effects of project facilities, operations, and maintenance on the relationship between recreation and wildlife species. To complete this task, wildlife habitat mapping information from other MFP relicensing tasks would be obtained and reviewed, existing and potential future recreational developments or use sites would be identified and mapped, and the level of recreational use by season, use type, and location would be estimated. For instance, Hell Hole and French Meadows reservoirs may receive a relatively large amount of recreational use, including boating and fishing use, during the late spring through early fall months. The overlap between the recreational use areas and wildlife habitat could be evaluated to identify the extent of potential wildlife/recreation conflicts.

To the extent possible, the Agency should attempt to utilize existing recreation and recreation-wildlife overlap data. For instance, CDFG, USFWS, or USFS may keep records regarding recreation-wildlife conflicts, and USFS may have estimates of the recreational use magnitude of the affected waters and surrounding environments. If field data are needed, the Agency should collaborate with resources agencies to identify areas of high survey priority, in order to balance the utility of the information collected with the cost of the investigations. Investigations should focus on specific locations that are both representative of the disturbance created by recreation on wildlife species within the affected area of the MFP, and represent the highest biological value to the local ecosystem. Development of study plans will then concentrate on these high priority areas and outline a procedure for expanding this data to the entire affected environment.

5.5 RECREATIONAL RESOURCES

5.5.1 Enhancement of Campgrounds, Boat Docks and Launching Facilities, and Day Use Areas

The USFS, NPS and State Parks will have an interest in enhancing existing recreational facilities at the MFP, and possibly in constructing new facilities. Primary areas of interest will be French Meadows and Hell Hole Reservoir. The recreational enhancements will likely be based upon the condition of the existing facilities and projected recreation demand determined by a needs analysis. Further USFS policies for the two national forests should dictate the type of recreational facilities desired, if any. Therefore, it will be necessary to evaluate the existing inventory and utilization of project area campsites, boat docks and launching facilities, and day-use areas.

Campground evaluations should include an identification of their amenities, aesthetic attributes, number of campsites with water and electric hookups for recreational vehicles, number of sites for tent camping, and group camping facilities. The USFS and NPS may ask for a determination of currently undeveloped locations for additional camping. Existing data and collection of additional data may be needed to determine the numbers of campsites that are occupied and the numbers of campers by type (RV or tent) for weekend days and weekdays by season. Using either aerial photography or boats, numbers of boats by type found on each project reservoir during peak summer weekends and holidays may need to be estimated. A determination should be made of when use of existing facilities might exceed their capacities, resulting in waits to launch or dangerous boating conditions.

Onsite interviews of recreationists at area campgrounds, boat ramps, marinas, angling sites, and picnic areas, may be needed to determine the peak numbers of daily visitors to each major recreational facility at the project. Recreational preferences and degree of satisfaction or dissatisfaction with project area recreational facilities should also be identified. In addition, telephone surveys of a random sample of households within 50 miles of the project may be needed to determine whether existing facilities are meeting the needs and preferences of local recreationists.

Based on daily use data collected and survey results, the numbers of annual recreationists who: stay at project area campgrounds; boat on project reservoirs; boat or raft on project-related river segments; engage in reservoir fishing (from boats, marinas or the reservoir shoreline); and pursue coldwater angling at project-related river sections may need to be estimated.

5.5.2 Recreational Boating Flows

A significant issue for American Whitewater, NPS, and commercial outfitters will be recreational flows for whitewater boating downstream of Oxbow powerhouse. Assessing this issue will likely require conducting a whitewater boating/rafting survey to determine the desirability of several alternative river flows for whitewater paddlers and rafters. Persons selected to run the river in kayaks, canoes, and rafts would be requested to fill out a survey form that records their degree of satisfaction or dissatisfaction with their whitewater experience at each flow level. Survey respondents also would provide information on other locations where they engage in whitewater paddling or rafting, and their local expenditures during a whitewater

trip. Based on the preferences revealed by this survey, the hourly and daily cost (in terms of energy generation foregone) of providing preferred whitewater flows would be determined. American Whitewater has adopted a policy that they will not request higher follows for whitewater boating that occurred naturally prior to project construction. Accordingly, it will be necessary to compare the flow needs with the pre-project flows on a seasonal basis.

5.5.3 Reservoir and River Angling Opportunities

Of interest to state and federal resource agencies, the USFS, and NGOs such as American Rivers, CSPA and Cal Trout will be angling opportunities on the projects reservoirs and stream and river reaches. Based on visitor counts and the responses of persons surveyed at marinas, boat launches, reservoir shoreline angling areas, river access points, and camp grounds, the numbers of project area visitors who participate in fishing in project reservoirs, their fishing locations, and time spent fishing per trip can be determined. Additionally, comparable data for visitors to the project who engage in river angling can similarly be obtained. Specific data requested may include estimates for angling activity by location during weekdays and weekend days in spring, summer, and fall. Based on the use data cited above, yearly estimates of the total number of angler-hours spent at each project area reservoir and major river segment can be estimated. A separate survey of anglers may be needed to determine their species preferences, and usual mode of fishing (fishing in a project reservoir from a boat, pier, marina, shoreline area; fishing in a project river segment from the shoreline, boat, etc.). This survey should be designed to determine fishing preferences and locations, fishing success, local expenditures made during a fishing trip, degree of satisfaction with existing angler access to project reservoirs and river segments, and recommendations to improve the quality of the angling experience at the project. Based on this information, a determination can be made whether additional reservoir and river angling opportunities may be needed, where there may be best located, and what type of facilities, if any, should be constructed.

5.6 LAND MANAGEMENT

5.6.1 Land Management

A key interest of the USFS will be the management of Forest Service lands and the control of fuel loading. Devastating fires like the Star fire and other recent wild fires in Northern California have heightened agency and public interest in land management. To better manage project lands, the types of land uses that exist and/or are planned for lands within the project area will need to be determined. Further, the desirability of developing recreational facilities at some sites and maintaining other sites as undeveloped areas for the benefit of aesthetics or wildlife will need to be determined.

Required information is likely to include a description of the parcels of land managed by federal agencies, state agencies, the licensee, and private individuals. Interviews with USFS land managers will also be needed to determine their goals and policies for managing acreage within and adjacent to the project boundary. Based on the results of terrestrial studies, a determination is needed of whether there are existing or potential land use conflict with the presence of federally listed threatened or endangered species. A similar evaluation will be needed for state-listed sensitive species.

5.7 CULTURAL RESOURCES

Entities with a primary interest in cultural resources include the affected Indian Tribes (Miwok Native Americans and Maidu Native Americans), the State Historic Preservation Office, the Advisory Council on Historic Properties and the National Park Service. The goal of these entities will be to protect the existing cultural resources within the project boundary. Given the sensitivity of the Indian tribes to disturbance of Indian cultural sites, the affected tribes may require that Indian cultural sites not be disturbed. This may negate the need for extensive field surveys like those done at other nearby relicensing projects. However, the specific field requirements can only be determined in consultation with the tribes.

To satisfy section 106 of the National Historic Preservation Act, the SHPO and FERC will require specific information and the development of a Historic Resources Management Plan (HRMP). Required activities will include a literature search of previous archeological inventories and ethnographic studies conducted within or near the project area. Most of this information is housed at the Northeast Information Center of the California Historical Resources Information System, located at California State University Chico. This is one of 12 statewide repositories for archeological site location and other information. A second required activity will be interviewing of officials of Indian tribes that historically occupied or currently use lands within the project area for hunting, fishing, gathering or engaging in religious practices for the purpose of developing oral histories of their tribes' involvement with project area resources.

After consultation with the Indian tribes and State Historic Preservation Officer, archeological investigations may be needed of any sites that are or would be affected by project operations or recreational activity. For the historic assessment, existing literature sources may be used to provide an historic portrait of the project area and nearby towns, emphasizing the development of hydropower.

5.8 ENGINEERING AND OPERATIONS

In order to assess many of the issues identified above, as well as alternatives, resource agencies and NGOs will request that an operations model be developed. The operations model should use the historic inflows, project parameters, and specified operating constraints to determine power generation, water levels and flow discharge effects of alternative operations. The operations model may be an existing model, but it will be necessary to consult with the resource agencies and NGOs on this model to ensure that they are comfortable with its use.

The operations model should be used to determine if the project's capacity can be economically increased. We recommend that the Agency conduct a Resource Utilization Study to assess potential changes to the project and its operation. Such studies are often conducted prior to the start of the formal relicensing process.

5.9 FRENCH MEADOWS INTERTIE

The Middle Fork Project is linked to the electrical grid through the French Meadows Gen-Tie License. The license for this Intertie is held by PG&E. Since this Intertie is essential for the operation of the project, the Resource Utilization Study should consider the options available to the Agency to continue to use this Intertie and compensate PG&E at tariff rates, should attempt

to either purchase the Intertie or compete with PG&E for the new license, or construct an upgraded transmission line if the line is capacity limited and capacity upgrades to the project may be feasible.

5.10 SUMMARY OF RESOURCE ISSUES

A summary matrix is presented which identifies potential environmental considerations and the priority of each consideration for various stakeholder groups (Table 5-1). The matrix also identifies the potential overall PM&E costs and project impacts, which could result from each of the potential environmental considerations. The capital cost determination is defined as the potential expenditures resulting from management, study, or settlement of each potential environmental consideration. The project impact determination is based on the potential for lost water or power revenue resulting from the settlement of each environmental consideration. The stakeholders considered on the summary matrix include:

Federal Agencies

- Army Corps of Engineers (ACOE)
- Bureau of Land Management (BLM)
- Bureau of Indian Affairs (BIA)
- Bureau of Reclamation (USBR)
- Environmental Protection Agency (USEPA)
- Federal Emergency Management Agency
- Federal Energy Regulatory Commission (FERC)
- Fish and Wildlife Service (USFWS)
- Forest Service (USFS)
- National Marine Fisheries Service (NMFS)
- National Park Service (NPS)
- Natural Resource Conservation Service (NRCS)

State Agencies

- California Department of Fish and Game (CDFG)
- California Energy Commission (CEC)
- California State Park Service (CSPS)
- California State Water Resource Control Board (SWRCB)
- State Historical Preservation Office (SHPO)

Tribal Participants

- Maidu Native Americans (Maidu)
- Miwok Native Americans (Miwok)

Local Agencies

- Placer Legacy Group (formed by Placer County)

Table 5-1 Potential Environmental Considerations Matrix

Potential Environmental Considerations \ Stakeholders	FERC	USEPA	SWRCB	NRCS	USFS	USFWS	NMFS	CDFG	USBR	ACOE	SHPO	Miwok	Maidu	Sierra Club	FOR	SARA	Rafters	Cal Trout	CSPA	NRDC	Amer. Rivers	CA Outdoors	BIA	Ch. of Comm.	Wstn. St. Trail Assoc.	ORV Grps	AR Ops Grp.	ARWG	PARC	Placer Legacy	PM&E Costs	Project Impacts
General																																
Designation of Affected Environment				M					M	M																		M	M	M	NA	
Four Reservoir Index Alterations	M	M				M																										M
Aquatic Resources																																
Coldwater Pool Resource in Folsom Res.	M		M											M																		
Species Composition and Abundance	M						M					M	M	M	M	M				M	M	M						M	M	M	M	
Physical Riverine Habitat	M		M				M					M	M	M						M	M	M						M	M	M	M	
Habitat-Flow Relationships (IFIM)							M					M	M	M						M	M	M						M	M	M		
Physical Reservoir Habitat	M													M	M	M		M	M	M	M	M		M				M	M	M	M	M
Resident Fish Passage	M		M		M	M						M	M	M	M	M				M	M	M						M	M	M		
Anadromous Fish Passage					M	M		M	M	M				M	M	M		M	M	M	M	M		M			M		M	M		
Flow Fluctuation		M	M				M							M				M	M	M		M		M			M	M	M	M	M	
Macroinvertebrates and Microorganisms	M		M									M	M	M	M	M		M	M	M	M	M		M				M	M	M		
Predation	M		M		M							M	M	M	M	M				M	M	M							M	M		
Entrainment			M											M	M	M		M	M	M	M	M							M	M		M
Fish Disease		M			M	M												M	M													
Recreational Goals						M											M				M	M		M								
Water Quality																																
Designated Beneficial Uses	M			M	M	M		M	M								M	M	M	M	M	M		M			M	M	M	M	M	M
Contamination of Sediments	M			M		M		M	M	M				M	M	M		M	M	M	M	M				M		M	M	M		
Water Temperature				M	M				M			M	M				M											M					
Natural Restorative Processes	M										M	M					M			M	M	M				M		M	M	M		M
Sediment Load, Recruitment, and Deposition	M			M				M	M		M	M					M						M	M	M	M	M		M	M	M	M
Land Use Practices		M				M		M	M	M		M	M	M	M	M	M	M	M	M	M	M	M	M	M	M			M	M		
Terrestrial Resources																																
Riparian Areas, Wetlands, and Floodplains																	M						M	M	M	M		M	M	M		
Upland Plant Communities		M	M	M		M		M				M	M								M		M	M	M	M			M	M		
Noxious Weeds						M		M				M	M		M	M					M		M	M	M	M		M	M	M	M	
Biodiversity of Vegetative Species	M			M																	M		M		M	M		M	M	M	M	M
Fire Management	M	M		M		M		M													M		M	M		M			M	M		
Wildlife and Wildlife Habitat				M																	M		M	M	M			M	M	M	M	
Non-Native (Undesirable) Wildlife Species				M	M							M	M								M			M					M	M		
Recreation-Wildlife Conflicts	M																												M	M		M
Recreational Resources																																
Facility Enhancements	M							M																M	M	M					M	
Recreational Boating Flows								M														M		M	M		M				M	M
Reservoir and River Angling Opportunities	M		M				M					M	M	M	M	M				M								M	M	M		M
Land Management																																
Land Management	M		M	M		M					M	M	M	M	M	M		M	M	M	M	M		M	M				M	M		M
Cultural Resources																																
Protection of Existing Cultural Resources			M					M						M											M			M	M		M	M
Historic Resources Management Plan	M				M																									M		
Engineering and Operations																																
Operations Model Evaluations	M		M		M	M		M				M	M				M	M	M		M			M			M	M				
French Meadows Intertie					M			M																								

KEY: H - High Consideration M - Moderate Consideration L - Low Consideration

NGOs

- American River Operations Group (AR Ops Grp)
- American River Watershed Group (ARWG)
- American Rivers
- American Whitewater
- California Outdoors (CA Outdoors)
- California Sportfishing Protection Alliance (CSPA)
- California Trout (Cal Trout)
- Center for Sierra Nevada Conservation
- Friends of the River (FOR)
- Save the American River Association (SARA)
- Sierra Club
- Natural Resource Conservation Service (NRCS)
- Natural Resources Defense Council (NRDC)
- Protect American River Canyons (PARC)
- Western States Trail Association

Local Recreation

- Local Rafters (Rafters) (ex: Mariah Wilderness Expeditions, American Whitewater Expeditions, Whitewater Voyages)
- Off-road Vehicles Groups (ORV Grps) (ex: California Off-Roach Vehicle Assoc.)

Local Economic Interests

- Auburn Chamber of Commerce
- PCWA customer group (to be formed)
- Placer County Builders Exchange (PCBE)
- Placer County Chamber of Commerce

The stakeholder, capital cost, and project impact priorities are designated as high (H), moderate (M), or low (L). High priority considerations indicate the fundamental priorities for each stakeholder, while low priority considerations may not be of primary interest, though the stakeholder will still likely be involved with the issue settlement.

6. STAKEHOLDER INVOLVEMENT PLAN

6.1 GENERAL PLAN

The Agency has experience in effective collaboration through the Water Forum. This experience, combined with the extensive licensing experience held by the planning team, leads to the following recommendations for the Agency's public involvement plan. This plan will need to evolve as practices and expectations of stakeholders shift over time.

We recommend the following principles to reflect the Agency's approach to public involvement:

- *A robust process* - enables all interested stakeholders ways to be involved.
- *A transparent process* – the process and issues addressed are open and accessible to all interested stakeholders.
- *An easy access process* – there are a range of ways and degrees to participate serving a variety of needs.
- *An inclusive process* – all feel welcomed to participate.
- *A well-run process* - systems are established up front to support communications and information access.
- *A content-driven process* – meeting discussions and the process focus on addressing and resolving issues fairly and effectively. Meetings are held as needed, but the process respects that participants' time is a precious, respected resource and their time should be used wisely.

To achieve these principles we suggest three types of public involvement to establish a variety of ways for different stakeholders to stay informed and involved in the licensing process:

- High-Intensity Involvement and Structured Collaborative Process
- High-Intensity Outreach at Key Milestones
- Information Communication

High-Intensity Involvement and Structured Collaborative Process. For those who would like to be part of the intense, multi-year process we suggest establishing a structured collaborative process facilitated by a neutral facilitator. The purpose of this process will be to establish a process for collaboration, develop, to the extent feasible, mutually acceptable study plans, oversee study implementation, and develop proposed protection, mitigation and enhancement measures (PM&E measures) and, to the extent feasible, a settlement agreement. The intent is to jointly identify the issues to be addressed, assure that appropriate information is available or collected to determine the project impacts on various environmental, cultural and recreation resources, and to develop proposed PM&E measures to address project impacts. This approach will be used in whichever licensing process is selected. As part of the initial stages of the process we will want to develop a process protocol. The Agency will likely develop a draft for stakeholder review.

Likely participants in this process will include: mandatory conditioning and recommending agencies, tribes, non-governmental organizations, local community representatives, local business interests, Agency customers, and other interested organizations and individuals.

This process will likely involve establishing a plenary group that will oversee the process and set policy. Work groups for the anticipated resource areas (cultural, environment [aquatics, terrestrial, water quality, and geomorphology], land use, recreation, perhaps others) will also likely be established based on participant interest and expertise. The plenary, along with the work groups, will ultimately conduct the final identification of PM&E measures, and, if desired and feasible, settlement negotiations.

The structured process will emphasize off-line, one-on-one or small group exchange to hear issues and address concerns to enable the larger groups to be as productive as possible. We anticipate identifying issues as early as possible in the process so they may be addressed and resolved early and in a quality manner. It may also become necessary to establish task forces or sub-groups to address issues that have been identified. Respect and trust in the facilitator is key to that person's (or the facilitator team's) abilities to conduct effective off-line work as well his/her/their ability to run effective meetings.

Also, helping participants to conduct their work in preparation for meetings is an essential component in off-line work. Finally, frequent use of a single-text approach helps to focus discussion and display comments with a bias to action and resolution. For instance, the evolution of the communications or process protocol, the development of study plans, and the PM&E identification process will all likely use a single text approach. A single-text approach allows for a full array of participants' comments in the text, as well as a method to pose solutions, track agreements and disagreements. This enhances quality and efficiency of the exchange and reduces meeting time required to resolve issues. It also helps create a record of the dialogue and decisions.

In addition, we would plan to develop a structured process supported by as many stakeholders as possible up front. With advance work to build strong relationships and trust between the Agency and it's staff and the stakeholders we will then be able to rely on staff development of drafts which stakeholders review and provide input to. This increases efficiency and progress.

High-Intensity Outreach at Key Milestones. Some participants in the relicensing process will be very interested, but they will either not have the time or interest in full participation in the time-intensive negotiated process identified above. We suggest establishing a process so that the Agency will have a way to interact with these stakeholders as well.

At key milestones in the relicensing process – initial issue identification, finalizing study plans, study implementation status reports, and settlement negotiations – there should be outreach activities planned that provide for interactive exchange between the Agency and interested stakeholders. These outreach activities could also involve other stakeholders active in the high intensity negotiated process. These activities should be designed to build on the Agency's current stakeholder communication program. For example, the current Agency customer newsletter and web site should be used to include Relicensing information. Also, we may encourage additional outreach by Agency staff at speaking opportunities in the County to build awareness of the relicensing process. In addition, we will likely want to schedule specific licensing update meetings for the broader community interested in licensing for an interactive exchange at these key milestones.

Input from stakeholders collected through these outreach activities would be compiled and shared with the collaboration group to ensure that stakeholder feedback can be incorporated into the overall process. This also enables additional issues to be brought forward and resolved, as well as additional process suggestions to be shared and addressed.

Information Communication. Supporting all communications, several tools will need to be developed to provide all interested agencies, tribes and publics information about the licensing process. We suggest establishing a well-designed web site to serve an array of informational

needs. This creates an effective tool for the dissemination of information as well as a method for stakeholders to access up-to-date information at their convenience. The web site will need links both via the Agency site and the Placer County general web site so stakeholders seeking information on licensing from either source can easily find the licensing web site. As part of the launch of relicensing we foresee developing a CD that includes information on the project, relicensing, the resources associated with the project, and plans for this licensing process. This can be a very helpful tool in the beginning to educate both the high intensity participants and those who might be part of the outreach activities over time. We also suggest developing fact sheets on the resource areas addressed in relicensing (environment, recreation, cultural).

In addition, there should be a quarterly (or semi-annual) newsletter with a well-managed database of stakeholders. Newsletters can be an important and effective tool for the Agency to communicate with its stakeholders. The newsletters will be produced in an attractive format using concise language geared for a non-technical audience allowing for a broader base of stakeholders to become engaged.

6.2 STAKEHOLDER ORGANIZATION ANALYSIS

6.2.1 Overall Strategies

We suggest the following overall strategies:

- Focus on identification of project impacts and project responsibility first and gather study information to verify, then identify appropriate protection, mitigation and enhancement measures.
- Present Placer County Water Agency as a local public agency that considers local needs and concerns in their decision making process. Throughout the relicensing process, the Agency should try to involve the community to get their input. The Agency has a responsibility to serve local customers and community needs.
- Develop a collaborative structure for a quality and efficient process. All information delivered to the stakeholders and public will need to be easy to digest. This not only includes public information materials, but also study reports, environmental documents, and the license application.
- Make an effort to keep meetings efficient and keep everyone informed of key meetings and milestones.
- Understand each organization's structure and dynamics. Establish and maintain good relationships so that tough issues can be managed fairly. Establish relationships at all levels and with multiple contacts, recognizing that individual participants will change over time.

6.2.2 Army Corps of Engineers (ACOE)

Their mission is to provide quality, responsive engineering services to the nation including: (1) Planning, designing, building and operating water resources and other civil works projects (Navigation, Flood Control, Environmental Protection, Disaster Response, etc.); (2) Designing and managing the construction of military facilities for the Army and Air Force. (Military Construction); and (3) Providing design and construction management support for other Defense and federal agencies.

Organization

- Cynthia Nielsen, Project Management
- John H. EFT, Office of Counsel
- Merrie Jo Leite, Resource Management

Regulatory Authority

- Clean Water Act 404 – Prevents the discharge of dredged or fill material into a waterway without a permit

Key Issues

The ACOE will be interested in issues dealing with anything that might impact their flood control responsibilities.

Strategy

- Monitor ACOE activities in the region.
- Establish relationships to keep them posted; involve as needed.

6.2.3 The Bureau of Indian Affairs (BIA)

They are responsible for the administration and management of 56 million acres of land held in trust by the United States for American Indians, Indian tribes, and Alaska Natives. Developing forestlands, leasing assets on these lands, directing agricultural programs, protecting water and land rights, developing and maintaining infrastructure, providing for health and human services, and economic development are all part of this responsibility taken in cooperation with the American Indians and Alaska Natives.

Organization

- **Sacramento Area Office**
  Ronald Jaeger, Regional Director

Regulatory Authority

- **FPA 4(e)** – Provides that the federal land management agencies may prescribe mandatory licensing conditions for the adequate protection and utilization of their federal reservations (i.e. national forests).

Key Issues

The BIA will be interested in the identification of culturally significant areas impacted by the project and its associated operations. They will want to work toward development of management plans that protect the existing cultural resources.

Strategy

The Agency should develop relationships with BIA contacts, keeping representatives informed and encourage active participation throughout process. We should make sure Indian Tribes' opinions are sought out through interviewing of officials of Indian tribes that historically occupied or currently use lands within the project area for hunting, fishing, gathering or engaging in religious practices, and inform BIA of these findings.

6.2.4 The Bureau of Reclamation

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Organization

- John Keys, Commissioner
- Kirk C. Rodgers, Regional Director

Regulatory Authority

- Folsom Dam operations downstream.

Key Issues

The Bureau of Reclamation will be interested in how the timing and temperature of inflow to Folsom Reservoir may potentially affect USBR's operational flexibility for releases to the lower American River. They will also be interested in how the MFP operations will influence their operational flexibility at Folsom Dam and will want to investigate potential project operations that will benefit anadromous salmonids in the lower American River without negatively impacting Folsom operations

Strategy

The Agency should inform the Bureau of Reclamation of the MFP licensing and keep them informed of progress; engage as needed.

6.2.5 CA Department of Fish and Game

The mission of the Department of Fish and Game is to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public.

Organization

- Robert Hight, Director
- Banky Curtis, Regional Manager, Region 2

- Gary Smith, Biologist
- Annie Manji, Biologist

Regulatory Authority

- FPA 10(j) – Requires FERC to consider license recommendations pursuant to the Fish and Wildlife Coordination Act from the NMFW, FWS, and state fish and wildlife agencies.

Key Issues

The California Department of Fish and Game is concerned with setting minimum instream flow requirements to maintain or enhance water quality and fish habitat. CDFG may emphasize the evaluation of the fish habitat within the project reservoirs to support recreational fisheries as well as suggesting the evaluation of the potential effects of the project facilities, operations, and maintenance on the predation of recreationally important fish species.

CDFG may suggest the use of 2-D instream modeling techniques to represent fish habitat assessment. They are also interested in evaluating the potential for providing passage for salmonids upstream of each impoundment, dam, or other physical passage barriers associated with the project as well as addressing the current flow fluctuation standards.

Strategy

Similarly to the Water Board, CA Fish and Game is facing state budget concerns, which may result in reduced staff participation. Due to this concern, it is important to build a strong relationship with several Fish and Game staff members keeping them informed during the process and engaging them at key points.

In addition, there will be great significance in working closely with Fish and Game staff, primarily Gary Smith, to identify places where the Department would be willing to combine IFIM methodologies with CDF&G interests in 2D modeling and use.

6.2.6 California Resources Agency

The agency aims to restore, protect and manage the state's natural, historical and cultural resources for current and future generations using creative approaches and solutions based on science, collaboration and respect for all the communities and interests involved.

Organization

- Mary D. Nichols, Secretary
- Michael Sweeney, Undersecretary
- Jim McKinney, Resources Agency Project Manager

Departments

- Department of Boating and Waterways
- Department of Conservation
- Department of Fish and Game
- Department of Forestry and Fire Protection
- Department of Parks and Recreation
- Department of Water Resources
- California Conservation Corps

Regulatory Authority

- **FPA 10(j)** – Requires FERC to consider license recommendations pursuant to the Fish and Wildlife Coordination Act from the NMFS, FWS, and state fish and wildlife agencies. (CADF&G)
- **No specific authority as the Resources Agency, except it oversees all departments identified above.** They have expressed interest in seeking to have a coordinated CA hydro policy which could significantly effect hydro licensing

Key Issues

The Resources Agency will have the same issues as the departments comprising the Resources Agency.

Strategy

The California Resources Agency oversees the operations of numerous state departments involved in the relicensing process. We suggest an active relationship so that as their coordination efforts proceed, we will be aware and can assist.

6.2.7 CA State Water Resources Control Board

The State Water Resources Control Board's (SWRCB) mission is to preserve, enhance and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations.

Organization

- Jim Canaday, Environmental Specialist and head of hydro licensing activities
- Sharon Stohrer, Staff, Environmental Review, Unit 2
- Russ Kanz, Staff, Environmental Review, Unit 2
- Britt Fecko

Regulatory Authority

- **Clean Water Act - Section 401** – For a project that discharges into navigable waters, a licensee must acquire a water quality certification (from the delegated state agency or EPA, if no state agency is delegated) indicating the project will meet state water quality standards. Water quality certification conditions become license conditions on a FERC license.

Key Issues

The SWRCB is concerned with maintaining or enhancing water quality as well as ensuring that the water is put towards beneficial uses as outlined in the basin plan. They are interested in species composition and abundance in affected waterways, which leads to concern with the water temperature in the affected streams and rivers.

Effects of the project facilities and operation on natural water quality restoration features, such as riparian areas, wetlands and riffles, are likely to be of concern.

The SWRCB will work to develop studies to evaluate the potential effects of project facilities, operation, and maintenance on the water quality for designated beneficial uses of surface waters and with land-use practices within the watershed on the water quality of the project waters. They will likely suggest evaluating the potential effects of the project facilities, operation, and maintenance on the accumulation of contaminants in sediment and the aquatic food chain, as well as the affects on sediment load, recruitment and deposition in the project waters.

Strategy

The SWRCB is currently facing a staffing shortage and due to state budget concerns may face further reduced staff. Due to these shortages, it is important to build a strong relationship with the SWRCB staff, keeping them informed along the way and engaging them at key points in the process.

The SWRCB will be interesting in using a 2D modeling technique for instream flow determinations. It will be crucial to work with staff early in the process to identify places where 1D modeling may be used and focus 2D efforts in areas of special interest to the SWRCB.

6.2.8 The Federal Energy Regulatory Commission

FERC regulates and oversees energy industries in the economic and environmental interest of the American public. Under the authority of the Federal Power Act, FERC has the exclusive licensing authority over nonfederal hydropower projects on navigable waterways, federal lands, and in certain other areas.

Organization

- Patrick Wood, Chairman
- J. Mark Robinson, Director, Office of Energy Projects

- Lon Crow, Director Environmental Section, CA Region leader on relicensing
- Richard L. Miles, Director, Dispute Resolution Services
- Cynthia A. Marlette, Lead General Counsel
- Marsha L. Gransee, Deputy General Counsel

Regulatory Authority

- **National Environmental Policy Act (NEPA)** – Under NEPA, FERC, as a federal permitting agency involved in the permitting of activities affecting the environment, is required to evaluate environmental impacts and the significance of these impacts.
- **Federal Power Act and Amendments (FPA)** – The statute gives the Federal Energy Regulatory Commission the authority to license non-federal hydropower projects located on navigable waters or federal lands, or that impact interstate commerce. Section 10(a)(1) of the act requires licenses issued by FERC to be best adapted to a comprehensive plan for improving or developing a waterway for the use or benefit of interstate or foreign commerce, for the improvement and utilization of waterpower development, for the adequate protection, mitigation, and enhancement of fish and wildlife, and for other beneficial uses, including irrigation, flood control, water supply, recreation and other purposes.
- **National Historic Preservation Act** - Requires FERC, in its NEPA process, to consider the affect of a project on historical or cultural resources before issuing a license. The Advisory Council on Historic Preservation is provided an opportunity to comment on a license issuance.

Key Issues

FERC's mission is to regulate key interstate aspects of the electric power, natural gas, oil pipeline, and hydroelectric industries, and to choose regulatory approaches that foster competitive markets whenever possible, assure access to reliable service at a reasonable price, and give full and fair consideration to environmental and community impacts in assessing the public interest of energy projects.

Strategies

It is important to engage FERC staff early on in the process and to build strong ties with their relicensing staff. This early relationship building will help to keep FERC engaged throughout the entire process and can help in a well-informed licensing process.

6.2.9 National Marine Fisheries Service

The NMFS aims to rebuild and maintain sustainable fisheries, promote the recovery of protected species and protect and maintain the health of coastal marine habitats.

Organization

- Bob Lohn, Regional Administrator
- Kerry Griffin, Marine Resource Habitat Specialist

- Steve Edmonson, Conservation Director, and Head of Hydro Licensing Activities
- Eric Theiss, Hydro Relicensing Coordinator

Regulatory Authority

- **FPA Section 10(j)** – Requires FERC to consider license recommendations pursuant to the Fish and Wildlife Act from the NMFS, FWS, and state fish and wildlife agencies.
- **FPA Section 18** – Provides that the Secretary of Commerce (NMFS) or the secretary of Interior (FWS) may prescribe fishways at FERC licensed projects.
- **Endangered Species Act Section 7(a)(2)** – Requires the resource agency to issue a biological opinion on a project's potential effect on threatened and endangered species.

Key Issues

The NMFS is concerned with protecting ESA listed species in the American River. They will aim to preserve water temperatures adequate to promote a healthy anadromous fishery. They are interested in species composition and abundance in affected waterways, as well as evaluating fish passage for anadromous fish and assessing impacts of entrainment of sub-adult fish in diversions and intakes.

Strategy

Develop early relationships with staff at local offices to help promote a positive and collaborative approach to study plan development.

6.2.10 The National Park Service

The National Park Service promotes and regulates the use of the national parks to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

Organization

- **Pacific West Region**
  - John Reynolds, Regional Director
  - Harry Williamson, California Hydro Coordinator

Regulatory Authority

- No specific laws. Section 16.8 of FERC's regulations require an applicant seeking a new license to consult with the National Park Service. The Park Service brings their recreation perspective and expertise to licensing; and have an indirect role in Section 106 of the National Historic Preservation Act.

Key Issues

The NPS will have an interest in opportunities for enhancing existing recreational facilities at the MFP, and the possibility for constructing new facilities. Concern will be placed on undeveloped locations, opportunities for additional camping, existing facilities capacities, and safety issues.

A significant issue for NPS, will be recreational flows for whitewater boating downstream of Oxbow powerhouse, including the desirability of several alternative river flows for whitewater paddlers and rafters. The NPS has interests in protecting existing cultural resources within the project boundary in consultation with affected tribes.

Strategy

The NPS is experiencing a staffing shortage and it is therefore important to develop an early working relationship with Harry Williamson and headquarters staff to help keep them informed with key milestones and important meetings. This will enable staff to conserve time while staying engaged at the appropriate times.

6.2.11 The US Fish and Wildlife Service

The U.S. Fish and Wildlife Service's mission is to work with others, to conserve, protect, and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people. Major responsibilities include migratory birds, endangered species, certain marine mammals, and freshwater anadromous fish.

Organization

- Steve P. Thompson, Manager California-Nevada Operations Office
- Gary Frazer, Assistant Director for Endangered Species
- Steven A. Williams, Director of the U.S. Fish and Wildlife Service
- Dave Allen, Regional Director: Region 1 (Washington, Oregon, California, Nevada, Idaho, Hawaii)
- Mike Hoover, Sacramento Chief Div. of Habitat Conservation (HC), oversees the energy group.
- Kerry O'Hara, Sacramento Office of General Counsel. Used to be in DC on hydro, is now primarily on ESA issues, but covers hydro as well.

Regulatory Authority

- **FPA Section 18** – Provides that the Secretary of Commerce (NMFS) or the secretary of Interior (FWS) may prescribe fishways at FERC licensed projects.
- **Endangered Species Act Section 7(a)(2)** – Requires a license applicant to obtain a permit from the USFWS if a project may affect threatened or endangered species.
- **FPA Section 10(j)** – Requires FERC to consider license recommendations pursuant to the Fish and Wildlife Coordination Act from the NMFS, FWS, and state fish and wildlife agencies.

Key Issues

Aquatic resource issues are expected to be the primary issues addressed by the FWS during the relicensing. They are concerned with adequate protection of ESA listed species as well as maintaining and enhancing fisheries. Habitat of anadromous salmonids plays a significant role as does potential entrainment impacts on sub-adult fish in diversions and intakes. The potential effects of the project facilities and operation on water quality, resulting from impacts to riparian areas, wetlands and riffles, are likely to be key issues. The FWS could make suggest evaluating the potential effects of project facilities, operations, and maintenance on wildlife, particularly those retaining special status, and wildlife habitat within the affected environment.

Strategy

Like other resource agenciues, the FWS is experiencing a staffing shortage and it is therefore important to work with Mike Hoover to address his staffing plans. It is crucial to develop an early working relationship with Mike in order to help keep him informed about key milestones and important meetings. This will enable him to conserve staff while keeping them engaged at the appropriate times.

It is also important to develop a strong working relationship with Kerry O'Hara, as she is the lead authority on ESA issues and has experience in hydro relicensing.

6.2.12 USDA Forest Service

The U.S. Department of Agriculture, Forest Service is a federal agency that manages public lands in national forests and grasslands. The Forest Service's mission is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. Forest Service management mandates are aimed toward the maintenance of healthy forest ecosystems and watershed management practices.

Organization

USFS/Region 5 Contacts

- Pacific Southwest Region
  - Bob Hawkins, Regional Hydro Assistance Team Leader
  - Jack Blackwell, Regional Forester

- El Dorado National Forest Contacts
  - John Berry, Forest Supervisor
  - Kristi Schroeder, Director
  - Kathy Hardy, District Ranger

- Tahoe National Forest Contacts
  - Steve Eubanks, Forest Supervisor
  - Richard Johnson, District Ranger, Foresthill District

- Washington Office
  - Jack Craven, Director of Lands
  - Mona Janopaul, Native Hydro Assistance Team

The Forest Service gives the lead relicensing role to the line officer. In the case of Placer County, John Berry, El Dorado National Forest Supervisor and Steve Eubanks, Tahoe National Forest Supervisor are the line officers. The line officers are given tremendous flexibility interpreting between the Sierra Nevada Framework (SNF) and the individual forest management plans and the determination of appropriate PM&E measures for licensing. Both the framework and forest plans give latitude in interpreting 4(e) responsibilities and licensee responsibilities for new PM&Es.

El Dorado and Tahoe National Forests are part of the Sierra National Forest System. The Sierra National Framework is the Forest Service's management plan for that region. Amendments to the plan allowing additional logging and other measure in response to public comments may be forthcoming.

Regulatory Authority

- **NEPA** – FS is involved in the permitting of activities affecting the environment to evaluate environmental impacts and the significance of these impacts.
- **FPA Section 4(e)** – This section of the Federal Power Act provides that the federal land management agencies, such as the Forest Service, may prescribe mandatory licensing conditions for the adequate protection and utilization of their federal reservations (i.e. national forests).

Key Issues

The Forest Service is concerned with establishing minimum instream flows aimed at creating new and sustaining current recreational activities, supporting healthy fish populations, environmental and water quality, and abundant macroinvertebrate communities. They are also concerned with entrainment and terrestrial resource issues.

Fire management protection is an increasing concern to the Forest Service and could lead to a heightened level of responsibility on the licensee to help prevent fire danger. The Forest Service also takes measures to maintain or enhance aesthetics within the project boundary. Additionally, the Forest Service as a land management agency with tribal trust responsibilities aims to protect cultural resources and significant sites.

Strategy

Due to their tremendous latitude to interpret 4(e) responsibilities along with their wide range of key issues, the Forest Service is a high priority stakeholder. We recommend approaching them early for a special, coordinated effort across the two forests and with the region. Part of this early effort will include planning on study needs, assessment of the line officers interpretation of management and SNF plans and application to hydro licensing. Since leadership roles often shift within the Forest Service, we recommend thorough documentation of the process and decision-

making trail. Since the project boundary lies within both the El Dorado and Tahoe National Forests, it is important to work with the Forest Service to get them to speak with one voice.

It will be important to focus on adequately assessing project impacts to enable determination of appropriate PM&E measures to address the impacts. Since the Forest Service interpretation of 4(e) authorities can be broad, a close and positive relationship is central to helping the overall relicensing team (FS and the Agency, with other stakeholders) focus on low-cost, low-project impact/high resource gain actions.

Since Placer County communities are located both on and in close proximity to National Forests, there is a strong relationship between agency and County interests. As a land management agency with tribal trust responsibilities, the Forest Service works closely with tribal and other local organizations. Therefore, it is important to work directly with the Forest Service to develop a strategy to work with these tribes to address their concerns and develop management plans to help protect valuable cultural resources.

6.2.13 Local Economic Organizations

Organization/Contacts

- Placer County Builders Exchange (PCBE)
- Auburn Chamber of Commerce
- Colfax Chamber of Commerce
- Lincoln Chamber of Commerce
- Roseville Chamber of Commerce
- Rocklin Chamber of Commerce
- Foresthill Chamber of Commerce
- Loomis Chamber of Commerce
- North Lake Tahoe Chamber of Commerce
- El Dorado County Chamber of Commerce
- El Dorado County Economic Development

Regulatory Authority

- None; potential interveners in the proceedings

Key Issues

The local economic groups are concerned with economic, recreation and power costs to the local community.

Strategy

We suggest engaging local consumer groups early on in the process to be sure that their power and economic interests are considered in development of the PM&E options. Relationships should be developed to build local customer support.

6.2.14 Local Recreation Interests

Organizations/Contacts

- John Ramirez, Placer County Parks Administrator
- Local Rafters (Rafters) (ex: Mariah Wilderness Expeditions, American Whitewater Expeditions, Whitewater Voyages)
- Off-road Vehicles Group (ORV Grps) (ex: California Off-Road Vehicle Assoc.)
- Mammoth Bar - Off Highway Vehicle
- Whitewater Recreation Office
- Trail Advisory Group
- Mounted Assistance Trail Patrol - Horses
- American River Mountain Bike Assistants
- Auburn State Recreation Area – Canyon Keepers
- Sierra Nevada Alliance

Regulatory Authority

- None; potential interveners in the proceeding.

Key Issues

Interested in maintaining and improving recreational flow opportunities and will likely also want advanced notice of whitewater opportunities. Also, each group will have their own recreational interests – horse trails, OHVs, trails, etc.

Strategy

We will want to contact these groups to determine their resource interests and interest in participating in the licensing process. We may want to encourage active participation by some stakeholders in the collaborative process with active caucus management.

Near-term Communications

We suggest that as a near-term activity, the Agency, potentially together with consultants who have strong relationships with many of the key stakeholders, should meet one-on-one with each of these key organizations. The purpose of these meetings should be to begin building relationships and understanding of each others' interests in the relicensing, and to identify a mutually agreed upon negotiated process for the licensing. Preparation for these meetings will include a profile of the organizations and an initial assessment of their potential interests in the relicensing based on experience in other related processes. The interviews should address: 1) overview of the relicensing (timeframes, project, etc.); 2) likely issues in the process, and a discussion of specific stakeholder issues; 3) suggested process; and 4) stakeholders to include in the process. We also might want to address Agency anticipated technical work to be done in preparation for the licensing process (early studies).

7. STUDY PLAN DEVELOPMENT AND IMPLEMENTATION

7.1 STUDY PLAN CONSIDERATIONS

The Agency should develop study plans based on information needed to address issues raised by relicensing participants. The issues themselves should be tied to resource management goals and should be related to project impacts. That is, the relicensing participants should clearly articulate what their resource goals are and their hypothesis of how the project might affect those resource goals. This information provides the basis or rationale for clearly defined studies.

If the project may affect a resource and its management goal, the Agency should work with relicensing participants to agree on the necessary studies, the appropriate scope and protocols early in the licensing process. The study effort should be commensurate with the level of impact and the significance of the resource. The Agency should ensure that the burden of conducting the studies should not fall solely on the Agency when other factors may be affecting the resource. In such situations the participants should be required to work together to assess the specific aspects of the project's impacts or involve other entities that may be affecting the resource. Such larger efforts could cause an overall delay in the process and unnecessarily complicate the relicensing process, and therefore should be avoided if possible.

If the Agency does not agree with participants that the project affects the resource, the Agency should try to resolve this dispute as soon as possible. Moving forward without resolving the issue may cost the Agency more if the Agency is required to undertake a study later in the process or to redo a study that was deemed unacceptable by the participants. Additionally, if not handled properly, such disagreements can adversely affect working relationships on other relicensing issues.

As noted in Section 6, the Agency should continue to involve participants throughout the study not just in the study development phase and during the presentation of results. Continuous involvement facilitates amendment of study plans to deal with unanticipated events. The level of involvement should be agreed upon by the participants and should be related to the importance of the issue and the effect of the project on the resource.

The Agency should consider the cost of the study in the development of the study plan. Costs should be commensurate with the importance of the issue, the level of effect that the project might have on the resource, and the management decisions that can be made to address the issue.

The Agency should try to rely on existing literature where possible to address issues. Supplementing existing information with a focused study to obtain specific information needed for a management decision is usually more cost effective than going out and doing a study.

The studies should be used to analyze alternatives and to build an administrative record to support licensing decisions and NEPA requirements. There is no specific study that needs to be undertaken for each project. (For example, decommissioning studies may not be required at every project.) Therefore, studies should be developed on a case-by-case basis.

We recommend that the Agency try to complete all studies prior to submittal of the license application. Delayed or inconclusive studies run the risk that the FERC and resource agencies will err on the conservative side in prescribing or recommending mitigation and enhancements. Although many licenses being issued by the Commission include adaptive management, we believe that it is often preferable for an applicant to gather sufficient information to address relicensing issues so that adaptive management provisions are either not required or have narrowly defined limits.

When study delay causes delay in issuance of a new license and subsequently translates to annual licenses for the project, an applicant may defer the cost of capital improvements, but there are still significant risks in having greater environmental protection and mitigation when a new license is issued. Additionally more studies may be requested to improve the database upon which the decision is to be made.

Following a structured study planning and execution process should minimize the disputes over the data results. However, there is still a potential for disputes to arise over how the study results will be used to make project management decisions. The Agency should discuss with participants their value systems and potential trade-offs.

7.2 STUDY PLAN ELEMENTS

We recommend that the Agency develop study plans that have the following elements. If the study plans do not have sufficient detail, the Agency may find itself at odds with relicensing participants. There is likely to be disagreement over the interpretation of results, but disagreements over the methodology can and should be avoided.

- Objective – The study objective should be clearly and concisely defined. It should be tied to the resource management goals.

- Geographic and temporal scope – The study area should be delineated and should be the primary area of effect. The temporal scope should consider the period for which the new license will apply.

- Approach – The study plan should describe the approach in sufficient detail to enable the participants to understand the methodology, equipment to be used, sampling locations, sampling frequency, etc. Sampling protocols should be included as appropriate along with accuracy requirements. The study plan detail should be commensurate with the importance of the issue and level of impact. Qualitative or quantitative studies should be identified.

- Schedule – Schedules and environmental conditions for conducting the study should be identified. Time lines for field measurements, report preparations, and participant review should be developed.

- Results – It is important to identify how the results will be used to make management decisions regarding protection, mitigation and enhancement measures.

7.3 TIMING OF STUDIES

The Agency should consider conducting low cost baseline studies that provide data on the existing environment covering a variety of hydrological and meteorological conditions. However, we do not recommend conducting studies, the methodology for which will be controversial, without first consulting with the resource agencies. More complex studies should be pre-approved before commencing the studies. Otherwise the Agency runs the risk of having to redo portions or all of the study that is contested.

7.4 STUDY EXECUTION

The Agency should consider who should conduct studies and the level of involvement of resource agencies. The Agency should consider the local qualifications and credibility of those conducting studies. On other relicensing projects, this has been a significant issue. In some cases, participant buy-in may be easier to obtain if a resource agency or university conducts the study. While the Agency should make the final decision on who conducts a particular study, the Agency should take into account the perspectives of the participants. Study results must be viewed as credible if settlement is to be reached.

8. INFORMATION MANAGEMENT AND DOCUMENT CONTROL

Information management and document control are key elements of any relicensing program. A poorly designed information management system will result in significant additional expense to the applicant in non-productive undertakings such as in document retrieval. A proposed information management system is recommended in Appendix A. As part of the recommended information management system, a Geographic Information System can be used to conduct analysis and present data. The following write up summarizes how a GIS can fit into the relicensing process.

8.1 GEOGRAPHIC INFORMATION SYSTEM UTILIZATION

Before beginning any field data collection associated with the MFP relicensing, the Agency should consider whether a geographic information system (GIS) evaluation format should be used for the data analysis. The application of GIS during the MFP evaluations would consist of overlaying coverages (e.g., wildlife habitat zones, vegetative distribution zones, locations of study sites) upon a base map of the affected environments. The base map would likely be developed from aerial photography that has been ortho-rectified during collection, meaning that the photographs are associated with physical geographic coordinates. An ortho-rectified photograph set for the affected environment may be available from Placer and El Dorado counties. Additionally, overlays of roads, project facilities, and even wildlife habitat and vegetation information within the affected environment may be available from the California Spatial Information Library.

GIS can be an enormously useful and efficient tool in developing relationships between various biological, hydrological, and operational parameters. As an example, in developing the relationship between recreational use and its potential conflict with wildlife habitat, both recreational use location and wildlife habitat coverages can be placed into the GIS. The GIS can then be used to determine the amount of acreage where wildlife habitat and various levels of recreational use may overlap, the type of recreational use overlapping with certain types of habitat, the seasons in which these overlaps occur, and myriad other pertinent information. While evaluating the potential issues for consideration outlined in this document, it may be appropriate to consider the applicability and utility of a GIS in addressing the tasks.

8.2 QUALITY ASSURANCE AND QUALITY CONTROL

The Agency should develop and implement a quality assurance and quality control as part of the information management and document control system. Given the large amount of information that will be generated over the relicensing period, a quality program is essential to conduct an efficient relicensing process.

8.3 PROCEDURES MANUAL

We recommend that the Agency develop a Procedures Manual as part of the early relicensing activities. At a minimum, the manual should include an introduction, relevant parts of the relicensing plan including goals and objectives, project statistics, the project organization, communications protocols, information on how communications are handled, the project filing system, document handling, and the project schedule. The Manual should be updated as necessary and changes distributed to the Agency and consultant relicensing team.

9. OTHER RELICENSING CONSIDERATIONS

9.1 COMPLIANCE AUDIT

We recommend that the Agency conduct a compliance audit as part of the early relicensing activities. This will entail assembly of a license document that includes the license and all amendments. Since one of the factors in FERC's licensing decision is compliance with the existing license, it is important to know whether the Agency has been in compliance and to ensure the Agency stays in compliance for the balance of the relicensing period.

9.2 PREPARATION OF THE LICENSE APPLICATION, ENVIRONMENTAL IMPACT REPORT AND WATER QUALITY CERTIFICATION APPLICATION (401)

As a public agency, the Agency has the responsibility to prepare an Environmental Impact Report (EIR). To maximize process efficiency, we recommend that the EIR and License Application be prepared as a single document that serves both purposes. The document should also serve as the supporting document for the Water Quality Certification application. If the Commission revises the Environmental Report when it prepares its NEPA document, the Agency may need to revise the EIR to be consistent with the NEPA document. The elements for the EIR and Exhibit E of the License Application are presented as subtasks within Table 10-1 in Section 10.

9.3 SETTLEMENT

The Commission strongly encourages applicants to settle with licensing participants. We recommend that the Agency work with stakeholders to craft a settlement agreement that meets the Agency's relicensing objectives. In order to settle it may be necessary for the Agency to agree to terms and conditions that are outside the Commission's jurisdiction. However, in doing so the Agency should get concessions in return from other stakeholders so that the settlement is a win-win solution. The settlement process should not begin until study information is available to allow alternatives to be evaluated. The process should be completed prior to application filing.

A settlement would provide certainty for the Agency. Not settling would leave decisions up to FERC and the mandatory conditioning agencies. This could result in a higher risk of not meeting relicensing objectives. Although many licenses being issued by the Commission include adaptive management provisions, we believe that it is often preferable for an applicant to gather sufficient information to address relicensing issues. If information must be gathered during the term of the new license, an applicant normally faces operational changes and capital cost requirements that are potentially greater than what might be required if the information were known prior to the licensing decision.

In conducting the settlement, the Agency should consider hiring a neutral facilitator. Experience has shown that a good facilitator can help an applicant achieve settlement faster and with better results than if the applicant tried to work the deal out itself.

9.4 LEGISLATIVE AND POLICY CONSIDERATIONS

We highly recommend that the Agency remain actively involved in monitoring and influencing policy and legislative actions that might affect the outcome of the relicensing. Because the Agency has an important public responsibility, it will be important to keep legislators and regulators apprised of the relicensing progress. If some relicensing participants do not act in good faith, having established relationships with senior regulators and elected officials, may lead to quick resolution of the problem. We suggest that use of this vehicle as a mechanism for achieving the relicensing objectives be the tool of last resort.

10. RELICENSING TASKS, SCHEDULE, AND COSTS

We have identified eight key relicensing elements: (1) early licensing activities; (2) the preparation of a Pre-Application Document (PAD) and the development of study plans; (3) conducting two years of studies; (4) preparation of a draft and final license application; (5) a settlement process; (6) FERC processing of the license application; (7) public and stakeholder involvement; and (8) project and information management. The various tasks that comprise relicensing and a recommended schedule for the Integrated Licensing Process are presented in Table 10-1 and Exhibit 10-1, respectively. A Traditional Licensing Process schedule is provided as Exhibit 10-2. Early licensing activities are the same for both processes. A final decision on the licensing process can be made as late as 2007.

Table 10-1 MIDDLE FORK AMERICAN RIVER PROJECT - ESTIMATED RELICENSING COSTS

TASKS	SUB COST	TOTAL COST	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Administrative Activities													
Prepare Business Plan		12,000	12,000										
Monthly Project Management Team Meetings		306,000	12,000	36000	36000	36000	36000	36000	36000	36000	24000	12000	6000
Water and Energy Committee Meetings		32,000	2,000	2000	2000	4000	4000	4000	4000	4000	3000	2000	1000
Budget Management		30,000	1,000	1000	2000	4000	4000	4000	4000	4000	3000	2000	1000
Monitor Relicensing Rule Changes		5,000	5,000										
Track Neighboring Project Relicensings		30,000	10,000	10000	10000								
Track PG&E Drum/Spaulding Relicensing		30,000					3000	5000	5000	5000	5000	5000	2000
Select Relicensing Team - Hire Relicensing Staff for Early Activity Phase		10,000	5,000	5000									
Select Consulting Team		15,000		15000									
Hire Additional Relicensing Staff for Study Phase		10,000				5000	5000						
Early Licensing Activites													
Develop Strategic Plan		50,000	50,000										
Assemble Project Binder w/License Amendments		2,000	2,000										
Construct New Flow Data Collection Points & Add Temperature Data		130,000	30,000	50,000	50,000								
Prepare Written Description of All Project Facilities		14,000	10,000	4,000									
Prepare Introductory CD for Stakeholders		20,000		20,000									
Assemble Historic Project Water & Power Operation Data Base		30,000	15,000	15,000									
Assemble GIS Data Base		50,000	20,000	30,000									
Update Hydraulic Operations Model		100,000	50,000	50,000									
Conduct Resource Utilization Study		100,000		100,000									
Assemble Historic Records Database		60,000	20,000	40,000									
Conduct Internal Compliance Audit		10,000		10,000									
Develop Project Web Site For Internal Use		30,000		15,000	15,000								
Prepare Public Information Library		60,000			60,000								
Monitor Development of USFS Forest Plans		10,000	5,000	5,000									
Identify and Review Relevant Comprehensive Resource Agency Management Plans		10,000		5,000	5,000								
Contact Key Stakeholders & Begin Developing Interest Statements		190,000		40,000	150,000								
FERC Letter to PCWA Notifying PCWA of License Expiration													
Prepare Pre-Application Document (PAD)													
Compile Existing Project Facility and Operating Description		0				0							
Compile Existing Environmental Information		30,000				30,000							
Negotiate Draft Study Plan with Stakeholders		30,000				30,000							
Prepare First Draft of PAD		330,000				330,000							
Engineering and Project Operation Description	10,000												
Economic Information	10,000												
Geology and Solis	5,000												
Water Resources	20,000												
Fish and Aquatic Resources	20,000												
Wildlife and Botanical Resources	20,000												
Wetlands, Riparian Habitat and TES Species	15,000												
Cultural Resources	15,000												
Recreation	10,000												
Land Use	10,000												
Aestheics	5,000												
Socio-economic Resources	10,000												
Tribal Resources	10,000												
Issues,Information Needs, Study Plans	100,000												
Scoping Document	20,000												
Maps and Drawings	20,000												
Project Management	30,000												
Subtotal	330,000												
PCWA Review and Comment on PAD		40,000				40,000							
Revise PAD		40,000					40,000						
Continue Negotiations on Draft Study Plans with Stakeholders		30,000					30,000						
Finalize PAD		20,000					20,000						
Print and Distribute PAD		5,000					5,000						
File Project 2079 Notice of Intent with FERC													
Study Plan Approval Process and Scoping													
FERC Notice in Federal Register to Initiate Relicensing													
Comments on PAD													
Scoping Meeting and Site Visit		25,000					25,000						
Revise and Reissue PAD and Proposed Study Plan		30,000					20,000	10,000					
Study Plan Meeting		15,000						15,000					
FERC Issues Scoping Document 1													
Comments on Scoping Document 1													
Study Plan Meeting		15,000						15,000					
Revised Study Plan		10,000						10,000					
FERC Preliminary Determination on Study Plan													
Study Dispute Resolution Process if Applicable													

Table 10-1 MIDDLE FORK AMERICAN RIVER PROJECT - ESTIMATED RELICENSING COSTS

TASKS	SUB COST	TOTAL COST	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Conduct Studies													
Conduct First Year Studies		4,750,000											
Coldwater Pool Resource in Folsom Lake	100,000							100,000					
Species Composition and Abundance	200,000							200,000					
Physical Riverine Habitat	100,000							100,000					
Habitat-Flow Relationships	300,000							300,000					
Physical Reservoir Habitat	200,000							200,000					
Resident Fish Passage	100,000							100,000					
Anadromous Fish Passage	20,000							20,000					
Flow Fluctuation	200,000							200,000					
Macroinvertebrates and Microorganisms	100,000							100,000					
Predation	50,000							50,000					
Entrainment	300,000							300,000					
Fish Disease	50,000							50,000					
Recreational Goals	20,000							20,000					
Designated Beneficial Uses	100,000							100,000					
Contamination of Sediments	100,000							100,000					
Water Temperature	400,000							400,000					
Natural Restorative Processes	50,000							50,000					
Sediment Load, Recruitment, and Deposition	250,000							250,000					
Land Use Practices	40,000							40,000					
Riparian Areas, Wetlands, and Floodplains	200,000							200,000					
Upland Plant Community	200,000							200,000					
Noxious Weeds	50,000							50,000					
Biodiversity of Vegetative Species	80,000							80,000					
Fire Management	60,000							60,000					
Wildlife and Wildlife Habitat	200,000							200,000					
Undesirable Wildlife Species	50,000							50,000					
Recreation-Wildlife Conflicts	30,000							30,000					
Enhancement of Recreation Facilities	300,000							300,000					
Recreational Boating Flows	200,000							200,000					
Reservoir and River Angling Opportunities	100,000							100,000					
Land Management	100,000							100,000					
Cultural Resources	400,000							400,000					
Operations Modeling	100,000							100,000					
Subtotal	4,750,000												
Initial Status Report		100,000						50,000	50,000				
Study Results Meeting		40,000							40,000				
Meeting Summary and Amendment of Study Plan		40,000							40,000				
Disagreements on Meeting Summary		10,000							10,000				
FERC Order Resolving Disagreements													
Conduct Second Year Studies		2,000,000											
Coldwater Pool Resource in Folsom Lake	0								0				
Species Composition and Abundance	200,000								200,000				
Physical Riverine Habitat	0								0				
Habitat-Flow Relationships	100,000								100,000				
Physical Reservoir Habitat	100,000								100,000				
Resident Fish Passage	0								0				
Anadromous Fish Passage	0								0				
Flow Fluctuation	50,000								50,000				
Macroinvertebrates and Microorganisms	100,000								100,000				
Predation	0								0				
Entrainment	100,000								100,000				
Fish Disease	0								0				
Recreational Goals	0								0				
Designated Beneficial Uses	0								0				
Contamination of Sediments	0								0				
Water Temperature	200,000								200,000				
Natural Restorative Processes	0								0				
Sediment Load, Recruitment, and Deposition	200,000								200,000				
Land Use Practices	20,000								20,000				
Riparian Areas, Wetlands, and Floodplains	50,000								50,000				
Upland Plant Community	50,000								50,000				
Noxious Weeds	0								0				
Biodiversity of Vegetative Species	20,000								20,000				
Fire Management	20,000								20,000				
Wildlife and Wildlife Habitat	100,000								100,000				
Undesirable Wildlife Species	20,000								20,000				
Recreation-Wildlife Conflicts	20,000								20,000				

Table 10-1 MIDDLE FORK AMERICAN RIVER PROJECT - ESTIMATED RELICENSING COSTS

TASKS		SUB COST	TOTAL COST	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Enhancement of Recreation Facilities		100,000								100,000				
Recreational Boating Flows		50,000								50,000				
Reservoir and River Angling Opportunities		50,000								50,000				
Land Management		50,000								50,000				
Cultural Resources		300,000								300,000				
Operations Modeling		100,000								100,000				
Subtotal		2,000,000												
Updated Status Report			100,000							50,000	50,000			
Study Results Meeting			40,000								40,000			
Meeting Summary and Amendment of Study Plan			20,000								20,000			
Disagreements on Meeting Summary			10,000								10,000			
FERC Order Resolving Disagreements														
Prepare and File License Application and 401 Water Quality Certificate														
Prepare Draft License Application, BA, EFHA, Historic PMP			958,000											
Initial Statement		5,000								5,000				
Exhibit A - Project Description		10,000								10,000				
Exhibit B - Project Operation		15,000								15,000				
Exhibit C - Construction History		4,000								4,000				
Exhibit D - Costs and Financing		10,000								10,000				
Exhibit E - Environmental Report/Environmental Impact Report														
General Description of the River Basin		4,000								4,000				
Cumulative Effects		20,000								15,000	5,000			
Applicable Laws (401, ESA, EFH, CZMA, NHPA, Wild&Scenic)		10,000								10,000				
Proposed Action and Alternatives														
Affected Environment		155,000								124000	31000			
Geology & Soils	10,000													
Water Use & Quality	20,000													
Aquatic Resources	25,000													
Terrestrial Resources	25,000													
Cultural Resources	25,000													
Recreational Resources	25,000													
Land Management & Aesthetics	15,000													
Socioeconomic Resources	10,000													
Environmental Analysis		150,000								120000	30000			
Proposed Environmental Measures		50,000								25000	25000			
Unavoidable Advers Impacts		30,000								15000	15000			
Developmental Analysis		20,000								10000	10000			
Consistency with Comprehensive Plans		20,000								10000	10000			
Consultation Documentation		20,000								10000	10000			
Literature Cited		5,000									5,000			
Exhibit F - Design Drawings & Supportin Design Report		50,000								50,000				
Exhibit G - Project Maps		50,000								50,000				
Exhibit H - Information Provided for a New License		60,000								48000	12000			
Biological Assessment		50,000								35000	15000			
Historic Properties Management Plan		50,000								35000	15000			
401 Application		50,000								35000	15000			
Project Management		100,000								75000	25000			
Printing and Distribution		20,000									20,000			
Subtotal		958,000												
90-day Review of Draft License Application			200,000								190,000	10,000		
Prepare Final License Application			2,000									2,000		
File 401 Water Quality Certification Application			4,000									4,000		
File Application with FERC, Distribute to Service List			2,000									2,000		
Newspaper Notice and Tendering Notice of Application Filing			500,000							200,000	300,000			
Settlement														

Table 10-1 MIDDLE FORK AMERICAN RIVER PROJECT - ESTIMATED RELICENSING COSTS

TASKS	SUB COST	TOTAL COST	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
FERC Processing of License Application													
FERC Decision on Additional Study Requests if Needed													
FERC Notice of Ready for Environmental Analysis													
Recommendations, Preliminary Terms and Conditions, Prescriptions													
PCWA Comments on Recommendations and Prescriptions		40,000									40,000		
FERC's Draft NEPA Document													
Comments on Draft NEPA Document		40,000										40,000	
Modified Mandatory Conditions and Terms and Conditions													
Final NEPA Document													
Decision on License Application													
Section 10(j) Process		40,000									20,000	20,000	
Expiration of FERC License and Issuance of New License													
Consultant Project Management/Strategy		850,000		40,000	70,000	100,000	100,000	150,000	150,000	100,000	60,000	50,000	30,000
Maintenance of Public Website & Information Management		360,000			60,000	50,000	50,000	50,000	50,000	50,000	25,000	20,000	5,000
High Intensity Stakeholder Relationships		780,000				110,000	150,000	150,000	150,000	150,000	50,000	20,000	
Public Involvement Program		1,000,000			50,000	175,000	175,000	160,000	160,000	160,000	60,000	50,000	10,000
PCWA Staffing Costs		3,280,000		185,000	185,000	285,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000
PCWA Overhead Costs (50%sal)		1,640,000		92,500	92,500	142,500	187,500	187,500	187,500	187,500	187,500	187,500	187,500
Subtotal Relicensing Costs		18772000	237,000	770,500	787,500	1,341,500	1,229,500	5,971,500	4,226,500	1,924,500	870,500	783,500	617,500
Escalation Factor @ 3 Percent			1	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344
Relicensing Cost in Nominal Dollars		22,006,821	237,000	793,615	835,459	1,465,893	1,383,813	6,922,605	5,046,662	2,366,892	1,102,723	1,022,290	829,868

PCWA Staffing Costs											
Project Manager	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Environmental Coordinator			70,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000
Information Coordinator	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Technician			30,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Secretary	35000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000
Subtotal Staffing	185,000	185,000	285,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000

Exhibit 10-1. MIDDLE FORK PROJECT RELICENSING
INTEGRATED LICENSING PROCESS
PRELIMINARY DRAFT SCHEDULE

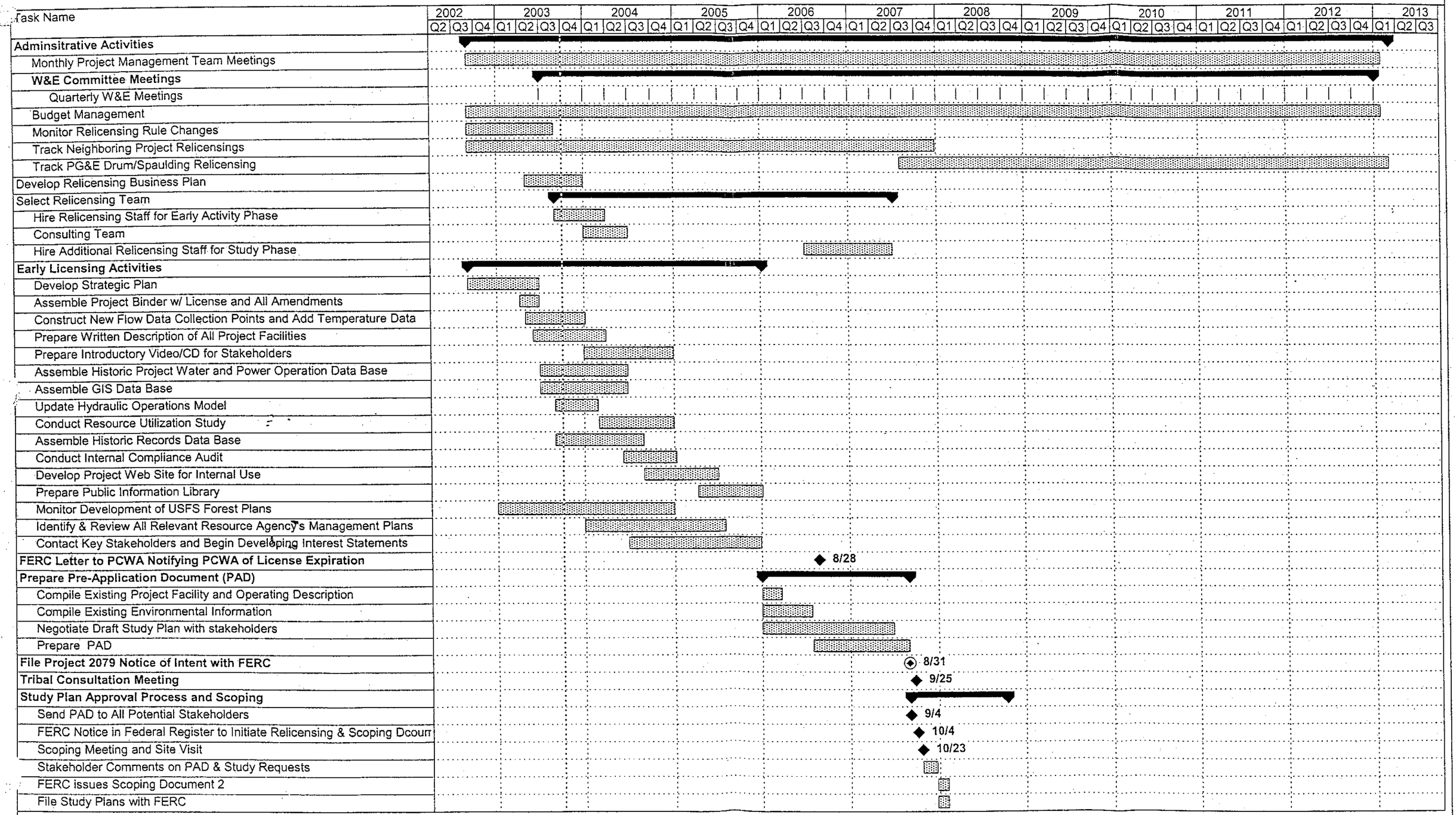


Exhibit 10-1. MIDDLE FORK PROJECT RELICENSING
INTEGRATED LICENSING PROCESS
PRELIMINARY DRAFT SCHEDULE

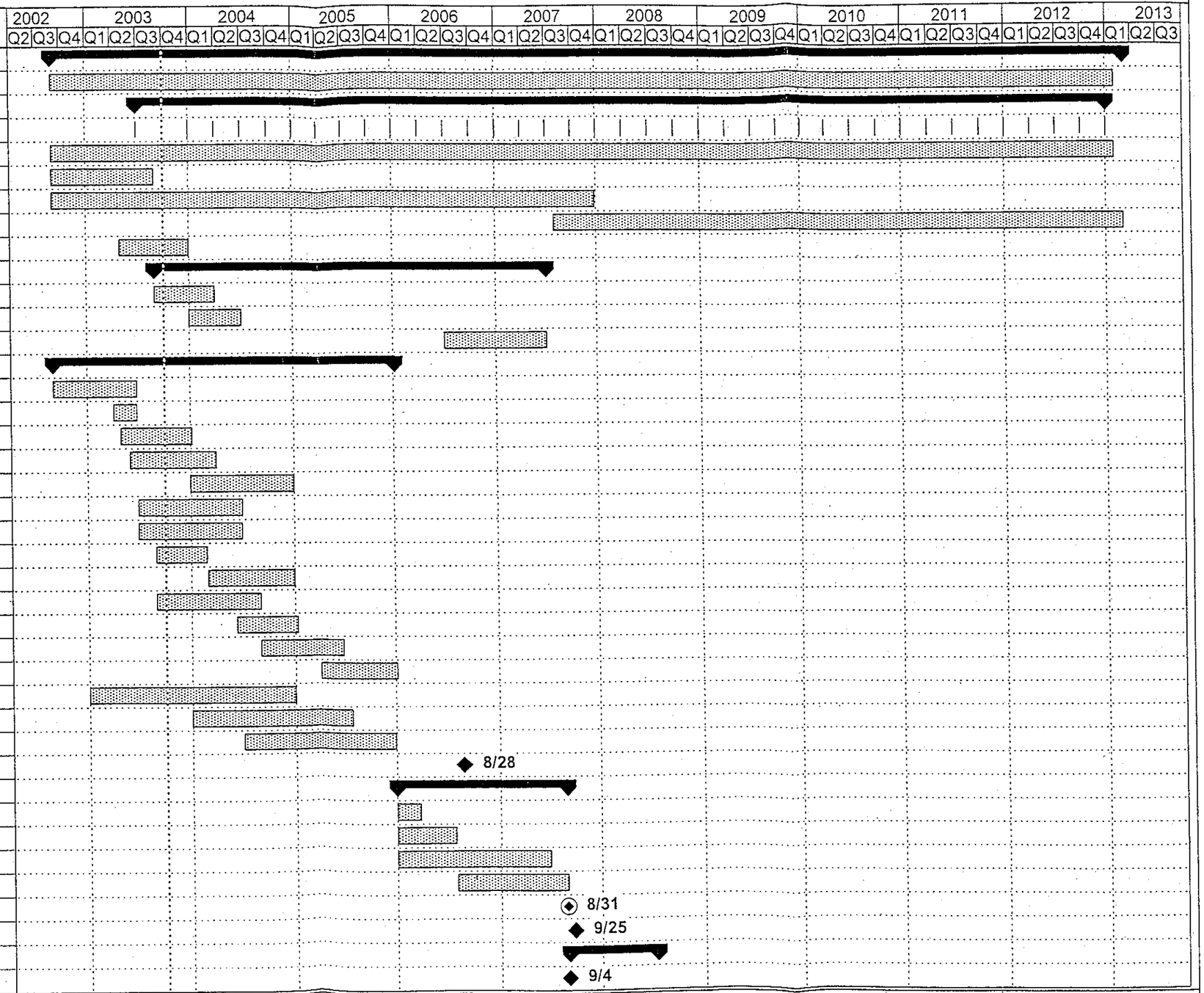
Task Name	2002			2003				2004				2005				2006				2007				2008				2009				2010				2011				2012				2013		
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Comments on Proposed Study Plan																																												
Study Plan Meeting																								3/3																					
Revised Study Plan																																												
Participant Comments on Study Plan																																												
FERC Preliminary Determination on Study Plan																																												
Study Dispute Resolution Process if Applicable																																												
Notice of Study Dispute																																												
Director's Decision on Study Plan																																												
Conduct Studies																																												
Conduct First Year Studies																																												
Initial Study Report																														1/30															
Study Results Meeting																														2/17															
Meeting Summary and Amendment of Study Plan																																												
Disagreements on Meeting Summary																																												
Responses to Study Disagreements																																												
FERC Order Resolving Disagreements																																												
Conduct Second Year Studies																																												
Updated Study Report																																1/29													
Study Results Meeting																																2/17													
Meeting Summary and Amendment of Study Plan																																												
Disagreements on Meeting Summary																																												
Responses to Study Requests																																												
FERC Order Resolving Disagreements																																												
Prepare and File License Application																																												
Prepare Draft Lic. Appl. or Prel. Lic. Proposal, BA, EFHA, Historic PMP																																												
90-day Review of Draft License Application																																												
Prepare Final License Application																																												
File Application with FERC, Distribute to Service List																																												
Newspaper Notice and Tendering Notice of Application Filing																																												
Settlement																																												
FERC Processing of License Application																																												
FERC Decision on Additional Study Requests if Needed																																												
FERC Notice of Ready for Environmental Analysis																																												
401 Water Quality Certification Application																																												
Recommendations, Preliminary Terms and Conditions, Prescriptions																																												
PCWA Comments on Recommendations and Prescriptions																																												
FERC's Draft NEPA Document																																												
Comments on Draft NEPA Document																																												
Modified Mandatory Conditions and Terms and Conditions																																												
Final NEPA Document																																												
Decision on License Application																																												
Section 10(j) Process																																												
Expiration of FERC License and Issuance of New License																																											2/28	
Maintenance of Public Website & Information Management																																												
Meeting Management & Facilitation																																												

Project: PCWA Background Report Ex
Date: Wed 10/1/03

Task | Milestone | Summary | FERC Filing | External Milestone | Deadline

Exhibit 10-2. MIDDLE FORK PROJECT RELICENSING
TRADITIONAL LICENSING PROCESS
PRELIMINARY DRAFT SCHEDULE

Task Name
Adminsitrative Activities
Monthly Project Management Team Meetings
W&E Committee Meetings
Quarterly W&E Meetings
Budget Management
Monitor Relicensing Rule Changes
Track Neighboring Project Relicensings
Track PG&E Drum/Spaulding Relicensing
Develop Relicensing Business Plan
Select Relicensing Team
Hire Relicensing Staff for Early Activity Phase
Consulting Team
Hire Additional Relicensing Staff for Study Phase
Early Licensing Activities
Develop Strategic Plan
Assemble Project Binder w/ License and All Amendments
Construct New Flow Data Collection Points and Add Temperature Data
Prepare Written Description of All Project Facilities
Prepare Introductory Video/CD for Stakeholders
Assemble Historic Project Water and Power Operation Data Base
Assemble GIS Data Base
Update Hydraulic Operations Model
Conduct Resource Utilization Study
Assemble Historic Records Data Base
Conduct Internal Compliance Audit
Develop Project Web Site for Internal Use
Prepare Public Information Library
Monitor Development of USFS Forest Plans
Identify & Review All Relevant Resource Agency's Management Plans
Contact Key Stakeholders and Begin Developing Interest Statements
FERC Letter to PCWA Notifying PCWA of License Expiration
Prepare Pre-Application Document (PAD)
Compile Existing Project Facility and Operating Description
Compile Existing Environmental Information
Negotiate Draft Study Plan with stakeholders
Prepare PAD
File Project 2079 Notice of Intent with FERC
Tribal Consultation Meeting
Study Plan Approval Process
Send PAD to All Potential Stakeholders



Project: PCWA Background Report Ex
Date: Wed 10/1/03

Task | Milestone | Summary | FERC Filing | External Milestone | Deadline

Exhibit 10-2. MIDDLE FORK PROJECT RELICENSING
TRADITIONAL LICENSING PROCESS
PRELIMINARY DRAFT SCHEDULE

Task Name	2002				2003				2004				2005				2006				2007				2008				2009				2010				2011				2012				2013
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
FERC Notice in Federal Register																							10/4																						
Site Visit																							10/23																						
Stakeholder Comments on PAD																																												
Revise & Re-issue PAD and Proposed Study Plan																																												
Study Plan Meetings																																												
Revised Study Plan																																												
Study Dispute Resolution Process if Applicable																																												
Notice of Study Dispute																																												
Director's Decision on Study Plan																																												
Conduct Studies																																												
Conduct First Year Studies																																												
Year End Reports																															1/30													
Study Results Meeting																															2/17													
Amendment of Study Plan																																												
Disagreements on Meeting Summary																																												
Conduct Second Year Studies																																												
Prepare and File License Application and 401 Water Quality Certificate																																												
Prepare Draft License Application, BA, EFHA, Historic PMP																																												
90-day Review of Draft License Application																																												
Prepare Final License Application																																												
File 401 Water Quality Certification Application																																			2/1									
File Application with FERC, Distribute to Service List																																			2/28									
Newspaper Notice and Tendering Notice of Application Filing																																			3/11									
Settlement																																												
FERC Processing of License Application																																												
Stakeholder Requests for Additional Studies																																												
FERC Decision on Additional Study Requests																																			5/31									
FERC Notice of Ready for Environmental Analysis																																			10/3									
FERC Scoping																																												
FERC Draft NEPA Document																																												
Comments on NEPA Document																																												
Recommendations, Preliminary Terms and Conditions, Prescriptions																																			6/11									
Final NEPA Document																																												
Modified Mandatory Conditions and Terms and Conditions																																												
Section 10(j) Process																																												
Decision on License Application																																										12/3		
Expiration of FERC License and Issuance of New License																																										2/28		
Maintenance of Public Website & Information Management																																												
Meeting Management & Facilitation																																												

Project: PCWA Background Report Ex
Date: Wed 10/1/03

Task | Milestone | Summary | FERC Filing | External Milestone | Deadline

10.1 EARLY LICENSING ACTIVITIES

Early Licensing Activities consist of those activities that will position the Agency to enable it to meet its relicensing goals and efficiently conduct the relicensing process. These activities will take place from the present through 2005. Key activities are the relicensing plan, developing a business plan, tracking the SMUD and El Dorado Irrigation relicensings to protect Agency interests and to identify ways of improving the relicensing process, tracking and influencing regulatory and legislative efforts to further the Agency's relicensing objectives, establishing stakeholder relationships that will be important throughout the relicensing process, collecting baseline data to develop a database that includes different hydrological conditions, establishing the infrastructure that will be needed for the relicensing, conducting preliminary studies to identify the potential increasing project MW capacity, hiring agency staff that will become permanent staff for the relicensing process and to implement the conditions of the new license, and selection of a consultant team.

10.2 PRE-APPLICATION DOCUMENT AND STUDY PLANS

The period 2006 through the early part of 2008 will require the development of the Pre-Application Document and study plans. The PAD should be a comprehensive document prepared in consultation with key stakeholders. Because the study plans will commit the agency to potentially significant study costs and may lead to protection, mitigation and enhancements, Agency involvement in the development of the PAD will be critical during this stage. This phase of the process also includes the FERC scoping process and FERC approval of the study plans. Because of the requirement to commence the formal consultation process no earlier than five and one-half years before the license expires, it is possible that study disputes may not be resolved until the summer of 2008. However, studies will need to be initiated in the spring of 2008. Thus it will be important for the Agency to work closely with the mandatory conditioning agencies to resolve study issues as part of the PAD development process.

10.3 STUDY EXECUTION

Two years are allocated for conducting studies: 2008 and 2009. This will allow time to prepare the license application and conduct the settlement process. The schedule allows for adjustments to the study plans after the first year of study. Some limited studies could be conducted in 2010, but with early baseline data collection and focused studies, the need for follow on studies will be greatly diminished.

10.4 PREPARATION OF LICENSE APPLICATION

Preparation of the license application entails not only the application itself, but other documents that will support the license application and the decision making process. The Agency will need to prepare the License Application, a Biological Assessment, an Essential Fish Habitat Assessment, an Historic Properties Management Plan, and the 401 Water Quality Certification Application. A draft application will be prepared in 2009, concurrent with the second year of studies, and will be completed early in the second quarter 2010. After a mandatory 90-day review, the application will be finalized for transmittal to FERC prior to February 28, 2011. The License Application will also be prepared to meet the State Environmental Quality Act requirements. The Environmental Impact Report will be finalized at the same time as the

License Application, but may need to be supplemented if the FERC license differs from what is proposed in the application.

10.5 SETTLEMENT PROCESS

We envision that the Agency will engage in a settlement process to resolve issues prior to the filing of the application. This process is scheduled to take place during 2009 and 2010. The first year of studies will have been completed prior to initiation of the settlement process. This will permit meaningful negotiations to take place early in 2009. The first part of the settlement process will be to establish settlement protocols. A conceptual settlement agreement must be completed late in 2010 to enable the settlement to be included in the License Application. Provision should be made to continue settlement discussions after 2010, if settlement is not accomplished prior to application filing.

10.6 FERC APPLICATION PROCESSING

After the License Application is filed with FERC in February 2011, the FERC will have two years to process it and issue a licensing decision. For the Integrated Licensing Process, FERC expects to have its processing completed within 18 months. A limited effort will be required by the Agency during the processing period, particularly if settlement has been reached.

10.7 PUBLIC AND STAKEHOLDER INVOLVEMENT

An important component of the relicensing process will be the involvement of the public and key stakeholders. This program will be ongoing throughout the entire relicensing period and will continue during the new license period. Through 2005, relationships should be developed with the key stakeholders identified in Section 6. As the PAD is developed the effort should be intensified for the key stakeholders. The Public Involvement Plan is scheduled to commence in 2006, although some effort will be needed in 2005 to develop the program. The Public Involvement Plan will continue until the license is issued in 2013.

10.8 PROJECT AND INFORMATION MANAGEMENT

As with the stakeholder involvement, project management and information management will continue for the duration of the licensing process. Project management includes both Agency and consultant team management. As needed, the relicensing plan should be amended to reflect regulatory and legislative changes, policy shifts, and information obtained through the licensing process. Information management reflects the implementation of the Information Management and Document Control System established in 2004.

10.9 RELICENSING COSTS

There are two cost components to relicensing the Middle Fork Project: (1) relicensing process costs; and (2) Protection, Mitigation, and Enhancement Costs. As depicted in Table 10-1, relicensing process costs would cost about $19,000,000 (2003 dollars), or about 90 per kW if the studies identified in Section 5 of the plan require the described level of effort, if the high intensity stakeholder plan is implemented and if the Agency expands its staff as recommended in

Section 11. Section 12 of the plan describes the risk of not undertaking select activities presented in the plan.

Table 10-1 also presents costs on a year-by-year basis from 2003 through license issuance in 2013. Table 10-2 summarizes the process costs by major effort.

Table 10-2. Relicensing Process Costs

Activity	Estimated Cost (thousands)
Early Licensing Activities	$866
PAD and Study Plans	620
First Year Studies	4,940
Second Year Studies	2,170
Draft Application	958
Final Application	208
Settlement Process	500
FERC Processing of Application	120
Project Management/Strategy	850
Website and Information Management	360
High Intensity Stakeholder Involvement	780
Public Involvement	1,000
Agency Staffing/Overhead/Administration	5,400
Total Process Costs	$18,772

If the Agency (1) is successful in developing study plans that either limit the anticipated scope of some of the studies identified in Section 5 or in rendering some studies unnecessary; (2) does not fill the recommended staff positions; (3) eliminates the high intensity stakeholder and public involvement; and (4) experiences a smoother and cost effective settlement process, process costs could be as low as $10 million. To achieve the lower process costs, the Agency also would need to curtail early licensing activities, and rely extensively on the consultant team. If the Agency were to adopt a plan to minimize process costs, the Agency would risk higher protection, mitigation and enhancement costs because of more conservative negotiation positions taken by key stakeholders due to a lack of trust of the Agency or due to insufficient information to adequately address resource issues; the Agency would not develop an institutional memory to comply with terms of the new license; and, the Agency's relationships with stakeholders including the Agency's customers could be adversely affected because these stakeholders would not be as well informed.

We do not anticipate that costs would be significantly greater than $19 million if the Agency implements the program as recommended. However, the Agency should have a contingency plan for process costs that could be as high as $25 million, if additional issues are identified or if the process becomes contentious. As the Agency begins to implement the relicensing plan, the Agency should reassess and modify the process costs, as appropriate, to reflect a better understanding of the issues, and anticipated level of effort. Costs for the 2003 through 2005 period, are planned to be less than $2,000,000, or about 10 percent of the expected process costs.

Protection, mitigation, and enhancement costs are difficult to estimate. Based upon our experience with other similar sized projects with complex issues, these costs could vary from $70 million to $200 million (2003 dollars) over the life of the new license. (With a present value factor of 14.1, annual PM&E costs would equate to $5 to 10 million.) These costs include both capital and operating and maintenance costs, such as reduced generation from higher instream flows. We recommend that an operations model be developed and operated to estimate potential losses in revenue from higher minimum flows that may be required through the relicensing process. After preliminary discussions with key stakeholders on issues of interest and desired outcomes, we recommend that the Agency revisit protection, mitigation, and enhancement costs.

Based on gross revenues of $30 to 40 million annually, annual O&M costs of $10 to 12 million over the next license period, a debt service reserve of $3 to 5 million annually, and the $5 to 10 million for PM&E measures, annual net revenues would be in the $3 to 22 million range. We believe that the net revenues would tend toward the higher value of $22 million and could be even higher if power rates increase relative to inflation.

11. PLACER COUNTY WATER AGENCY RELICENSING STAFFING STRUCTURE

To successfully relicense the MFP, the Agency will need to select a staffing structure to meet its needs. Licensees have used various models for other projects. On smaller projects that are typically not the mainstream business of the licensee; licensees tend to rely almost exclusively on consultants, usually designating the senior staff person in charge of hydropower operations. On the other extreme, licensees with several large projects (e.g., DWR's Oroville Facilities and PG&E's numerous hydropower projects) have more in-house staff to undertake the relicensing effort. However, they too rely on consultants to perform a variety of tasks. On projects the size of the MFP, and for which there is currently not a dedicated staff of professionals from which to draw upon, licensees have tended to staff up and also rely on consultants (e.g., Eugene Water and Electric Board for the Carmen-Smith relicensing). The primary reason for the staff increase is to develop institutional knowledge, bringing current operations knowledge into the licensing process and preparing internal staff for compliance with the new license. However, after licensing there is typically not the need for as many professionals as during the period prior to license issuance. Because of this, the requirement for numerous skills during relicensing, and the intermittent need for the various skills, and based upon our previous experience in successfully relicensing projects, we recommend that the Agency rely on consultants to complete many of the relicensing tasks. (See also our write up on study plan development in Section 8.)

Several staffing models were reviewed to develop a recommended approach for the Agency. These include SMUD's South Fork American River Project, Oroville-Wyandotte Irrigation District's Project, Dominion Generation's Roanoke Rapids and Gaston Project, Southern California Edison's Big Creek Project, PacifiCorp's Klamath Project, and Eugene Water and Electric Board's Carmen-Smith Project. SMUD's project staffing is described and variances from this staffing program identified for the other projects.

SMUD uses an in-house staff of seven employees to manage its relicensing effort, supplemented by a team of technical, legal and process consultants:

- Project Manager - The project manager is responsible for overall management of the program including strategy, project organization and administration, oversight of consultants, program implementation, participant involvement, and development of protection, mitigation and enhancement measures. The project manager reports to SMUD management who, in turn, report to the Board of Directors.
- Communications Coordinator – This position is responsible to manage the relationships with the stakeholders, organize meetings, ensure that critical stakeholders can and will attend, and fill in for missing stakeholders. This person must be respected to fairly understand and represent the interests of each of the stakeholders, if necessary. This person can be relied upon to make sure that issues important to a particular stakeholder get discussed.
- Environmental Coordinator – This position is responsible to manage the consultants and engage the stakeholders on the technical environmental issues of the relicensing. This is an advocacy position, challenging stakeholders to defend their requests for information/studies, developing the information through consultants necessary to resolve issues and reach agreements.
- Information Coordinator – This position is responsible for preparing, organizing and distributing all of the written information developed for the project. Duties include maintaining the project web site, keeping and providing records and notices to the public in accordance with FERC requirements.
- Engineering Technician – This position develops all needed technical information regarding the physical assets of the project, historical project information and operational capabilities of the project. Duties include conducting in house modeling scenario studies, directing the preparation of maps and exhibits and assisting the other team members as needed, writing up/editing the analysis and results from field studies and generally managing the work of consultants.
- 2 Secretarial – Records storage, phone, mail.

Dominion Generation successfully used a management team of four in-house staff and the consultant project manager in its relicensing of the 325 MW Roanoke Rapids and Gaston Project. These included the relicensing project manager, two environmental specialists from the company's environmental group including the Environmental Manager, and a civil engineer. The relicensing project manager and one of the environmental specialists were assigned full-time to the project. The Environmental Manager was assigned part time, as was the civil engineer. For purposes of the relicensing, the project reporting was very clear. Everyone on the team reported to the project manager. (In other relicensings, on which internal staff did not functionally report to the project manager, conflicts in priorities have occurred which have adversely affected the overall schedule and in some cases decisions may have been inconsistent with the relicensing goals.)

The project manager had full authority to direct the relicensing team and engage them for the percent of time deemed necessary. The project manager reported to the operations vice president. He was also responsible for coordinating with the hydropower plant operations manager and the reservoir supervisor. No specific staff were assigned for maintaining the website, but the company's Information Technology department was responsible for maintaining the project website. However, information put on the website was handled through the project manager. Because the company did not have a GIS department, all GIS files were developed and stored by the consultant. Technology was transferred to the company as appropriate, complete

with GIS protocols. Records and notices were jointly handled by the project manager and consultant team lead, working in close coordination as a team. Because the company has few secretaries and the corporate culture does not rely on secretaries, much of the administrative burden fell upon the consultant team. However, it is recommended that the Agency assign at least one secretary/filing clerk to the relicensing. Coordination with resource agencies was handled by the management team (project manager and consultant team lead).

Eugene Water and Electric Board is organized in a similar manner to SMUD and Dominion Generation. A small internal relicensing team is selected to lead the relicensing effort. It consists of the project manager, two environmental leads, and an engineering lead. Administrative support is provided by the project manager's group.

Southern California Edison's (SCE) Big Creek relicensing is handled in a similar manner to SMUD and Dominion with a small internal team and a closely linked consulting team. Internal staff include the operations manager of the project and the program manager, a licensing project manager, 2 additional full time environmental staff, 1 full time engineer, 1 full time secretary, part-time in-house legal counsel, and part-time IT support as needed. The consulting team includes an environmental consulting lead, and a process management consulting lead. The combined SCE internal management and staff and consulting leads comprise a "core team" which oversees, and manages implementation of the process. An annual operating plan based on a strategic plan established initially is used to guide the core team and track progress.

PacifiCorp has a very similar model. There is an overall program manager reporting to the vice president of hydro generation, a full-time licensing project manager, a full-time environmental manager directing cultural and recreation, a part-time water resource expert, a full-time secretary, a part-time engineer, and other staff support as needed. There is also an environmental consultant lead and a process management lead. Similar to Big Creek, the internal project leadership and environmental and process management leads are a core team directing the process.

In all cases there is a logical alignment of staff responsibilities with the resource areas addressed (e.g., recreation, cultural, aquatics, water quality, land management, socioeconomics). Staff and consultant leads are assigned to each of these areas and they hold the dual responsibilities of preparing the environmental content of the process (study plans, technical reports, draft PM&E measures) and managing the negotiation process in the work groups. The project manager serves as the lead negotiator and policy setter.

Oroville-Wyandotte Irrigation District is organized differently for it's relicensing. The plant engineering manager serves as the relicensing project manager and the General Manager provides project oversight. The Irrigation District relies more heavily on consultants.

In an effort to balance salary costs and develop in-house capability, we recommend the following staffing structure:

- Project Manager - The project manager is responsible for overall management of the program including strategy, project organization and administration, oversight of consultants, program implementation, participant involvement, and development of protection, mitigation and enhancement measures. The project manager reports to

Agency management who, in turn, report to the Board of Directors. Skills needed include project management, environmental resource management and stakeholder/negotiation management expertise.

- Environmental Coordinators (2) – This position is responsible to manage the consultants and engage the stakeholders on the technical environmental issues of the relicensing. Each of the two coordinators should be a specialist in a relevant resource area (e.g., one to address aquatics, fisheries, water quality, and the other to address recreation, cultural and land use). It may be appropriate to phase in the second position since they won't likely both be needed full time from the start. These staff need both technical skills and stakeholder management/negotiation skills.
- Information/Records Management Coordinator – This position is responsible for preparing, organizing and distributing all of the written information developed for the project. Duties include maintaining the project web site, keeping and providing records and notices to the public in accordance with FERC requirements. This is likely a part time position.
- Engineering Technician – This position develops all needed technical information regarding the physical assets of the project, historical project information and operational capabilities of the project. Duties include conducting in house modeling scenario studies, directing the preparation of maps and exhibits and assisting the other team members as needed, writing up/editing the analysis and results from field studies and generally managing the work of consultants. This is likely to also be a part-time position.
- Secretarial (1) – Records storage, phone, mail, database management, etc.

We do not see the need for a full time Communications Coordinator. This function is better handled directly by the project manager and environmental coordinators, as well as the existing Agency communications group and the project management team.

Recommended Consultant Team. Similar to SMUD, Dominion, SCE and PacifiCorp we suggest complementing the internal team with an environmental and process management consulting team. There should be an overall consulting team lead working closely with the internal project manager to guide and direct the overall process. As part of the "core team" with internal staff, we suggest also including a lead environmental resource manager and process manager. These consulting leads need to have extensive licensing expertise, resource expertise and process management expertise. Various subconsultants may also be added on an as-needed basis to support the process. For instance, cultural resource experts, economics experts, or other expertise may be added as appropriate.

12. RISK ASSESSMENT

As the Agency embarks on its relicensing process for the MFP, it will be faced with a number of risks. Each risk factor has a potential to impact the Agency. Table 12-1 presents each risk factor, its potential impact on the Agency, the likelihood of the risk factor occurring, suggested mitigation for each risk factor, and an action plan to reduce the risk.

Key risk areas include potential legislative changes, future regulatory changes, relicensing trends, study costs, enhancement costs, capacity and energy values, and competition.

Table 12-1. Relicensing Risks

Risk Factor	Potential Impact	Probability	Mitigation	Action Plan
Legislative changes	Could have significant positive impact	Moderate	None needed as legislative trend is positive for hydropower industry	Monitor and influence proposed energy bill to have agencies conduct balancing
Regulatory changes	Listing of additional species could have negative effects	Low to moderate	Look for win-win opportunities before regulations are adopted	Monitor potential regulatory changes and work with NHA to influence
Relicensing trends	Could be negative as agencies are requesting more enhancements with each new license	Moderate for additional changes to restore the environment	Look for low-cost enhancements	Work with NHA & others to reverse relicensing trends and value power benefits more
Higher study costs	Negative effects on project economics	Moderate	Prepare basis for study dispute and try to work out with agencies before approaching FERC	Offer reasonable studies to agencies to address issues
Increased enhancement costs	Could affect project viability, and would negatively affect project value	High – trend is to higher P,M, and E costs	Look for lower cost alternatives to accomplish resource objectives	Monitor other projects, establish working relationship with key agencies
Ramping rate restrictions	Would decrease operational flexibility	Medium to high	If ramping rate restrictions required, impose ramp down restrictions and not ramp up restrictions	Conduct study demonstrating effects of ramping on stranding
Higher instream flows	Would reduce generation with potentially significant revenue loss & could affect water supply	High probability of higher flows in tributary streams and MF American River	Propose non-instream flow alternatives to enhance habitat, propose higher flows on streams where water loss is not as important	Work with resource agencies to persuade them to accept alternatives
Effect of fuel prices on capacity and energy values	Higher fuel prices would enhance value of project; lower prices would adversely affect project value	High likelihood of variable prices, but current trend is for higher prices in future	Conduct sensitivity analysis with varying fuel prices to assess economic value of project and cost of enhancements	Influence policy in California to ensure hydro is considered a renewable and needs to remain part fot he energy mix
Competition.	Agency could lose project	Low	Remain in compliance with license, develop plan best adapted to public	Monitor competition on other projects, Develop positive stakeholder relationships to minimize desire of parties to compete
Loss of Water Supply	Potentially significant consequences to Agency if higher downstream flows required	Low	Propose alternatives that do not affect Agency water supply	Monitor water rights issues on other CA hydropower projects

13. RECOMMENDATIONS

In order to achieve the Agency's relicensing goals, we recommend that the Agency commit to the following actions:

13.1. ESTABLISH INFRASTRUCTURE

Specifically, prior to January 2006, the following actions should be taken to monitor, report, and document the progress of all relicensing activities:

- Establish a geographic information system (GIS) consistent with the USFS and Placer County GIS protocols.
- Develop a web site linked to the Agency and Placer County general web sites to service an array of informational needs.
- Develop in-house relicensing capability through the hiring or assignment of: (1) Project Manager; (2) two Environmental Coordinators; (3) Information/Records Management Coordinator; (4) Engineering Technician; and (5) Secretary.
- Hire an environmental and process management consulting team to complement the in-house team.
- Develop and implement an information management and document control system.
- Develop a quality assurance and quality control plan.
- Develop a Procedures Manual for use by project personnel.
- Develop a process protocol during the initial stages of the process.
- Develop a structured relicensing process supported by as many stakeholders as possible.
- Establish a structured collaborative process facilitated by a neutral facilitator.

13.2. DEVELOP AND IMPLEMENT STAKEHOLDER COMMUNICATION PLAN

Associated with the stakeholder involvement plan, in 2004 the Agency should identify and track relicensing issues, build relationships and inform the public. Specific activities should include:

- Provide information on the project, the affected environmental and social resources, and the relicensing process in a convenient manner, such as a video/CD.
- Develop fact sheets on the resource areas addressed in relicensing.
- Monitor resource agency activities in the region that could affect the MFP relicensing.
- Identify stakeholder issues as early as possible so that they may be addressed and resolved efficiently and in a timely manner.
- Informally consult with resource agencies, tribes and key stakeholders during the development of the PAD.
- Develop Agency interest statements regarding the Agency's potential responsibility on various issues, such as downstream water uses, and balancing the public interest needs.
- Plan outreach activities at key milestones in the relicensing process to provide for interactive exchange between the Agency and interested stakeholders.
- Publish a quarterly or semi-annual newsletter.

13.3. COMPLETE THE PRE-APPLICATION DOCUMENT

The Agency should complete the PAD by August 2007. To accomplish this, the Agency should utilize existing literature, and as appropriate, obtain the following information for development of the PAD:

- Collect water temperature and discharge data.
- Conduct appropriate baseline studies.
- Develop and run an operations model to evaluate alternative operations.
- Conduct a compliance audit.
- Assess the feasibility to improve and upgrade project facilities including capacity, energy, and water supply, based upon sound engineering, economic, and environmental principals.
- Develop specific study plans that have clearly defined objectives, scope, approach, and schedule.

13.4. PLAN FOR THE INTEGRATED LICENSING PROCESS

The Agency should plan for the ILP, but should maintain the flexibility to adopt other relicensing processes until August 2007. In connection with the process selection, the Agency should:

- Monitor and influence, as appropriate, policy and legislative actions that might affect the outcome of the relicensing and the electrical industry.
- Estimate potential protection, mitigation, and enhancement costs after preliminary discussions with key stakeholders on issues of interest and desired outcomes.
- Adopt a cooperative approach if the Agency elects to go with an Enhanced Traditional Process.
- File the Notice of Intent at the earliest allowable date, August 31, 2007.

LIST OF ACRONYMS

ACOE	Army Corps of Engineers
Agency	Placer County Water Agency
AIR	Additional Information Request
ALP	Alternative Licensing Procedure
AR Ops Grp	American River Operations Group
ARWG	American River Watershed Group
ASR	Additional Study Requests
BIA	Bureau of Indian Affairs
BVET	Basinwide Visual Estimation Technique
CA Outdoors	California Outdoors
Cal Trout	California Trout
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CFR	Code of Federal Regulations
CSPA	California Sportfishing Protection Alliance
CSPS	California State Park Service
CWA	Clean Water Act
DEA	Draft Environmental Assessment
DEIS	Draft Environmental Impact Statement
DWR	California Department of Water Resources
EID	El Dorado Irrigation District
EIR	Environmental Impact Report
ESA	Endangered Species Act
FERC	Federal Regulatory Energy Commission
FOR	Friends of the River
FPA	Federal Power Act and Amendments
FRI	Four Reservoir Index
GIS	Geographic Information System
HRMP	Historic Resources Management Plan
IFIM	Instream Flow Incremental Methodology
ILP	Integrated Licensing Process
IT	information technology
Maidu	Maidu Native Americans
MFP	Middle Fork American River Project
Middle Fork Project	Middle Fork American River Project
Miwok	Miwok Native Americans
MW	Megawatt
NEPA	National Environmental Policy Act
NGO	Non-governmental Organizations
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
NOPR	Notice of Proposed Rulemaking
NPS	National Park Service

NRCS	Natural Resource Conservation Service
NRDC	Natural Resources Defense Council
OHV	off-highway vehicle
ORV Grps	Off-road Vehicles Groups
PAD	Pre-Application Document
PARC	Protect American River Canyons
PCBE	Placer County Builders Exchange
PG&E	Pacific Gas and Electric Company
PM&E	protection, mitigation and enhancement
Rafters	Local Rafters
RBP	Rapid Bioassessment Protocols
RV	recreational vehicle
SARA	Save the American River Association
SCE	Southern California Edison Company
SHPO	State Historic Preservation Officer
SMUD	Sacramento Municipal Utility District
SNF	Sierra Nevada Framework
SWRCB	California State Water Resources Control Board
UARM	Upper American River Model
USBR	United States Bureau of Reclamation
USEPA	United Statement Environmental Protection Agency
USFS	United States Department of Agriculture Forest Service
USFWS	United States Fish and Wildlife Service
WUA	weighted usable area

GLOSSARY

anadromous	A species of fish that migrates to spawn in freshwater after spending most of its life in an estuary or ocean. Examples for the Roanoke River basin are the American Shad and the Striped Bass.
basin	The watershed of a major river system.
benthic macroinvertebrates	Aquatic organisms, visible to the naked eye (macro) and lacking backbone (invertebrate), that live in or on the bottom of rivers and streams (benthic). Examples include but are not limited to, aquatic insect larvae, mollusks and various types of worms. Some of these organisms, especially aquatic insect larvae, are used to assess water quality.
benthos	A term for bottom-dwelling aquatic organisms.
best management practices	Techniques that are determined to be currently effective, practical means of preventing or reducing pollutants from point and nonpoint sources, in order to protect water quality. BMPs include, but are not limited to: structural and nonstructural controls, operation and maintenance procedures, and other practices. Often, BMPs are applied as a system of practices and not just one at a time.
conductivity	A measure of the ability of water to conduct electrical current. It is dependent on the concentration of dissolved ions such as sodium, chloride, nitrates, phosphates and metals in solution.
degradation	The lowering of the physical, chemical or biological quality of a waterbody caused by pollution or other sources of stress.
GIS	Geographic Information System. An organized collection of computer hardware, software, geographic data and personnel designed to efficiently capture, store, update, manipulate, analyze and display all forms of geographically referenced information.
macroinvertebrates	Animals large enough to be seen by the naked eye.
MW	One million watts.
pH	A measure of the concentration of free hydrogen ions on a scale ranging from 0 to 14. Values below 7 and approaching 0 indicate increasing acidity, whereas values above 7 and approaching 14 indicate a more basic solution.
phytoplankton	Aquatic microscopic plant life, such as algae, that are common in ponds, lakes, rivers and estuaries.

riparian zone	Vegetated corridor immediately adjacent to a stream or river.
runoff	Rainfall that does not evaporate or infiltrate the ground, but instead flows across land and into waterbodies.
tributary	A stream that flows into a larger stream, river or other waterbody.
turbidity	An expression of the optical property that causes light to be scattered and absorbed rather than transmitted in straight lines through a sample. All particles in the water that may scatter or absorb light are measured during this procedure. Suspended sediment, aquatic organisms and organic particles such as pieces of leaves contribute to instream turbidity.
watershed	The region, or land are, draining into a body of water (such as a creek, stream, river, pond, lake, bay or sound). A watershed may vary in size from several acres for a small stream or pond to thousands of square miles for a major river system. The watershed of a major river system is referred to as a basin or river basin.

APPENDIX A

Web-Based Document Management System

Version 1.0 draft • February 17, 2003

Table of Contents

Table of Contents 1
Revision History 1
System Description 2
  Introduction 2
  Document Management System 2
  Project Collaboration Tools 2
  Project Management Reports 2
  Web-Based User Interface 3
Performance Requirements 3
Security Requirements 3
  Physical Security 3
  Network Security 3
  Operating System Security 3
  Application Security 4
User Roles 4
Use Cases 4
  Administrative Tools 4
    User Administration 4
    Web Site Administration 5
    User Access Logs 6
  Document Management System 6
  Project Collaboration Tools 7
    Groups 7
    Contacts 8
    Topical Discussions 8
    Calendar/Events 9
    Issues 10
    Tasks 10
    News & Announcements 11
Document Profiling Information 11
Report Definitions 12
Development Project Activities 12

Revision History

Ver. 1.0 2/17/03 David Prinzing
Original document creation – draft

System Description

INTRODUCTION

The relicensing process for the MFP will span a decade. During this time numerous reports and studies will be completed and staff changes are likely. Further, during the 30 to 50 year term of a new license, compliance with the license conditions will be important. In order to have a cost-effective relicensing process that allows project personnel to efficiently access documents and new staff to quickly get up to speed, a document management system is critical. We recommend the following document management system for the MFP relicensing. It is based upon our experiences on dozens of relicensing projects.

DOCUMENT MANAGEMENT SYSTEM

The following major features should be supported for the document management system:

- **Access Controls**: all access to information in the document management system should be controlled through a roles-based user authentication system.
- **Document Profiling**: information about the documents (meta-data) can be entered into the database. This information can be used for document management, organizing the library, searching for specific documents, etc.
- **Searching**: full-text searching tools should be provided to provide easy access to information.
- **Version Control**: facilities should be provided for change management (document check in/out, revision history, etc.).
- **Routing**: limited facilities should be provided to support document review and approval workflow. Specifically, a notification tool should be provided to allow users to have the server send an email message to specified users when a document is submitted or revised. These email messages will contain a web link that brings the user back to the appropriate document in the library.

PROJECT COLLABORATION TOOLS

In addition to the above document management features, the web site should also provide the following project team collaboration tools:

- **Contacts**: basic contact information for project participants
- **Documents**: the document management system (described above)
- **Discussions**: hierarchical, threaded discussions; much like email in a shared location
- **Calendar**: significant project events (e.g. team meetings, due dates, etc.) on a shared calendar
- **Issues**: issues are similar to discussion items, only they can be closed out and hidden if desired
- **Tasks**: simple task management tools for project participants (a project "to do" list)
- **Announcements**: a simple messaging system where news items have beginning and ending dates

PROJECT MANAGEMENT REPORTS

As an artifact of using the document management system, certain project status information will be generated that can be summarized and presented in various project management reports. The document profiling information will play a significant role in this effort.

<< These reports need to be defined in terms of (1) purpose, (2) an example report, (3) input fields used, and (4) any calculated fields, including the formula used. >>

WEB-BASED USER INTERFACE

There is a basic principle in web design that says that when a user comes to the web site, they have something in their mind that they want to know or do. The development team needs to figure out what that is, and put it right up front. This is key to making the site intuitive for its various users. For this web site, the way to do that effectively is to segment the users into groups based on the roles they fulfill on the project. When a user first comes to the web site, they're anonymous. Anonymous users (a user group) can see only what is appropriate for the general public. For this site, that may only be a logon screen. Once a user logs in, their identity and user group are known, and the web server can provide an appropriate menu selection and home page content for the kinds of things they do most often. Their home page would be something like a "dashboard" containing panels of information and links that they would be most interested in or that need their attention. A context-sensitive online help system would also facilitate learning to use the system and acquiring a sense of intuition about how the site works.

Performance Requirements

Performance requirements will vary depending on the size and nature of any given project. Initially, it is anticipated that the system can be accommodated on a single server; however, the system should be able to support being scaled up to multiple, load-balanced web servers and clustered database servers.

Security Requirements

Information security happens on multiple levels, and each of these levels needs to be considered in the deployment of the Document Management System. The following factors need to be considered:

1. Physical security (e.g. putting the servers behind a locked door)
2. Network security (firewalls, encryption, intrusion detection systems, etc.)
3. Operating system security (user names/passwords, access control groups, etc.)
4. Application security (user names/passwords, access control groups, etc.)
5. Human factors (often the largest security hole – giving out passwords over the phone, etc.)

PHYSICAL SECURITY

The document management system will usually be deployed on a local-area network at the project office. However, it may also be deployed from a centralized data center serving multiple projects. Regardless of physical location, the servers must be placed in a locked room, such as a server or telecom closet. Access to the servers will be limited to authorized system administrators only.

NETWORK SECURITY

Network security elements will include a both firewall and transport-layer encryption (SSL). The servers will be placed behind a firewall, configured such that only HTTP (normal web traffic on TCP port 80) and SSL (encrypted web traffic on TCP port 443) traffic will be allowed to enter through the firewall. Outgoing traffic from the servers will be allowed on any port. However, only HTTP, SSL, and some SMTP (server-generated email notifications on TCP port 25) traffic are expected to be going out through the firewall. Inside the firewall, multiple servers may "talk" to each other on any port.

OPERATING SYSTEM SECURITY

Operating system user IDs and passwords will not be used by the document management system. The system will maintain its own user database.

APPLICATION SECURITY

For application security within the integrated system, the web site will use a "locks and keys" metaphor for controlling access to information. The database will include a table of web pages (web pages have locks) and a table of users (users have keys). If a user has all the required keys on their virtual key ring for a given web page, then that page will be available to the user. This way, when a user comes to the web site and logs in, a custom menu can be generated dynamically for them based on who they are, what they need to do, and what they have access to.

User Roles

Segmenting users into groups that have common interests or objectives is very important. It's key to making the web site intuitive for its many diverse users. Once a user logs in, their identity and user group are known, and the web server can provide an appropriate menu selection and home page content for the kinds of things they do most often. Their home page can be something like a "dashboard" containing panels of information and links that they are most interested in or that need their attention.

User roles are also important because they define the "actors" (individuals or groups of individuals) that will interact with the system in the use case scenarios. All roles are expected to be familiar with Microsoft Windows, web browsers, and computers in general. The roles defined for this system are:

- **Agency Project Manager**
  << Do project managers have any special access relative to a regular team member? >>
- **Project Team Member**
  Team members will be able to use the collaboration tools and document management system to add, edit, view, and print documents.
- **Consultant – Project Team Member**
  << What limitations should be placed on a subcontractor? Are they a regular team member? >>
- **System Administrator**
  The system administrator will have complete access to all information on the system, including managing user accounts and setting access controls.

Use Cases

Use cases describe the detailed interaction between various user roles (actors) and the system. An *actor* is someone or something outside the system that interacts with the system. A *use case* is a sequence of actions that a system performs that yields an observable result of value to a particular actor. In other words, a use case fulfills a particular goal that an actor has, to be accomplished by the system. This section provides brief descriptions of the use cases.

ADMINISTRATIVE TOOLS

The key concept behind user access controls is a "locks and keys" metaphor. Web pages have locks, and users have keys. Developers provide the locks and other profile information about web pages. User administrators manage user accounts and their associated keys. The administrative tools are essentially web pages that enable users with administrator keys to manage such information in the database, and thereby control and monitor user access.

User Administration

These tools are used to manage information in the database about system users. A user account contains basic information about a user, such as a unique integer user ID, unique user name, password MD5 hash (actual passwords are not stored in the database), email address, first/last

name, user access keys, etc. With the exception of the "I forgot..." use case, only user administrators may use these tools.

UC-UA01 **Create a new user**
The user administrator fills in a form providing information about the user, including any contact information and group associations available. The system validates that the user name is unique. If not, the administrator is prompted to try again without needing to fill out the form all over again. If the user name is unique, then the system creates a new user record in the database and gives it a unique, serial, integer user ID. If an email address is provided, the new user is emailed a link that brings them back to the web site with a token that enables them to update their password. Once they update their password, they are prompted to update their contact information as well.

UC-UA02 **Edit an existing user**
The user administrator fills in a form providing information about the user, preloaded with existing information from the database.

UC-UA03 **Deactivate an existing user**
The user administrator "deactivates" a specified user account, which blocks their access to the system and hides them from display in normal user administration lists. The actual user account record is not deleted, because many other items in the database will be linked to it (discussion items, files, access logs, etc.). Information about the user remains available to lists of items linked to the user. Deactivated users may be reactivated.

UC-UA04 **Reactivate a user that has been deactivated**
The system displays a list of deactivated users. The user administrator can then "reactivate" a specified user account from the list.

UC-UA05 **Find a user (search)**
The user administrator can search for users by keyword(s). The system will return a list of users that match the criteria, along with links to view, edit, or deactivate those users.

UC-UA06 **Browse a list of users (filter by group)**
The system will display a list of users in a browse-able hierarchy for user administrators that contains links for add, edit, deactivate, and view functions.

UC-UA07 **View a user – full detail**
The system will display the requested user to a user administrator, along with summary information about items linked to that user.

UC-UA08 **Email a user their password ("I forgot...")**
A form will be supplied on a logon page for users that have forgotten their password. They enter their user name, click "send". If the user name is valid and an email address is on file for the user, the system will send them an email message containing a link that brings them back to the web site with a token that enables them to update their password. Once they update their password, they are prompted to update their contact information as well.

Web Site Administration

These tools are used to manage information in the database about actions (web pages or URLs), such as name, title, menu label, location in the menu hierarchy, locks, etc. Only a user with a "developer" key may access these tools.

UC-WS01 **Create a new action record**
A developer fills in a form providing information about a new action. The action name must be unique. The system creates a new record in the database.

UC-WS02 Edit an existing action record
A developer can edit information about a specified action by modifying information in a form that was preloaded with information from the database.

UC-WS03 Delete an existing action record
A developer can delete the information in the database about a specified action.

UC-WS04 Browse a list of actions
The system will display a list of actions in a browse-able hierarchy (matching the menu structure) that contains links to add, edit, and delete functions.

User Access Logs

The user access logs will contain information about every web page request, including user name (if logged on), file name, IP address, browser string, etc.

UC-AL01 Browse user access logs by user name
The system will display a list of user names, total hits, and most recent access timestamp. A paginated list will be sorted by timestamp in descending order. If the user clicks on a user name, the system returns a paginated list of web pages viewed by that user, showing the access information (timestamp, web page, IP address, browser string, etc.), sorted by timestamp in descending order (most recent first).

UC-AL02 Browse user access logs by file name
The system will display a list of file names, total hits, and most recent access timestamp. A paginated list will be sorted by timestamp in descending order. If the user clicks on a file name, the system returns a paginated list of hits, showing the access information (timestamp, user name, IP address, browser string, etc.), sorted by timestamp in descending order.

UC-AL03 Review user access logs by browser string
The system will display a complete list of unique browser strings in alphabetical order, along with the total number of hits. Totals and percentages will also be provided for major browser categories (Internet Explorer, Netscape/Mozilla, Opera, etc.) and operating system categories (Windows, Mac, Linux, Unix, etc.). This information will be useful for user interface design in future revisions.

DOCUMENT MANAGEMENT SYSTEM

The document management system is effectively a library of official files related to a project or task. A typical document management system provides tools for (1) describing documents (metadata), (2) finding documents (search), (3) checking documents in/out and managing document versions (version control), and (4) facilitating workflow for review and approval (routing). Initially, this document management system will provide all these functions, except for routing. Routing functions may be included in a future release.

UC-DM01 Enter a new file into the library
Using a web browser, fill in a form that describes the file you're about to upload. Find the file on your hard drive (browse button) and enter the name and path to the file in the form. Upload the file to the library using HTTP and update the database to include information about the file. Files will be stored outside the web directory tree to avoid direct access.

UC-DM02 Find a file in the library (quick search)
Enter keyword(s) and find matching documents. Search is performed both on document profile information (metadata) in the database and the full text of the documents in the library. User access controls are observed (part of the search criteria).

UC-DM03 **Find a file in the library (advanced search)**
Enter search criteria and find matching documents. Search criteria could include author, date range, keywords, project, program, etc. Search is performed on document profile information (metadata) in the database. Keyword search will also be taken from the full-text index.

UC-DM04 **Browse files in the library by program, project, task/activity, author, topic, etc.**
Present lists of files in a browse-able topical hierarchy. Include links to retrieve files, check out files, check in files, view full details (with revision history), etc. Include a "My Documents" list somewhere in a convenient location (home page?).

UC-DM05 **Retrieve a personal copy of a file in the library**
Click on a file from a list (search results, topical browse, etc.) and download it. The file is not checked out for revisions.

UC-DM06 **Update an existing file in the library**
A user has an updated version of an existing file in the library, but they didn't check it out for revisions. If the file has not been checked out by anyone else, they can upload a new version of the file and update the profile information. The revision history will be updated and maintained by the system. Old versions may optionally be retained in the library.

UC-DM07 **Check out a file in the library for revisions**
Retrieve a file from the library and mark it as reserved and under revision. Log the user and a timestamp. Display checked-out status in any listing of the file. Display a list of active, checked-out files on each user's home page, or other convenient location.

UC-DM08 **Check in a new version of a file in the library**
Barring an administrator override, documents may only be checked in by the user that checked it out. Upload a new version of the file, update the profile information, and update and maintain the revision history. Old versions may optionally be retained in the library.

UC-DM09 **Review the revision history of a file in the library**
Provide a full-details view of profile information about the specified document, including its revision history. If old versions are present in the library, include links to retrieve copies of those files for personal use. Only the most recent version of the document may be checked out for revision.

PROJECT COLLABORATION TOOLS

Groups

A "group" is a container of items in a list. A group might be a project, an activity, a subcontractor category, a company, an engineering discipline, an office location, or whatever. It could contain contacts, discussion items, files, issues, events, etc. A group may also contain other groups. As users are members of different groups, they will be able to see and work with items related to those groups. Also, groups have owners and administrators. Group membership is managed by the owner or a group administrator.

UC-GR01 **Create a new group**
The user fills in a form providing information about the group (title, description, owner, timestamp, etc.). Only group administrators can create a new group. Once a new group is created, other items may be associated with it.

UC-GR02 Edit an existing group
Edit simple information about the group (title, description, etc.) and manage group membership. Only a group owner or administrator may edit information about the group.

UC-GR03 Delete an existing group
Delete a group and its associated links (but not the linked items themselves [?]). Only a group owner or administrator may delete a group.

UC-GR04 Find a group (search)
Search for groups by keyword(s). The system will return a list of groups that match the criteria, along with links to view, edit, or delete those groups if access control requirements are met.

UC-GR05 Browse a list of groups
The system will display a list of groups in a browse-able hierarchy that contains links for add, edit, delete, and view functions if access control requirements are met.

UC-GR06 View a group – full detail
The system will display the requested group, along with summary information about items linked to that group.

Contacts

Contact records contain information about people associated with a given project or group. A contact is not the same as a user. A user profile is key to user access controls, and can only be managed by user administrators. Contact records can be associated with users, however. Contact records can be managed by any user.

UC-CR01 Create a new contact record
The user fills in a web-based form providing contact information about another person. The contact may be associated with multiple groups. Anyone can create a contact.

UC-CR02 Edit an existing contact record
The user fills out a form that is pre-loaded with existing information and submits the updates. One of the attributes of a contact record is the groups they are associated with. Any user can update any contact record, but modifications are tracked.

UC-CR03 Delete an existing contact record
Delete a contact record. Anyone may delete a contact record that is not associated with a system user profile. Only user administrators can delete contact records associated with a user.

UC-CR04 Find a contact (search)
Search for contacts by keyword(s). The system will return a list of contacts that match the criteria, along with links to view, edit, or delete those contacts if access control requirements are met.

UC-CR05 Browse a list of contact records (filter by group)
The system will display a list of contacts in a browse-able hierarchy that contains links to add, edit, delete, and view functions if access control requirements are met.

UC-CR06 View a contact record – full details
The system will display full information about the specified contact.

Topical Discussions

A topical discussion is like email in a shared place. Topics and messages are arranged in a browse-able hierarchy and associated with a specific "group", which may be a program, project, activity, engineering discipline, or whatever. Any user can create a new topic/message at any level in the hierarchy. Only users with a "moderator" key can edit or delete topics/messages.

Basic information captured in a discussion item includes: discussion ID, parent ID, group ID, user ID, topic/subject, message, timestamp.

UC-DS01 Browse the topical discussion board

The system will display a list of groups, topics, and messages in their content hierarchy, along with links to browse around the content hierarchy tree. By clicking on an item in the hierarchy, the user will request a display based on the specified discussion item. The system will return a list of topics/messages using that discussion item as the parent item, with the list containing child items in the content hierarchy. For each item in the list, the system will display the discussion item and an indication of any child items that may exist for that given item in the list. The system will also provide "breadcrumb" links showing the path back up the hierarchy tree to the root. Each group will have its own root in the message hierarchy. Each display will also provide a form for creating a new topic/message at that level in the hierarchy (use case UC-DS02 below). If the user is a moderator, they will also see links to edit or delete messages in the hierarchy (use cases UC-DS03 and UC-DS04 below).

UC-DS02 Create a new topic/message

The user will fill out a form (topic/subject, message) and submit the information. The system will create a new discussion item record in the database along with information that identifies the author, when they submitted the message, and where the message fits in the topical hierarchy. The system will return a web page showing the user's new message in the hierarchy.

UC-DS03 Edit a topic/message

Only a Moderator may edit an existing discussion message. They will fill out a form that is pre-loaded with existing information and then submit the updates. The system will return a web page showing the updated message in the hierarchy.

UC-DS04 Delete a topic/message

Only a Moderator may delete a message from the hierarchy. Once the request to delete has been confirmed, the system will delete the indicated message and any child messages associated with it (potentially an entire branch of the hierarchy tree).

UC-DS05 Find a message within a group (search)

If the user belongs to the group, they can enter keyword(s) into a search form and search the discussion hierarchy for that group to find messages that contain those keywords. The system will perform a full-text search and return a list of matching messages.

Calendar/Events

The event calendar on the program web site is not intended to replace a user's personal calendaring tool. Rather, it will show significant events of interest to an entire group (meetings, schedule milestones, deliverable due dates, etc). Events in the calendar will therefore be linked to a specific "group", as defined above. Optionally, people in the contact list (above) may be invited to an event (e.g. meeting). The system will send invitation messages and track accept/decline responses.

UC-CA01 Browse a calendar of events

Users will have a "primary" group, and its calendar will be shown by default. They may also choose to browse the calendars of other groups to which they belong. After selecting a group, the user may browse the calendar of events through multiple views: daily, weekly, monthly, and tabular list.

UC-CA02 View an event (full detail)

When the user selects an event (e.g. while browsing a calendar), the system will return a web page displaying all the details about the event. If people were invited to

the event, then their status (accepted/declined/awaiting response) and any optional comments would also be displayed.

UC-CA03 Find an event (search)
The user will submit keyword(s), and the system will return a list of events within the current group that match, checking event titles, descriptions, etc. Optionally, a date range may also be supplied. If the user clicks on one of the events in the list, the system will return a full detail view of the event (UC-CA02).

UC-CA04 Create a new event
The user will fill out a form and submit the information. The system will create a new event record in the database associated with the current group. The system will then return a web page displaying all the details about the event. If people were invited to the event, the system will send invitation messages to those people with links back to the web site to accept or decline the meeting, with optional comments. The system will receive and track invitation responses.

UC-CA05 Edit an existing event
In response to a user's edit selection, the system will present a form populated with existing data, allowing the user to make changes. The user will submit the information, and the system will make updates. Only the author of the event or an event administrator may edit an event in the calendar. If people were invited to the event, the system will send updated invitation messages to those people with links back to the web site to accept or decline the meeting, with optional comments. If they have already accepted/declined the invitation, this would be shown in the message, and they could change their status by clicking a link. The system will receive and track invitation responses.

UC-CA06 Delete an event
In response to a user's deletion request, the system will delete the selected event. The system will then return a calendar view showing the current calendar, with the event missing. Only the author of the event or an event administrator may delete an event. If people were invited to the event, the system will send them cancellation messages, along with an optional explanation provided by the person deleting the event.

Issues

"Issues" are much like a topical discussion, associated with an element in a project schedule. What's unique about an issue is that it can be closed out and hidden if desired.

<< these use cases still need to be defined >>

Tasks

This feature provides a mechanism for tracking work assignments and providing status updates. Tasks can be associated with a single "group" (as defined above). Users can use the system to keep track of their own to-do list if they like. Users can also create tasks and assign them to other users. Anyone can update the status of a task, but status updates are "signed" with the user's name and a timestamp. The system will keep a history of status updates. Completed tasks don't show in the active list, but they're retained in the historical database for optional viewing (designated as a "task history"). The system will send email messages to notify people of the following events if they have requested such notifications in their user profile: (1) if a task is assigned to me by someone else, I want to know; (2) if someone updates the status of a task for which I'm responsible, or which I created, I want to know; (3) if a task is overdue, then I want to know if I'm responsible or if I created it.

UC-TA01 Browse task list

UC-TA02 Create a new task

UC-TA03 Edit a task

UC-TA04 Delete a task

UC-TA05 Update status information

News & Announcements

News and announcements are simple messages, associated with a single "group" (as defined above). If you're a member of the group, you see the message. Anyone can post messages. Only the user who posted the message and a message administrator can edit or delete messages. Messages have a "visibility lifetime" – starting and ending dates.

UC-NA01 **Browse news and announcements**
When the user navigates to their "news" page, the system will provide a chronological list of messages, most recent first, organized by the user's groups. Only "visible" messages are displayed (i.e. the server's current date falls within the visibility date range). If the user authored the message, the system will also provide links to edit or delete the message. This page will also provide a link to enter a new message.

UC-NA02 **Enter a new message**
The user will fill out a form containing information such as headline, message, start date, end date, and group. When they submit the information, the system will update the database and record the author's identity and a timestamp when they created the message. Any user can post messages for groups they are members of.

UC-NA03 **Edit a message**
The system will provide the user with a form pre-filled with existing message information for the specified message. When the user submits the form, the system will update the message in the database and record the user's identity and a timestamp of when the message was modified. Only the most recent modification identity/timestamp will be maintained. Only the user who posted the message and a message administrator can edit a message.

UC-NA04 **Delete a message**
When the user clicks a deletion link, the system will delete the specified message from the database. Only the user who posted the message and a message administrator can delete a message.

Document Profiling Information

This section describes the information captured about each document in the library. For performance reasons, the system will store the documents as files in the server's file system rather than as binary large objects (BLOBs) in the SQL database. The system will use automatically-generated, unique file names in the file system rather than the file name submitted by the user. The original file name will be retained and will be used when the file is downloaded. The system file name will consist of the submitted file name (or a fixed length fragment of the submitted file name) with a date/timestamp appended to it. The files will be stored outside of the web server's normal access folders so that the only way to gain access to the files will be through the web application, which will enforce user access controls.

Field Name	Data Type	Description	Example
file_id	long integer	Unique file identifier, automatically generated by the system.	1
folder_id	long integer	Foreign key; identifier of the hierarchical folder that contains this document.	21
group_id	long integer	Foreign key; identifier of the user group this file is associated with.	17
file_name_orig	Text	Original file name provided by user when the document was uploaded.	"Project Report.doc"
file_name_sys	Text	Actual file name used by the system; combination of original file name and timestamp	"Project Report.doc 2003.02.17.16.47.58"
user_id	long integer	Foreign key; user ID of the person who submitted the document.	37
user_name	Text	User name of the person who submitted the document. Redundant in this table; included for performance reasons.	david.prinzing
date_time	Timestamp	System date and time stamp, generated when the document is submitted.	02/17/2003 16:47:58
title	Text	Document title	
description	Text	Description of the document (one or two sentences). Keywords could be stored here.	

Report Definitions

For each report definition, include the following information:

6. Purpose/objectives
7. Example
8. Input Fields
9. Calculated Fields

Development Project Activities

1) Define what profiling information is to be collected/tracked for each document
2) Define the various reports required
3) Scale down the World-Class Program Controls System foundation to support individual projects
   a) Database support: use PostgreSQL instead of Oracle
   b) User access controls: use JDBC Realm "roles"
   c) Administrative tools: users
   d) Administrative tools: groups
4) Development priorities for new features:
   a) Document Management System
      i) Basic document management (browse, add, edit, delete) with document profiling
      ii) Basic search: search document profile information only
      iii) Version control: check in/out, revision history, etc.

iv) Notification: server sends email message to specified users when documents are submitted
v) Full-text search: implement the Lucene search engine (originally developed for Excite)

b) Collaboration tools: Contacts
c) Collaboration tools: Announcements
d) Collaboration tools: Calendar
e) Collaboration tools: Tasks
f) Project Management Reports
g) Collaboration tools: Discussions
h) Collaboration tools: Issues