Sacramento Municipal Utility District

Upper American River Project (UARP)
FERC Project No. 2101

Scoping Document 1
and
Notice of Preparation

August 8, 2003

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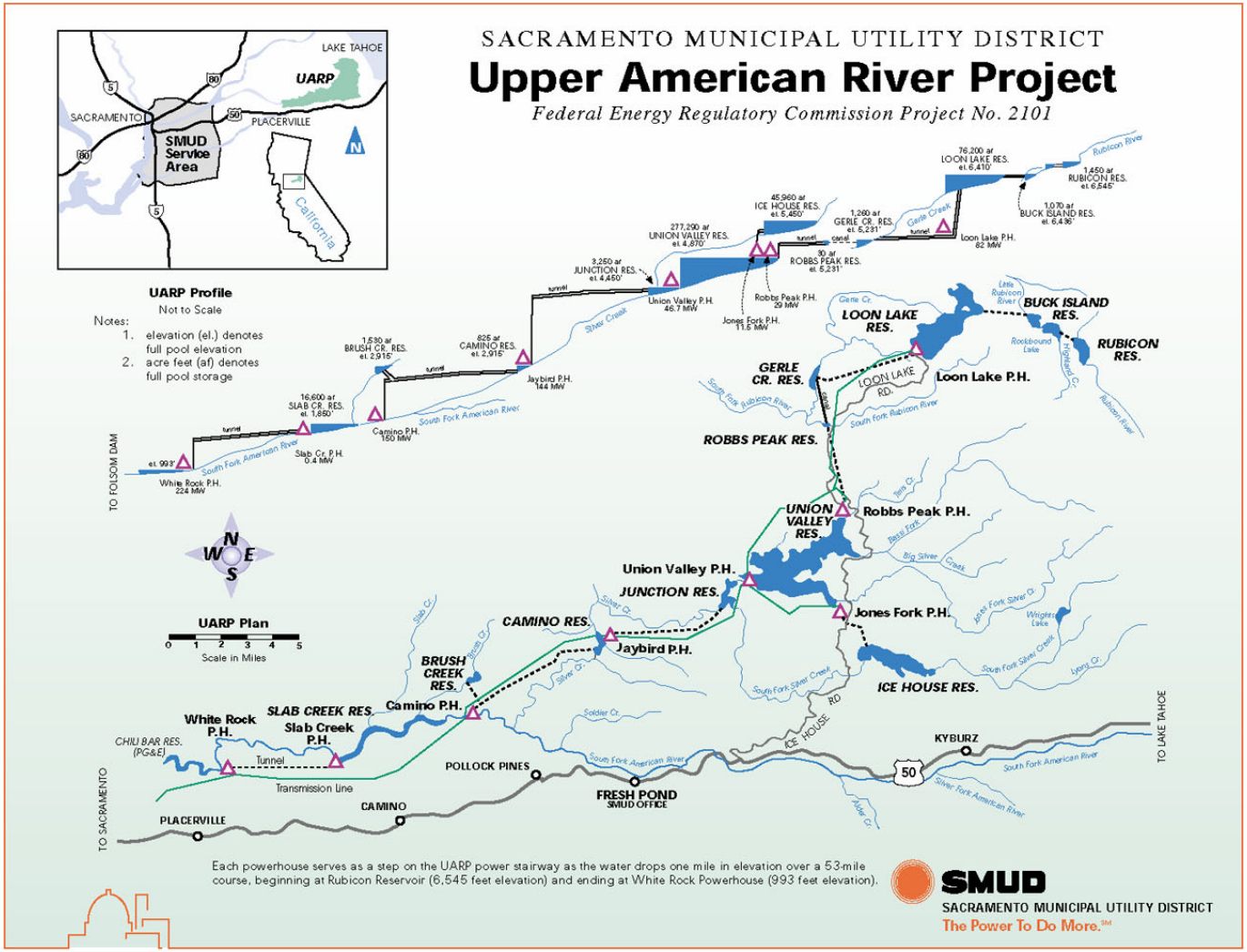
1.0 INTRODUCTION

The Federal Energy Regulatory Commission (FERC), under the authority of the Federal Power Act (FPA), may issue licenses for up to 50 years for the construction, operation, and maintenance of non-federal hydroelectric projects. The Upper American River Project (UARP or Project) is an existing hydroelectric project owned by the Sacramento Municipal Utility District that consists of 11 reservoirs and eight powerhouses, located on the South Fork American River and its tributaries and the Rubicon River and its tributaries (Figure 1.0). In a normal water year, the UARP provides roughly 1.8 billion kilowatt-hours of electricity – enough energy to power about 180,000 homes, or roughly 20 percent of SMUD's customer demand. This abundant energy resource establishes the Project as an important component of the SMUD-owned generation that serves the needs of the 1.2 million residents of SMUD's service territory. A primary value of the Project lies in its ability to provide operational flexibility, system reliability and economical power generation.

SMUD began the relicensing of the UARP in May of 2001 by initiating a FERC-approved alternative licensing process. SMUD formally filed a Notice of Intent to seek a new license for the UARP in July of 2002. In July of 2005, SMUD will file a license application with FERC that includes a Preliminary Draft Environmental Assessment.

The National Environmental Policy Act of 1969 (NEPA), FERC's regulations, and other applicable laws require that FERC independently evaluate the environmental effects of licensing the project including a set of reasonable alternatives. The FERC staff intends to prepare either a draft Environmental Assessment (EA) or a draft Environmental Impact Statement (EIS) that describes and evaluates the probable effects, including the assessment of the site-specific and cumulative effects, if any, of the alternative actions. Preparation of the environmental document is supported by a scoping process to ensure the identification and analysis of all pertinent issues.

Figure 1.0 UARP Location, Plan & Profile Drawing



2.0 ALTERNATIVE LICENSING PROCESS

On July 11, 2001, SMUD filed a formal request with the FERC to follow the procedures of the Alternative Licensing Process (ALP), as specified in FERC regulations (18 CFR Section 4.34(I)). The FERC noticed the request in the Federal Register on July 19, 2001 and approved the request on August 29, 2001. This process is well adapted to the unique needs and circumstances of SMUD and the interested parties that will participate in the relicensing. The ALP for the Project has four main components:

- A one-step National Environmental Policy Act (NEPA) review process, in which SMUD, in cooperation with stakeholders and with the assistance of FERC, will prepare a Preliminary Draft Environmental Assessment (PDEA) that will be submitted to the FERC within the license application;
- Broad public participation and open, efficient sharing of information, including the development of a Hydro Relicensing Internet web site that is available to the public;
- A cooperative, consensus-based approach to identifying and designing licensing studies, analyzing study data, and developing protection, mitigation, and enhancement (PM&E) measures; and
- An early start on the relicensing process and a clear, workable schedule, to enable the FERC to issue a new license for the Project before the current license expires, without sacrificing the opportunity to conduct comprehensive studies and analysis of the benefits and impact of the Project.

SMUD initiated the Alternative Licensing Process in May 2001 via two public meetings (one conducted in Sacramento and the other in Placerville) to introduce the Project and describe the relicensing process. Subsequent to these public meetings, SMUD began a series of organizational meetings that accomplished three important goals in the initial phases of the project relicensing: (1) the drafting of a Communication and Process Protocol that established structure, functionality, and ground rules for the ALP, (2) the creation of an over-arching policy group, or Plenary Group, as well as several focused technical working groups (TWGs), and (3) the identification of issue questions to be addressed during the relicensing process. In July 2001, SMUD also distributed an Initial Information Package (IIP) to facilitate these initial phases of the relicensing process. The IIP contained basic information on Project facilities and operation, as well as information on environmental resources that are potentially affected by the Project. The UARP IIP is available on SMUD's relicensing web site at http://hydrorelicensing.smud.org.

The specific purpose of the IIP was to aid and inform discussions of the issue questions to be addressed during relicensing. Because the Plenary Group's issue question identification process was conducted largely by active participants in the ALP, SMUD also hosted two public meetings in July 2001 to receive input from the general public. Issue identification was completed by November 2001, the issues were then transferred to the various TWGs for study plan development. The Technical Working Groups that have been formed to date include: (1) aquatic resources (which includes geomorphology and hydrology), (2) terrestrial resources, (3) cultural resources, (4) recreation and aesthetic resources, (5) land use, and (6) socioeconomic resources.

In May 2003, SMUD decided to include the construction and operation of a new development – the proposed Iowa Hill Pumped Storage Development – in its relicensing proposal. The initial IIP referenced the possibility that the Iowa Hill Development may be included in the relicensing because it was under review by SMUD. A separate Initial Information Package for the Iowa Hill Development was issued in mid-2003, which included more detailed information. Since then, SMUD and the ALP participants have begun the process of identifying issues and developing study plans associated with the proposed Iowa Hill Development.

Concurrent with the UARP relicensing process, a separate relicensing process is underway for the Chili Bar Project (FERC Project No. 2155) which is owned and operated by Pacific Gas & Electric Company (PG&E). The existing license for the Chili Bar Project expires on the same date as the UARP original license – July 31, 2007. The Chili Bar Project is a seven (7) megawatt hydroelectric facility that largely operates on a water-available basis determined by UARP operation during the summer regulated-flow period. Its primary function is to operate as a regulating reservoir, with water discharging from White Rock Powerhouse flowing directly into Chili Bar Reservoir. SMUD and PG&E are cooperating on joint environmental relicensing studies, activities, and tasks as described in Section 8.0 of this document. The combined operations of the UARP and Chili Bar Project effect the 20-mile reach of the South Fork American River between Chili Bar Dam and Folsom Lake.

3.0 RELICENSING SCHEDULE

The tentative schedule for completing major milestones in the UARP ALP is provided in Table 1.

Table 1. Procedural Schedule

Activity	Date
	2003
Scoping Document 1	August
NEPA/CEQA Scoping Meeting	September
Scoping Document 2	November
Review Results of 2003 Studies and Produce Reports	October – December
Begin Discussions of Protection, Mitigation, and Enhancement (PM&E) Measures	October
	2004
Submit Draft Mandatory Conditions Pursuant to 4(e), Draft Fishway Prescriptions Pursuant to Section 18, and Draft Recommendations Pursuant to 10 (a)	To be determined
Perform Technical Studies	May-September
Conclude discussions of PM&E measures with Comprehensive Agreement	August
Complete and circulate Draft License Application with Preliminary Draft Environmental Assessment	September
	2005
Submit Comments on Draft License Application	January
Finalize CEQA document	To be determined
File application with SWRCB for 401 certification of the license application	Two days before filing of application letter date
Submit Final License Application to FERC; give notice of submittal to mailing list	July

4.0 SCOPING

Under the authority of the Federal Power Act, FERC may issue licenses for the construction, operation, and maintenance of non-federal hydroelectric projects within the waters of the United States. In the granting of a new license or the renewal of an existing license, FERC must, in conformance with NEPA, FERC's own regulations, and other applicable laws, evaluate the environmental effects of the licensing decision, or proposed action, and consider reasonable alternatives. In addition, as a public agency, SMUD must comply with the California Environmental Quality Act (CEQA) when applicable. Both NEPA and CEQA require analysis of the environmental effects of the proposed action and the alternatives. SMUD will be the lead agency for the preparation of the CEQA document.

As part of an ALP, FERC regulations allow licensees to prepare their own Preliminary Draft Environmental Assessment (PDEA) and submit it with the license application in lieu of an Exhibit E environmental report. Within the ALP, SMUD intends to negotiate Project PM&E measures with the active participants as part of a settlement agreement. Under this scenario, continued operation of the Project with implementation of the measures identified in the settlement agreement would serve as the proposed action. The information contained in the PDEA submitted by SMUD would then be used by the FERC to prepare a Draft Environmental Assessment or Draft Environmental Impact Statement (EIS). In addition, SMUD may use the PDEA to satisfy SMUD's requirements under CEQA. SMUD may achieve this by either: (1) drafting the PDEA as a "joint" NEPA/CEQA document; or (2) using the PDEA as a basis for drafting a separate document to satisfy CEQA.

4.1 Scoping Under NEPA and CEQA

SMUD will conduct scoping pursuant to both NEPA and CEQA. Scoping of the pertinent issues is the first step in both the NEPA and CEQA processes. Scoping is the process of identifying issues, concerns, and opportunities associated with the proposed action. The purposes of scoping and the rationale behind this Scoping Document 1 (SD1) include those provided at 42 U.S.C. § 1501.7 and at Cal. Pub. Resources Code §§ 21083.9, 21104, and 21153 and in summary are to:

- Identify new resource issues that are associated with the project (natural and social) that have not identified to date within the ALP.
- Identify reasonable alternatives to the proposed action that should be evaluated.
- Determine the depth of needed analysis and significance of issues.
- Eliminate from detailed study issues and resources that do not require detailed analysis.
- Identify how the project would or would not contribute to cumulative impacts.
- Coordinate compliance with NEPA, CEQA, and other applicable laws and regulations. For example, the scoping discussions will address whether NEPA and CEQA compliance will occur through joint documents or through two separate sets of documents.
- Coordinate among agencies that may rely upon the NEPA and CEQA documents for subsequent project approvals (e.g., the State Water Resources Control Board in its 401 Certification).

Once the written and oral comment period of this scoping process has passed, new issues identified will be reviewed and decisions will be made about the level of analysis needed in the PDEA and in the Initial Study. As in all aspects of this ALP, SMUD will attempt to reach consensus within the Plenary Group relative to these decisions. After the comment period, the SD1 will be revised in accordance with the comments received, and re-issued to the interested public and participants in the ALP as Scoping Document 2 (SD2). This final scoping document will present a summary of the results of the scoping process and identify new pertinent issues in the ALP, the PDEA, and under CEQA.

4.2 Scoping Meetings and Site Visit

In accordance with FERC regulations, NEPA, and CEQA, SMUD will host three formal scoping meetings. At the scoping meetings, all resource agencies, Native American tribes, citizens' groups, businesses, the counties and the cities in which the proposed project is located, any responsible or public agency under CEQA, other organizations, and other interested persons are invited to orally provide recommendations to SMUD and FERC concerning the adequacy of issues (environmental and social) that have been identified to date through ALP. In addition, SMUD will offer a one-day tour of the UARP on Friday, September 12. The meeting dates that have been established are:

Date	Time	Location
September 9 Tuesday	6:00 pm – 8:00 pm	SMUD Customer Services Center 6301 S Street Sacramento
September 10 Wednesday	9:00 am – 4:00 pm	SMUD Customer Services Center 6301 S Street Sacramento
September 11 Thursday	6:00 pm – 8:00 pm	Building C, County Government Center 2850 Fairlane Court Placerville

The scoping meetings will allow individuals an opportunity to submit oral or written comments to the relicensing record. Oral comments will be recorded by a court reporter, as consistent with FERC practice. Individuals providing oral comments at the scoping meetings will be asked to identify themselves for the public record. To allow everyone an opportunity to speak, those with comments will be asked to respect time limits when providing comments. Individuals choosing not to speak, but wishing to express an opinion, will be afforded the opportunity to submit written comments at the meeting, or via mail/e-mail by October 13, 2003. All oral and written comments will become part of the public record for the relicensing of the Project.

5.0 REQUEST FOR INFORMATION

SMUD and FERC request all resource agencies, Native American tribes, citizens' groups, businesses, other organizations, and members of the public to forward any information that will assist SMUD and FERC in conducting an accurate and thorough analysis of site-specific and cumulative effects of the licensing decision for the Project. Types of information requested include, but are not limited to:

- Comments on the scope of issues currently being addressed in the relicensing, as presented in this document in Section 8.0, and whether any other issues should be considered;
- Information, data, or professional opinions that may contribute to identifying and defining the scope of important issues;
- Identification of and/or information from studies or analyses (previous, ongoing, or planned) that are relevant to the Project;
- Information that would aid in the characterization of past and/or existing physical, chemical, biological, cultural, and socioeconomic resources in the Project area;
- Identification of any federal, state, or local resource plans and future project proposals that include the Project area, containing information on when they will be implemented, such as proposals to construct or operate water treatment facilities, recreation areas, water diversions, or fish management programs;
- Documentation that would support a conclusion about whether or not the proposed relicensing decision would contribute to adverse or beneficial effects on resources (natural and social), including but not limited to: (1) how the Project would interact with other developmental activities, (2) results from studies, (3) resource management policies, and (4) reports from federal, state, and local agencies; and
- Documentation of why any resources or issues should be excluded from further consideration.

The above-requested information can be submitted during the scoping meetings, in writing via the regular mail, or by e-mail to SMUD at the following address. Mail or e-mail submittals must be received by October 13, 2003:

David Hanson
Sacramento Municipal Utility District
6301 S Street, Mail Stop A352
Sacramento CA 95817-1899
hydrorelicensing@smud.org

Questions concerning the scoping process for the Project should be directed to David Hanson at 916-732-6703 or to:

Jim Fargo
Federal Energy Regulatory Commission
888 First Street, NE
Washington DC 20426
202-502-6095
james.fargo@ferc.gov

6.0 PROJECT DESCRIPTION

The Upper American River Project (UARP or Project) is a hydropower project constructed over a period of years beginning in the late 1950s. It is owned and operated by the Sacramento Municipal Utility District (SMUD). The Project is located in the California counties of El Dorado and Sacramento, within the Rubicon River, Silver Creek, and the South Fork American River (SFAR) drainages. The Project's 11 reservoirs are capable of impounding over 425,000 acre-feet (ac-ft) of water. The eight powerhouses can generate up to 688 megawatts (MW) of power. The project also includes 11 transmission lines that have a combined length of about 180 miles, about 28 miles of power tunnels/penstocks, one canal that is 1.9 miles long, and about 700 developed public-use campsites.

6.1 Existing Project Facilities

The Project includes seven developments and the components necessary to utilize the available water resource for hydroelectric generation. These developments are located in El Dorado County, California, approximately 50 to 70 miles east of Sacramento:

- Loon Lake
- Robbs Peak
- Jones Fork
- Union Valley
- Jaybird
- Camino
- Slab Creek/White Rock

A description of these developments is provided below, while a more detailed description is provided in the UARP Initial Information Package available on SMUD's relicensing web site at http://hydrorelicensing.smud.org.

6.1.1 Loon Lake Development

The Loon Lake Development is the most upstream Project facility. The development utilizes water from the Rubicon River, Highland Creek, Little Rubicon River, and Gerle Creek. The development includes a number of facilities: Rubicon Dam, Rubicon-Rockbound Tunnel, Buck Island Dam, Buck Island-Loon Lake Tunnel, Loon Lake Dam, Loon Lake Powerhouse Penstock, Loon Lake Powerhouse, Loon Lake Powerhouse Tailrace Tunnel, transmission lines, recreation facilities, and other appurtenant facilities. Rubicon Dam is located inside a designated wilderness area (Desolation Wilderness), within the boundary of the Eldorado National Forest (ENF). All other facilities in this development are located outside the wilderness boundary but within the ENF. The Loon Lake Powerhouse began commercial operation on August 27, 1971. This development is located on both private (including SMUD-owned) and public land within the boundary of the ENF.

6.1.2 Robbs Peak Development

The Robbs Peak Development utilizes water released from Loon Lake Development, Gerle Creek, Angel Creek and the South Fork Rubicon River (SFRR) and smaller ephemeral tributaries. The Robbs Peak Development includes: Gerle Creek Dam, Gerle Creek Canal, Robbs Peak Dam, Robbs Peak Tunnel, Robbs Peak Penstock, Robbs Peak Powerhouse, transmission lines, recreation facilities, and other appurtenant facilities.

The Robbs Peak Powerhouse began commercial operation on October 25, 1965. This development is located on both private and public land within the boundary of the ENF.

6.1.3 Jones Fork Development

The Jones Fork Development utilizes water from the South Fork Silver Creek (SFSC). The Jones Fork Development includes: Ice House Dam, Jones Fork Tunnel, Jones Fork Penstock, Jones Fork Powerhouse, transmission lines, recreation facilities, and other appurtenant facilities. The Jones Fork Powerhouse, the most recent powerhouse to be added to the UARP, began commercial operation on June 10, 1985. The Jones Fork Powerhouse is located on public land within the boundary of the ENF; Ice House Reservoir is located on land owned nearly entirely by SMUD. The Jones Fork Tunnel and the Jones Fork Penstock are on both private and public land within the ENF.

6.1.4 Union Valley Development

The Union Valley Development utilizes water from Big Silver Creek, Jones Fork Silver Creek, Tells Creek, Wench Creek, and smaller ephemeral tributaries as well as water releases from Robbs Peak and Jones Fork Powerhouses, both located on the perimeter of Union Valley Reservoir. The Union Valley Development includes: Union Valley Dam, Union Valley Tunnel, Union Valley Penstock, Union Valley Powerhouse, transmission lines, recreation facilities, and other appurtenant facilities. The Union Valley Powerhouse began commercial operation on June 6, 1963. This development is located on both public and private land within the boundary of the ENF. Most of the land that Union Valley Reservoir is located on is owned by SMUD.

6.1.5 Jaybird Development

The Jaybird Development utilizes water released from Junction Reservoir and flows from South Fork Silver Creek and the Little Silver Creek. It includes: Junction Dam, Jaybird Tunnel, Jaybird Penstock, Jaybird Powerhouse, transmission line, and other appurtenant facilities. There are no developed recreation facilities associated with the Jaybird Development. The Jaybird Powerhouse began commercial operation on May 1, 1961. This development is located on both private and public land within the boundary of the ENF. Most of the land that Junction Reservoir is located on is owned by SMUD.

6.1.6 Camino Development

The Camino Development utilizes water released from Camino Reservoir, Brush Creek Reservoir and smaller ephemeral streams. The development includes: Camino Dam, Camino Tunnel, Brush Creek Dam, Brush Creek Tunnel, Camino Penstock, Camino Powerhouse, transmission lines, and other appurtenant facilities. There are no developed recreation facilities associated with the Camino Development. The Camino Powerhouse began commercial operation on November 1, 1963. All facilities in this development are located on public land within the ENF.

6.1.7 Slab Creek/White Rock Development

The Slab Creek/White Rock Development is the most downstream Project facility (excluding transmission lines) and discharges into the Chili Bar Reservoir, which is part of PG&E's Chili Bar Project. The Slab Creek/White Rock Development utilizes water released from Camino Powerhouse, Brush Creek, Slab Creek and the SFAR. The development includes: Slab Creek Dam, Slab Creek Penstock, White Rock Tunnel, White Rock Powerhouse Penstock, White Rock Powerhouse, and other appurtenant facilities.

The Slab Creek and White Rock Powerhouses began commercial operation in 1983 and on May 28, 1968, respectively. Slab Creek Reservoir is located on public and private (including SMUD) land within the ENF. The remainder of the development is located on private land adjacent to and beyond the western boundary of the ENF.

6.2 Existing Project Operations

The Upper American River Project is the only hydroelectric project owned by SMUD. Its importance as a power generating resource is most evident when considered within the context of the other forms of SMUD power generation and power purchases that comprise the SMUD energy portfolio. Careful management of the energy portfolio allows SMUD to deliver a steady and uninterrupted supply of electricity to its customer-owners. The Project plays a significant role in energy management, contributing value in three primary areas: (1) operational flexibility, (2) economical power generation, and (3) overall system reliability.

One of the primary aspects of operational flexibility lies in the ability of the Project to store water on a seasonal basis. The combined 400,000 ac-ft gross capacity afforded by the three Project storage reservoirs (Loon Lake, Ice House and Union Valley Reservoirs) allows SMUD to manage the water, within physical, safety and regulatory constraints, to generate electricity when power is most valued throughout the year. The Project is operated generally in a manner to provide electricity during peak load situations. It is also operated to ensure reliability of the electric transmission system within SMUD's control area.

From a water management perspective, the operation of the Project follows an annual cycle of reservoir filling and release that coincides with the natural patterns of rain and snowmelt runoff characteristic of the Sierra Nevada. While the Project includes eleven reservoirs, each is utilized in

different ways to manage the water for power production. Three reservoirs (Loon Lake, Ice House and Union Valley), accounting for 94 percent of total Project gross storage capacity, are operated primarily as long-term storage reservoirs, capturing as much of the winter/spring rain and snowmelt runoff as practicable, consistent with various regulatory, dam safety, water rights and FERC operational requirements.

The two uppermost reservoirs (Rubicon and Buck Island) provide limited storage and are operated primarily as run-of-the-river reservoirs to capture and divert water from the Rubicon River and the Highland Creek drainages. No power is generated at the uppermost reservoirs.

Typically, from about mid-summer to winter each year, the elevations of the three primary storage reservoirs are gradually lowered to generate electricity and provide adequate storage space to capture winter/spring runoff and minimize the frequency and amount of spillage. During this period, the Project is operated in a peaking mode, essentially following the daily demand cycle. Water is released from one or more of the storage reservoirs and is passed through the forebay/afterbay reservoirs as it makes its way through the series of downstream powerhouses. In winter, as rainstorms and snowmelt begin to increase stream flow in the basin, the process is reversed, with more water stored than released through the powerhouses. Thus, from winter to early summer, the water elevations of the storage reservoirs gradually increase.

Five of the Project reservoirs (Gerle Creek, Robbs Peak, Junction, Camino and Slab Creek) operate primarily as re-regulating forebays and/or afterbays to the various powerhouses. The remaining reservoir (Brush Creek) is operated typically to provide either spinning reserves or maximum peaking power for system reliability purposes. SMUD's water rights do not allow the storage of water in these six reservoirs. Thus, retention time in these reservoirs is short and water levels are likely to fluctuate daily as they provide the re-regulating function for which they were designed.

The Project also includes eight powerhouses. Six of the powerhouses (Loon Lake, Jones Fork, Union Valley, Jaybird, Camino and White Rock) account for 95 percent of the total Project's 688 megawatts maximum capability. These powerhouses can generally be operated flexibly, with limited constraints on power plant flows and sufficient storage for meet daily peaking cycles. Of the two remaining powerhouses, the 29 MW Robbs Peak Powerhouse is operated in a run-of-river mode due to the lack of storage capacity in the Robbs Peak Development. Robbs Peak Powerhouse does, however, contribute to Project's peaking power capability, as Robbs Peak's primary inflow during most of the year is the Loon Lake Powerhouse discharge. The eighth powerhouse is the 0.4 MW Slab Creek Powerhouse, which is typically operated in a base-load mode in which it utilizes the continuous minimum flow releases into the natural streambed of the SFAR below the Slab Creek Dam.

6.3 Currently Implemented Environmental Measures

Throughout the course of the past license period, SMUD has managed the UARP in a manner that reflects the District's commitment to balancing energy production and environmental stewardship. Since the issuance of the original project license in 1957, SMUD has developed a strong partnership with the Eldorado National Forest that has been expressed in a variety of joint projects and programs. Many of these projects and programs that SMUD has performed over the past license term were not required by the original license. SMUD has engaged in a variety of road maintenance activities, built fire hydrants at points where project penstocks cross roads, installed landing lights at a heliport, and painted powerhouses with colors to reduce visual impacts. More substantial measures include:

Aquatic Resource Measures

- To enhance the opportunities for spawning of German brown trout, SMUD has been granted permission from the California Division of Safety of Dams to maintain reservoir elevations beyond the annually required September 30th water release date. This effort not only accommodates the trout, but also extends the recreation season at the reservoir.
- Continuous minimum flows are released from all reservoir dams, with many flows varying by water year type and month.
- Continuous habitat-sustaining flows are released from some reservoir dams during times of the year (July-October) when natural inflows to the reservoirs cease (e.g., Rubicon and Buck Island Reservoirs). Thus, flows are provided in the bypass reach at times of year when no water flows into the reservoir.

Recreation

- In cooperation with the ENF, SMUD has constructed campgrounds (with over 700 campsites), boat launches and day use facilities at the primary Project reservoirs. SMUD contributes funds annually to the ENF for facility administration, operation and maintenance.
- Reservoir water levels are managed to provide quality recreational experiences, consistent with power generation needs.
- SMUD and Pacific Gas and Electric (PG&E) coordinate management efforts to enhance whitewater rafting opportunities on the South Fork American River below Chili Bar Dam. This whitewater resource is one of the most popular courses in the western United States.
- SMUD's snow plowing of roadways to Project facilities significantly enhances winter recreation access.

Terrestrial

- SMUD participates in and supports efforts for non-native weed eradication (star thistle, skeleton weed, spotted knapweed) around project facilities.
- Recreational development at Union Valley Reservoir has been cooperatively planned with the ENF to avoid disrupting bald eagle nesting activities.

6.4 Proposed Iowa Hill Pumped Storage Development Facilities and Operation

As part of the relicensing process, SMUD proposes to increase electrical capacity of the UARP by constructing a new development - the Iowa Hill Pumped Storage Development (Iowa Hill Development). A description of the development is provided below, while a more detailed description is provided in the Iowa Hill Development Initial Information Package available on SMUD's relicensing website at http://hydrorelicensing.smud.org.

6.4.1 Iowa Hill Development Proposed Facilities

The Iowa Hill Development, as proposed, is an off-stream pumped storage project that makes use of the existing UARP Slab Creek Reservoir as a lower reservoir and involves construction of a new upper reservoir atop Iowa Hill. The difference in elevation between the two reservoirs would be approximately 1,200 feet, providing the capability of the development to generate a nominal 400 MW of electricity. Under the proposed layout, the reservoirs will connected through a subterranean powerhouse and tunnel system. The electrical power produced by the development will be carried by the existing three 230kV transmission lines that move power from the UARP to SMUD's load center. No new transmission lines would be required except for a new generation tie-line approximately two miles in length which would tie the Iowa Hill Development into the UARP system on the Camino/White Rock circuit.

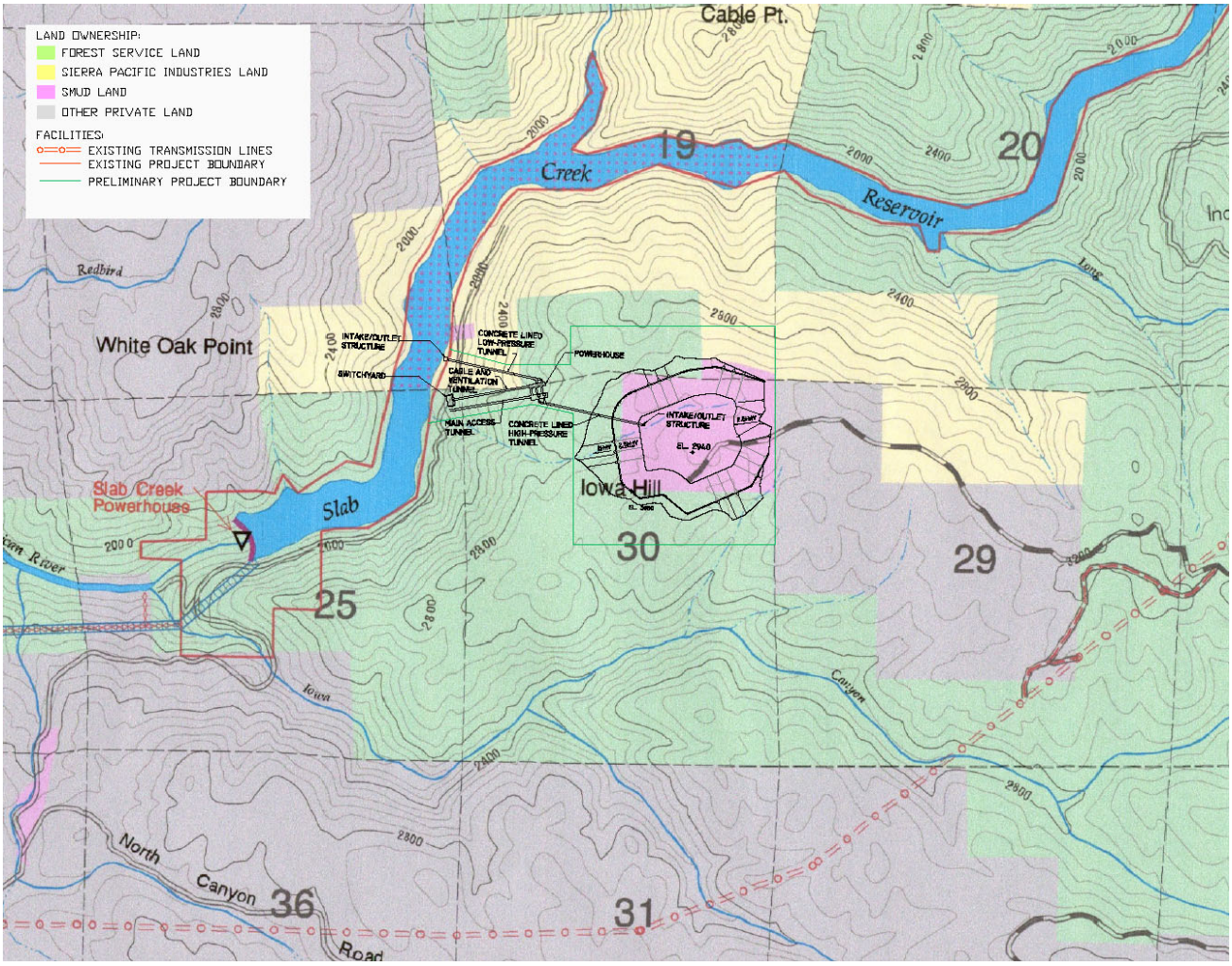
The Iowa Hill Development would enhance SMUD's ability to meet Sacramento's future energy needs, particularly during the critical times of peak demand. However, the value of the development goes beyond the exchange of on- and off-peak energy. In the larger context, the Iowa Hill Development will serve as an operational tool that will aid SMUD in delivering energy during the next 50 to 100 years.

The site for the proposed Iowa Hill Development is located in El Dorado County, approximately one mile upstream of the existing Slab Creek Dam on the south bank of Slab Creek Reservoir, located on the South Fork American River (SFAR).

6.4.2 Reservoir Layout

As described above, the Iowa Hill Development would require the construction of one new reservoir, the upper reservoir. The lower reservoir would be the existing Slab Creek Reservoir. While SMUD has considered alternative reservoir sizes, the proposed upper reservoir is a 6,400 acre-feet reservoir that covers approximately 100 acres of land atop Iowa Hill. The upper reservoir would not result from construction of a dam being built across an existing stream or river, rather; it would be created by building a berm on the top of Iowa Hill (Figure 2.0).

Figure 2.0 Plan View of the Proposed Iowa Hill Development



The berm for the upper reservoir would be constructed from crushed rock from the tunneling operation, earth from the upper reservoir basin, a clay or high-density polyethylene (HDPE) liner to prevent leakage, and appropriate revetment/rock where needed to minimize bank erosion. During construction of the upper reservoir, SMUD would balance the excavation and fill requirements of the total Development eliminating any need for permanent spoil and permanent spoil areas at the upper reservoir. Prior to the close of construction, all temporary spoil would be eliminated by incorporation into the upper reservoir dikes and the area landscaped.

6.4.3 Powerhouse Design and Locations

The powerhouse proposed for the Iowa Hill Development would have a rated capacity of 400 MW. It would consist of two or three, equally-sized, variable-speed pump/turbine units. SMUD's preliminary concept for the project utilizes engineering for an underground powerhouse design (Figure 3.0). Variable speed units possess a number of advantages over conventional synchronous speed units, including: (1) lower system disturbance from pumping starts, (2) the ability to operate at part load during pumping mode, (3) use for regulation while in pumping mode, and (4) flexibility to lower overall system costs.

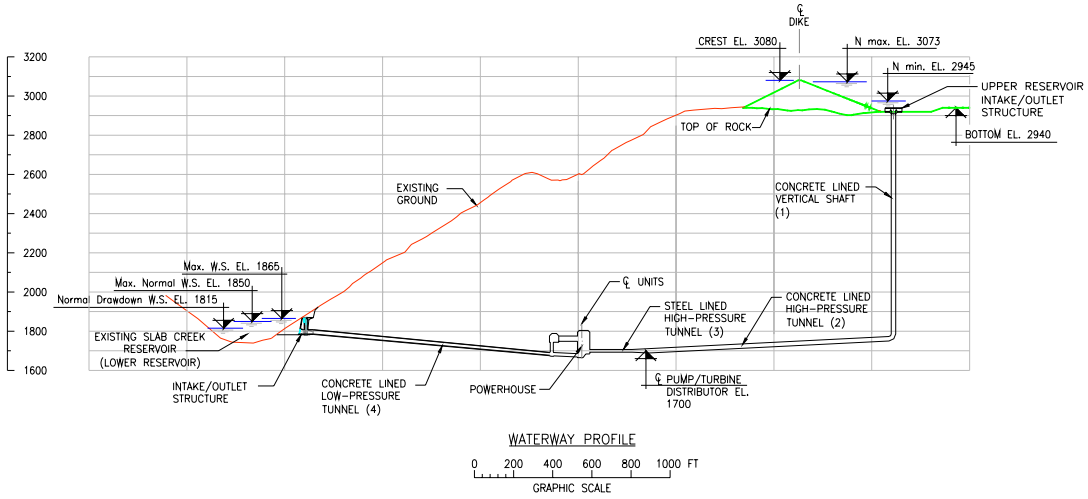


Figure 3.0 Cross-Section of the Proposed Iowa Hill Project

6.4.4 Preliminary Intake Design

SMUD would construct a multi-port (e.g., octagonal) intake, approximately 80 feet below the Slab Creek Reservoir maximum water level elevation of 1,850 feet. An octagonal intake would eliminate the need to alter the mountain slope (both under water and above the shoreline) during construction.

The natural slope has existed under water for over 30 years and has existed in-the-dry for thousands of years. Similar to other slopes in other UARP reservoirs it is not anticipated to require stability enhancements. Because of the octagonal configuration the horizontal net velocity component on the reservoir would be minimal, greatly reducing any concern over stirring up sediment. It would lie sufficiently below the water elevation of the reservoir so as not to pose a safety hazard to boaters. To construct the octagonal intake, a steel cofferdam is floated-in and sunk in place.

6.4.5 Site Access

The primary access to the upper reservoir site off of US Highway 50 is via Carson Road to Cable Road to Iowa Hill Road. SMUD would improve the serviceability of four miles of existing Cable Road from the end of the paved portion of Cable Road to the upper reservoir site. SMUD would either provide an unimproved gravel road or pave the four miles of existing roadway to be improved. The existing road will not be widened. Wide places in the existing road would be improved along with the rest of the road and would function as passing turnouts. Once constructed, the upper reservoir would be fenced, locked and unavailable for public recreation.

The primary access to the lower reservoir site is off US Highway 50 via Carson Road to Larsen Drive, to North Canyon Road, to the Slab Creek Reservoir access road. The preliminary location of these facilities at the lower reservoir site is at the end of the existing two-mile long Slab Creek Reservoir access road. The first 1.1 miles of the existing road, starting from North Canyon Road going to a point near the dam, was constructed by SMUD as a gravel road to provide access for dam construction and O&M access to the existing Slab Creek Reservoir. The remaining 0.9 miles of the existing access road, starting from near the dam and heading east, was originally constructed as a 10-foot-wide road and currently provides access to the existing, semi-developed boat launch site. This segment of road would be widened by two feet and paved.

During construction, the excavated rock and soil from the powerhouse, tunnel, and shaft would be transported to the upper reservoir site to be used for berm construction of the upper reservoir. The difference in elevation from the lower access area to the upper reservoir site is about 1,000 feet. Large dump trucks would be used to transport the excavated rock from the main access tunnel for the powerhouse to the upper reservoir site. The transportation route would likely be along the following route starting from the main access tunnel site: Slab Creek Reservoir access road, North Canyon Road, Larson Drive, Carson Road, Cable Road, concluding at the upper reservoir site at Iowa Hill.

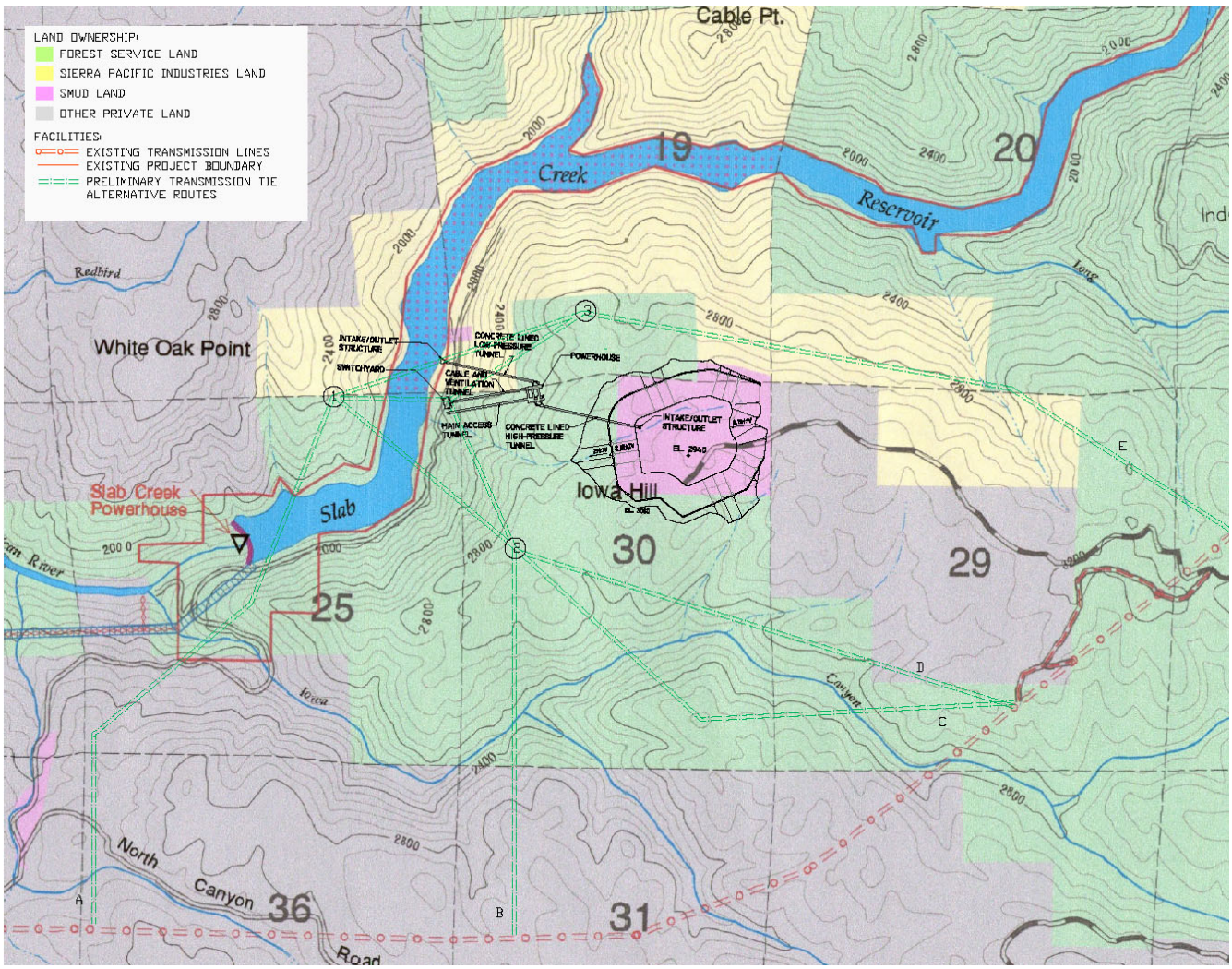
6.4.6 Transmission Interconnection

The electrical power output would be carried by the existing three 230-kV transmission lines that move power down from the UARP to SMUD's load center. The only new transmission line would be a generation tie-line approximately two miles in length that would tie the Iowa Hill Development

into the UARP system by looping the Camino/White Rock circuit through the Development switchyard. This same tie-line would also be used for the Development when it is operated in the pumping mode.

The tie-line would start at the proposed switchyard, to be located on the bank of Slab Creek Reservoir in the area near the intake, and then come up out the SFAR canyon. Then from there, the tie-line would head toward the existing UARP transmission corridor, which passes by the Development to the south and southeast. The total distance of the tie-line would be between approximately 1.25 to 2.5 miles, depending on which route is ultimately selected. Five preliminary transmission tie-line alternative routes are under consideration (Figure 4.0). There are two options for getting power from the Iowa Hill Development switchyard, which is in the Slab Creek Reservoir Canyon, up and over Iowa Hill, which is 1,000-1,200 feet higher in elevation: (1) spanning across the reservoir from the switchyard to a mid-point on the west bank of the Canyon, and then back across the Canyon in an east, southeast, south, or southwest direction to get up and over Iowa Hill; or (2) run a transmission right-of-way up the south bank of the canyon, up the side of Iowa Hill, to the top. Once out of the canyon, various options exist to connect with the existing UARP transmission line.

Figure 4.0 Possible Transmission Line Routes for the Proposed Iowa Hill Development



6.4.7 Iowa Hill Development Operations

Slab Creek Reservoir, the lower reservoir of the Iowa Hill Development, is currently operated as a re-regulating afterbay/forebay. The reservoir serves as an afterbay to the 150 MW Camino Powerhouse and a forebay for the 224 MW White Rock Powerhouse. The reservoir currently receives water emanating from Camino Powerhouse and inflow from the SFAR. Because of this re-regulating mode of operation, water levels in the reservoir may fluctuate daily with changing volumes of inflow and powerhouse flow. Typical weekly fluctuation is no more than 30 feet, ranging between the operation pool levels of 1,820 feet and 1,850 feet.

In the pumping mode for a 400 MW powerhouse, the estimated discharge capacity of the tunnels would range between 3,600 and 4,200 cfs and in the generating mode the discharge capacity of the tunnel would range between 4,800 and 5,200 cfs. The "rated" condition is based on the need to be capable of delivering 400 MW in the generating mode under adverse conditions (i.e., when the upper reservoir is nearly empty and the lower reservoir is near its normal maximum elevation of 1,850 feet).

Early evaluations of the Iowa Hill Development indicated small changes to the current levels of fluctuation of Slab Creek Reservoir. Thus, with minimal change in the pattern of reservoir elevation, there should be no increased incidence of spill at the dam, no effect on the ability to release minimum flows into the Slab Creek Dam bypass reach, and no change in the volume of water released through the White Rock Powerhouse. Nevertheless, SMUD will evaluate the effects of Iowa Hill operations on the above parameters using the CHEOPS™ water balance model developed for the UARP relicensing.

7.0 PROPOSED ACTION AND ALTERNATIVES

SMUD is seeking a new license for the continued operation of the existing multi-development UARP, along with the addition of the Iowa Hill Development. Alternatives for the future operation of the UARP will be developed as part of the ALP process, including environmental issues identified during the scoping process, and settlement discussions. Based on the analysis of these alternatives, FERC will consider whether, and under what conditions, to issue a new license for the UARP.

7.1 Alternatives Considered

Alternatives to be considered in the PDEA will include, at a minimum, SMUD's proposed action and the no-action alternative.

7.1.1 Applicant's Proposed Action

SMUD will develop a proposed action that will consist of a plan to continue to operate the existing UARP Developments and to construct and operate the Iowa Hill Pumped Storage Development. The proposed action will also contain PM&E measures that have been developed within the ALP comprehensive agreement process. If full consensus is not reached relative to PM&E measures in the comprehensive agreement process, the PDEA will include disputed measures in the form of alternatives. To the extent that PM&E measures would reduce the power production and other ancillary benefits of the proposed project, the PDEA will evaluate costs and contributions to airborne pollutants related to generation of replacement power by fossil fuel plants.

The proposed action will also consist of a new license term of 50 years. A number of factors lend support to a 50-year term. Primary among these are the record of environmental stewardship and partnership with the Eldorado National Forest that has existed over the past 50 years of project operation. SMUD's past success in partnering with the Eldorado National Forest speaks to the level of willingness and commitment that will carry through into the next license term. The addition of the Iowa Hill Pumped Storage Development is another factor in support of a 50-year license term. This redevelopment of the UARP is a substantial enhancement of SMUD's ability to serve future peak load growth, and as such, advances the case for a long license term. The collaborative ALP process that SMUD has implemented for the UARP relicensing also supports a long license term. The PM&E measures developed from this process will reflect a broad consensus of local and regional interests that should hold long into the future.

7.1.2 No-Action Alternative

Under the no-action alternative, the existing Project would continue to operate under the terms and conditions of the existing license, the proposed Iowa Hill Development would not be constructed And no new environmental PM&E measures would be implemented. This alternative establishes the baseline environmental conditions against which other alternatives will be compared.

7.2 Alternatives Considered But Eliminated From Detailed Study

At this time, the following alternatives are not proposed for examination in the PDEA.

7.2.1 Federal Government Takeover

Federal takeover is not considered to be a reasonable alternative. Federal takeover of the Project would require Congressional approval. While the fact alone would not preclude further consideration of this alternative, there is currently no evidence showing that a federal takeover should be recommended to Congress. Since the beginning of the ALP in May 2001, no party has suggested that federal takeover would be appropriate and no federal agency has expressed an interest in operating the Project.

7.2.2 Non-Power License

A non-power license is a temporary license the FERC would terminate whenever it determines that another governmental agency is authorized and willing to assume regulatory authority and supervision over the lands and facilities covered by the non-power license. At this time, no governmental agency has suggested a willingness or ability to takeover the Project. No party has sought a non-power license and no basis exists for concluding that the Project should no longer be used to produce power. Thus, a non-power license is not considered a reasonable alternative.

7.2.3 Project Retirement

Retiring the Project would require denying SMUD's license application and require the surrender and termination of SMUD's existing license with any necessary conditions. The Project would no longer be authorized to generate power. The 688 MW Project is an important component in SMUD's integrated generation portfolio, providing economical power, operational flexibility, and other ancillary benefits to SMUD's customer-owners. There would be substantial costs involved with retiring the Project and/or removing any Project facilities, and retirement would foreclose any opportunity to add PM&E measures to the existing Project. Since the beginning of the ALP in May 2001, no party has suggested that Project retirement would be appropriate or should be considered. For these reasons, Project retirement is not considered a reasonable alternative.

8.0 SCOPE OF CUMULATIVE EFFECTS ANALYSIS & ENVIRONMENTAL ISSUES

8.1 Cumulative Effects and Impacts

The PDEA will analyze cumulative effects and impacts. Under CEQA, "cumulative impacts" refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts (Cal. Pub. Resources Code § 15355). According to the Council on Environmental Quality's regulations for implementing NEPA (50 CFR 1508.7), an action may cause cumulative impacts on the environment if its impacts overlap in space and/or time with impacts of other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

Resources that could be affected cumulatively by the continued operation of the UARP in combination with other activities in the South Fork American River Basin include: (1) water quality, (2) water temperature, (3) fisheries populations, (4) benthic macroinvertebrates, (5) amphibian populations, and (6) recreation.

8.1.1 Geographic Scope

The geographic scope of the cumulative effects analysis defines the physical limits or boundaries of the projects action's effect on resources. It is defined by the physical limits or boundaries of: (1) the UARP's effects on the resources, and (2) the contributing effect from other hydropower and non-hydropower activities.

In this case, the overall scope of analysis for all six potentially cumulatively affected resources is proposed to encompass the South Fork American River between Chili Bar Dam and Folsom Lake. UARP operations, in conjunction with operation of the Pacific Gas and Electric Company's Chili Bar Project (FERC Project No. 2155), interact in a cumulative sense.

8.1.2 Temporal Scope

The temporal scope of the cumulative effects analysis will include past, present and future actions, and their effects on each resource that could be cumulatively affected. For the purposes of this analysis, the temporal scope will look 30-50 years into the future, concentrating on the effect on the resources from reasonably foreseeable actions. The historical discussion will, by necessity, be limited to available information for each resource. Current resource conditions will also be identified.

8.2 Resource Issues

The following resource issues are presented first for the existing Project developments, followed by the proposed Iowa Hill Pumped Storage Development.

8.2.1 Existing Project Developments

This section contains a preliminary list of key environmental and developmental issues to be addressed in the PDEA and EIR relative to the relicensing of the existing UARP facilities. The list of issues was developed from the extensive scoping that occurred early in the ALP (see Appendix A). This list is not intended to be exhaustive or final, but it is reflective of the issues that have been identified to date in the relicensing process. All issues raised during the scoping comment period will be reviewed and evaluated to determine the appropriate level of analysis needed in the environmental documents. Issues identified with an asterisk (*) are considered overlapping issues associated with the coordinated operation of the UARP and Chili Bar Project.

8.2.1.1 Water Use and Quality

- Effects of project operations and alternative reservoir levels and project reach flows on compliance with applicable state water quality standards (including water temperature) along project waters.*
- Effects of project operations and alternative project reach flows on sediment transport, gravel recruitment, and channel morphology below project reservoirs.*
- Effects of project operations and maintenance (including road use) and use of project recreation facilities on erosion or sedimentation along project waters.
- Effects of project operations and maintenance and recreational activities, including boating and water contact sports, on reservoir and riverine water quality.*

8.2.1.2 Aquatic Resources

- Effects of project operations and alternative project reach flows on water temperature, and physical habitat, and population levels of special status fish species.*
- Effects of project operations and alternative reservoir levels on use of project reservoirs (including in-reservoir spawning and movement into tributary streams) by resident species.
- Effects of project operations and alternative project reach flows on macroinvertebrate populations downstream of project reservoirs.*
- Effects of project operations and alternative reservoir levels and project reach flows on special status amphibians, including the California red-legged frog, mountain yellow-legged frog, and foothill yellow-legged frog and on aquatic reptiles, including the western pond turtle.*

- Whether protective measures for entrainment of fish at the intake structures of project reservoirs are warranted.

- Effects of project operations and alternative project reach flows on downstream distribution of large woody debris.*

8.2.1.3 Terrestrial Resources

- Effects of project facilities, operations, and maintenance and alternative PM&E measures on special status bird species, including osprey, bald eagle, California spotted owl, willow flycatcher, and northern goshawk.
- Effects of project facilities, operations, and maintenance and alternative PM&E measures on the valley elderberry longhorn beetle.
- Effects of project facilities, operations, and maintenance and alternative PM&E measures on special status plant species.
- Effects of project facilities, operations, and maintenance and alternative PM&E on noxious weeds.
- Effects of project facilities, operations, and maintenance and alternative PM&E measures on bat populations.
- Effects of project facilities (including canals, transmission line corridors, and penstock routes) and alternative PM&E measures on mortality and movement of deer populations.
- Effects of project facilities, operations, and maintenance and alternative PM&E on bear populations and special-status mesocarnivore populations.
- Effects of project operations and alternative project reach flows on recruitment and reproduction of riparian vegetation project reservoirs.*
- Effects of project operations and alternative reservoir levels and project reach flows on wetlands.*

8.2.1.4 Recreation and Visual Resources

- Adequacy of the supply, and quality, of project recreation facilities to meet present and future recreational demand.
- Whether specific project facilities, bodies of water or areas are near to, at, or over their social or environmental carrying capacity.
- Effects of project operations and alternative flows on whitewater boating in project reaches.*
- Effects of project operations and alternative reservoir levels at Ice House, Union Valley and Loon Lake Reservoirs on recreation and aesthetics.
- Whether specific measures are needed to ensure that project features are compatible with the visual setting.

8.2.1.5 Socioeconomics

- Effects of visitation to project recreation facilities and the project's operation and maintenance workforce on the local economy, public safety services, and local residents' quality of life.
- Effects of alternative PM&E measures on inducing growth in El Dorado County.

8.2.1.6 Land Use

- Whether the project is consistent with the Eldorado National Forest Land and Resource Management Plan and other pertinent plans and planning efforts.
- Whether the project is consistent with the management objectives for the Desolation Wilderness.
- Effects of the project's operations and maintenance and the use of the project's recreation facilities on wildfire risk and fire management.

8.2.1.7 Cultural Resources

- Effects of project operations and alternative PM&E measures on archaeological and historical sites and sites of concern to Native Americans.

8.2.1.8 Air Quality

- Effects of project operations and alternative PM&E measures on air quality.

8.2.1.9 Developmental Resources

- Effects of alternative PM&E measures on UARP power generation and SMUD economics.

8.2.2 Proposed Iowa Hill Pumped Storage Development

8.2.2.1 Aquatic Resources

- Effects of the Iowa Hill Development on surface hydrology from captured stream channels.
- Effects of Iowa Hill Development operation on the frequency and volume of spills into the South Fork American River from Slab Creek Reservoir.
- Effects of Iowa Hill Development on turbidity in the South Fork American River during project operation due to weakened bank stability in Slab Creek Reservoir and/or exposure of sediment deposits in the back end of the reservoir.

- Whether the Iowa Hill Development construction and operation/maintenance impacts amphibians and aquatic reptiles (e.g., California red-legged frog, foothill yellow-legged frog, and western pond turtle) in the stream system above the reservoir.
- Effects of Iowa Hill Development operation on aquatic species in Slab Creek Reservoir, including hardhead, that would be at risk of entrainment in the development intake facility.
- Effects of Iowa Hill Development construction activities on water quality.
- Effects on the thermal regime of Slab Creek Reservoir and the South Fork American River downstream of the reservoir due to temperature change (warming) that may occur with water being recycled in a small upper reservoir.

8.2.2.2 Terrestrial Resources

- Loss of vegetation due to land disturbance, both short-term disturbance and long-term loss, including timber removal.
- Loss of wildlife habitat due to the land disturbance.
- Loss of wetlands that would be affected by the construction and operation/maintenance of the Iowa Hill Development.
- Effect of Iowa Hill Development on deer migration during construction and operation/maintenance?
- Effects of Iowa Hill Development on California spotted owl protected activity centers.
- Effects of Iowa Hill Development on raptors, including the northern goshawk.
- Effects of Iowa Hill Development on the valley elderberry longhorn beetle.
- Whether the Iowa Hill Development will affect sensitive plants resulting from construction activities and operation/maintenance.
- Effects of Iowa Hill Development on introduction of noxious weeds.

8.2.2.3 Cultural Resources

- Effect of the Iowa Hill Development on Heritage resource sites (e.g., Cable Point timber transportation).

8.2.2.4 Recreation and Visual Resources

- Effect of Iowa Hill Development operations on: (1) public access at the upper end of Slab Creek Reservoir due to reservoir fluctuations, (2) recreation on Slab Creek Reservoir itself due to reservoir fluctuations, (3) recreation in other parts of the project (Ice House, Union Valley and Loon Lake Reservoirs), and (4) recreation downstream of Slab Creek Reservoir as well as downstream of Chili Bar Dam.
- Effects of Iowa Hill Development facilities, including upper reservoir berms and transmission line corridor, on visual resources from Slab Creek Reservoir, ridge east of Red Bird creek, and other key viewpoints.

- Effects of Iowa Hill Development intake and discharge rates on recreational safety, including boating and swimming.
- Whether constructing Iowa Hill would cause recreation use to increase.

8.2.2.5 Land Use and Socioeconomics

- Consistency of Iowa Hill Development with existing land use regulations and compliance plans (comprehensive plans).
- Effect of Iowa Hill Development on existing land uses and management.
- Effects of Iowa Hill Development construction and operation on fire risk in the canyon.
- Effects of Iowa Hill Development construction activities on socioeconomic resources of the area, including, police, fire, health, schools, housing, schools, and tourism.

Appendix A

Issue Questions Identified During Initial Stages of UARP Alternative Licensing Process (ALP)

Issue Questions Identified During Initial Stages of Upper American River Project ALP

This appendix presents a list of approximately 250 resource issue questions that have been identified to date within the Alternative Licensing Process relative to the relicensing of the existing project. The process of developing these issue questions within the Alternative Licensing Process (ALP) began in June of 2001. The questions were initially developed within the Plenary Group of the ALP. Additional input from the public, via public workshops and other means, was integrated into the final list of issue questions, which was formally approved by the Plenary Group. All issue questions were grouped into six major resource areas, consistent with the different Technical Working Groups (TWGs) formed by the Plenary Group. The six technical resource areas include:

- Aquatic, Water Quality, Geomorphology, and Hydrology Resources
- Cultural Resources
- Recreation
- Socioeconomic Resources
- Land Use
- Terrestrial Resources

Each TWG assigned the different issue questions to different study plans, as listed below. The Plenary Group has approved these study plans, and most studies are being implemented or have been completed. Following each list of study plans are additional issue questions that (1) are part of a draft study plan not yet approved by the Plenary Group, (2) don't warrant a study (e.g., an information request or a recommended PM&E), or (3) are being addressed in another venue such as the Joint Benefits Investigation Team established between SMUD, El Dorado County Water Agency and the El Dorado Irrigation District.

The Plenary-approved study plans are available to the public at SMUD's relicensing web site at http://hydrorelicensing.smud.org or by calling the Hydro Relicensing Project at (916) 732-5838.

AQUATIC, WATER QUALITY, GEOMORPHOLOGY & HYDROLOGY RESOURCES

Water Quality Study Plan

- Is operation of the Project protective of Basin Plan Designated beneficial uses?
- How does the Project affect water quality (e.g. turbidity) and sedimentation, specifically at Slab Creek Reservoir, as operation of this reservoir affects sediment transport into Chili Bar Reservoir?
- How can we manage that impact if it exists? What are the historic events that have affected sedimentation?
- Do the waters below the Project reservoirs meet the water quality objectives of the Basin Plan? How can the Project be managed to help meet them?
- What type of long-term sediment and water quality strategies, operational practices and maintenance strategies exist?
- Do the waters within the reservoirs and the diverted reaches adequately protect all designated beneficial uses?
- Identify the Project-related pollution events that may have occurred in the watershed.
- What are the (Project induced) effects of recreation (including on water and upslope activities) on water quality in the reservoirs and stream reaches (e.g. dispersed recreation and outhouses)?
- What is the location of all spoil piles within the Project area and what are the effects on water quality?

Note: the water temperature in both streams and reservoirs as well as pH, dissolved oxygen and conductivity in reservoirs are addressed in detail in the draft Water Temperature Study Plan and are included in this study to the extent that concurrent sampling will take place along with dependent constituents.

PHABSIM Study Plan

- What effect do flows have on species during critical life stages?
- What are the limiting features of a natural (unimpaired/pre-project) hydrograph on aquatic species?
- Are the minimum stream flows defined under the existing license adequate for protecting aquatic resources?

Fish Surveys Study Plan

- Does the Project affect special-status species? If so, then where and how?
- What are the appropriate species to be used as indicator species for management of the Project related to flows?

- Do Project diversions have an effect on aquatic biota? (e.g. are fish screens necessary? Low-flow channels & dams?
- What are the composition, distribution, and population of aquatic resources in the Project-affected streams and reservoirs (including benthic macroinvertebrates)?
- What are the effects of the Projects on warm water fisheries in the project reservoirs?

Note: this study plan only addresses fish species. Other aquatic special status species and resources are addressed in the Amphibian and Aquatic Reptiles Study Plan, and benthic macroinvertebrates are addressed in the Aquatic Bioassessment Study Plan.

Habitat Mapping Study Plan

- What effect do flows have on species during critical life stages?
- How do sport-fishing releases affect native species and the ability to manage them?
- How does spill water affect aquatic resources?
- How are Project releases into Chili Bar affecting aquatic resources?
- What are the limiting features of a natural (unimpaired/pre-project) hydrograph on aquatic species?
- Are the minimum stream flows defined under the existing license adequate for protecting aquatic resources?

Hydrology Study Plan

- How has the Project affected the timing and natural hydrology in all Project reaches and tributaries? What are the effects on habitat and geomorphology?
- What are the unimpaired (pre-Project) and regulated flows in the Project area? What is the range of variability of those flows?

Aquatic Bioassessment Study Plan

- What is the health of existing macroinvertebrate communities in diverted reaches as an indicator of water quality?

Reservoir Fish Habitat Study Plan

- Do annual/seasonal/daily water level fluctuations in reservoirs affect aquatic species? Which ones are affected? How are they affected? When are they affected?
- What are the effects of the Project to warm water fisheries in the project reservoirs?
- How are project releases into Chili Bar affecting aquatic resources?

Note: this study plan only addresses fish; amphibians and aquatic reptiles are addressed in the Amphibians and Aquatic Reptiles Study Plan. The fish species that occur in the Project reservoirs will be confirmed based on the Fish Surveys Study. For the purposes of this study plan's execution, it is understood that SMUD will address the UARP reservoirs and SMUD and PG&E will jointly address Chili Bar Reservoir.

Assessment of Controlled and Uncontrolled Spill From Project Reservoirs Study Plan

- Could the ramp up and down rate be sped up in the future license to avoid future spills? What are the effects on biota and safety?

Deepwater Intake Entrainment Study Plan

- Do Project diversions have an effect on aquatic biota (e.g., are fish screens or low flow channels in dams necessary)?

Project Sources of Sediment Plan

- What effects do the Project features and operations have on fluvial geomorphology and stream habitat?
- How do Project-related features affect sediment budgets?

Note: the Channel Morphology Study Plan addresses sediment once it enters the river and reservoirs (within the flood-prone area), and the Water Quality Study addresses turbidity. Also note that as part of the Reservoir Fish Habitat Study, any obvious areas of erosion along reservoir banks will be identified.

Amphibians and Aquatic Reptiles Study Plan

- Does the Project affect special-status species? If so, where and how?
- What is the composition, distribution, and population of aquatic resources in the Project-affected streams and reservoirs, including benthic macroinvertebrates?

Note: this study only addresses amphibians and aquatic reptiles; other aquatic special status species and resources are addressed in the Fish Survey Study and benthic macroinvertebrates are addressed in the Aquatic Bioassessment Study.

Channel Morphology Study Plan

- What effects do project features and operations have on fluvial geomorphology and stream habitat?

- What are the physical attributes (i.e., available pools and presence of large debris) of the Project? How have they been affected by the Project? What habitat is provided by those attributes (habitat mapping)?
- Do project features affect distribution of large wood in streams? Do they comply with Forest Service standards?
- What Project flows affect recruitment and reproduction of riparian plants?
- How are the Project operations affecting gravel recruitment (related to spawning and macroinvertebrate habitat)?
- Does operation of the Project affect stream bank stability?
- Does the existing minimum stream flow requirements adequately protect the fluvial geomorphological processes?

Other Aquatic Resources Issue Questions

- What are the effects of water temperatures on downstream project diversions and resources?
- What are the temperatures available in the project including potential modifications (e.g., cold water pools)?
- What water temperature data already exists for the project area and what are the gaps?
- What mathematical models are available for evaluating project-related water temperature impacts?
- What are all of the effects (including temperature, turbidity, recreation, etc.) of the daily ramping below Chili Bar to aquatic and riparian resources?
- How are ramping rates affecting aquatic and riparian species (including Chili Bar)?
- How are fish migrations and movements affected by the project?
- Do the project diversions have an effect on aquatic biota (e.g., are fish screens necessary? low-flow channels & dams?)? (Note: this question is for the draft Shallow Water Entrainment Study Plan.)
- What are the effects of the trans-basin diversion on aquatic resources and geomorphology?
- What enhancements can be made for aquatic resources? (Note: TWG identify existing or potential impact first.)
- What is the best process for coordinating aquatic studies?
- What are the cumulative effects of the project, maintenance of the project, operations of the project, and structures, on aquatic resources (including interruption of ecological processes and species life cycles)?
- What tributaries are affected by projects in the study area? (Study areas will change by species and studies.)
- What streams in the area that are not affected by the project, have the potential to be study or mitigation reaches? (Note: TWG to identify need first.)
- What available studies could help this project?
- What is the ideal flow regime for aquatic species?

- What aquatic species should we manage for in the future?
- Do project operations comply with existing aquatic resource management plans?
- What is the potential for the project to influence Folsom Lake with respect to monthly and seasonal release patterns and the interaction with release patterns of other agencies (e.g. SAFCA, USBR)? (Note: TWG determine feasibility and identify existing information first.)
- What are Chili Bar's minimal flow requirements and are they different in dry-years? What are SMUD's obligations to supply Chili Bar with water to meet these requirements?
- What is SMUD's existing sediment management plan? What are the effects on Forest Service land?
- What regulatory and contractual constraints affect flows relative to the project? (Chili Bar, PG&E)
- What are the agreements or normal operational protocols between SMUD and PG&E?
- What are the contractual obligations between PG&E/SMUD to operate the White Rock/Chili Bar facilities?
- To what extent have whitewater flows below Chili Bar been a result of licensing for operational requirements versus informal, unenforceable arrangements?

CULTURAL RESOURCES

Archaeological and Historical Resources Study Plan

- Are there sites eligible for the National Register of Historic Places in the project area (Area of Potential Affect, APE)?
- Is there a complete inventory of cultural sites in the project area (APE)?
- What is the archaeological record of habitation for the UARP area (APE)?
- Are the UARP facilities or other sites considered historic because they meet NHPA standards, or will during the term of the next license?
- Is the former FERC Project No. 78 (the old PG&E American River Project) a historic site?
- What are the impacts on cultural sites (e.g., farm sites) and historical use (including grazing) associated with the inundation of land by UARP reservoirs? Can there be a complete literature survey of this impact, including under the reservoirs (no drainage required)?

Ethnographic and Ethnohistoric Study Plan

- What is the list of critical vegetation used for Native American practices in the APE?
- Have appropriate Native American Tribes and cultural groups been identified in the project area for participation or consultation in the UARP relicensing? What preferences do the tribes have for how they participate in the relicensing process?
- Does the project affect culturally significant sites? And if so, are there opportunities to enhance sites that are of cultural significance to Native Americans Tribes?

- Are there cultural properties of importance to non-tribal interests groups (e.g., Basque)?
- What is the cultural significance of historical grazing activities and the continuance of the activity?

Other Cultural Resources Issue Questions

- Are there combined project-related impacts between Chili Bar and UARP? If so, what are they (to be determined by APE designation)?
- Are there historic properties being adversely affected by project activities (including recreation) and if so, can they be protected from further deterioration?
- Are there historic properties that will require monitoring, mitigation, or data recovery?
- Are there cultural sites being affected by wave action or exposure as these reservoir levels change?
- Is the former FERC Project No. 78 (the old PG&E American River Project) suitable for public interpretation?
- Are there specific cultural properties (e.g., historic ranches, prehistoric sites) amenable to public interpretation?
- Is a programmatic agreement necessary to complete the Sect. 106 process to comply with the National Historic Preservation Act?
- Is a heritage resources management plan needed to meet long-term preservation issues?

RECREATION AND AESTHETIC RESOURCES

Recreation Supply Study

- What are the material conditions of Project developed sites and facilities? Do project recreational facilities on USFS lands meet current design requirements (including accessibility)?
- What are the regional recreational opportunities in view of the primary recreational opportunities at the Project?
- Are there any, and if so, what is the status of any identified/designated Wild and Scenic River reaches (e.g., USFS, BLM, NRI, or state) affected by the Project?
- What are the existing Project facilities (e.g., identify, inventory and map)?
- Where are the dispersed recreational sites near Project facilities (e.g., identify and map)?
- What are the existing recreational opportunities (Note: includes opportunities at dispersed recreational sites near Project facilities)?

Recreation Demand Study

- Does the project affect recreation at the following areas: Highway 50 at the turnoff for Ice House Road and Wentworth Springs Road?
- Is there demand for trails under power line corridors? If so, what opportunities/constraints exist to use power line corridors as trails?
- Is there a need for connections between existing and future trails within and outside UARP? If so, are there opportunities to provide connections between existing and future trails within and outside UARP?
- What are the regional recreational demands (current, past and projected) in view of the primary recreational opportunities on these projects?
- Are the existing sport fishing opportunities adequate to meet existing and future recreation demand?

Visitor Use and Impact Study

- What is the level of project induced recreation? (e.g., What would the recreational opportunities be today if the project were not built)?
- What are the benefits of recreation associated with the UARP?
- How is recreator behavior affected by project operations?
- What are the current and projected user conflicts related to recreation at or in the vicinity of the Project?
- What are project related reservoir fluctuations that impact reservoir recreation?
- What are the combined impacts to recreation relative to flows and reservoir levels of the UARP and Project 184 (Silver Creek confluence downstream)?
- How do project operations affect site qualities at developed recreation sites (e.g., lake levels)?
- What are the effects of project facilities and operations on wilderness values?
- What are the existing and future use estimates for Project-related recreation?
- What is the existing level of public information and interpretation about Project-related aspects and recreational opportunities, and is it adequate?
- What are the opportunities for angling at Project waters and what is the level of angler satisfaction?

Recreation Carrying Capacity Study

- What is the recreation carrying capacity for the Project with respect to the recreational experience and the ecological system?

Recreation Needs Assessment

- Identify recreation needs for the Project over the term of the license, including facilities from UARP to White Rock Powerhouse.
- Do existing project related transportation facilities (e.g. roads and trails) meet current/future recreation needs?
- Can the trail from Loon Lake to Rubicon Reservoir be made more recreation friendly, or easy to walk on?
- What needs exist for providing trail access around and through Project facilities to the river edge for fishing, portage, etc.?
- Are there any needed or desired repairs/replacements at Project recreation facilities?
- Are there any needed or desired measures (e.g., education, engineering, enforcement) at dispersed recreational sites near Project facilities?

Aesthetics Study

- Are the Project facilities and operations consistent with the visual quality objectives in the Forest Service plan?
- What is the visual impact of spoils pile (e.g., Slab Creek and White Rock adit)?
- What are the visual impacts of stumps in the lakes? (Buck Island or Rubicon Lakes?)
- What are the project related effects on aesthetics of lands under transmission lines?
- What are the effects of Project facilities and operations on wilderness visual quality?

Whitewater Boating Feasibility Study

- Is it possible to have consistent and regular releases that support boating in the reach between Slab Creek Dam and Chili Bar reservoir?
- What are the optimal and minimum boating flows between Slab Creek Dam and Chili Bar, for all crafts, and all classes of boating?
- What are the effects of potential boating flows on water levels of Project reservoirs?
- What maximum and minimum flow regimes are required for whitewater boating in stream reaches affected by the Project, including upper Rubicon River?
- Can we provide whitewater boating flow phone, web site, flow modeling for 1-week intervals, and past releases?
- Can there be a flow management hydrology model (unimpaired hydrograph) built with a whitewater filter that estimates flows assuming UARP/Chili Bar presence and absence?
- What is the need for, and feasibility of, whitewater boating in the reached below Project dams?

Recreational Flow Study (Downstream Reach below Chili Bar Dam)

- What are the effects of boating flows on water levels of UARP/Chili Bar Project reservoirs?
- Can there be a flow management hydrology model (unimpaired hydrograph) built with a whitewater filter that estimates flows assuming UARP/Chili Bar presence and absence?
- What are the impacts of the combined UARP and Chili Bar Projects on all types of recreation downstream of Chili Bar Dam?
- What are the benefits of recreation associated with the UARP/Chili Bar Projects?
- Are there any and, if so, what is the status of any identified/designated Wild and Scenic river reaches (e.g., USFS, BLM, NRI, or State of California) affected by the UARP/Chili Bar Projects?
- What are the combined impacts to recreation relative to flows and reservoir levels of the UARP and Project 184 (Silver Creek to confluence downstream)?
- What are the effects of UARP/Chili Bar Projects operation on whitewater boating in the 20-mile reach below Chili Bar dam?
- Is it possible to have consistent and regular releases that support boating in the reach below Chili Bar (note: this question will also be addressed in the Recreation Plan because it's a trade-off question)?
- Can we provide whitewater boating flow information in advance for different stretches in the Project area, such as flow phone, website, flow modeling for 1-week intervals, and past releases (Note: this question will also be addressed in the Recreation Plan because it's a trade-off question)?
- How could operational changes to existing UARP facilities enhance the established whitewater-based recreational industry in El Dorado County? What would be the economic consequences to UARP? (Note: this question will also be addressed in the Recreation Plan because it's a trade-off question)?

Recreation Plan

The recreation plan integrates information from the other recreation studies and separate analyses performed to identify impacts associated with recreation on other resources to develop a long-term recreation plan associated with the UARP.

- Can efforts be made to coordinate lake levels and releases for recreation (all forms of recreation)?
- What additional use could be made of Project lands compatible with the Project (e.g., transmission lines for trails)?
- Who is liable for public safety regarding new recreational opportunities?
- What are the current and future costs of maintenance of existing and planned recreation facilities and of monitoring recreation uses?
- What could be done to enhance the existing recreational opportunities?

- Can we coordinate stream flow for recreation and ecological protection?

- Are the current/future Project recreation facilities/plans/operations consistent with the comprehensive recreation management plans of CDFG, USFWS, BLM, USFS, El Dorado County General Plan and other agencies?
- What are the current and future costs of maintaining existing Project related recreational facilities and dispersed use management (monitoring) for BLM, and USFS from UARP to White Rock?
- Is the current manner in which SMUD reimburses USFS adequate (e.g., how does it compare with the industry standard?
- What opportunities exist to coordinate operations with Project 184 in regard to reservoir levels throughout the watershed and river flows below Slab Creek Reservoir?
- Are there any and, if so, what is the status of any identified/designated Wild and Scenic river reaches (e.g., USFS, BLM, NRI, or state) affected by the Project?
- Could the ramp rates be changed in the future license to avoid future spill: what are the effects on biota and safety?
- If there are any needed or desired repairs/replacement at Project recreation facilities or any needed or desired measures (e.g., education, engineering, enforcement) at dispersed recreation sites near Project facilities, what would be the plan for development and implementation?
- What potential exists to enhance flatwater recreation by modifying Project operations (i.e., reservoir levels)?
- Is it possible to have consistent and regular releases that support boating in the reach below Chili Bar?
- Can we provide whitewater boating flow information in advance for different stretches in the Project area, such as flow phone, website, flow modeling for 1-week intervals, and past releases?
- How could operational changes to existing UARP facilities enhance the established whitewater-based recreational industry in El Dorado County? What would be the economic consequences to UARP?

Other Recreation Issue Questions

- What are the contractual obligations between PG&E/SMUD to operate the White Rock/Chili Bar facilities? (Note: this question is also listed under other aquatic issue questions).
- What are the agreements or normal operational protocols between SMUD and PG&E? (Note: this question is also listed under other aquatic issue questions).
- What are Chili Bar's minimal flow requirements and are they different in dry-years? What are SMUD's obligations to supply Chili Bar with water to meet these requirements? (Note: this question is also listed under other aquatic issue questions).

- To what extent have whitewater flows below Chili Bar been a result of licensing for operational requirements versus informal, unenforceable arrangements? (Note: this question is also listed under other aquatic issue questions).
- Should there be whitewater boating releases from UARP and Chili Bar? What are the environmental and economic costs and benefits?
- What is the economic value of different recreational activities, in terms of the amount of money the different activities generate?
- What opportunities exist for environmental enhancement of existing recreational opportunities, focusing on dispersed recreation?
- Can a list of out-of-kind mitigation measures that are recreational opportunities be created?
- Is there a demand for flat-water recreation at Chili Bar reservoir? If so, what opportunities/constraints exist for flat-water recreation of Chili Bar reservoir?
- How does whitewater boating affect other recreational opportunities downstream of Chili Bar Dam?
- What recreational opportunities have been displaced by the project facilities and have those been adequately accommodated in the region? (Note: this question was eliminated by the Plenary Group on January 9, 2002, because the question has overlap with questions being addressed by the cultural and recreation TWGs and the historical part of the question is highly speculative).

On January 7, 2002, the Recreation TWG determined no study was needed relative to the following three issue questions:

- What are the current recreation impacts on public lands below Chili Bar?
- What are the recreation facility needs along the 20-mile corridor?
- Does the Project affect recreation at Coloma (additional whitewater recreation access)?

The following six issues questions focuses on the impacts of recreation on non-recreation resources, and will be addressed largely by other technical working groups. The Recreation Technical Working group, however, will supply information to the other technical working groups regarding the specific mechanisms of impact and geographic areas of concern.

- What effects do project related developed and dispersed recreation (including OHV/OSV) have on other resources?
- What are the effects of project-induced recreation on wilderness?
- What are the public-safety needs of induced recreation on law enforcement, medical, fire, search and rescue (risks, issues, and mitigation)?
- What are the impacts of campgrounds on water quality?
- What are the project-induced recreation impacts on water quality? Does Project operation or Project-induced recreation affect water quality along the Rubicon OHV Trail near Spider Lake and Buck Island Reservoir?

- What are all of the effects (including temperature, turbidity, recreation, etc.) of the daily ramping below Chili Bar to aquatic and riparian resources? (Note: this issue is also listed under other aquatic resources issue questions).

SOCIOECONOMIC RESOURCES

Socioeconomic Impact Study Plan

- What are the socioeconomic benefits (direct, indirect and induced) and costs of the UARP to El Dorado County and the Region?
- What are the benefits and costs (local and regional) of the UARP to federal land agencies?
- What are the public-safety needs of induced recreation on law enforcement, medical, and search and rescue (risks, issues and mitigation)?

Reoperation Study Plan

- How could operational changes to existing UARP facilities contribute to meeting demonstrated water supply and drought protection needs in El Dorado County? What would be the economic consequences to UARP?

Other Socioeconomic Issue Questions

The Regulatory Overview Document addresses the following three issues questions:

- To what extent does the City of Sacramento's (all claimed water rights in the Project area) consumptive water rights affect UARP operations?
- To what extent would reassignment of SMUD's still-held, Project-related consumptive water rights affect UARP operations?
- To what extent do all consumptive water rights and other contractual obligations affect the Project's operation?

The following five issue questions are addressed via the Master Memorandum of Understanding, approved by the Plenary Group on May 1, 2002:

- How does the UARP fit into consumptive water and drought protection needs of EDC?
- What realistically can/should be done to assist EDC water needs, including EID, GDPUD, and EDCWA?
- What are the existing water rights?
- Is it advantageous for EDC and SMUD to jointly pursue: 1) investment in recent and future increases in plant capacity; 2) joint development of future pumped storage in the basin; 3)

future water storage; 4) SMUD annexing all or some of PG&E's distribution lines in EDC; and 5) EDC and SMUD joint license application for UARP.

- How could additions to UARP facilities or integrated operation with other existing or proposed water storage and electric generation facilities advance these same goals? What would be the economic consequences to UARP?

The following four issue questions relate to the reach downstream of Chili Bar Dam:

- What are the combined project impacts of UARP and Project 184 to socioeconomics (local and regional)?
- What are the effects (local and regional) of Project operation on whitewater boating-associated businesses in the 20-mile reach below Chili Bar Dam?
- How have water use decisions affected socioeconomics (local and regional) in this year (2001) versus others?
- Is there an opportunity to manage for timed spills into Chili Bar?

LAND USE

Land Use Study Plan

- What are SMUD's management plans on lands they use?
- What are the existing land use regulations and compliance plans (comprehensive plans) and is the Project consistent with these regulations and plans?
- How does the project affect existing land uses and management?
- What is the SMUD land ownership in the project area including easements, use agreements, and right-of-ways?
- What land management actions relate or are associated with Project operations (e.g., high river flow creates boating, creates access, etc.)?
- Are there spoil sites (e.g., tunnel muck) that are no longer needed or that need maintenance?
- Are there impacts from roads or transmission lines and their maintenance (e.g., erosion and sedimentation)?
- Is the current design and maintenance of Project roads adequate for Project function? (Note: this is an information request that is related to the Project Roads Assessment.)
- Is there access to SMUD's transmission lines (e.g., for mobile biomass generation)? (Note: this issue question is on hold pending discussion on its relevance and intent.)
- What are the effects on the Forest Service associated with maintenance and public use management of (a) lands located below the high water mark, (b) areas close to dams and (c) powerline corridors?
- What are the effects to private landowners and/or local governments associated with maintenance, unauthorized public use and security of Project access roads?

Fire Risk and Protection Study Plan

- Is there a need for fuels management to protect Project facilities?
- Does the Project affect fuels management and if so, how?
- What are the infrastructure needs (if any) for fighting fires associated with Project-related operations?
- What are the public safety needs of induced recreation on fire (risks, issues and mitigation)?
- Does the Project increase fire risk? What are the potential mitigation or prevention measures to reduce fire risk?

Other Land Use Issue Questions

- Is there access to SMUD's transmission lines (e.g., for mobile biomass generation) (note: this issue question is on hold pending discussion on its relevance and intent)?

TERRESTRIAL RESOURCES

Bald Eagle and Osprey Study Plan

- What are the relevant and known factors (limiting and beneficial) affecting special status bird populations in the Project area and how/where are these factors influenced by Project operation and maintenance?
- What are the Project impacts on special status birds with particular emphasis on Project facilities, operation, maintenance and Project-influenced recreation?
- To what extent do Project operations and maintenance activities and Project-induced recreation affect bald eagle populations?

Bat Study Plan

- What are the relevant and known factors (limiting and beneficial) affecting special status bat populations in the Project area and how/where are these factors influenced by Project operation and maintenance?
- Where and to what extent has the Project created or affected bat roosts and foraging habitat?

Bird/Powerline Associations Study Plan

- What are the relevant and known factors (limiting and beneficial) affecting special status bird populations in the Project area and how/where are these factors influenced by Project operation and maintenance?
- To what extent do Project-associated power lines comply with established design standards for protection of raptors and other birds from electrocution? To what extent do Project-associated power lines contribute to avian collision mortality?

- What are the Project impacts on special status birds with particular emphasis on Project facilities operation, maintenance and Project-influenced recreation?

Black Bear Study Plan

- How and where does SMUD's infrastructure and operations affect wildlife movement?
- What are the relevant and known factors affecting bear behavior in the Project area and how/where are these factors influenced by Project operation and maintenance?
- What are the effects on terrestrial resources of having year-round roads in the Project area? (e.g., what are the effects related to bear hunters having access to the Project area because of road clearing?
- What are the impacts on terrestrial resources due to secondary use of project access roads (e.g., OHV use)?
- Relative to effects on wildlife, what is the use of off-road vehicles by season? By month?

California Spotted Owl Study Plan

- What are the relevant and known factors (limiting and beneficial) affecting special status bird populations in the Project area and how/where are these factors influenced by Project operation and maintenance?
- What are the Project impacts on special status birds with particular emphasis on Project facilities, operation, maintenance and Project-influenced recreation?
- To what extent do Project operations and maintenance activities and Project-induced recreation affect spotted owl populations?

Coast Horned Lizard Study Plan

- What are the relevant and known factors (limiting and beneficial) affecting special status terrestrial reptile populations in the Project area and how/where are these factors influenced by Project operation and maintenance?
- What are the Project impacts on special status terrestrial reptiles?

Invasive/Noxious Weeds Study Plan

- Where and to what extent do Project operations contribute to the establishment, maintenance and expansion of invasive/noxious weeds within the Project area?
- What is the distribution of invasive/noxious weeds within the Project area?

Special Status Mesocarnivore Study Plan

- What are the relevant and known factors (limiting and beneficial) affecting special status mesocarnivore populations in the Project area and how/where are these factors influenced by Project operations and maintenance?

Mule Deer Study Plan

- How and where does SMUD's infrastructure and operations affect wildlife movement?
- How does SMUD's infrastructure and operations affect deer movement?
- What are the relevant and known factors (limiting and beneficial) affecting deer populations in the Project area and how/where are those factors influenced by Project operation and maintenance?
- What is the extent of wildlife drowning in Gerle Creek Canal or in the ditch below the outlet of the Rubicon-Rockbound Tunnel?
- What are the impacts on terrestrial resources due to secondary use of project access roads (e.g., OHV use)?
- Relative to effects on wildlife, what is the use of off-road vehicles by season? By month?

Northern Goshawk Study Plan

- What are the relevant and known factors (limiting and beneficial) affecting special status bird populations in the Project area and how/where are these factors influenced by Project operation and maintenance?
- What are the Project impacts on special status birds with particular emphasis on Project facilities, operation, maintenance and Project-induced recreation?
- To what extent do Project operations and maintenance activities and Project-induced recreation affect northern goshawk populations?

Northern Sagebrush Lizard Study Plan

- What are the relevant and known factors (limiting and beneficial) affecting special status terrestrial reptile populations in the Project area and how/where are these factors influenced by Project operation and maintenance?
- What are the Project impacts on special status terrestrial reptiles?

Riparian Vegetation Study Plan

- What is the distribution of riparian areas/zones surrounding project reservoirs and along stream reaches where flows are altered by project operations and in other areas influenced by project facilities or operations?

- What is the current condition of the riparian habitat along each affected stream reach? Is there information on historical conditions that would be of use in evaluating potential improvement to the riparian habitat? How has the condition changed?

Special Status Plants Study Plan

- What special status plants are affected by Project operations, maintenance and recreation activities?
- What is the distribution of special status plants affected by Project operations, maintenance and recreation activities?

Valley Elderberry Longhorn Beetle Study Plan

- What is the distribution of the valley elderberry longhorn beetle (VELB), what are the known factors (limiting and beneficial) affecting the VELB, and how are these factors influenced by Project operations?

Vegetation Mapping Study Plan

- What is the distribution of vegetation types in the Project area?

Wetlands Study Plan

- Are there wetlands in the Project area created by aboveground leaking facilities? Are they Project-created?
- Are drawdown zones on high elevation reservoirs managed correctly to retain and support wetland/riparian plants (i.e., can the upper reservoir riparian zones look more like Secret Lake and less like Aloha Lake?
- What are the beneficial and adverse effects on native plants and plant communities affected by leakage from project water conveyance systems (e.g., emphasis on adits)?
- What are the Project-related impacts on existing wetlands?

Willow Flycatcher Nesting Habitat Study Plan

- What are the relevant and known factors (limiting and beneficial) affecting special status bird populations in the Project area and how/where are these factors influenced by Project operation and maintenance?
- What are the Project impacts on special status birds with particular emphasis on Project facilities, operation, maintenance and Project-influenced recreation?
- To what extent do Project operations and maintenance activities and Project-induced recreation affect willow flycatcher populations?

Waterfowl Nesting Habitat Study Plan

- What are the relevant and known factors (limiting and beneficial) affecting special status bird populations in the Project area and how/where are these factors influenced by Project operation and maintenance?
- Are drawdown zones on high elevation reservoirs managed correctly to retain and support wetland/riparian plants (i.e., can the upper reservoir riparian zones look more like Secret Lake and less like Aloha Lake?
- What are the Project impacts on special status birds with particular emphasis on Project facilities, operation, maintenance and Project-influenced recreation?
- What are the Project-related effects on existing wetlands?"), and 33 ("To what extent do Project operation and maintenance activities and Project-induced recreation affect waterfowl populations?

Other Terrestrial Resources Issue Questions

- What were the historical terrestrial resources (such as habitat, riparian, and vegetation) in the project area, including the reservoir inundation zones? Develop information using existing maps, drawings, photos, and literature descriptions.

Appendix B

Annotated Outline
Applicant-Prepared
Administrative Draft
Environmental
Assessment/Administrative
Draft Environmental Impact Report

ANNOTATED OUTLINE
APPLICANT-PREPARED ADMINISTRATIVE DRAFT ENVIRONMENTAL ASSESSMENT/ADMINISTRATIVE DRAFT ENVIRONMENTAL IMPACT REPORT

Section & Description **Page**

THIS ANNOTATED OUTLINE provides a "checklist" for an environmental document that will be prepared by SMUD to satisfy both California and federal statutory schemes. First, this outline contemplates an environmental document that will satisfy the substantive and procedural requirements for an Environmental Assessment and an Environmental Impact Statement pursuant to the National Environmental Policy Act (NEPA) and the Council on Environmental Quality's (CEQ) implementing regulations. Second, this outline contemplates an environmental document that will satisfy the requirements of a draft Environmental Impact Report pursuant to the requirements of the California Environmental Quality Act (CEQA). It is hoped that the State Water Resources Control Board could also adopt this document as a responsible agency under CEQA for the purpose of issuing a water quality certificate for the Project. As a "checklist" for spotting issues, this outline identifies discussion points that SMUD may ultimately decide are unnecessary for inclusion in the final environmental document.

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  - 6.2.1 Example: Project Effects on X
    - 6.2.1.1 Objectives
    - 6.2.1.2 Methods Including Significance Criteria
    - 6.2.1.3 Results and Discussion
      - 6.2.1.3.1 *Impacts Prior to Mitigation*
      - 6.2.1.3.2 Mitigation
    - 6.2.1.4 Conclusions
      - 6.2.1.4.1 *Impacts After Mitigation*
- 6.3 Environmental Impacts of Alternatives and Recommendations
- 6.4 Analysis
- 6.5 Conclusions
- 6.6 Unavoidable Impacts
- 6.7 Biological Assessment [if needed]

7.0 AESTHETIC RESOURCES
- 7.1 Affected Environment/*Existing Environment* (baseline)
- *7.2* Environmental Impacts and Recommendations *[Impacts to be discussed in this section will be identified during scoping and recommendations during the settlement agreement process. See also 18 C.F.R. § 380.15 (providing that the siting of projects must be undertaken in a way that avoids or minimizes impacts on scenic values)]*
  - 7.2.1 Example: Project Effects on X
    - 7.2.1.1 Objectives
    - 7.2.1.2 Methods Including Significance Criteria
    - 7.2.1.3 Results and Discussion
      - 7.2.1.3.1 *Impacts Prior to Mitigation*
      - 7.2.1.3.2 Mitigation
    - 7.2.1.4 Conclusions
      - 7.2.1.4.1 *Impacts After Mitigation*
- 7.3 Environmental Impacts of Alternatives and Recommendations
- 7.4 Analysis
- 7.5 Conclusions
- 7.6 Unavoidable Impacts

8.0 CULTURAL RESOURCES
- 8.1 Affected Environment/*Existing Environment* (baseline)
- *8.2* Environmental Impacts and Recommendations *[Impacts to be discussed in this section will be identified during scoping and recommendations during the settlement agreement process. Discussion will include impacts on any historic property per the National Historic Preservation Act, 16 U.S.C. 470(f); pursuant 18 C.F.R. § 380.15, the siting of projects must be undertaken in a way that avoids or minimizes impacts on historical values]*
  - 8.2.1 Example: Project Effects on X

8.2.1.1 Objectives
8.2.1.2 Methods Including Significance Criteria
8.2.1.3 Results and Discussion
8.2.1.3.1 *Impacts Prior to Mitigation*
8.2.1.3.2 Mitigation
8.2.1.4 Conclusions
8.2.1.4.1 *Impacts After Mitigation*
8.3 Environmental Impacts of Alternatives and Recommendations
8.4 Analysis
8.5 Conclusions
8.6 Unavoidable Impacts

9.0 RECREATION RESOURCES
9.1 Affected Environment/*Existing Environment* (baseline)
9.2 Environmental Impacts and Recommendations *[Impacts to be discussed in this section will be identified during scoping and recommendations during the settlement agreement process. See also 18 C.F.R. § 380.15 (providing that the siting of projects must be undertaken in a way that avoids or minimizes impacts on recreational values)]*
9.2.1 Example: Project Effects on X
9.2.1.1 Objectives
9.2.1.2 Methods Including Significance Criteria
9.2.1.3 Results and Discussion
9.2.1.3.1 *Impacts Prior to Mitigation*
9.2.1.3.2 Mitigation
9.2.1.4 Conclusions
9.2.1.4.1 *Impacts After Mitigation*
9.3 Environmental Impacts of Alternatives and Recommendations
9.4 Analysis
9.5 Conclusions
9.6 Unavoidable Impacts

10.0 SOCIOECONOMICS
10.1 Affected Environment/*Existing Environment* (baseline)
10.2 Environmental Impacts and Recommendations *[Impacts to be discussed in this section will be identified during scoping and recommendations during the settlement agreement process. Including Environmental Justice (Executive Order No. 12898)]*
10.2.1 Example: Project Effects on X
10.2.1.1 Objectives
10.2.1.2 Methods Including Significance Criteria
10.2.1.3 Results and Discussion
10.2.1.3.1 *Impacts Prior to Mitigation*
10.2.1.3.2 Mitigation
2.2.1.4 Conclusions
10.2.1.4.1 *Impacts After Mitigation*
10.3 Environmental Impacts of Alternatives and Recommendations
10.4 Analysis
10.5 Conclusions
10.6 Unavoidable Impacts

11.0 AIR QUALITY

11.1 Affected Environment/*Existing Environment* (baseline)
11.2 Environmental Impacts and Recommendations *[Impacts to be discussed in this section will be identified during scoping and recommendations during the settlement agreement process.]*
11.2.1 Example: Project Effects on X
11.2.1.1 Objectives
11.2.1.2 Methods Including Significance Criteria
11.2.1.3 Results and Discussion
11.2.1.3.1*Impacts Prior to Mitigation*
11.2.1.3.2Mitigation
11.2.1.4 Conclusions
11.2.1.4.1*Impacts After Mitigation*
11.3 Environmental Impacts of Alternatives and Recommendations
11.4 Analysis
11.5 Conclusions
11.6 Unavoidable Impacts

12.0 GROWTH INDUCEMENT
12.1 Affected Environment/*Existing Environment* (baseline)
12.2 Environmental Impacts and Recommendations *[Impacts to be discussed in this section will be identified during scoping and recommendations during the settlement agreement process.]*
12.2.1 Example: Project Effects on X
12.2.1.1 Objectives
12.2.1.2 Methods Including Significance Criteria
12.2.1.3 Results and Discussion
12.2.1.3.1*Impacts Prior to Mitigation*
12.2.1.3.2Mitigation
12.2.1.4 Conclusions
12.2.1.4.1*Impacts After Mitigation*
12.3 Environmental Impacts of Alternatives and Recommendations
12.4 Analysis
12.5 Conclusions
12.6 Unavoidable Impacts

VI DEVELOPMENTAL ANALYSIS

A. POWER AND ECONOMIC BENEFITS OF THE PROJECT

B. COST OF ENVIRONMENTAL MEASURES

C. POLLUTION ABATEMENT

VII RECOMMENDED ALTERNATIVE/ENVIRONMENTALLY SUPERIOR ALTERNATIVE

[Recommended (Preferred) Alternative and environmentally superior alternative to be determined by settlement group or by Plenary Group.]

VIII CONSISTENCY WITH OF FISH AND WILDLIFE AGENCIES RECOMMENDATIONS

IX CONSISTENCY WITH COMPREHENSIVE PLANS AND POLICIES

A. COMPREHENSIVE PLANS

1.0 Clean Water Action Plan
2.0 San Francisco Bay/Sacramento –San Joaquin Delta Estuary Water Quality Control Plan
Sacramento River–San Joaquin River Water Quality Control Board Basin Plan
3.0 California Water Plan
4.0 Calfed Program
6.0 USFS/SWRCB Management Agency Agreement Of 1981
7.0 Eldorado National Forest Land And Resource Management Plan, As Amended
8.0 USDA/USEPA Clean Water Action Plan
9.0 El Dorado County General Plan
10.0 Sacramento County General Plan
11.0 Federal Invasive Species Management Plan
12.0 Framework for Archeological Research Management
13.0 California Comprehensive Statewide Historic Preservation Plan
14.0 California State Outdoors Plan
15.0 California Public Opinions and Attitude in Outdoor Recreation Survey
16.0 El Dorado County River Management Plan
17.0 Upper American River Project Recreation Plan

[This section will be expanded based on FERC's list of comprehensive plans at the time the application is filed.]

B. POLICIES

1.0 California Department Of Fish And Game Policies
2.0 Desolation Wilderness Management Guidelines
3.0 California Wetlands Conservation Policy

X MANDATORY FINDING OF NO SIGNIFICANT IMPACT OR SIGNIFICANT IMPACT

A. SUBSTANTIAL DEGRADATION
B. SHORT-TERM VS. LONG-TERM ENVIRONMENTAL GOALS.
C. CUMULATIVE EFFECTS
D. SUBSTANTIAL ADVERSE AFFECTS ON HUMAN BEINGS.

XI MITIGATION AND MONITORING PLANS

XII LITERATURE CITED

XIII LIST OF PREPARERS

IX DISTRIBUTION LIST

APPENDICES

[All appendix material on CD]