SACRAMENTO MUNICIPAL UTILITY DISTRICT
UPPER AMERICAN RIVER PROJECT
(FERC NO. 2101)

UARP LAND USE
TECHNICAL REPORT

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- Land Use Study Plan

10.2 Land Use Study Plan

The Land Use Study will evaluate the compatibility of Project facilities, transportation systems and operations with existing land uses and federal, state and local planning documents, policies and land use regulations. If the Project would result in land use impacts, mitigation measures would be proposed to protect land uses.

10.2.1 Pertinent Issue Questions

This Land Use Study Plan addresses the following Issue Questions:

15. "What are SMUD's management plans on lands they use?" (TR-15)

17. "What are the existing land use regulations and compliance plans (comprehensive plans) and is the Project consistent with these regulations and plans?" (S-17, LU-2)

18. "How does the project affect existing land uses and management." (S-18, LU-3)

16. "What is the SMUD land ownership in the project area including easements, use agreements, and right-of-ways?" (S-16, LU-1)

19. "What land management actions relate or are associated with Project operations (e.g. high river flow creates boating, creates access, etc.)?" (S-19, LU-5)

23. "Are there spoil sites (e.g., tunnel muck) that are no longer needed or that need maintenance?" (S-23, LU-11)

37. "Are there impacts from roads or transmission lines and their maintenance [e.g., erosion and sedimentation]?" (TR-37, LU-7)

22. "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. (S-22, LU-10)

39. "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. (TR-39, LU-12)

13. 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? (LU-13)

14. What are the effects to private landowners and/or local governments associated with maintenance, unauthorized public use and security of Project access roads? (LU-14)

10.2.2 Background

The study will comply with the CEQA guidelines, and FERC Regulations (18 CFR Section 4.51) requiring an applicant for a new license to include a description of existing development and use of project lands and other lands abutting project impoundments, and a description of wetlands or floodplains within, or adjacent to, the project boundary. Under the Alternative Licensing Process (ALP) the land use study will also address appropriate issue questions raised by ALP participants.

10.2.3 Study Objectives

The objectives of this Land Use Study are:

1. Identify existing land ownership categories and land use/management in the Project vicinity, including descriptions of zoning, easements and use agreements. This objective will address Issue Questions 15 and 16, and FERC Regulations.

2. Assess the compatibility of Project facilities and operations with existing land uses within the Project vicinity. This objective will address Issue Questions 17 and 18.

3. Evaluate the consistency of Project facilities and operations with applicable federal, state, and local planning documents including land use policies and regulations, and land management designations, including fuels management and watershed protection. This objective will address Issue Question 17, 18 and 19.

4. Identify the location and condition of (including type of material) and potential uses for the Project spoil piles and historic borrow sites. This objective will address Issue Question 23.

5. Identify the location of any wetlands and floodplains within or adjacent to the FERC Project Boundary. This objective will address FERC Regulations.

6. Review and evaluate the road and transmission line systems and SMUD maintenance practices relative to impacts and project function. This objective will address Issue Questions 22 and 37.

7. Identify and evaluate the effects to the Forest Service, local governments and private landowners associated with management and maintenance of Project lands and access roads, as described in Issue Questions 13 and 14.

10.2.4 Study Area

The study area for land use will consist of three study areas that are dependent on the study objective to be addressed. For Objectives 1, 2, 6 and 7 (Issue Questions 16, 17 18, 22, 37, 13 and 14, and FERC Regulations), the study area is defined as the Project vicinity and will consist of the land parcels that are within and/or abutting the FERC Project Boundary, as well as other lands related to the project. For Objective 3 Issue Questions 17, 18 and 19), the consistency review of the Project will consider comprehensive and resource plans applicable to the Project from the Project region, which is defined as El Dorado County, and the northeastern portion of Sacramento County (the latter for the transmission line only). To address Objective 4 and 5 (Issue Question 23 and FERC Regulations), the study area will be confined to the site boundaries of the spoil piles, historical borrow sites, wetland areas and floodplains within the Project vicinity.

10.2.5 Information Needed from Other Studies

Information needed from other relicensing studies includes: 1) from the Recreation Studies, information on the distribution of Project-related recreation use; 2) from the Terrestrial Resources Study and the Wetland Information Synthesis, the location of any wetlands within and adjacent to the FERC Project Boundary; 3) from the Cultural Resources Study, any land use or Tribal rights issues raised in consultation with Indian Tribes; and 4) from the Water Quality Study and Project Sources of Sediment Study, a description of the condition of spoil piles and historic borrow sites associated with the Project.

10.2.6 Study Methods and Schedule

Study methods for land use will consist of seven separate tasks. Each task is cross-referenced to the Study Objectives and Issue Questions.

Task 1. Land Use and Ownership Description

Task 1 will address Study Objective 1, Issue Questions 15 and 16, and FERC Regulations. This task will identify the existing land uses and types of ownership of land parcels that are within and/or abutting the FERC Project Boundary. Information on land use and ownership will be compiled and verified with the appropriate land management agency. Land uses will be depicted on a map and described according to the general plans and land management plans of the appropriate jurisdiction.

Land ownership will be depicted on a map and described in terms of major property owners such as state, county and corporate land ownership boundaries. The list of agencies to be contacted and/or visited includes, but is not limited to: El Dorado County Planning Department, Sacramento County Planning Department, Eldorado National Forest and the U.S. Bureau of Land Management. Land ownership and land use maps will be developed from GIS coverages and will show township, range and section lines. Task 1 will also include a review of easements, use agreements and permits associated with land use of Project lands within the FERC Project Boundary.

SMUD will also identify the land use practices associated with the Project. This includes an evaluation of such practices on lands within the project boundary, as well as lands used by SMUD outside the project boundary.

Task 2. Land Use Compatibility Assessment

Task 2 will address Study Objective 2 and Issue Questions 17 and 18. Task 2 will address the physical compatibility of existing Project facilities and operations with adjacent land uses. Compatibility will be assessed based on traditional land use practice where adjacent land uses that could result in harm or nuisance are considered incompatible. If incompatible land uses are identified, reasonable measures that could mitigate the incompatibility will be proposed.

Task 3. Plan Consistency Review

Task 3 will address Study Objective 3 and Issue Questions 17, 18 and 19. This task will focus on the consistency of the existing Project with land management direction of agencies with jurisdiction in the Project Region. Task 3 differs from Task 2 in that it is an assessment of compatibility with management direction, as compared to the physical land use assessment in Task 2. Consistency with land management direction will be assessed by reviewing adopted plans, including relevant designations, policies, and regulations, and by interviewing land managers. All resources areas in the plans will be reviewed including fuels management and watershed protection. Note that some of these plans are identified and discussed in SMUD's Initial Information Package.

Land and resource plans to be reviewed are:

- Eldorado National Forest Land and Resource Management Plan
- Rubicon River Wild Trout Management Plan
- Public Opinions and Attitudes on Outdoor Recreation in California
- Recreation Needs in California
- California Water Plan Update
- Water Quality Control Plans and Policies Adopted as Part of the State Comprehensive Plan
- Sierra Nevada Forest Plan Amendment
- Desolation Wilderness Management Guidelines
- El Dorado County General Plan
- El Dorado County River Management Plan
- El Dorado County Trails Master Plan
- El Dorado County Water Agency Water Resource Development and Management Plan
- Bureau of Land Management SFAR Plan
- Bureau of Land Management Federal Land Policy and Management Act Area Plan
- Resource Conservation District Watershed Plan
- Sacramento County General Plan

- Comprehensive Statewide Historic Preservation Plan for California
- California State Comprehensive Outdoor Recreation Plan
- Sierra Pacific Industries Timber Harvest Plan
- Water Forum Agreement
- California Department of Transportation applicable plans
- California Department of Safety of Dams applicable plans
- Sacramento Flood Control Agency applicable plans
- Federal Emergency Management Agency applicable plans

  Note: pursuant to section 2.19 (State and Federal Comprehensive Plans) of the relicensing regulations, the first six plans in the list above have been filed with the FERC and are recognized by FERC as either a state or federal comprehensive plan.

Review of the land and resource plans will first identify where, how and to what extent the existing Project affects land management actions identified in plans. Secondly, this review will evaluate whether this effect is incompatible with the land management direction of the plan. Where these affects are considered to be incompatible, reasonable protection, enhancement and/or mitigation measures will be proposed.

Task 4. Spoil Piles and Historical Borrow Sites

Task 4 will address Objective 4 and Issue Question 23. The Project Sources of Sediment Study will provide baseline information on the location, content, and condition of Project spoil piles and historic borrow sites. Land use and management information will be collected from appropriate planning documents and permits, and from interviews with the appropriate land management agency, including SMUD staff and land managers. Potential uses of the material will be researched through interviews with potential users and opportunities and constraints to future use of the material identified.

Future disposal sites for both on-site woody debris and rock/sediment will be identified to ensure compatibility with USFS Land and Resource Management Plan. This will be achieved by SMUD working with the USFS to identify potential sites, then evaluating those sites within the appropriate TWG meetings.

Task 5. Wetlands and Floodplains

Task 5 will address Objective 5 and FERC Regulations. Information on wetlands within the FERC Project Boundary will be summarized from the wetland study to be conducted as part of the terrestrial resource studies. For the identification of floodplains, the Federal Emergency Management Agency (FEMA) will be contacted and maps of the hundred year floodplains in the Project area requested. If alternative mapping of a more detailed nature is available, it will be utilized.

Task 6. Road and Transmission Line System

Task 6 will address Objective 6 and Issue Questions 37 and 22. This task will delineate the road and transmission systems that are used by SMUD in operation of the UARP and roads used for project-induced recreation. Different levels of usage will be identified for the many roads used by SMUD and project-induced recreation. Maintenance practices will be evaluated to determine impacts on resources such as erosion and sedimentation. SMUD will also consider whether the existing road system is adequate to carry out project-related functions.

Task 7. Effects associated with management of Project lands and access roads

Task 7 will address Objective 7 and Issue Questions 13 and 14. This task will identify and document the effects to the Forest Service, local governments and private landowners associated with management and maintenance of Project lands and access roads. Representative of the Forest Service, El Dorado County Sheriff's Department, El Dorado County Department of Transportation, Sierra Pacific Industries and other private landowners will be

interviewed and the effects identified will be documented. Information from the recreation studies concerning the distribution of Project-related recreation will be considered in evaluation of the effects.

The preliminary results of the study will be presented to the Land Use TWG in the fall of 2003. The results of Task 6 will be presented to the Land Use TWG in May 2003.

10.2.7 Analysis

Integration of qualitative and quantitative information to identify potential impacts of Project operations and facilities, and development of protection, mitigation and/or enhancement (PM&E) measures for impacts that are significant.

10.2.8 Study Output

A presentation on the study will be made to the Land Use TWG and Plenary Group. The ultimate study output will be a written report that includes the issues addressed, objectives, study area including sampling locations, methods, analysis, results, discussion and conclusions. The report will be prepared in a format so that it can easily be incorporated into the Licensee's draft environmental assessment that will be submitted to FERC with the Licensee's application for a new license. The report will include maps depicting land use and ownership categories within the FERC Project Boundary.

10.2.9 TWG and Plenary Group Endorsement

The Land Use TWG approved the draft study plan on February 13, 2003. The participants at the meeting who said they could "live with" the plan were U.S. Forest Service, El Dorado County Citizens for Water and SMUD. None of the participants at the meeting said they could not "live with" the draft study plan.

The Plenary Group approved this plan on March 5, 2003. The participants at the meeting who said they could "live with" this study plan were the U.S. Forest Service, El Dorado Irrigation District, El Dorado County Citizens for Water, Georgetown Divide Public Utility District, National Park Service, Taxpayers' Association of El Dorado County, Friends of El Dorado County, American River Recreation Association & Camp Lotus, El Dorado County Water Agency, City of Sacramento and SMUD. None of the participants at the meeting said they could not "live with" this study plan.

10.2.10 Literature Cited

Hydropower Internet Home Page, http://www.ferc.fed.us/hydro/hydro2.htm

UARP LAND USE TECHNICAL REPORT

SUMMARY

The Land Use Study Plan is a compilation of several separate studies addressing land use-related issues that were identified by the Land Use Technical Working Group (TWG) as being associated with the Upper American River Project (UARP or Project), or identified by FERC regulations to be addressed in the report on land use. The study plan calls for a description of land ownership and use associated with and adjacent to the UARP, an assessment of compatibility between land uses of the UARP and adjacent lands, and an evaluation of the consistency of the UARP with 26 planning documents, 6 of which are comprehensive plans identified by FERC as relevant for review, an additional 19 were identified by the Land Use TWG as also relevant for review, and one additional document was identified by the author as relevant. The land use study also includes an assessment of conditions and potential future uses of spoil piles and borrow sites, identification of any wetlands or floodplains that could be affected by the UARP, an assessment of impacts from road and transmission line practices, and identification of the management effects of the UARP on land management agencies and private land owners.

Results indicate that:

1. *Land Use and Ownership* – About two thirds of UARP lands within the FERC Project Boundary (excluding the transmission line) are U.S. lands under management by the Eldorado National Forest (ENF) with about one third of the lands being owned by the Sacramento Municipal Utility District (SMUD). Similarly, about two thirds of the lands within a 0.5 mile radius of the FERC Project Boundary and the transmission line, are lands under ENF management, with the other third owned by private entities, including Sierra Pacific Industries (SPI).

2. *Land Use Compatibilities* – The UARP was identified by the ENF as a potential source of fire risk and hazard. However, the *Fire Risk and Protection Technical Report* (DTA and CRS 2004a) found little risk of fire associated with the UARP, except the transmission line. While the transmission line is a potential fire risk and hazard, SMUD vegetation management practices are successfully reducing the risk. Concerning fire hazard and risk associated with dispersed recreation at sites identified by the ENF, available fire data does not distinguish between the types of human-caused fires, thus it could not be determined with certainty which human-caused fires were actually a result of dispersed recreation. In addition, it has not been determined which, if any, of the ENF-identified dispersed recreation sites are associated with the UARP.

3. *Consistency Review* – Review of planning documents found no inconsistencies between the UARP and the land use planning documents that were reviewed. This is due primarily because planning has occurred with the UARP in place over the past 45 years, and also because some plans are very broad in scope and not specific to the UARP. In addition, in operating and maintaining the UARP, SMUD complies with applicable laws and regulations and employs sound management practices, which include, as appropriate, measures to protect environmental resources.

4. *Spoil Piles and Borrow Sites* – Existing adit spoil piles created during UARP construction and post-construction spoil piles (existing and potential sites) were identified within the UARP vicinity. The adit spoil piles contain large and indeterminate volumes of material that continue to be utilized by SMUD staff for a variety of needs. Some of the smaller post-construction sites are closed sites not intended for future use, while others that are planned for use contain known volumes and remaining capacities. Both the post-construction and adit spoil piles do not require maintenance as they are stable in their current condition.

5. *Wetlands and Floodplains* – The largest areas of wetlands within and adjacent to the FERC Project Boundary are located at Loon Lake and Union Valley Reservoirs and are in good condition. Wetlands at

Loon Lake Reservoir are mostly reservoir-influenced. Wetlands at Union Valley are above the maximum water surface elevation of the reservoir. Other wetlands are small and primarily UARP-created with limited ecological value. Most of the UARP is not located in areas of FEMA-identified floodplains. Areas within the ENF are not mapped by FEMA. Outside of the ENF, a 100-year floodplain has been identified for the South Fork American River downstream of Slab Creek Reservoir but flood elevations and flood hazard factors have not been determined. The White Rock Powerhouse is within the 100-year flood plan of the South Fork American River.

6. *Roads and Transmission Lines* – The SMUD operations and maintenance staff use a variety of federal, state, county, and private highways/roads to access project facilities, including powerhouses, reservoir dams, transmission lines, and meteorological stations. These roads are used by light and heavy vehicles at varying levels of frequency. Many of the roads are maintained by SMUD, including snowplowing. A comprehensive survey of all roads used by SMUD identified few erosion problems that result in significant sedimentation of fine material into nearby watercourses.

7. *Effects Associated with Management of UARP Lands and Access Roads* – Land managers and public service providers identified needs for additional staffing, equipment and equipment operating expenses to adequately provide fire protection and education and land-based and water-based law enforcement in the Crystal Basin area. For purposes of this study, "needs" refer to specific requests or requirements identified by agency staff through telephone or email communication but for which no substantiating documents were provided. In addition, private landowners identified concerns of trespass on their property due to access from SMUD roads.

1.0 INTRODUCTION

This technical report is one in a series of reports prepared by Devine Tarbell & Associates, Inc, (DTA) and Martha Goodavish Planning & Design for the Sacramento Municipal Utility District (SMUD) as an appendix to SMUD's application to the Federal Energy Regulatory Commission (FERC) for a new license for the Upper American River Project (UARP or Project). The report addresses land use descriptions and issues associated with the UARP and includes the following sections:

- **BACKGROUND** – Includes when the applicable study plan was approved by the UARP Relicensing Plenary Group; a brief description of the issue questions addressed, in part, by the study plan; the objectives of the study plan; and the study area. In addition, requests by resource agencies for additions to this technical report are described in this section.
- **METHODS** – A description of the methods used in the study.
- **RESULTS** – A description of the salient data results and analysis of the results, where appropriate.
- **LITERATURE CITED** – A listing of literature cited in the report.
- **APPENDICES** – Electronic maps of land ownership, and aerial photographs of land uses are provided in appendices A and B (Appendix B provided on CD Only). A free software application, Mr. SID is available online from www.lizardtech.com, and is needed to view the aerial photographs in Appendix B.

This technical report does not include a detailed description of the UARP Alternative Licensing Process (ALP) or the UARP itself, which can be found in the following sections of the SMUD

application for a new license: The UARP Relicensing Process, Exhibit A (Project Description), Exhibit B (Project Operations), and Exhibit C (Construction).

Also, this technical report does not include a discussion of land use associated with the proposed Iowa Hill Pumped Storage Development, which is addressed in a separate report titled *Iowa Hill Land Use Technical Report* (DTA and Goodavish 2005a), nor are appropriate protection, mitigation, and enhancement measures for land use. An impacts discussion regarding the UARP is included in the applicant-prepared preliminary draft environmental assessment (PDEA) document, which is part of SMUD's application for a new license.

2.0 BACKGROUND

2.1 Land Use Study Plan

On March 5, 2003, the UARP Relicensing Plenary Group approved the Land Use Study Plan that was developed and approved by the relicensing Land Use TWG on February 13, 2003 (SMUD 2003). The study plan was designed to address the following issues questions developed by the UARP Relicensing Plenary Group:

Issue Question 15.	What are SMUD's management plans on lands they use?
Issue Questions 17 and 2.	What are the existing land use regulations and compliance plans (comprehensive plans) and is the Project consistent with these regulations and plans?
Issue Questions 18 and 3.	How does the project affect existing land uses and management?
Issue Questions 16 and 1.	What is the SMUD land ownership in the project area, including easements, use agreements, and right-of-ways?
Issue Questions 19 and 5.	What land management actions relate or are associated with Project operations (e.g. high river flow creates boating, creates access, etc.)?
Issue Questions 23 and 11.	Are there spoil sites (e.g., tunnel muck) that are no longer needed or that need maintenance?
Issue Questions 37 and 7.	Are there impacts from roads or transmission lines and their maintenance [e.g., erosion and sedimentation]?
Issue Questions 22 and 10.	Is the current design and maintenance of Project roads adequate for Project function?

Issue Question 13.	What are the effects on the ENF 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?
Issue Question 14.	What are the effects to private landowners and/or local governments associated with maintenance, unauthorized public use and security of Project access roads?

2.2 Land Use Study Plan Objectives

The objectives of this Land Use Study are:

1. Identify existing land ownership categories and land use/management in the UARP vicinity, including descriptions of zoning, easements and use agreements. This objective will address Issue Questions 15 and 16, and FERC Regulations.

2. Assess the compatibility of UARP facilities and operations with existing land uses within the UARP vicinity. This objective will address Issue Questions 17 and 18.

3. Evaluate the consistency of UARP facilities and operations with applicable federal, state, and local planning documents, including land use policies and regulations, and land management designations, including fuels management and watershed protection. This objective will address Issue Questions 17, 18 and 19.

4. Identify the location and condition of (including type of material) and potential uses for the UARP spoil piles and historic borrow sites. This objective will address Issue Questions 11 and 23.

5. Identify the location of any wetlands and floodplains within or adjacent to the FERC Project Boundary. This objective will address FERC Regulations.

6. Review and evaluate the road and transmission line systems and SMUD maintenance practices relative to impacts and UARP function. This objective will address Issue Questions 22 and 37.

7. Identify and evaluate the effects to the ENF, local governments and private landowners associated with management and maintenance of UARP lands and access roads, as described in Issue Questions 13 and 14.

3.0 METHODS

To address the issue questions above, and other comments made by members of the Land Use TWG during development of the study plan, the following seven separate tasks were identified for the land use study. Each task is cross-referenced to the Issue Questions and Study Objectives

listed above, and describes the general approach and methods to be used for each of the tasks. Some methods have been altered from the original study plan in response to the availability of information or other factors (e.g., aerial photographs were used in lieu of developing a land use map after consultations with the El Dorado County Planning Department and the Eldorado National Forest revealed software incompatibilities along with likely changes to their respective land management plans in the near future).

3.1 Land Use and Ownership Description

The land use and ownership description addresses Study Objective 1, Issue Questions 15 and 16, and FERC Regulations. This task identifies existing land uses and types of ownership within and abutting the FERC Project Boundary. Land ownership is depicted on maps and described in terms of the major land owners/land managing agencies which include: Sacramento Municipal Utility District (SMUD), federal lands managed by the Eldorado National Forest (ENF) and the Bureau of Land Management (BLM), Sierra Pacific Industries (SPI) and other private property owners in El Dorado County. Land uses are depicted on aerial photographs and described in general accordance with the aerial photographs and general land use designations of the appropriate jurisdiction. This task also includes review of easements, use agreements and permits associated with land use of lands within the FERC Project Boundary and land use practices associated with the UARP. This includes an evaluation of such practices on lands within the FERC Project Boundary, as well as lands used by SMUD outside the FERC Project Boundary.

3.2 Land Use Compatibility Assessment

The assessment of land use compatibility addresses Study Objective 1 and Issue Questions 17 and 18. This task identifies the physical compatibility of the existing UARP facilities with adjacent land uses. Compatibility is assessed based on traditional land use practice where adjacent land uses that could result in harm or nuisance are considered incompatible.

3.3 Plan Consistency Review

The plan consistency review addresses Study Objective 3 and Issue Questions 17, 18 and 19. This section evaluates whether the UARP is consistent with: 24 federal, state and local plans identified by the Land Use TWG for review; the City of Folsom General Plan, which was added to the list because the transmission line traverses through the City of Folsom, from the county line to Folsom Junction; and the *South Fork American River – Chili Bar Watershed Lower Middle Fork American River Watershed Landscape and Roads Analysis* (USDA 2003), which was added by the author as relevant.

It is important to note that the first six plans reviewed are plans that have been filed with the FERC and are on the FERC list of recognized comprehensive plans to be reviewed for consistency. Land and resource plans reviewed are:

1. Eldorado National Forest Land and Resource Management Plan*
2. Rubicon River Wild Trout Management Plan*
3. Public Opinions and Attitudes on Outdoor Recreation in California*

4. Recreation Needs in California*
5. California Water Plan Update*
6. Water Quality Control Plans and Policies Adopted as Part of the State Comprehensive Plan*
7. Sierra Nevada Forest Plan Amendment
8. Desolation Wilderness Management Guidelines
9. El Dorado County General Plan
10. El Dorado County River Management Plan
11. El Dorado County Trails Master Plan
12. El Dorado County Water Agency Water Resource Development and Management Plan
13. Bureau of Land Management SFAR Plan
14. Bureau of Land Management Federal Land Policy and Management Act Area Plans
15. Resource Conservation District Watershed Plan
16. Sacramento County General Plan
17. Comprehensive Statewide Historic Preservation Plan for California
18. California State Comprehensive Outdoor Recreation Plan
19. Sierra Pacific Industries Timber Harvest Plan
20. Water Forum Agreement
21. California Department of Transportation applicable plans
22. California Department of Safety of Dams applicable plans
23. Sacramento Flood Control Agency applicable plans
24. Federal Emergency Management Agency applicable plans
25. City of Folsom General Plan
26. South Fork American River – Chili Bar Watershed Lower Middle Fork American River Watershed Landscape and Roads Analysis

* = comprehensive plan filed with FERC.

3.4 Spoil Piles and Historical Borrow Site Evaluation

There are two basic types of spoil piles associated with the UARP. The largest spoils piles are those that were created during the construction of the Project as tunnel boring material. A large portion of the tunnel material was rock that was used to construct reservoir dams and dikes, but the remaining material not used for such purposes, was deposited at tunnel adits. These long-term spoil piles are referred to in this report as adit spoil piles. The second type are smaller spoil piles that have been created since the initial construction of the project. These post-construction piles were created by reservoir cleanouts or other project maintenance. Some of these spoil piles are closed, or not intended to be used in the future, while others are designated for future use, such as asphalt base for road maintenance.

The evaluation of spoil piles and historical borrow sites addresses Study Objective 4 and Issue Questions 23 and 11. Disposal sites for both on-site woody debris and rock/sediment are identified to ensure compatibility with the ENF Land and Resource Management Plan.

3.5 Wetlands and Floodplain Description

The description of wetlands and floodplains addresses Objective 5 and the FERC Regulations. Information on wetlands within the FERC Project Boundary is summarized from the *Riparian Vegetation and Wetlands Technical Report* (DTA 2004v). For the identification of floodplains, Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FEMA 1983-1995) produced for the National Flood Insurance Program are used to identify one hundred year floodplain areas in the vicinity of UARP facilities, and UARP-affected reaches of stream.

3.6 Road and Transmission Line System Assessment

The assessment of the effects of roads and the transmission line system addresses Objective 6 and Issue Questions 37 and 22. The assessment delineated the road and transmission systems that are used by SMUD in operation of the UARP, and roads used to access UARP-related recreation facilities or reservoir shorelines. Different levels of usage are identified for the many roads used by SMUD operation and maintenance staff. Maintenance practices are evaluated to determine any impacts on resources such as erosion and sedimentation. SMUD also assessed whether the existing road system is adequate to carry out UARP-related functions.

The UARP transmission line consists of numerous interconnected segments running from the Loon Lake Powerhouse westward into Sacramento County. As described in Section 4.1.8, SMUD plans to delete from the Project license the transmission lines to the west of the Folsom Junction, located in the City of Folsom, so the description of the transmission lines will conform with the current configuration of the SMUD transmission and distribution system. Therefore, this report assesses the Project transmission lines located east of the Folsom Junction.

3.7 Effects Associated with Management of UARP Lands and Access Roads

The identification of effects associated with management of UARP lands and access roads addresses Objective 7 and Issue Questions 13 and 14. This section identifies and documents the effects on the ENF, local governments and private landowners associated with management and maintenance of UARP lands and access roads. Representatives of the ENF, El Dorado County Sheriff's Department, Sierra Pacific Industries and other private landowners were either interviewed or information from such entities summarized from other documents. Information from the recreation studies concerning the distribution of UARP-related recreation is considered in evaluation of the effects.

4.0 RESULTS AND ANALYSIS

4.1 UARP Land Ownership and Land Use

This section discusses existing land ownership and land uses of surface acreages that are within or adjacent to the FERC Project Boundary. Land ownership within the UARP area is a combination of SMUD, federal lands managed by the Forest Service and the Bureau of Land Management (BLM), Sierra Pacific Industries, and other private landowners within El Dorado County. Maps (pdf files viewable in Acrobat Reader) of each of the seven UARP developments,

and the transmission line, can be found in Appendix A. Each map shows a 0.5-mile buffer around the FERC Project Boundary for each UARP development, and for the transmission line, which is within the FERC Project Boundary, although it is not shown as being within the boundary on the maps. The buffer is used for illustration in the discussion of land ownership within and adjacent to the FERC Project Boundary as called for in the study plan.

Subsurface features, such as tunnels associated with developments, are within the FERC Project Boundary and show up as a FERC Project Boundary line on the maps even though the feature is subsurface. Also, the UARP transmission line extends from Loon Lake to the Folsom Junction in the City of Folsom. However, the land ownership map in Appendix A shows land ownership for the transmission line from Loon Lake development to the White Rock development. A general textural discussion of ownership for the remaining section of transmission line (White Rock to the Orangevale Substation) is provided. The land ownership maps in Appendix A show the individual developments without the respective miles of transmission line; instead, the transmission line (from Loon Lake to Folsom Junction) is shown as a separate map. This is because the developments can have overlapping use of the same section of transmission line making it difficult to portray graphically.

Table 4.1-1 provides estimates of acreage owned or managed, by development, within the FERC Project Boundary. It is important to note that Table 4.1-1 shows substantially more federal lands within the project boundary than what FERC charges SMUD annually for use of federal lands per Section 24 of the Federal Power Act, which is 4,553.41 non-transmission line acres and 359.79 transmission-line acres. This is because in the 1960s SMUD transferred lands within the FERC Project Boundary to the Forest Service subject to SMUD retaining occupancy rights to those lands or the rights needed for project purposes. These land transfers occurred primarily to enhance public use of reservoir shorelines. Thus, the lands within the FERC Project Boundary that SMUD transferred to the Forest Service are not included in FERC's assessment of federal lands subject to the annual charges for the use of federal lands.

Table 4.1-1. Land ownership (in acres) within the FERC Project Boundary, by development[1]

Development	SMUD (Surface)	SMUD (Submerged)	US - ENF (Surface)	US - ENF (Submerged)	US - BLM	Private	Totals
Loon Lake		253.1	711.3	1329.7		11.3	2305.4
Robbs Peak	2.9	25.3	166.1	22.7		33.5	250.5
Jones Fork	25.7	640.9	491.9	26.9			1185.4
Union Valley		2018.1	1386.7	870.8		6.8	4282.4
Jaybird		52.0	310.7	25.3		7.9	395.9
Camino			192.8	34.3		0.2	227.3
White Rock	23.3	73.3	160.5	132.9	42.3	70.3	502.6
Total	**51.9**	**3062.7**	**3420.0**	**2442.6**	**42.3**	**130.0**	**9149.5**

1. Does not include lands associated with transmission lines.
Source: VESTRA, 2004 (estimates calculated using GIS software).

Table 4.1-2 provides estimates of acreage owned or managed, by development, located in the area from the FERC Project Boundary to one-half mile away from the FERC Project Boundary.

Table 4.1-2. Land ownership (in acres) from the FERC Project Boundary to one half mile away from the FERC Project Boundary, by development[1]

Development[1]	SMUD	US - ENF	US – BLM	Private (SPI)	Private (Other)	Totals
Loon Lake		5725.7		11.2	505.4	6242.3
Robbs Peak		1984.0		935.4	19.1	2938.5
Jones Fork	14.3	820.9		2719.5	135.5	3690.2
Union Valley		2323.7		1898.6	223.2	4445.5
Jaybird		2455.5		683.0		3138.5
Camino		4532.6		8.7	36.7	4578.0
White Rock	190.6	2973.2	41.5	683.3	2346.4	6235.0
Transmission Line[2]	6.1	6742.4		2928.7	3722.5	13399.7
Development & Transmission Line Totals[3]	**211.0**	**27558.0**	**41.5**	**9868.4**	**6988.8**	**44667.7**

1. Development exclude transmission lines and associated access roads.
2. Includes all lands within one half mile of transmission line and associated access roads.

Source: VESTRA, 2004 (estimates calculated using GIS software).

Management of federal lands (ENF and BLM) within the FERC Project Boundary of the UARP developments and transmission line corridor is conducted by the respective federal land-managing agency consistent with its land management plans for those lands, as well as by SMUD which has rights and responsibilities through various license articles and conditions of the current UARP FERC license and Special Use Permits (SUP) issued by the ENF.

Outside of the ENF- and BLM-managed lands, SMUD holds easements for use of a 150-foot-wide corridor for a transmission line right-of-way on private properties, including SPI lands. The easements allow SMUD to use and maintain the corridor for electrical transmission only. The easements run with the land, not the property owner. SMUD also has land use rights for non-transmission line lands within the FERC Project Boundary that are privately owned.

Land uses are discussed in terms of general uses of the land and are based on information provided in the *UARP Initial Information Package* (SMUD 2001), general knowledge of UARP area, and aerial photographs of the UARP area found in Appendix B. A free software application, Mr. SID is available online from www.lizardtech.com, and is needed to view the aerial photographs in Appendix B. Recreation-related land use aspects are briefly discussed in this report. More detailed information about recreation is contained in the *Recreation Supply Technical Report* (DTA and LBG 2004e).

4.1.1 Loon Lake Development

The Loon Lake Development is the most upstream UARP development and is located within the administrative boundary of the ENF in El Dorado County, California, approximately 70 miles east of Sacramento. The development utilizes water from the Rubicon River, Highland Creek, and Ellis Creek. Facilities within the FERC Project Boundary include Rubicon and Buck Island Reservoirs; Loon Lake Reservoir; associated pipelines, tunnels, powerhouses; substation: 20.3 miles of 69-kV overhead transmission lines; and recreation facilities all located at Loon Lake Reservoir, including four campgrounds, a boat launch, a wilderness trailhead, and a chalet.

4.1.1.1 Loon Lake Land Ownership

The Loon Lake Development includes two UARP reservoirs in the high country: Buck Island and Rubicon reservoirs. Rockbound Lake, a non-UARP body of water, is located between Buck Island and Rubicon reservoirs (see Appendix A). The project reservoirs are located on public land managed by the ENF. Buck Island is located in an area the ENF manages as general forest and Rubicon Reservoir is located in an area the ENF manages as wilderness (Desolation Wilderness).

Buck Island Reservoir is located on the ENF less than one-quarter mile outside of the Desolation Wilderness. Construction of Buck Island Dam in 1963 enlarged the existing, natural Buck Island Lake and inundated a portion of the original Rubicon OHV Route, consequently requiring rerouting of the trail to a higher elevation.

Rubicon Reservoir is located approximately 1.5 miles inside the boundary of the Desolation Wilderness. Although technically not within the wilderness due to congressional exclusion, the ENF manages the Rubicon Reservoir area consistent with wilderness goals and objectives, while allowing SMUD reasonable access to the reservoir for facility operation and maintenance. A limited number of helicopter flights are used to access and maintain Rubicon Reservoir-related facilities.

All other facilities in the Loon Lake Development are located on public land within the ENF. However, SMUD does own a 253.1-acre-parcel of submerged land that encompasses the north end of Loon Lake Reservoir.

Land ownership adjacent to the Loon Lake FERC Project Boundary (within a half mile radius of the FERC Project Boundary) is primarily under ENF management (5,725.7 acres) with one parcel of SPI land (11.2 acres) near Gerle Creek Reservoir, and several parcels of private ownership (505.4 acres) at Hidden Lake, Spider Lake, Loon Lake Reservoir, and along Angel Creek. See Appendix A for a map showing land ownership, and Table 4.1-1 for a list of the land acreage under each land ownership category within the FERC Project Boundary and Table 4.1-2 for land acreage within 0.5 miles of the FERC Project Boundary for the Loon Lake Development.

4.1.1.2 Loon Lake Land Use

Hydroelectric generation and recreation are the dominant uses in the vicinity of the Loon Lake Development. See Appendix B for aerial photographs of the Loon Lake Development. Hydroelectric generation uses include the impoundment of water at Rubicon, Buck Island, and Loon Lake reservoirs. Water is transferred from Rubicon Reservoir to Loon Lake Reservoir via a tunnel/surface channel, a pass-through of Rockbound Lake and an underground tunnel from Buck Island Reservoir to Loon Lake Reservoir. Power is generated in an underground powerhouse located at the south end of Loon Lake Reservoir where there is a substation, maintenance building and transmission line that extends south and west to the Union Valley substation.

No public motorized vehicle operation is allowed within the Desolation Wilderness and the Rubicon Reservoir area. Land use is primarily recreational, including hiking and backpacking, overnight camping, horseback riding, swimming, fishing, and hunting. High use periods are during the months of May through September, when snow pack has receded. Winter use and visitation is more limited and consists of cross-country skiing, snowshoeing, and snow camping. Foot access into the wilderness is via the Rubicon Hiking Trail (ENF Trail #16E30) and permits from the ENF are required for both day and overnight visitation.

Buck Island Reservoir experiences recreational uses similar to Rubicon Reservoir. However, the Rubicon OHV Trail (ENF OHV Trail #14N02) is a popular off-highway vehicle recreational trail that passes along the north side of Buck Island Reservoir (abutting the east edge of the dam that creates the reservoir), and high volumes of day use and overnight camping by Rubicon OHV Trail users occurs. Many of the OHV users camp at dispersed sites (e.g., undeveloped and undesignated campsites on the ENF) near the route along the reservoir's northern shore and near the dam. Motorized access to the reservoir makes this a popular location for dispersed camping, OHV use, hiking, fishing and hunting.

Loon Lake Reservoir is accessible via a paved road and the lake and surrounding areas are used for hydroelectric generation, boating, fishing, camping, hiking, backpacking, hunting and horseback riding, among other recreational activities. SMUD facilities are located on the south shore and are visited on weekdays throughout the year by SMUD staff for operation and maintenance activities. During the winter months, snowshoeing and cross country skiing use occurs. One equestrian staging area and four campgrounds are located adjacent to the lake, with two campgrounds having RV facilities and one campground accessible only by boat. The Loon Lake Chalet, which is located just south of the Loon Lake Auxiliary Dam, is available year-round for day-use and overnight stay. There is one paved boat launch at the south end of the reservoir, near the Loon Lake Campground, and an unpaved and undesignated boat launch at the north end of the auxiliary dam. An unpaved road leads from the northwest side of the lake, crosses over the main dam, to a spur road and staging area on ENF land located near the base of the main dam that is used by OHV users accessing the Rubicon OHV Trail. The staging area contains a small out-building and a demarcated helicopter landing area for use by helicopters during emergencies and for supply transport during certain activities, including organized four-wheel-drive events in the area.

Although roadways and trails exist within the Loon Lake Development area and recreational uses occur on and adjacent to the three reservoirs within the development, much of the surrounding area is open space that experiences limited human activity. Private lands interspersed within the ENF in this area may be used for periodic, seasonal livestock grazing.

4.1.2 Robbs Peak Development

The Robbs Peak Development is located within the administrative boundary of the ENF in El Dorado County, California, approximately 65 miles east of Sacramento. The development primarily utilizes water released from the Loon Lake Development as well as inflow from Gerle Creek, Angel Creek and the South Fork Rubicon River (SFRR), with facilities within the FERC Project Boundary, including: Gerle Creek dam and canal; Robbs Peak dam, canal, penstock, and powerhouse; 6.8 miles of overhead 69-kV transmission line; and recreation facilities at Gerle Creek Reservoir, including two campgrounds, two day use areas, an interpretive trail, and a fishing pier.

4.1.2.1 Robbs Peak Land Ownership

Robbs Peak Development is located on both private and public land within the boundary of the ENF. SMUD owns 28.2 acres of land within the Robbs Peak Development, 25.3 acres of which are submerged lands beneath Gerle Creek Reservoir. In addition to SMUD-owned land, approximately 188.8 acres of lands within the Robbs Peak FERC Project Boundary are located on ENF lands (including 22.7 acres of submerged lands beneath Gerle Creek Reservoir), with another approximately 33.5 acres privately owned (Appendix A and Table 4.1-1).

Land ownership within a 0.5 mile radius of the Robbs Peak FERC Project Boundary is primarily under ENF management (1,984.0 acres) with several large parcels of SPI land in the vicinity of the canal and tunnel (935.4 acres), and one parcel of private ownership (19.1 acres) near the intersection of the transmission line and tunnel (Appendix A and Table 4.1-2).

4.1.2.2 Robbs Peak Land Use

The Robbs Peak Development area is used primarily for recreation. Hydroelectric generation uses include the impoundment of water at Gerle Creek Reservoir and transference of the water from the reservoir to Robbs Forebay via a canal. At the forebay the water enters an underground tunnel and penstock into Robbs Peak Powerhouse located on the northeast shore of Union Valley Reservoir. The transmission line extends from the Robbs Peak Powerhouse north to the Loon Lake line and runs parallel to it to the substation below Union Valley Dam.

Recreation facilities and uses within the Robbs Peak Development include two campgrounds, two day-use areas, an interpretive trail, and a fishing pier located at Gerle Creek Reservoir. Picnicking facilities and access for fishing, boating and swimming are available; however, no motor boating is allowed on the reservoir.

Robbs Valley Resort is a privately owned and operated facility located east of Ice House Road, approximately 2 miles north of Robbs Peak Powerhouse. Robbs Valley Resort contains

amenities, including a restaurant and bar, camping facilities, a general store, vehicle fueling station, and a vehicle storage area. The resort is typically open from late May through October each year.

With the exception of roadways (including Ice House Road and Wentworth Springs Road and numerous unpaved roads), UARP facilities and recreation developments (including the privately owned Robbs Valley Resort), other development within the Robbs Peak development area is limited to timber harvesting and dispersed recreation that is likely to occur throughout this area. In addition, there is one ENF-designated wildlife area near the north arm of Union Valley Reservoir. Wildlife areas are lands managed to maintain viable populations of spotted owls and goshawks. The habitats of these two sensitive species are managed to provide suitable nesting and foraging ground to perpetuate their existence. Lands in this status are intermingled with the general forest zone (Appendix B).

4.1.3 Jones Fork Development

The Jones Fork Development is located within the administrative boundary of the ENF in El Dorado County, California, approximately 60 miles east of Sacramento. The development utilizes water from the South Fork Silver Creek (SFSC) with facilities, including: Ice House dam and reservoir; Jones Fork tunnel, penstock, and powerhouse; 4 miles of overhead 69-kV transmission line and recreation facilities, including three campgrounds, a day use area, a boat launch, a trail, an information station and a sanitation station.

4.1.3.1 Jones Fork Land Ownership

Both the Ice House Reservoir and the Jones Fork Powerhouse are located on ENF land. The Jones Fork tunnel and penstock cross both private and ENF land. SMUD owns 658.7 acres of land within the Jones Fork Development, 640.9 acres of which are submerged lands beneath Ice House Reservoir. In addition to SMUD-owned land, approximately 518.2 acres of lands within the FERC Project Boundary associated with Jones Fork Development facilities are ENF lands. Approximately 7.1 acres of SPI land is located within the Jones Fork FERC Project Boundary (Appendix A and Table 4.1-1).

Land ownership within a 0.5 mile radius of the Jones Fork Development is primarily SPI lands (2,719.5 acres) interspersed with ENF land (820.9 acres) and two parcels of private land (135.5 acres), one of which is associated with the Ice House Resort (Appendix A and Table 4.1-2).

4.1.3.2 Jones Fork Land Use

The Jones Fork Development area is used primarily for hydroelectric generation, recreation and timber harvesting. Hydroelectric generation uses associated with the Jones Fork Development include the impoundment of water at Ice House Reservoir and the transference of the water via a surface and subsurface conduit to the Jones Fork Powerhouse, which is located on the southeast shore of Union Valley Reservoir. Recreational facilities within the Jones Fork Development are primarily associated with those adjacent to Ice House Reservoir. Recreational uses of the area

include camping, fishing, hunting, and day use activities, including bicycling on a 3.1-mile unpaved bike path that runs between the dam and Strawberry Campground.

The Ice House Resort is located approximately 1.5 miles southwest of Ice House Dam, adjacent to Ice House Road. The resort is open from May 15 through October 15 each year, and may offer winter-time services in the future. The resort includes a restaurant/bar, general store, motel, campground, RV hook-ups, showers, and other amenities.

With the exception of roadways (including Ice House Road, ENF roads, and numerous unpaved roads), UARP facilities and recreation developments (including the privately owned Ice House Resort), other development within the Jones Fork Development area is limited. Timber harvesting and dispersed recreation likely occur at locations throughout this area (Appendix B).

4.1.4 Union Valley Development

The Union Valley Development is located within the ENF in El Dorado County, California, approximately 65 miles east of Sacramento. The development primarily utilizes water from Big Silver Creek, Jones Fork Silver Creek, Tells Creek and Wench Creek and releases from Robbs Peak and Jones Fork powerhouses. Facilities include: Union Valley dam and reservoir; Union Valley tunnel and penstock; Union Valley powerhouse; Junction dam and reservoir; 17.7 miles of overhead 69-kV transmission lines; and recreation facilities at Union Valley Reservoir, including 12 campgrounds, a day use area, three boat launches, and two sanitation stations. There are no developed recreation facilities at Junction Reservoir.

4.1.4.1 Union Valley Land Ownership

The Union Valley Development is located on public land within the boundary of the ENF. SMUD owns 2,018.1 acres of land within the FERC Project Boundary for the Union Valley Development, all of which are submerged lands beneath Union Valley Reservoir. In addition to SMUD-owned land, approximately 2,179.5 acres of lands within the FERC Project Boundary are ENF lands (Appendix A and Table 4.1-1).

Land ownership within a 0.5 mile radius of the Union Valley Development is about evenly split between ENF land (2,323.7 acres) and SPI lands (1,898.6 acres). In addition, there is one large privately held parcel (223.2 acres) on the north-central side of Union Valley Reservoir (Appendix A and Table 4.1-2).

4.1.4.2 Union Valley Land Use

The Union Valley Development and adjacent areas are used primarily for recreation, hydroelectric generation, and timber harvesting purposes. Union Valley Reservoir impounds water from Big Silver Creek, Jones Fork Silver Creek, Tells Creek and Wench Creek and releases from Robbs Peak and Jones Fork Powerhouses. Water from Union Valley Reservoir is released for hydroelectric generation to the Union Valley Powerhouse, located immediately below the dam.

Union Valley Reservoir is the largest reservoir of the UARP and the site of the greatest concentration of developed recreation facilities in the Crystal Basin. There are 12 campgrounds, a day use area, three boat launches, and two sanitation stations, as well as two boat-in and hike-in campgrounds. An additional feature of the recreation complex at Union Valley Reservoir is a 5.2-mile-long paved bike trail around the lake perimeter between Wench Creek Campground and Jones Fork Campground.

The abundant recreational facilities and access from Ice House Road to Union Valley Reservoir make the area a highly popular destination for fishing, water skiing and other boating activities, camping, picnicking, hiking, sightseeing, bicycling and other activities.

With the exception of roadways (including Ice House Road, ENF roads, and numerous paved and unpaved roads), UARP facilities and recreation developments, other development within the Union Valley Development area is limited; however, dispersed recreation and timber harvesting occurs throughout the area (Appendix B).

4.1.5 Jaybird Development

The Jaybird Development is located within the ENF, in El Dorado County, California, approximately 55 miles east of Sacramento. The development utilizes water released from Junction Reservoir and stream flow from South Fork Silver Creek and Little Silver Creek. Facilities include: Junction dam and reservoir; Jaybird tunnel, penstock and powerhouse; and a 15-mile, 230-kV overhead transmission line.

4.1.5.1 Jaybird Land Ownership

All UARP facilities in this development are located within the boundary of the ENF. SMUD owns 52.0 acres of land within the FERC Project Boundary, all of which are submerged lands beneath Junction Reservoir. In addition to SMUD-owned land, all other lands within the FERC Project Boundary (approximately 304.2 acres) are ENF lands (See Appendix A and Table 4.1-1).

Land ownership within a 0.5 mile radius of the Jaybird Development is primarily under ENF management (2,455.5 acres) with several large parcels of SPI land in the vicinity of Junction Reservoir (683.0 acres) (Appendix A and Table 4.1-2).

4.1.5.2 Jaybird Land Use

The Jaybird Development is used primarily for hydroelectric generation purposes. Junction Reservoir impounds water released from Union Valley Reservoir, South Fork Silver Creek, and Little Silver Creek. Water from Junction Reservoir is released for hydro generation to the Jaybird Powerhouse.

Junction Reservoir is located in a steep canyon at the confluence of Silver Creek and South Fork of the Silver Creek (SFSC), immediately downstream of Union Valley Dam. There are no developed recreation facilities located at this reservoir; however, there are at least three areas along the reservoir shoreline that are occasionally used for dispersed camping. One of these sites

located on the south shore, about halfway up the South Fork Silver Creek arm of the reservoir, provides undeveloped access for launching boats on the reservoir.

With the exception of roadways (Bryant Springs Road, and several paved and unpaved roads) and UARP facilities, other development within the Jaybird Development area is limited; however, dispersed recreation and timber harvesting occurs throughout the area (Appendix B).

4.1.6 Camino Development

The Camino Development is located within the ENF in El Dorado County, California, approximately 55 miles east of Sacramento, and utilizes water released from Camino Reservoir and Brush Creek Reservoir. Facilities include: Camino dam and reservoir; Camino tunnel; Brush Creek dam and reservoir; Brush Creek tunnel; Camino penstock and powerhouse; and 41.7 miles of 230-kV overhead transmission lines.

4.1.6.1 Camino Land Ownership

All facilities in this development are located on public land within the ENF. SMUD does not own any land within the FERC Project Boundary, and all lands within the FERC Project Boundary (approximately 227.1 acres) are ENF-managed lands (Appendix A and Table 4.1-1).

Land ownership within a 0.5 mile radius of the Camino Development is almost entirely under ENF management (4,532.6 acres) with a portion of one parcel of SPI land in the vicinity of Camino Reservoir (8.7 acres), and a portion of one private parcel (36.7 acres) near a UARP access road to the south of the development (Appendix A and Table 4.1-2).

4.1.6.2 Camino Land Use

The Camino Development area is used primarily for hydroelectric generation, with limited recreational use occurring. There are no developed recreation facilities at Camino or Brush Creek reservoirs. Boats are not permitted on the surface of Camino Reservoir, and the area receives only infrequent use by visitors that are fishing, hunting and using OHVs.

Brush Creek Reservoir is located in a steep, remote, and forested area at 2,915 feet in elevation. There are no developed recreation facilities at the reservoir; however, there are areas that are occasionally used as dispersed camping sites by the public. There is a partly-paved, narrow, single-lane ramp that allows limited access for launching boats on the southern shoreline of the reservoir, and fishing on the reservoir may occur (Appendix B).

4.1.7 White Rock Development

The White Rock Development is located in El Dorado County, California, approximately 50 miles east of Sacramento. About half of eastern end of the development lies within the administrative boundary of the ENF, and the other western half is outside the ENF, on SMUD, BLM and private lands within El Dorado County.

The White Rock Powerhouse is the most downstream UARP development and discharges into Chili Bar Reservoir, which is part of the Pacific Gas and Electric Company's Chili Bar Project. The White Rock Development utilizes water released from Camino Powerhouse and the South Fork American River (SFAR). The development includes: Slab Creek dam and reservoir; Slab Creek penstock and powerhouse; White Rock tunnel, penstock and powerhouse; and 70.7 miles of 230 kV overhead transmission line.

4.1.7.1 White Rock Land Ownership

SMUD owns approximately 96.6 acres of land within the FERC Project Boundary of the White Rock Development, 73.3 acres of which are submerged beneath Slab Creek Reservoir. The ENF manages 293.4 acres within the FERC Project Boundary. The BLM manages 42.3 acres within the FERC Project Boundary. The remaining 70.3 acres within the FERC Project Boundary are privately owned (Appendix A and Table 4.1-1).

Land ownership within a 0.5 mile radius of the White Rock Development is fairly evenly divided between ENF lands (2,973.2 acres) near Slab Creek Reservoir, and private land ownership (2,346.6 acres) between Slab Creek Reservoir and White Rock Powerhouse. In addition, there are several parcels of SPI land (683.3 acres) that border Slab Creek Reservoir and 41.5 acres of BLM land near the White Rock Powerhouse (Appendix A and Table 4.1-2).

4.1.7.2 White Rock Land Use

The White Rock Development area is used primarily for hydroelectric generation and limited dispersed recreation. Slab Creek Reservoir impounds water of the SFAR, which includes releases from the Camino Powerhouse and the El Dorado Irrigation District's Aiken Powerhouse, both of which are located upstream of the Slab Creek Reservoir. Most of the water is conveyed from Slab Creek Dam to the White Rock Powerhouse. Minimum instream flow releases at the Slab Creek Dam are made through the Slab Creek Powerhouse, which is located at the base of the dam. Access to lands within this development area is generally limited due to its remote location. However, dispersed recreational activities do occur.

Slab Creek Reservoir is located approximately 8 miles from Highway 50 (Camino, Sly Park Road exit). Access to Slab Creek Reservoir is possible from two routes, one from near the dam, via Slab Creek Dam Access Road, and the other from the upstream end of the reservoir via Forebay Road. At the end of the Slab Creek Dam Access Road, there is a narrow one-lane dirt road (Slab Creek Reservoir Access Road) leading to an undeveloped boat launch, and at the upper end of the reservoir. There is a narrow unpaved surface that leads to the shoreline where small boats are occasionally launched and dispersed camping occurs (Appendix B).

The current level of dispersed recreation activities at Slab Creek Reservoir is likely to change in the near future as a result of security issues. Based on the findings of a confidential, FERC-required security study conducted throughout the UARP, which is unrelated to the relicensing effort, it is likely that access to Slab Creek Reservoir will be restricted in the near future. If this restriction is implemented, recreational pursuits may no longer be available on the reservoir.

4.1.8 Transmission Line

The UARP transmission line consists of numerous interconnected segments running from the Loon Lake Powerhouse westward into Sacramento County. To update the description of the transmission lines of the UARP to conform with the current configuration of the SMUD transmission and distribution system, SMUD plans to delete from the Project license the transmission lines to the west of Folsom Junction, located in the City of Folsom. Therefore, this report assesses the Project transmission lines located east of the Folsom Junction.

The overhead transmission line generally transverses adjacent to UARP facilities, with various interconnection points at UARP generation facilities along its route. The transmission line's voltage ranges from 69-kV (Loon Lake to Union Valley Powerhouse) to 230-kV (westward from the Union Valley Powerhouse).

4.1.8.1 Transmission Line Land Ownership

As discussed in the beginning of this section, land ownership mapping for the transmission line is available for the eastern portion of the transmission line (east of White Rock Powerhouse) and is discussed in terms if ownership within a 0.5 mile radius. To the west (from White Rock Powerhouse to the Folsom Junction), most lands along the transmission line corridor are privately owned. Aerial photographs of the transmission line area is available in Appendix B.

Within a 0.5 mile radius of the transmission line east of White Rock Powerhouse, land ownership is primarily on lands under management by the ENF (6,742.4 acres), followed by lands in private ownership, including 2,928.7 acres of SPI lands and 3,722.5 acres of land in other private ownership. In addition, there are 6.1 acres of SMUD-owned land within 0.5 miles of the eastern portion of the transmission line (Appendix A and Table 4.1-2).

The western portion of the transmission line corridor, from near Camino Powerhouse to Folsom Junction, crosses private lands (other than SPI) for which SMUD holds 252 easements (240 across private lands in El Dorado County and 12 in Sacramento County).

4.1.8.2 Transmission Line Land Use

Lands in the vicinity of the eastern portion of the transmission line corridor have generally been discussed under the individual developments. However, in general, the transmission lines are located up-slope of water bodies such as reservoirs and streams and therefore, are not areas of developed recreation. Although the corridor and access roads could be used by dispersed recreationists, in general, the corridor is not a desirable location for camping or other recreation uses due to the lack of or distance from water.

Lands in the vicinity of the western portion of the transmission line corridor that are outside the administrative boundary of ENF include a broad range of land use designations that generally intensify in use as the corridor crosses El Dorado County from east to west. Designations include rural residential, low, medium and high density residential, natural resource areas, and open space. In addition, the El Dorado County General Plan identifies Overlay Districts for

agricultural lands, ecological preserves and mineral resource areas. Within these areas, current land uses adjacent to the transmission line right-of-way include undeveloped open space (grasslands and oak woodlands predominate), agriculture, farming and ranching (small farms/ranches within the area include those used for livestock grazing, orchards and vineyards), and residential uses of mixed densities. Near the western portion of the transmission line within the community of El Dorado Hills (El Dorado County) and the City of Folsom (Sacramento County), the right-of-way transects suburban residential development generally of increasing densities (Appendix B).

4.2 Land Use Compatibility Assessment

The following issues were identified by resource agencies as perceived land use issues associated with the existing UARP:

1. Fire risk associated with the eastern section of the UARP transmission line (Loon Lake Powerhouse to White Rock Powerhouse).

2. Fire hazard risk associated with dispersed recreation use in the Crystal Basin area.

The *Fire Risk and Protection Technical Report* (DTA and CRS 2004a) was prepared as part of the relicensing studies to assess wildfire hazard and risk in the vicinity of the UARP. The report assessed the risk and hazard level associated with the UARP and dispersed recreation use in the Crystal Basin, and the effectiveness of SMUD's vegetation management policy to reduce fire risk associated with the transmission line.

4.2.1 Fire Hazard Risk Associated with the UARP Transmission Line

The *Fire Risk and Protection Technical Report* (DTA and CRS 2004a) assigned composite fire hazard and risk values to various segments of the transmission line corridor east of White Rock Powerhouse to Loon Lake Powerhouse. Fire risk (the probability of a fire to occur), fire hazard (the amount of fuel available to burn) and exposure to fire weather conditions (elevation) were the factors used to determine the fire risk and hazard values.

Fire risk was determined from historical data of fire starts provided by the ENF and the California Department of Forestry and Fire Protection (CDF). Fire hazard was determined through use of a fire simulation model (Behave). The assessment of fire hazard risk associated with the transmission line corridor indicates that there is a moderate level of fire risk and hazard for all segments of the transmission line, except the low elevation White Rock-Camino segment, which has a high level of fire hazard risk due to the proximity of the segment to residential areas and U.S. Highway 50. Within the last three years, there have been two fires (west of White Rock Powerhouse) as a result of line sag from SMUD transmission lines. During the same time period, there were 61 other fire starts that originated from distribution lines owned by another utility to homes in the same fire district. There are no reports of fire starts due to line sag within the ENF.

4.2.2 Fire Hazard Risk Associated with Dispersed Recreation

In response to this issue, fire risk within one-eighth and one-quarter mile of ENF-identified dispersed recreation sites in the Crystal Basin was evaluated, as documented in the *Fire Risk and Protection Technical Report* (DTA and CRS 2004a). The report includes an assessment of existing fire data and identifies an apparent positive relationship between human activity and the number of fire starts.

Although a positive relationship was indicated between human-caused fires and the identified dispersed recreation sites, available data did not provide a distinction between the types of human-caused fires; thus it could not be determined with certainty which human-caused fires were actually a result of dispersed recreation. In addition, it has not been determined which, if any, of these ENF-identified dispersed recreation sites, most of which are located outside of the FERC Project Boundary, are associated with the UARP.

4.2.3 Vegetation Management of the Transmission Line

SMUD implements a vegetation management program to maintain clearances along the transmission line. SMUD voluntarily complies with California Public Utility Commission (CPUC) rules and regulations regarding power line clearances (General Order 95). The vegetation management program has been recently adopted and implemented.

The management program guides management of vegetation within the transmission line right of way (ROW). The purpose of the plan is to set forth management direction to maintain an adequate distance between overhead transmission lines and vegetation within the ROW.

Aerial photographs of the transmission line ROW (Appendix B) show the landscape consisting primarily of coniferous forest in the upper half of the UARP development areas (Loon Lake down to Jaybird), chaparral in the lower development area (Jaybird to White Rock), and oak grassland for the remainder of the transmission line route from White Rock to Folsom Junction.

SMUD primarily uses mechanical means, such as hand cutting and bulldozing, to clear the ROW outside the ENF. On ENF lands, the ENF recently authorized SMUD to use ENF-approved herbicides in addition to mechanical treatment within the ROW. Herbicides allow for selective treatment of vegetation where undesirable plants species, such as exotics or noxious weeds, are selectively treated and desirable species, such as low-growing trees and shrubs that provide wildlife habitat or food for foraging, are preserved. The reduction of fuel within the ROW has an added benefit to the local County and the ENF as it creates a fuel break that would contribute to the control or containment of a wildfire.

4.3 Plan Consistency Review

4.3.1 El Dorado National Forest Land and Resource Management Plan

The 1974 Forest and Rangeland Renewable Resources Planning Act, amended by the 1976 National Forest Management Act, requires the Forest Supervisor of a National Forest to develop

a land and resource management plan (LRMP) to direct management activities on the forest and to revise the plan when conditions change significantly, or at least every 15 years.

The ENF LRMP (USDA 1989) was amended in 2004 and is discussed below in Section 4.3.7 on the Sierra Nevada Forest Plan Amendment.

4.3.2 Rubicon River Wild Trout Management Plan

The *Rubicon River Wild Trout Management Plan* (CDFG 1979) was prepared as an implementation plan for trout fisheries protection and enhancement on a 30-mile segment of the Rubicon River, from Hell Hole Dam downstream to the Middle Fork American River. The wild trout plan was prepared in response to the California Wild Trout Program established by the California Fish and Game Commission in 1971. Guidelines for the wild trout program are:

- To maintain wild trout populations at levels necessary to provide satisfactory recreational angling opportunities for wild trout.
- To maintain and enhance where possible the habitat required for optimum wild trout production.
- To preserve the natural character of the streamside environment.

The wild trout plan identifies goals specific to management of the Rubicon River, including:

- To protect the aquatic environment of the Rubicon and its tributaries.
- To perpetuate a naturally sustained, balanced population of rainbow trout.
- To provide a quality backcountry angling experience characterized by a naturally scenic streamside environment.

To achieve these goals, the wild trout plan identifies a program that includes a series of management activities for the Rubicon River. Certain management activities are directed toward in-field actions for CDFG to undertake, while others are directed toward guiding coordination between CDFG and other public land and resource managers with jurisdiction in the UARP area.

4.3.2.1 Applicability to the UARP

One relevant issue identified in the wild trout plan is sedimentation of the Rubicon River and tributaries occurring as a result of various water development facilities within the drainage. Specifically, the wild trout plan states: “Sediment removal each fall from the Robbs Peak Diversion, operated by SMUD on the South Fork Rubicon River results in turbid water and silt deposition in the South Fork.”

In response to this issue the wild trout plan recommended: “SMUD should develop means of eliminating sedimentation of downstream areas during sediment removal operations in Robbs Peak Forebay. Diverting flow around the areas of excavation may be a solution.” (CDFG 1979, Rubicon River Wild Trout Management Plan, pp. 28-30) Based on this recommendation, SMUD currently diverts flows around areas of excavation at Robbs Peak Reservoir.

4.3.2.2 Conclusions

SMUD's current operations incorporate flow diversions as recommended in the wild trout plan and no changes to this practice are anticipated. As such, no inconsistencies were found between the Rubicon River Wild Trout Management Plan and the UARP operations.

4.3.3 Public Opinions and Attitudes on Outdoor Recreation in California

Public Opinions and Attitudes on Outdoor Recreation in California 1997 (California State Parks 1998) is an element of the California Outdoor Recreation Planning Program. The document contains public opinion data generated through surveys conducted in 1997. The purpose of the data collection was to provide information useful for developing an updated California Outdoor Recreation Plan. As such, the document does not contain specific elements, planning requirements, goals, objectives, or other criteria to which the existing UARP can be assessed for consistency. The California Outdoor Recreation Plan (2002) is evaluated in Section 4.3.18.

4.3.4 Recreation Needs in California

A set of documents collectively referenced as *Recreation Needs in California, February 1982 & March 1983* (California State Parks 1983) was compiled in association with this land use plan consistency evaluation. The set contains six *Recreation Activity Profiles* for the following activities: Nature Appreciation, Picnicking, Hiking and Backpacking, Visiting Scenic Areas, Bicycling, and Camping. Each of the profiles contains statistical information from the early 1980s concerning participation levels and availability of opportunities for each of the specific activities within the state. The documents were finalized in 1982, and contain projections of recreation needs for a 20-year planning horizon through the year 2000. No specific goals, policies or objectives that have contemporary relevance to the UARP were identified in these planning documents. The relevance of the documents would be their contribution as baseline data to subsequent state outdoor recreation planning; the California Outdoor Recreation Plan (2002) is evaluated and included herein under separate heading.

4.3.5 California Water Plan Update

The *California Water Plan, Bulletin 160-98* (DWR 1998) assesses California's water needs and evaluates water supplies to quantify the difference between water demands and supplies. The Water Plan was first published in 1957 and is required to be republished every five years. The latest plan was issued as Bulletin 160-98 in 1998, and an updated plan is currently available in draft form (DWR, 2003). Bulletin 160-98 forecasts water shortages in California by 2020, and identifies water management options likely to be implemented by 2020 that would reduce future shortages. Bulletin 160-98 predicts future water needs and contains detailed information concerning water issues and development within the state, but does not make specific recommendations regarding how individual water purveyors should meet the needs of their service areas. As such, the Water Plan does not contain specific elements, planning requirements, goals, objectives, or other criteria to which the existing UARP can be assessed for consistency.

4.3.6 Water Quality Control Plans and Policies Adopted as Part of the State Comprehensive Plan

The applicable "Water Quality Control Plans and Policies Adopted as Part of the State Comprehensive Plan" for the UARP is the *Sacramento River-San Joaquin River Water Quality Control Plan* the overview of which (below) is taken from the *UARP Initial Information Package* (SMUD 2001).

The Clean Water Act (CWA) is the most significant legislation regarding water use and quality in the UARP area. The CWA requires the USEPA to adopt water-quality standards for surface waters within the United States. These standards consist of designated beneficial uses and water-quality criteria to support those beneficial uses. As provided for in the CWA, the USEPA has assigned administration of the CWA for California waters to the State of California. The Porter-Cologne Water Quality Act is California's comprehensive water-quality control legislation and designates the Regional Water Quality Control Boards (RWQCBs) responsible for CWA programs.

To meet its requirements under the CWA as well as the Porter-Cologne Water Quality Act, the Central Valley RWQCB has prepared and adopted the Sacramento River-San Joaquin River Water Quality Control Plan (Basin Plan) for the Sacramento and San Joaquin River Basins and their tributaries (RWQCB 1998); this Basin Plan is applicable to waters within the UARP area.

4.3.6.1 Applicability to the UARP

Section 401 of the CWA requires all applicants for a federal license or permit to obtain state certification that the proposed hydro project is in compliance with established water quality standards, which consist of designated beneficial uses and water quality objectives to support those beneficial uses. Certification may be conditioned with other limitations to assure compliance with various CWA provisions. In California, the State Water Resources Control Board (SWRCB) is the administrator of the CWA.

4.3.6.2 Conclusions

SMUD will apply for state certification, as described in Section 4.3.6.1. A detailed discussion of compliance with the Basin Plan will be provided in the final *Water Quality Technical Report,* to be issued in March 2005.

4.3.7 Sierra Nevada Forest Plan Amendment

The 1988 ENF LRMP (USDA 1989) was amended in 2001 by the Sierra Nevada Forest Plan Amendment (SNFPA), Final Environmental Impact Statement (FEIS) and ROD (USDA 2001) referred to here as the 2001 SNFPA. This 2001 amendment was a 10-year planning effort by the Forest Service to respond to the results of the Sierra Nevada Ecosystem Project, a comprehensive academic study on the state of the Sierra Nevada Mountain bioregion (University of California, 1996). The 2001 SFNPA addressed the following five perceived "problem areas" raised by the Sierra Nevada Ecosystem Project:

- Old forest ecosystems and associated species
- Aquatic, riparian, and meadow ecosystems and associated species
- Fire and fuels management
- Noxious weeds
- Lower Westside hardwood forest ecosystems

The Forest Service received more than 200 appeals of the 2001 SNFPA, which lead to further review and adjustment of the management direction and issuance of the 2004 SNFPA, Final Supplemental Environmental Impact Statement (FEIS) and ROD (USDA 2004a), referred to here as the 2004 SNFPA. The 2004 SNFPA lays out broad management goals for addressing the five problem areas listed above. The 2004 SNFPA amends the 1988 ENF LRMP and establishes: 1) management direction and goals; 2) land allocations; 3) desired future conditions over the next 50 to 100 years; 4) standards and guidelines to be used in designing and implementing future management actions; and 5) a strategy for inventory, monitoring, and research to support adaptive management. The components of the SNFPA most likely to have applicability to resources associated with the UARP are represented in the following management directions for 1) Old Forest Ecosystems and Associated Species; 2) Aquatic, Riparian, and Meadow Ecosystems and Associated Species Goals); and 3) Fire and Fuels Management Goals. (UDSA 2004a, SNFPA, Record of Decision, Appendix A)

Old Forest Ecosystems and Associated Species

The broad goals of the old forest and associated species conservation strategy are to:

- Protect, increase, and perpetuate desired conditions of old forest ecosystems and conserve species associated with these ecosystems while meeting people's needs for commodities and outdoor recreation activities;
- Increase the frequency of large trees, increase structural diversity of vegetation, and improve the continuity and distribution of old forests across the landscape; and
- Restore forest species composition and structure following large scale, stand-replacing disturbance events.

Aquatic, Riparian, and Meadow Ecosystems and Associated Species Goals

The strategy for aquatic management provides broad goals (listed below), which are endpoints toward which management moves watershed processes and functions, habitats, attributes, and populations. The following goals are part of the Aquatic Management Strategy:

- *Water Quality:* Maintain and restore water quality to meet goals of the Clean Water Act and Safe Drinking Water Act, providing water that is fishable, swimmable, and suitable for drinking after normal treatment.

- *Species Viability:* Maintain and restore habitat to support viable populations of native and desired non-native plant, invertebrate and vertebrate riparian-dependent species. Prevent new introductions of invasive species. Where invasive species are adversely affecting the viability of native species, work cooperatively with appropriate State and Federal wildlife agencies to reduce impacts to native populations.
- *Plant and Animal Community Diversity:* Maintain and restore the species composition and structural diversity of plant and animal communities in riparian areas, wetlands, and meadows to provide desired habitats and ecological functions.
- *Special Habitats:* Maintain and restore the distribution and health of biotic communities in special aquatic habitats (such as springs, seeps, vernal pools, fens, bogs, and marshes) to perpetuate their unique functions and biological diversity.
- *Watershed Connectivity:* Maintain and restore spatial and temporal connectivity for aquatic and riparian species within and between watersheds to provide physically, chemically and biologically unobstructed movement for their survival, migration and reproduction.
- *Floodplains and Water Tables:* Maintain and restore the connections of floodplains, channels, and water tables to distribute flood flows and sustain diverse habitats.
- *Watershed Condition:* Maintain and restore soils with favorable infiltration characteristics and diverse vegetative cover to absorb and filter precipitation and to sustain favorable conditions of stream flows.
- *Streamflow Patterns and Sediment Regimes:* Maintain and restore in-stream flows sufficient to sustain desired conditions of riparian, aquatic, wetland, and meadow habitats and keep sediment regimes as close as possible to those with which aquatic and riparian biota evolved.
- *Stream Banks and Shorelines**:*** Maintain and restore the physical structure and condition of stream banks and shorelines to minimize erosion and sustain desired habitat diversity.

Fire and Fuels Management Goals

Goals for fire and fuels management include reducing threats to communities and wildlife habitat from large, severe wildfires and re-introducing fire into fire-adapted ecosystems. Broad-scale goals include:

- Treating fuels in a manner that significantly reduces wildland fire intensity and rate of spread, thereby contributing to more effective fire suppression and fewer acres burned.
- Treating hazardous fuels in a cost-efficient manner to maximize program effectiveness.
- Actively restoring fire-adapted ecosystems by making demonstrated progress in moving acres out of unnaturally dense conditions (in other words, moving acres from condition class 2 or 3 to condition class 1).

This decision includes managing hazardous fuels in and around communities combined with strategic placement of fuels treatments across broad landscapes to modify wildland fire behavior. Goals for fuels treatments include:

- Strategically placing treatment areas across landscapes to interrupt potential fire spread.
- Removing sufficient material in treatment areas to cause a fire to burn at lower intensities and slower rates of spread compared to untreated areas.
- Consideration of cost-efficiency in designing treatments to maximize the number of acres that can be treated under a limited budget.

4.3.7.1 Applicability

Hydroelectric generation is one of many permitted uses within the ENF. Like other permitted uses, the UARP developments and transmission line is affected by ENF land management direction.

4.3.7.2 Conclusion

No inconsistencies have been found between the Eldorado National Forest LRMP, as amended by the 2004 SNFPA, and the UARP operation and maintenance. As part of the UARP relicensing, SMUD's proposed project will include reasonable measures to protect and enhance affected resources, an assessment of which will be included in the PDEA of the license application. In addition, the license application will include an assessment of whether the proposed project is consistent with the Eldorado National Forest LRMP, as amended by the 2004 SNFPA.

4.3.8 Desolation Wilderness Management Guidelines

In 1998, the ENF LRMP was amended to include the Desolation Wilderness Management Guidelines, Land Management Plan Amendment (USDA 1998b) as a result of the Desolation Wilderness Management Guidelines FEIS and ROD (USDA 1998a). The ENF and Lake Tahoe Basin Management Unit developed the guidelines in response to the following issues:

1) Increased day use in the wilderness due to increasing population in urban areas and improved access at wilderness trailheads.
2) Development of more sophisticated methods for managing wilderness use.
3) National direction for the Forest Service to utilize LRMPs to provide standards and guidelines for adequate and consistent wilderness management and direction.

4.3.8.1 Applicability

The Desolation Wilderness Management Guidelines, Land Management Plan Amendment (Guidelines) focuses on the management of recreational use and grazing activities in the wilderness based on the Limits of Acceptable Change (LAC) process. The Guidelines do not

affect SMUD operations of the UARP Rubicon Reservoir, which is a non-conforming use because the reservoir predates the wilderness designation.

4.3.8.2 Conclusions

No inconsistencies were found between the Guidelines and the UARP.

4.3.9 El Dorado County General Plan

The El Dorado County Board of Supervisors adopted a general plan for the County on July 19, 2004 (General Plan). However, this plan cannot be implemented until 1) the Board's action is upheld by voters in a referendum to be held on March 8, 2005; and 2) the Board's action, and the supporting environmental impact report and other documents, are upheld by the Sacramento County Superior Court as provided in a writ of mandate entered by that court in 1999. This technical report assesses the UARP against the General Plan as adopted by the Board of Supervisors because that plan is the only document in existence with any potential to become effective.

The General Plan contains the following elements, each having a series of goals, objectives, and policies pertaining to the topical areas addressed in each element:

- Land Use
- Transportation and Circulation
- Public Services and Utilities
- Public Health, Safety and Noise
- Conservation and Open Space
- Agricultural and Forestry
- Parks and Recreation
- Economic Development

4.3.9.1 Applicability to the UARP

The General Plan goals, objectives and policies speak to activities the County would undertake directly or those subject to the County's discretionary authority to approve, guide or otherwise restrict. Although the applicability of specific County policies to the UARP would be limited to those over which the County would have jurisdictional authority, this assessment considers the UARP in light of County policies, and attempts to identify instances in which the UARP could be inconsistent with the County General Plan, even though the County may not have jurisdictional authority to apply its policies.

Land Use Element. The Land Use element of the County General Plan contains policies directed at guiding future land uses. Policies include those that require buffer zones around a development to protect water quality, vegetation conservation, limitations on development and construction on steep slopes, community design guidelines, and protection of scenic corridors.

Circulation Element. The Circulation Element speaks to the County's roadway and transportation networks, and contains numerous policies directed toward achieving adequate roadway facilities within the County. Also included in the Circulation Element is consideration of bicycle and pedestrian facilities and support for trails and roadway shoulder options for non-motorized transportation and recreation. The UARP relicensing recreation studies have assessed the potential for non-motorized trail development at UARP facilities, including the UARP transmission line corridor.

Public Services and Utilities Element. The Public Services and Utilities Element focus is on the provision of public services and utility service within the County, and therefore has limited applicability to the UARP. However, Policy 5.6.1.5 states: "The County shall encourage the coordination between utilities constructing power lines and school districts to avoid placement of power lines in close proximity to schools." The existing UARP transmission line is not in close proximity to any schools; the only new transmission line proposed by SMUD for its new license will accommodate the proposed Iowa Hill Pumped Storage Development, discussed in the *Iowa Hill Land Use Technical Report* (DTA and Goodavish 2005a).

Public Health, Safety, and Noise Element. The Public Health, Safety, and Noise Element contains policies, including those associated with, fire safety, noise, hazardous materials and air quality, including policies associated with development in fire hazard areas, dam failure flood inundation zones, noise sensitive developments, and consideration of hazardous materials. Policies are generally applicable to citing proposed development and encourage or require development to avoid areas of high fire hazards, flooding, and noise generation sources.

Conservation and Open Space Element. The Conservation and Open Space Element contains policies directed toward conserving and protecting soil, mineral, water, biological and cultural resources, and preserving or utilizing open space within the County. SMUD complies with federal and state environmental protection laws in operating and maintaining the UARP.

Parks and Recreation Element. The Parks and Recreation Element contains policies directed toward providing adequate parks and recreational opportunities within the County, and toward securing funding and partnership opportunities for development and maintenance of parks and recreational facilities. The UARP contributes to the recreational aspects of the County by providing opportunities for outdoor recreation at UARP-related recreation facilities and by providing storage and associated summertime releases/flows on the lower portion of the South Fork of the American River.

Economic Development Element. The economic development element contains policies directed toward ensuring economic development opportunities within the County and for identifying and facilitating such opportunities. Consideration of the economic costs and benefits of the UARP on the County is addressed in the *Socioeconomic Impact Technical Report* (DTA and CH2MHILL 2004a).

4.3.9.2 Conclusions

Because the UARP is an existing project under FERC jurisdiction, the Elements of the General Plan are not applicable to the UARP. Nevertheless, no inconsistencies were found between the General Plan Elements and the UARP. An assessment of whether the proposed Iowa Hill Development is consistent with the General Plan is contained in a separate report titled *Iowa Hill Land Use Technical Report* (DTA and Goodavish 2005a).

4.3.10 El Dorado County River Management Plan

The El Dorado County River Management Plan or RMP (El Dorado County, November 2001) is an update to the County's 1988 River Management Plan, and establishes a set of operational rules for commercial and private boaters navigating the South Fork of the American River between the Chili Bar Dam and Salmon Falls Road in El Dorado County.

The focus of the RMP is to prescribe management actions to be implemented by various County agencies in association with whitewater boating on the lower portion of the SFAR. Management elements include safety and education programs, transportation programs, monitoring, agency and community coordination, permitting, river carrying capacity thresholds and associated management tools, regulations, facilities and lands management activities, funding elements, and river data collection and dissemination.

Pertaining to river flows, the operational aspects of the RMP are intended to fit within the upstream hydro projects' operational parameters. The RMP includes guidance concerning the activities of a River Management Advisory Committee, which holds regular meetings and advises the County Board of Supervisors and the Planning Commission. As part of the River Management Advisory Committee's function, the committee is responsible for coordination with resource and other agencies for activities related to the river. Relative to flows, Element 5.1.2 of the RMP states in part: "Representatives of the El Dorado County Water Agency and/or El Dorado Irrigation District (EID), the Sacramento Municipal Utility District (SMUD), and Pacific Gas and Electric Company (PG&E) will be requested to present a forecast for river flow and typical system operations. This information will be used to anticipate the character of river management needs. . . ." (El Dorado County 2001)

The RMP recognizes and discusses the important contribution that storage and operation of the UARP makes to sustain flows in the SFAR at levels that allow whitewater boating for much of the summer. Of particular relevance in the RMP are the following.

- Although releases from PG&E's power plant at Chili Bar regulate flows in the RMP reach, it is SMUD's UARP that controls the volume of flow available to Chili Bar Reservoir and PG&E's Chili Bar Powerhouse. The RMP is based on the analysis of historic river operations (i.e., over 25 years of hydroelectric power operations during the County administration of whitewater recreation by implementation of the RMP) and the presence of informal agreements between river outfitters and SMUD.

- The SMUD UARP system has the greatest influence on the flow regime of the South Fork American River in the RMP reach. Its operation, particularly in the summer recreation season, is critical to the County's ability to facilitate safe use of the South Fork for whitewater recreation.

(El Dorado County 2001, El Dorado County River Management Plan, pp. 2-7 and 2-8)

The RMP also discusses the role of PG&E in coordinating releases from Chili Bar for purposes, including minimum stream flow requirements for fisheries, and to accommodate, as practicable, the flows necessary for whitewater boating.

4.3.10.1 Applicability to the UARP

As discussed above, the RMP recognizes the importance of the UARP in providing water storage that enables summertime use of the SFAR for whitewater boating. Nevertheless, the County has no authority to regulate operations at the UARP, which is regulated by the FERC. Although the RMP encourages the County and River Management Advisory Committee to coordinate with both SMUD and PG&E, it does not place any requirements (which would likely be beyond the County's authority to impose) on the utilities. The current practice of springtime coordination meetings between SMUD, PG&E and representatives of the rafting community does not conflict with the RMP.

4.3.10.2 Conclusions

No inconsistencies were found between the RMP and the UARP.

4.3.11 El Dorado County Trails Master Plan

The *Draft El Dorado County Trails Master Plan* (El Dorado County 1997) is a plan for identifying a process for development of a network of trails between communities, schools, parks, and other destinations throughout the County. The draft plan is intended as an update to the 1989 Hiking and Equestrian Master Plan and includes goals, policies, design standards, and implementation mechanisms intended to guide the acquisition, construction, and maintenance of trail and trailhead facilities throughout the County. The plan enumerates the various County General Plan policies directed toward trail development and discusses the benefits of trail connectivity among the more populated areas of the County.

4.3.11.1 Applicability to the UARP

The Trails Master Plan documents the County's trail planning goals and policies and does not place specific requirements on other jurisdictions or land owners/managers within the County. The Trails Master Plan does, however, contain provisions for the County to work with other parties (which may include SMUD and the ENF) for trail planning and development and identifies trail, trailhead, and signage design standards for trails within the County.

4.3.11.2 Conclusions

No inconsistencies were found between the Trails Master Plan and the UARP.

4.3.12 El Dorado County Water Agency Water Resource Development and Management Plan

The *Draft Water Resources Development and Management Plan* (El Dorado County Water Agency 2003) is designed to coordinate water resource planning activities within El Dorado County and to identify actions and water resource alternatives to meet the water needs in the County. The draft water plan documents the water supply needs of the entire county, and identifies potential technical, environmental, and institutional constraints for each water resource alternative contained within the plan.

The stated primary goals of the draft water plan are to:

- "Coordinate various water resource planning efforts within El Dorado County.
- Be consistent with proposed General Plan land use development alternatives.
- Document the projected water needs of the county through 2025 and beyond.
- Identify actions and water resource alternatives to meet water needs of El Dorado County.
- Identify potential technical, environmental, and institutional constraints for each water resource alternative.
- Develop water resource alternatives that have general local support.
- Develop a phasing and implementation plan to the year 2025." (Section 1.1, The *Draft Water Resources Development and Management Plan,* El Dorado County Water Agency 2003)

The draft water plan contains many recommendations that can be realized only if El Dorado County interests are able to reach agreements with specified agencies that are outside the County, such as the Placer County Water Agency, SMUD, the City of Sacramento, and the Bureau of Reclamation. These agreements would need to be consensual, inasmuch as none of these entities is under any legal obligation to enter into them.

4.3.12.1 Applicability to the UARP

SMUD holds non-consumptive water rights for the UARP under permits and licenses issued by the State Water Resources Control Board, with parallel consumptive use rights being held by the City of Sacramento. SMUD's interests in the UARP, however, intersect the draft water plan in two regards. First, under two agreements between SMUD and El Dorado County (now assigned to EID), the County has certain rights to use Slab Creek Reservoir and the White Rock penstock to divert water supplies to which El Dorado County has a right. Second, SMUD's non-consumptive use power water rights (but not the City of Sacramento's parallel consumptive use water rights) are subject to the provision that no diversion or use of water under the water right

shall be made that will interfere with the diversion or use of water for irrigation or domestic purposes under either a prior or subsequent water right.

El Dorado County's contractual right to use SMUD facilities and the limitation on SMUD's use of water for hydropower purposes have the potential to assist the County in the realization of some of the objectives of the draft water plan. Other possibilities referenced in the draft water plan, such as diversions at Robbs Peak Forebay, or the exchange of Fazio water for entitlements held by the City of Sacramento, require the agreement of third parties, and consideration of such arrangements is beyond the scope of this technical report.

4.3.12.2 Conclusions

The draft water plan recognizes that many of its proposals require contractual agreements with third parties, such as SMUD, and it makes no assumptions as to whether any or all of those agreements are obtainable. There is no inconsistency between the draft water plan and the UARP.

4.3.13 Bureau of Land Management South Fork American River Plan

The South Fork American River – A Management Plan (BLM 2004) is a plan for management of the "public lands" (i.e., those under BLM ownership/jurisdiction) adjacent to the SFAR below Chili Bar Dam to Folsom Lake; none of these public lands are located within the FERC Project Boundary for the UARP. Along this corridor of the SFAR, the BLM manages a total of 4,164 acres of land comprising seven separate "planning units". Each planning unit is physically separated from other units by private property. The planning units are: Miner's Cabin, Ponderosa Parcel, Parcel C, the Dave Moore Nature Area, Greenwood Creek, Norton Ravine, and Pine Hill. This new management plan amends the BLM's Sierra Planning Area Management Framework Plan (MFP), as amended in 1988. Topics and issues not specifically addressed in the South Fork Plan will continue to be guided by the MFP.

4.3.13.1 Applicability to the UARP

The management plan contains a set of planning assumptions, including Planning Assumption #10, which states: "It is anticipated that there will be no significant changes in water flow in the South Fork American River in the foreseeable future." (BLM 2004) With the possible exception of this assumption, there are no planning or land use issues contained within the management plan that would have relevance to the UARP.

4.3.13.2 Conclusions

The existing UARP is consistent with the direction of the management plan. SMUD and PG&E have jointly conducted studies relative to flows in the reach downstream of Chili Bar Dam for their respective relicensings, and any proposed changes in water flow would be documented in the respective applications.

4.3.14 Bureau of Land Management Federal Land Policy and Land Management Act Area Plan

The Federal Land Policy and Land Management Act (FLPMA) of 1976, as amended, is the BLM "organic act" that establishes the agency's multiple-use mandate to serve present and future generations. The act calls for periodic and systematic inventorying of public lands, and land use planning to project present and future land uses. The area plan for the SFAR discussed in Section 4.3.13 above addresses this Act.

4.3.15 Resource Conservation District Watershed Plan

The Resource Conservation District Watershed Plan is a component of the El Dorado County Water Resources Agency's Water Resource Development and Management Plan, discussed above in Section 4.3.12.

4.3.16 Sacramento County General Plan

The Sacramento County General Plan (Sacramento County 1993) is a land use planning document that contains the County's visions and goals throughout the plan's planning horizon, and identifies objectives and policies associated with various goals to guide the County's land use. The General Plan contains the state-required elements of Land Use, Circulation, Housing, Conservation, Open Space, Noise and Safety, as well as six additional optional elements, including Air Quality, Public Facilities, Hazardous Materials, Agricultural, Scenic Highway and American River Parkway Plan.

4.3.16.1 Applicability to the UARP

The UARP transmission lines extend from El Dorado County into Sacramento County. In addition, SMUD intends to propose in its relicense application the deletion of transmission lines beyond Folsom Junction from the UARP license. Thus, the objectives and policies contained within the Sacramento County General Plan *Public Facilities Element* were reviewed for applicability.

One objective of this element is: "Ensure the provision or safe, reliable, efficient and economical electric service while minimizing potential land use conflicts, and health, safety, environmental, and aesthetic impacts of transmission facilities." A series of policies associated with new transmission lines and substations are identified to aid the County in achieving this object, including Policy PF-91 which states: "Transmission line rights-of-way located in undeveloped areas shall be maintained as parks, recreation areas and open space and solar distributed generation sites subject to land owners' current and intended use of the property. Pursuant to terms of standard utility facility easements, proposed uses and improvements within utility rights-of-way are subject to review and consent by the affected utility." (Sacramento County 1993, Public Facilities Element, page 43)

Another objective of the Public Facilities Element is to: "Plan and design transmission facilities to minimize visual impacts, preserve existing land uses, and avoid biological and cultural

resources." This objective speaks to SMUD's ongoing activities and recommends that "an aggressive outreach and education program be initiated and incorporated into SMUD's existing public notification process" and includes policy PF-92 that states: "…existing and future transmission corridors should be shared by more than one utility company." Policy PF-101 states: "The Board of Supervisors should utilize policies in this section as a basis for formulating recommendations for locating sub-transmission facilities, commenting on SMUD's electric facilities siting plans, and when adopting sub-transmission siting locations for County Community Plans." (Sacramento County 1993, Public Facilities Element, pp. 43-45)

The Public Facilities Element includes numerous advisory and prescriptive policies concerning electric transmission lines; in general, the policies guide the development of new facilities.

4.3.16.2 Conclusions

Because the continued operation of the existing UARP transmission line within Sacramento County would not require the development of new facilities, the applicability of the Sacramento County General Plan is limited. The General Plan recognizes the county's limited role regarding the electric system: "…Sacramento County does not dictate policy regarding the development and efficiency of the energy supply system… [The county] supports planning initiatives such as SMUD's energy source diversification and demand-side conservation. …Sacramento County recognizes that SMUD has the primary responsibility for providing electric service within Sacramento County, and that paramount within that responsibility is the performance of the electric system. It is the intention of these policies to ensure that County land use planning/development activities are coordinated with the associated facilities development responsibilities of SMUD." (Sacramento County 1993, Public Facilities Element, page 41)

As a result of the minimal applicable General Plan policies and the County's recognition of SMUD's existing and future operation as integral to the services provided in Sacramento County, no inconsistencies were found between the Sacramento County General Plan and the UARP.

4.3.17 Comprehensive Statewide Historic Preservation Plan for California

The *Comprehensive Statewide Historic Preservation Plan for California 2000 – 2005* (OHP 2001) is intended to provide guidance and implementation of a sound planning procedure for the identification, registration, protection, and preservation of important historical resources. The plan discusses various issues facing historic and archaeological preservation within the State, and the benefits and shortcoming of related laws, regulations, and professional conduct.

4.3.17.1 Applicability to the UARP

The plan identifies a "shared vision" and seven "shared goals", each having a series of specific "shared objectives". Review of the goals and objects to determine relevance to the UARP was conducted. None of the goals or objectives pertain specifically to UARP facilities or appear to place direct requirements on SMUD in relationship to the UARP. However, the following select goals and objectives (objectives listed as bullet items) are provided as indicative of the intent of the plan and may have overarching applicability to resources within the UARP area:

Goal I – Increase the number of significant privately and publicly owned historic resources that are protected and preserved in all geographical regions of the state:

- Promote the registration of historic resources on local, state, and federal registers.
- Promote comprehensive, context-driven surveys of historic resources in all areas of the State.

Goal V – Encourage and implement historic preservation as a regular component of public policy planning at all levels of government:

- Advocate for the identification, evaluation, protection, and preservation of historic resources.

Goal VI – Ensure that the identification of, and information about, historical and cultural resources in California is comprehensive, available in a consistent and complete format, and continually acquired:

- Assist and encourage state and local agencies in the identification, recordation, evaluation, and interpretation of historic resources.
- Promote consistency in statewide and local administration of archeological programs by encouraging voluntary use of guidance developed or distributed by OHP.

4.3.17.2 Conclusions

The goals and objectives appear to be intended solely as guidance/direction to the OHP. To the extent that OHP implements this guidance, it would likely be reflected in more specific guidance or regulatory requirements. Thus, no inconsistencies were found between the Comprehensive Statewide Historic Preservation Plan for California 2000 – 2005 and the UARP.

4.3.18 California Outdoor Recreation Plan

The 2002 edition of the *California Outdoor Recreation Plan* (CORP) (California State Parks 2002) includes statewide recreation data and is intended to serve as a tool for statewide recreation leadership and action for a five-year period. The 2002 edition supercedes the 1993 edition. The stated primary objective of the CORP is to determine the outdoor recreation issues (i.e., problems and opportunities) most critical in California, and to explore the most appropriate actions by which public agencies (including federal, state and local agencies) might best address the issues. The scope of the 2002 CORP was designed to meet the specific program responsibilities of the Federal Land and Water Conservation Fund Act, which addresses outdoor recreation, land acquisition, facility development, redevelopment, and rehabilitation.

The CORP identifies five broad issues, each with a series of recommended actions intended to reflect the political and administrative capacity of the state of California to guide, influence, or

direct the outdoor recreation policies and programs of agencies in state and local governments. The CORP has the specific aim of accomplishing the following:

- Provide a source of information.
- Serve as an action guide.
- Provide leadership.
- Maintain funding eligibility.
- Provide project selection criteria.

4.3.18.1 Applicability to the UARP

The CORP is a statewide guidance document and contains generalized provisions with limited applicability to the UARP. However, due to the recreational facilities and opportunities associated with the UARP, the CORP guidance does have relevance to SMUD's facility planning efforts associated with the UARP relicensing in terms of identifying recreational demands in the state that could be provided by the UARP.

Five key "issues" are identified in the CORP, and for each issue a number of actions are recommended, each correlated with one or more agencies for implementation. The following is a list of actions identified in the CORP which list either "local providers" or "all providers" (either of which may be attributed to SMUD or other recreation facilitating agencies within the UARP area) as potentially responsible agencies for implementation of the actions:

- Document and publicize benefits related to parks and outdoor recreation.
- Emphasize elements of park and recreation field most valued by the public.
- Complete statewide inventory of federal, state, county, city and special district outdoor recreation facilities.
- Incorporate historic preservation into public policy at all levels of government.
- Federal, state and local providers adopt relevant project goals from the Vision Insight Planning team to meet their specific needs.

To the extent that the UARP provides opportunities for outdoor recreation and that SMUD considers the development of recreational facilities and continued use of facilities as part of its on-going operations, the CORP provides information and advisory elements that may be beneficial to recreation resources planning within the UARP area.

4.3.18.2 Conclusions

None of the actions identified in the CORP contain prescriptive elements that place requirements on the UARP; thus, no inconsistencies were found between the CORP and the UARP. In addition, recreation studies conducted for the UARP relicensing regarding recreation demand and supply, e.g., *Recreation Demand Technical Report* (DTA and LBG 2004d), and *Recreation Supply Technical Report* (DTA and LBG 2004e) address the direction of the CORP.

4.3.19 Sierra Pacific Industries Timber Harvest Plan

Sierra Pacific Industries (SPI), the state's largest private landowner, owns or manages approximately 1.5 million acres of forest lands in the Sierra Nevada, Cascade, Klamath, and Coast mountain ranges of California. SPI harvests approximately 1.2 percent of its lands annually (Mountain Democrat 2000).

Logging on private lands in California is regulated by the CDF under the 1973 Z'Berg Nejedly Forest Practice Act. The Act requires a Timber Harvest Plan (THP) be written by a Registered Forester and submitted to the CDF before trees can be harvested. The plan must describe in detail how the harvest will be done, how the site will be replanted, and all the measures that will be taken to prevent erosion, maintain water quality and protect habitat. When the THP is finished, an environmental review is done by regulatory agencies, including CDF, CDFG, and depending on the site, the Division of Mines and Geology, Department of Parks and Recreation, the Coastal Commission, and local air and water quality boards.

SPI plans harvesting activities and prepares THPs about 2 or 3 years prior to implementation. Typically harvesting consists of clear cutting around 17 acres. Clear cuts can include visual retention such as the creation of nooks or small islands of oaks, large woody material, snags, or other features that could break up the visual texture of the site. SPI has an established system of access roads on their land so temporary spur roads are cleared for harvesting activities then replanted after use.

4.3.19.1 Applicability to the UARP

Approximately 130 acres of SPI land are within the non-transmission line FERC Project Boundary. In addition, SMUD has easements for the transmission line corridor to cross several miles of SPI land. The presence of the UARP has not conflicted with SPI timber harvest plans and activities. However, SPI believes the attraction of recreationists to Gerle Creek, Union Valley, and Ice House reservoirs has affected the maintenance and management of SPI roads and lands (Feller 2004). This issue is discussed more in Section 4.7 below.

4.3.19.2 Conclusions

No inconsistencies were found between SPI timber harvest plans and the UARP.

4.3.20 Water Forum Agreement

The Water Forum Agreement is a comprehensive agreement among agencies and entities in Sacramento, Placer and El Dorado Counties (Water Forum 2000). The agreement is a comprehensive package of linked actions to be undertaken by members of the Water Forum with the goal of achieving two broad objectives: "provide a reliable and safe water supply for the region's economic health and planned development to the year 2030; and preserve the fishery, wildlife, recreational, and aesthetic values of the Lower American River." (Water Forum 2000, Introduction, page 1)

The agreement contains numerous specific provisions to which individual water purveyors and users within the region have committed. SMUD is a party to the agreement in regard to its water supply needs for its non-UARP generation facilities in the Sacramento area. In general, the agreement includes provisions for SMUD to increase American River diversions during *most* years (when certain minimum Folsom Lake inflows occur), and to decrease American River diversions in dry years, relying instead on a substitute water supply provided by the county water agency. According to the agreement, SMUD has also decided to conference with other stakeholders on how available water should be managed when certain low inflows to Folsom Lake are projected.

4.3.20.1 Applicability to the UARP

The Water Forum Agreement is not applicable to the UARP.

4.3.21 California Department of Transportation Applicable Plans

Applicable California Department of Transportation (DOT) plans are the *California Transportation Plan Technical Addendum* (DOT 1993) and the *Draft California Transportation Plan 2025* (DOT 2003). The 1993 California Transportation Plan (CTP) is a statewide, long-range transportation plan. The 2003 Draft CTP proposes a vision for transportation in year 2025 and beyond, and sets goals, policies and strategies to achieve this vision. It gives broad strategic direction to transportation system improvements based on a continuing planning process. The CTP does *not* select projects; rather it provides guidance in the selection of strategies that will meet statewide targets for performance of the transportation system. For instance, one goal of the CTP is to "preserve and maintain the transportation system." Strategies identified in the plan to achieve this goal include:

- Increase private sector participation and coordinate transportation maintenance and rehabilitation projects with other transportation agencies and public utility projects to minimize costs and traveler disruption.
- Coordinate roadwork and cost sharing on local streets and roads with public utilities and private sector developers to reduce maintenance costs and minimize traveler disruption. Integrate bicycle and walking facilities into transportation designs and circulation plans.

The Sacramento Area Council of Governments (SACOG) coordinates regional transportation issues within the Sacramento area, including the west slope of El Dorado County. SACOG adopted a *Regional Transportation Plan (RTP) for 2025* in July 2002. The plan focus is on the urban areas of the SACOG region, and specific projects identified within the RTP nearest the UARP area are those associated with Highway 50 mainline improvements (SACOG 2002). SMUD is identified as a participant in the Transportation Roundtable, involved in the development of the RTP.

4.3.21.1 Applicability to the UARP

The two strategies listed above are indicative of the general and broad direction of the CTP. While various strategies could be interpreted to apply to UARP facilities (specifically, access

roads and bicycle/pedestrian facilities within the UARP system), specific applicability of the CTP to the UARP is not evident. Additionally, because the RTP focuses on urban transportation issues, and identification of projects in the UARP area is limited to improvements to Highway 50, specific applicability of the RTP to the UARP is not evident.

4.3.21.2 Conclusions

The CTP and the RTP do not appear to have applicability to the UARP; hence no inconsistencies were found between the plans and the UARP.

4.3.22 California Department of Safety of Dams Applicable Plans

The California Department of Water Resources Division of Safety of Dams (DSOD) promulgates dam safety regulations. DSOD reviews plans and specification for the construction of new dams or for the enlargement, alteration, repair, or removal of existing dams. Reviews are made pursuant to applications submitted to the Division, and the Division must grant written approval before an owner/applicant can proceed with proposed activities.

The California Water Code, Sections 6000 through 6501, contains specific requirements associated with the application, approvals and construction or modification of dams within the state. California Code of Regulations, Title 23 (Waters), Division 2 (Department of Water Resources), Chapter 1 (Dams and Reservoirs), codifies State law associated with the development of dams and contains provisions, including those associate with applications, filing fees, plan review and construction supervision, and evidence of water rights. A complete listing of requirements and provisions of the Division is beyond the level of detail necessary for this plan consistency evaluation and is not included herein.

DSOD also exerts maintenance and operation supervisory authority of all dams of jurisdictional size, i.e., artificial barriers, together with appurtenant works, which are 25 feet or more in height or have an impounding capacity of 50 acre-feet or more. Applicable elements of this authority (California Water Code, Division 3, Dams and Reservoirs) include:

- Employment of a civil engineer (registered in the state) to "supervise the structure for the protection of life and property for the full operating life of the structure." (Section 6025.6 [a])
- Supervision, by the civil engineer noted above, of dams to ensure seepage, earth movement, or other conditions that may exist do not constitute a danger to life or property. If such a condition exists, the civil engineer is to notify the owner and recommend appropriate action. (Section 6025.6 [b])
- DSOD inspects dam/hydropower facilities on an unscheduled basis to determine safety of structures and operations. DSOD may require dam owners to conduct engineering tests to demonstrate that safety and safeguards for life and property are not compromised. (Section 6102)

4.3.22.1 Applicability to the UARP

SMUD retains a California-registered civil engineer who conducts 5-year safety inspections of all dams and pertinent facilities; these reports are provided to DSOD for review. In addition, the DSOD conducts annual inspections of UARP dams. If structural anomalies are discovered either by engineering or other inspections, modifications are proposed, review and approved to correct the anomaly (e.g., Camino Powerhouse penstock stabilization project and powerhouse wall pressure relief project).

If a requirement made by the DSOD conflicts with a FERC dam safety requirement and compliance with both requirements cannot be achieved, the DSOD will modify its requirement sufficiently to make compliance possible with both federal and state requirements (California Water Code, Division 3, Dams and Reservoirs, Section 6027).

4.3.22.2 Conclusions

SMUD complies with all applicable requirements of the Division of Safety of Dams. No inconsistencies were found between the relevant statutes, regulations, and required specifications and the UARP.

4.3.23 Sacramento Flood Control Agency Applicable Plans

The *River Corridor Management Plan (Lower American River)* (RCMP) is a non-binding policy document overseen by the Lower American River Task Force to address near-term policy issues relating to parkway management and coordinated resource management on the lower American River (i.e., the American River downstream of Folsom Dam). The elements of the RCMP are: Fisheries and In-stream Habitat Management; Vegetation and Wildlife Management; Flood Management; and Recreation Management. The 2003 RCMP Annual Report for the period January 2002 – December 2002 (Task Force 2003), which provides an overview of the plan and management actions identified therein, was reviewed for this consistency assessment. The Annual Report includes a summary of plan elements, recent undertakings, and future activities.

The RCMP identifies a series of actions for the betterment of resources associated with the lower American River. As such, actions identified in the plan focus on activities and resources within this area, including recreation within the American River Parkway, fisheries issues below Nimbus Dam to the American River confluence with the Sacramento River, flood control, and other issues specific to this reach of river. Issues and actions above Folsom Dam appear to be limited to those associated with temperature control devices for Folsom Dam releases and water intake for the El Dorado Irrigation District in the South Fork arm of Folsom Lake.

4.3.23.1 Applicability to the UARP

The RCMP has no applicability to the UARP.

4.3.24 Federal Emergency Management Agency Applicable Plans

Executive Order 11988, issued by President Carter in May 1977, is a directive to federal agencies to consider potential impacts and to assert leadership in reducing flood losses and losses to environmental values served by floodplains. Subsequently, the Water Resources Council issued guidelines for implementing the Order. Guidelines identify an eight-step process:

1. Determine if a proposed action is in the base floodplain.
2. Provide for public review.
3. Identify and evaluate practicable alternative to location in the base floodplain.
4. Identify the impact of the proposed action.
5. Minimize threats to life and property and to natural and beneficial floodplain values, and restore and preserve natural and beneficial floodplain values.
6. Reevaluate alternatives.
7. Issue findings and a public explanation.
8. Implement the action.

Additional guidance for meeting the directives of Executive Order 11988 were issued by the Interagency Task Force on Floodplain Management in a document entitled, *Further Advice on Executive Order 11988 Floodplain Management*.

The Order and subsequent implementing guidance provide prescriptive and advisory methods for federal agencies to comply with the Order and to consider and address potential effects of their actions on floodplains. Guidelines indicate that the Order is applicable to all federal actions, and includes in the definition of "actions": "Federal activity including…conducting Federal activities and programs affecting land use, including but not limited to water and related land use resources planning, regulating, and licensing activities." The guidelines also contain information concerning opportunities for incorporation with National Environmental Policy Act (NEPA) compliance.

4.3.24.1 Applicability to the UARP

It is assumed that FERC's ultimate licensing decision associated with the UARP relicensing would constitute a federal action requiring the FERC to meet the directives of Executive Order 11988. Section 4.5.2 of this technical report contains a description of UARP facilities within various flood zone designated areas.

4.3.24.2 Conclusions

No inconsistencies were found between Executive Order 11988 and the UARP.

4.3.25 City of Folsom General Plan

The City of Folsom General Plan (City of Folsom 1993) is a land use planning document that contains the City's goals and policies associated with development and activities within the City. The General Plan contains the required elements of Land Use, Transportation and Circulation,

Housing, Conservation, Open Space and Conservation, Safety, and Noise, as well as four additional elements, including Parks and Recreation, Air Quality, Public Facilities, and Hazardous Materials.

4.3.25.1 Applicability to the UARP

The UARP transmission line is located within the boundaries of the City of Folsom. The City's General Plan was reviewed for goals and policies applicable to the operation and maintenance of both the transmission line and right-of-way within which it is located. No specific goals or policies were identified with direct applicability to the SMUD transmission line nor were any goals or policies identified with general applicability to transmission lines and rights-of-way within the City. Two portions of the General Plan contain elements with limited potential for applicability to SMUD operation of the transmission line, as discussed below.

- One policy with potential applicability associated with right-of-way maintenance regards tree replacement. Policy 23.2 states: "Replacement trees shall be required whenever existing trees are removed." General right-of-way vegetation management would preclude the growth of trees within the right-of-way that would require removal for which this policy would be applicable. Thus, it is unlikely a conflict would arise. Regardless, SMUD voluntarily complies with California Public Utility Commission (CPUC) rules and regulations regarding power line clearances (General Order 95) and would abide by the requirements within that order regarding trees.

- The City General Plan contains a map which identifies "Scenic Corridors in Folsom" (Figure 24-2), and Blue Ravine Road, which is crossed by the SMUD transmission line, is identified on the map as a scenic corridor. However, no specific goals or policies associated with the transmission line crossing were identified.

4.3.25.2 Conclusions

The City General Plan has limited to no specific applicability to the segment of the SMUD transmission line that is located within the City. Thus, no inconsistencies were found between the City General Plan and the UARP.

4.3.26 South Fork American River - Chili Bar Watershed, Lower Middle Fork American River Watershed Landscape and Roads Analysis

The South Fork American River – Chili Bar Watershed, Lower Middle Fork American River Watershed Landscape and Roads Analysis (LRA) tiers off of the SNFP and provides specific management recommendations for the South Fork American River – Chili Bar Watershed, which includes the Slab Creek Reservoir sub-basin (USDA 2003).

As discussed above in Section 4.3.1, under the ENF Land and Resource Management Plan (LRMP) and Section 4.3.7, under the Sierra Nevada Forest Plan Amendment (SNFPA), land allocations have been established for the National Forest lands in the Eldorado National Forest's LRMP, as amended by the 2004 SNFPA (USDA 2004a).

The SNFPA instituted a management requirement for landscape analysis, subject to funding, to provide an information baseline for evaluating the existing conditions in terms of the desired conditions. The landscape analysis is not a decision document; rather it provides information on existing conditions; its purpose is to enable identification and prioritization of appropriate project opportunities that would enhance, maintain or improve the landscape conditions in order to achieve or move toward the desired conditions of the land allocations given by the SNFPA (USDA 2003).

4.3.26.1 Applicability to the UARP

The ENF lands at the Slab Creek Reservoir area are addressed by the LRA. Hydroelectric generation is one of many permitted uses within the ENF. Like other permitted uses, the UARP developments and transmission line is affected by ENF land management direction.

4.3.26.2 Conclusion

No inconsistencies have been found between the LRA and the UARP operation and maintenance. The ENF LRMP (USDA 1989), as amended by the SNFPA (USDA 2004a), is discussed in Section 4.3.7.

4.4 Spoil and Wood Debris Piles, and Historical Borrow Sites

4.4.1 Spoil Piles and Historical Borrow Sites

Most spoil piles and borrow sites are the result of tunnel adit construction. Tunnel adits are generally constructed when tunneling activities occur. Adits provide intermediate points of connection between tunnel segments, which result in sometimes massive quantities (e.g., 100,000s of yards) of tunnel rock and substrate material ("spoils"). For each tunnel segment constructed in the UARP, spoils piles were generated, of which some remain today. Tunnels were constructed in the following areas.

- Rubicon Diversion Dam to Rockbound Lake
- Buck Island Dam to Loon Lake Reservoir
- Loon Lake Powerhouse to Gerle Creek Reservoir
- Robbs Peak Reservoir to Robbs Peak Powerhouse
- Ice House Reservoir to Jones Fork Powerhouse
- Junction Reservoir to Jaybird Powerhouse
- Camino Reservoir to Camino Powerhouse
- Brush Creek Reservoir to Camino Powerhouse
- Slab Creek Reservoir to Whiterock Powerhouse

Typically materials excavated or bored were used for other purposes during construction such as dam construction. There are a number of existing adit piles that are used presently. These are as follows:

- Loon Lake Powerhouse tailrace excavation adit. This adit is located west of the Robbs – Gerle canal and is frequently used by UARP operations and maintenance staff for most rock and gravel needs within the Project area.
- Peavine Ridge/Bryant Springs excavation. This material was placed at the intersection of Peavine Ridge and Bryant Springs Road from the two-phased cleanout of Camino Reservoir in 1999 and 2000. The material is used jointly by UARP and ENF for projects within the Crystal Basin area.
- Camino adit. This adit resulted in rock from the Brush to Camino powerhouse adit, which is used for "screen" material only (no crushing is done). Brush Creek road shoulder maintenance and repair is typically done with materials from this adit.
- Jaybird adit. Materials from the Junction to Jaybird powerhouse tunnel are located here, and are used locally for road improvement.
- Whiterock ("Kona") adit. Located off Kona Road at Mosquito Road results from the Slab Creek to Whiterock tunnel construction. This adit includes large boulders, cobbles and smaller material used for road base.

Adequacy of the rock taken from tunneling operations determines future use. For example, if bore test samples show sufficient structural integrity, rock is used to build the core for earthen structures, such as the dams and dikes found at Loon Lake, Union Valley and Ice House Reservoirs. If the rock is susceptible to fracturing, it may be used for a product such as road base or asphalt. If during construction areas where tunnel boring or other excavation did not turn up suitable rock for earthen fill, borrow sites were used to provide the necessary materials; for example the material found in terraces along South Fork Silver Creek within Ice House Reservoir were considered useable for core materials of Ice House Dam. Fill for transition zones in earthen dams were located sometimes miles from the construction site. Transition material for construction of Ice House Dam was located about six miles east of the construction site. Aggregate used for concrete was located in areas of high granitic deposits, of which a notable borrow site was the Tells Creek area (SMUD UARP Design Report, 1958).

Presently, all existing adit spoil piles are used for road construction, base and asphalt, berming (e.g., Camino powerhouse access road), helicopter pad construction, (Loon Lake helipad and Buck Island landing pad) and a variety of other uses. The condition of each adit spoils pile was evaluated relative to existing erosional problems and the need for maintenance. A full accounting of the evaluation is provided in the *Project Sources of Sediment Technical Report* (DTA 2004u). Each pile was found to be a stable deposition of rock material lying in a non-eroding angle of repose, requiring no maintenance actions outside those currently applied by SMUD staff during periods of material removal.

In addition to the adit spoil piles, a series of smaller piles have been created following UARP construction activities. These spoil piles were created to dispose of material generated from either reservoir cleanout actions (e.g., Camino Reservoir cleanout) or other maintenance activities. These sites are smaller in size than the indeterminate size adit spoil piles. Table 4.4-1 contains information on the size, location, and purpose of these smaller spoils pile sites.

4.4.2 Wood Debris Piles

The wood debris corralled in each reservoir by the log boom is moved by boat to the nearest reservoir boat ramp. Heavy equipment operators have an excavator and dump truck standing by that removes the wood and takes it to one of the approved ENF slash piles where it is deposited for future burning. The amount of debris varies considerably based upon how severe the winter storms are and how much deadwood is captured in the spring run off. The average for all reservoirs in an average winter and spring is approximately six logs per season.

Table 4.4-1. Location, description, dimensions and use of existing and potential spoils piles within the UARP

	Location	Description/Purpose	Dimensions (approx.)	Volumes of existing spoils (approximate, in cubic yards)		GPS coordinates
1	West of intersection of Peavine Ridge and Bryant Springs Roads	This site was needed for the cleanout of mass wasting event in which over 750,000 yards of hillside was deposited in Camino Reservoir in 1997. The bulk of 250,000 yards of coarse rock material was placed here. Since cleanout efforts in 1999/2000, rock has been used by ENF for road base.	250' long x 125' wide	1,000 yds of 1/2-inch gravels with smaller piles of coarse rock		N 38° 48.295' W 120° 27.021'
2	Jaybird Springs Road en route to Jaybird powerhouse	This site was also needed for the cleanout of mass wasting event into Camino Reservoir in 1997. It is currently a closed site, but has been previously used as a slash pile.	125' long by 125' wide	About 5,000 yds of coarse rock were placed here on the downslope resulting in a level area.		N 38° 48.295' W 120° 27.021'
3	Jaybird Springs Road en route to Jaybird powerhouse (west of site 2)	This site was also used for the event of 1997 as a second spoil area for the Camino Reservoir cleanout.	300' long by 90' wide	None--is clear at this time		N 38° 49.983' W 120° 31.109'
4	Jaybird Springs Road at first switchback	This site was used (but not required) for storage of a small portion of rock from the 1997 event. It serves a dual purpose of also providing a road blockade against runaway vehicles.	30' long by 15' wide	100 yds of coarse rock		N 38° 50.774' W 120° 32.171'
5	Jaybird Springs Road near Jaybird Powerhouse	This site was used (but not required) for temporary storage of a small portion of rock from the 1997 event. During reservoir cleanout, haul trucks would haul from this temporary site to either permanent site 1 or 2. This is a closed site.	60' long by 40' wide	None--is clear at this time		N 38° 50.238' W 120° 31.946'
6	Dead end of Jaybird Springs Road near Camino Reservoir	This site was used (but not required) for temporary storage of a small portion of rock from the 1997 event. During reservoir cleanout, haul trucks would haul from this temporary site to either permanent site 1 or 2.	80' long by 40' wide	None--is clear at this time		N 38° 49.869' W 120° 32.026'
7	Camino Powerhouse road at juncture with Forebay Road just north of bridge	This site is a temporary spoil location used for nearly completed reconstruction work at Camino Powerhouse (penstock stabilization and powerhouse wall pressure relief).	75' long by 60' wide	3,000 yds of coarse rock		N 38° 47.774' W 120° 37.533'
8	Brush Creek Road about one mile from Brush Creek Reservoir	This site is a permanent storage site for rock removed from behind the Camino Powerhouse wall, repair work that was completed in 2004.	250' long x 125' wide	20,000 yds of coarse rock	.	N 38° 48.170' W 120° 37.203'

Table 4.4-1. Location, description, dimensions and use of existing and potential spoils piles within the UARP

	Location	Description/Purpose	Dimensions (approx.)	Volumes of existing spoils (approximate, in cubic yards)		GPS coordinates
9	Brush Creek Road about one-half mile from Brush Creek Reservoir	This site is a permanent storage site for rock removed from the water conveyance rock traps for the Camino Powerhouse as a result of the 1997 mass wasting event.	75' long by 100' wide	100 yds of coarse rock		N 38° 48.496' W 120° 37.384'
10	Robbs – Gerle canal at Robbs Forebay	Temporary site for spoils from Robbs Peak Reservoir.	250' long by 75' wide	500 yds of coarse rock		N 38° 56.899' W 120° 23.307'

4.5 Wetlands and Floodplains

4.5.1 Wetlands

The *Riparian Vegetation and Wetlands Technical Report* (DTA 2004v) documents the distribution, abundance, and condition of riparian vegetation and wetlands in the study area, including the FERC Project Boundary for the UARP and affected reaches. Wetland studies were conducted in 2003 and included map preparation and field assessments of wetlands to describe the physical and biological character.

The largest areas of wetlands within and adjacent to the FERC Project Boundary are located at Union Valley and Loon Lake Reservoirs. Much smaller areas of wetlands occur at Ice House Reservoir, Gerle Creek Reservoir, Rockbound Reservoir and Rubicon Reservoir. Most of these reservoir-associated wetlands are in good condition, dominated by native plant species with few or no weeds. Few reservoir wetlands exhibited signs of off-road vehicle use or other overt adverse effects from recreational use. Two wetland sites located near boat launches/campgrounds were in relatively poor condition.

At Union Valley Reservoir, most of the wetlands are sloping meadows that begin at elevations much higher than the maximum water surface elevation ("high water") of the reservoir. Wetlands associated with Loon Lake Reservoir are primarily located in and around shallow bays and are thus much more substantially under reservoir influence and flows from Ellis Creek. Species richness of wetlands seasonally inundated by the reservoirs was much lower than in meadows that never inundated.

UARP-created wetlands at tunnel adits, a substation, and a switchyard are generally small and isolated, and display limited ecological values, although one of the sites provides habitat for foothill yellow-legged frogs. Each of these sites was excavated during construction of the UARP, and is thus fundamentally disturbed, limiting the potential development of wetlands. Table 4.5-1 shows the location and type of wetlands found at each of the UARP developments, and gives the approximate size of most wetland areas associated with the UARP.

Table 4.5-1. Wetland acreage associated with the UARP.

UARP Development	UARP Feature Location	Wetland Types	Size of Wetlands
Loon Lake Development	Rubicon Reservoir	Shoreline wetlands with limited topographic relief	15.0 ac.
	Buck Island Reservoir	Shoreline wetlands with limited topographic relief	8.2 ac.
	Loon Lake Reservoir	Lakeshore-basin meadows	37.9 ac.
		Depressional meadows within swales	
	Loon Lake Dam Reach	Wetlands meadows	NA*
	Loon Lake Boat Launch	Depressional wetland hydrologically removed from the reservoir	10,000 sq. ft.
	Loon Lake-Union Valley	3 small wetland areas	14,000 sq. ft.

Table 4.5-1. Wetland acreage associated with the UARP.			
UARP Development	**UARP Feature Location**	**Wetland Types**	**Size of Wetlands**
	Transmission Line	Wetland complex behind commercial campground at Robbs Valley	10.0 ac.
Robbs Peak Development	Gerle Creek Reservoir	Lakeshore-basin meadows	0.9 ac.
	Gerle Creek Adit	UARP-created wetland	NA
	Gerle Creek Canal	Wetland hydrologically removed from canal	10,000 sq. ft.
	Robbs Peak Penstock	1 small wetland area	125 sq. ft.
Jones Fork Development	Ice House Reservoir	Lakeshore-basin meadows	4.9 ac.
	Ice House Dam Reach	Wetlands and meadows	NA
	Jones Fork-Union Valley Transmission Line	4 small wetland areas	15,290 sq. ft.
Union Valley Reservoir	Union Valley Reservoir	Drainage-fed meadow	140.0 ac.
		Lakeshore meadow	
		Drainage-fed meadows connected by lakeshore meadows	
	Union Valley Switchyard	UARP-created wetland	> 10,000 sq. ft.
Jaybird Development	Jaybird Canyon Adit	UARP-created wetland	< 0.1 ac.
	Jaybird Substation	UARP-created wetland	NA
Camino Development	Camino Tunnel Adit	UARP-created wetland	750 sq. ft.
Slab Creek/White Rock Development	Slab Creek Dam Adit	UARP-created wetland	NA
Total			218.38 ac.

4.5.2 Floodplains

The Federal Land Management Agency's (FEMA) National Flood Insurance Program produces flood insurance rate maps that identify flood hazard zones within the United States. Flood insurance maps for El Dorado County, California indicate that the UARP and its affected reaches of streams and rivers lie within flood insurance zones A, A-1, C and D.

Areas designated as Zone A are within the 100-year floodplain of the identified stream channel, but are areas where base flood elevations and flood hazard factors have not been determined. The South Fork American River (SFAR) from about 2 miles downstream of Slab Creek Reservoir to Folsom Reservoir is designated as Zone A. The 100-year floodplain for the SFAR is fairly confined to the river embankments, in-stream islands, and the confluence of the river with side tributaries. This is largely due to the fact that the river flows within a deep canyon throughout most of its length. Due to the location of the White Rock Powerhouse on the embankment of the SFAR, this powerhouse is within Zone A and the 100-year floodplain of the SFAR.

Areas within Zone A-1 are designated as being within the 100-year floodplain of a stream channel where flood elevations and flood hazard factors have been determined, but are not identified. In the community of El Dorado Hills, New York Creek and its immediate embankments are designated as Zone A1. The UARP transmission line corridor passes across

New York Creek near Tam O'Shanter Drive. Although the transmission line corridor crosses the creek, the land within the corridor is managed as open space and there are no risks or hazards to the land if the creek were to flood. The transmission line towers are located well outside the New York Creek floodplain near the top of the side slopes in order to span the drainage.

Areas within Zone C are designated as "areas of minimal flooding". The UARP transmission line corridor outside the Eldorado National Forest (ENF) is in Zone C, except where it is in Zone A or A-1 as discussed above.

Areas within Zone D are designated as "areas of undetermined, but possible flood hazards and includes all lands within the ENF administrative boundary, including all UARP facilities, upstream of the White Rock Powerhouse.

4.6 Roads and the Transmission Line System

4.6.1 Road Use and Maintenance

The operation and maintenance of the UARP requires a significant amount of travel on a variety of paved and dirt roads. The majority of the routine operations and maintenance associated with the Project is performed by an 81-person labor force working from SMUD's Fresh Pond Office, located along U.S. Highway 50, 13 miles east of Placerville. Transmission line right-of-way vegetation maintenance is performed by a labor force from SMUD's Sacramento Headquarters Offices. The operations and maintenance labor force uses a number of U.S. highways, California State highways and county roads driving from the Fresh Pond Office to various Project facilities and appurtenant structures, such as meteorological stations. These include the aforementioned U.S. Highway 50, State Highways 88 and 89, and El Dorado County roads – Ice House Road, Forebay Road, Mosquito Road, and Cable Road. The following sections describe, by Project development, the specific roads used by operations and maintenance staff to access various project facilities from these federal, state, and county roads. The current design and maintenance of roads used by SMUD staff is adequate for project function. SMUD is actively engaged in maintaining a variety of roads year around, including snow plowing, to ensure access to project facilities.

The information provided in the development-specific tables of the succeeding eight subsections includes the road names, start points, end points, surface type, level of use, and SMUD maintenance, including snow plowing. Level of use is defined in the tables using an alphanumeric code that contains information on type (or size) of vehicle and frequency of trips. SMUD crews either travel in light vehicles (e.g., pick up trucks or 4-wheel drive vehicles) or in heavy vehicles (e.g., 6-axle trucks). Roads leading to UARP-related developed recreation facilities and undeveloped recreation sites are also described in the tables.

Light Vehicle Use

LV1 - Heavy 100+ trips/year
LV2 - Medium 20-100 trips/year
LV3 - Light Vehicle 10-20 trips/year

LV4 - Periodic Vehicle 3-10 trips/year
LV5 - Infrequent Vehicle 1-2 trips/year
DRF - Developed Recreation Facility
URS - Undeveloped Recreation Site

Heavy Vehicle Use

HV1 - Light Maintenance 1-10 times/year
HV2 - Operations 10-50 times/year
HV3 - Major Maintenance 1-2 times/10 years
Snow Plowing 10-20 times/year

SMUD Road Maintenance

Blank cell – limited maintenance only when access is impaired.
X – light maintenance, cleaning culverts
XX – grading, maintain ditches and rock removal
XXX – overlay segments, fill potholes
JM – SMUD shares in joint road maintenance

4.6.1.1 Loon Lake Development

The Loon Lake Development has eleven road segments totaling nine miles of roads that SMUD personnel use, as well as two trail segments, totaling 7.5 miles, SMUD uses to access Buck Island Reservoir and Rubicon Reservoir. One road segment (0.9 miles) is a road to a UARP-related developed recreational facility (DRF), and is occasionally used by SMUD. Of the twelve total road segments, three (1.1 miles) are paved; the remaining roads are dirt or gravel. Three of the road segments (0.4 miles) are maintained by SMUD. Snow plowing is done on two roads (0.2 miles). Between 20 and 100 light-vehicle trips are made annually by SMUD personnel on three road segments (1.2 miles); between ten and 20 trips are made annually on one road segment (0.1 mile); between three and ten trips are made annually on seven road segments (7.7 miles). Heavy equipment trips are made on one road segment (0.1 mile) between 10 and 50 times annually. It should be noted that heavy equipment trips are generally made on the same roads used for other purposes (e.g., LV1). Table 4.6-1 provides details as to road segment names, length, surface, use, maintenance and snow plowing.

Table 4.6-1. Loon Lake Development roads.

ID	Road(s) Name	Destination	Start	End	Distance	Surface	Use	Maintain Road	Plow Snow
L1	Loon Lake Dam Outlet Gage Road	Loon Lake Dam Outlet Gage Station	Ice House Road	Gage Station	0.2	dirt	LV2	XX	
L2	Loon Lake Intake Road	Loon Lake Intake	Ice House Road	Intake Housing	0.1	paved	LV2	X	X
L3	Loon Lake PH Access Building Road	Loon Lake PH Access Building	Ice House Road	Access Building	0.1	paved	LV3,HV2	X	X
L4	Loon Lake Campground	Loon Lake Campground	Ice House Road	Campground	0.9	paved	LV2, DRF	none	

Table 4.6-1. Loon Lake Development roads.

ID	Road(s) Name	Destination	Start	End	Distance	Surface	Use	Maintain Road	Plow Snow
	Road								
L5	13N19(0.8) to 13N11(0.3) to 13N11C(1.4) ROW	T3 - T13	Ice House Road	Ice House Road	2.5	gravel/dirt	LV4		
L6	ROW	T14 - T17	Ice House Road	T17	0.6	dirt	LV4		
L7	No Name	T18 - T20	Wentworth Springs Rd.	T18	0.4	dirt	LV4		
L8	No Name	T21	Ice House Road	T21	0.2	dirt	LV4		
L9	13N57	T22 - T23	Ice House Road	T23	0.3	dirt	LV4		
L10	Robbs Resort Rd (0.1) to ROW (1.5) to 13N21 (0.3)	T24 - T34	Ice House Road	T24	1.9	dirt	LV4		
L11	13N15 (0.3) to ROW (0.3) to ROW (0.4) to ROW (0.5) to 13N22 (0.3)	T35 - T47	Ice House Road	Ice House Road	1.8	dirt	LV4		
L12	Rubicon Hiking Trail	Buck Island Res. and Rubicon Res.	Loon Lake Trailhead	Rubicon Reservoir	7.2	rock / dirt	periodic motor-cycle		
L13	Trail to Pleasant Campground	Buck Island Res. and Rubicon Res.	Pleasant CG	Rubicon Hiking Trail	0.3	rock / dirt	periodic motor-cycle		

4.6.1.2 Robbs Peak Development

The Robbs Peak Development has 13 road segments for a total of 16.7 miles of roads that SMUD personnel use. Two additional roads (1.4 miles) in this development are roads to UARP-related developed recreational facilities (DRF). Of the 15 total road segments, five roads (3.6 miles) are paved; the remaining roads are dirt or gravel. Six of the road segments (3.7 miles) are maintained by SMUD. Snow plowing is done on four roads (3.1 miles). More than 100 light-vehicle trips are made annually by SMUD personnel on four road segments (3.1 miles). Between 20 and 100 trips are made annually by SMUD personnel on two road segments (2.1 miles); between three and 10 trips are made annually on seven road segments (11.5 miles). Heavy equipment trips are made on one road segment (0.5 mile) between 10 and 50 times annually. Table 4.6-2 provides details as to road segment names, length, surface, use, maintenance and snow plowing.

Table 4.6-2. Robbs Peak Development roads.

ID	Road(s) Name	Destination	Start	End	Distance	Surface	Use	Maintain Road	Plow Snow
R1	Gerle Creek Campground Road	Gerle Creek Campground	Wentworth Springs Rd.	Campground	0.8	paved	DRF	none	
R2	Angel Creek Picnic Area Road	Angel Creek Picnic Area	Wentworth Springs Rd.	Picnic Area	0.6	gravel	DRF	none	
R3	Gerle Creek Dam Road	Gerle Creek Dam	Wentworth Springs Rd.	Dam	0.6	paved	LV1	X	X
R4	Gerle Canal Road	Gerle Creek Canal (in total)	Gerle Creek Dam	Robbs Reservoir	1.9	dirt	LV1	XX	X
R5	13N29	Gerle Creek Canal	13N28 (R6)	Gerle Creek Canal	0.5	dirt	LV2	XX	
R6	13N28 to South Fork Campground Road	SF Rubicon Gage Station	Ice House Road	Gage Station	1.6	paved	LV2		
R7	Robbs Reservoir Rd.	Robbs Reservoir & Robbs Met Station	Ice House Road	Met Station	0.1	paved	LV1	X	X
R8	Robbs Powerhouse Road	Robbs Powerhouse	Ice House Road	Powerhouse	0.5	paved	LV1,HV2	X	X
R9	Robbs Surge Shaft Road	Robbs Surge Shaft	Ice House Road	Surge Shaft	0.1	dirt	LV4	X	
R10	12N22(0.2) to 12N22F(0.1)	T48	Ice House Road	T48	0.3	gravel	LV4		
R11	13N31 (2.0) to 13N31B (0.5) to 12N15Y (0.6) to ROW (1.1) to No Name Road (0.3) to No Name Road (2.0)	T49 - T57	Ice House Road	12N50 (Wolf Creek Road) (R12)	6.5	dirt	LV4		
R12	12N50(1.3) to No Name(0.1)	T58	12N30 (U1)	T58	1.4	dirt	LV4		
R13	12N30M	T59 - T61	12N30 (U1)	12N30 (U1)	1.3	dirt	LV4		
R14	No Name	T62-T63	12N30 (U1)	T62	0.2	dirt	LV4		
R15	ROW	T64 - T70	12N30 (U1)	12N30 (U1)	1.7	dirt	LV4		

4.6.1.3 Union Valley Development

The Union Valley Development has seventeen road segments totaling 28.6 miles of roads that SMUD personnel use. Seven additional roads (4.9 miles) in this development are roads to UARP-related developed recreational facilities (DRF). Of the twenty-four total road segments, 17.9 miles (13 roads) are paved, with one road a combination of pavement and gravel; the remaining roads are dirt or gravel. Four of the road segments (4.1 miles) are maintained by SMUD; three roads (9.0 miles) are maintained jointly by SMUD and other entities (e.g., ENF, El

Dorado County). Snow plowing is done on seven roads (13.1 miles). More than 100 light-vehicle trips are made annually by SMUD personnel on five road segments (12.4 miles). Between 20 and 100 trips are made annually by SMUD personnel on one road segment (0.6 mile); between ten and 20 trips are made annually on one road segment (5.3 miles); between three and ten trips are made annually on one road segment (0.1 mile); between one and two trips are made annually on two road segments (10.2 miles). Heavy equipment trips are made on three road segments (4.0 miles) between 10 and 50 times annually; heavy equipment trips are made in two road segments (6.5 miles) between once and ten times per year. Table 4.6-3 provides details as to road segment names, length, surface, use, maintenance and snow plowing.

Table 4.6-3. Union Valley Development roads.

ID	Road(s) Name	Destination	Start	End	Distance	Surface	Use	Maintain Road	Plow Snow
U1	12N30(3.2) 12N50(2.1) (Wolf Creek Road)	Union Valley Dam & T-Lines	Ice House Road	Dam	5.3	dirt/gravel	LV3		
U2	Yellow Jacket Campground Road	Yellow Jacket Campground	12N50 (Wolf Creek Road) (U1)	Campground	0.8	paved	DRF	none	
U3	Wolf Creek Campground Road	Wolf Creek Campground	12N50 (Wolf Creek Road) (U1)	Campground	0.8	paved	DRF	none	
U4	Wench Creek Campground Road	Wench Creek Campground	Ice House Road	Campground	0.7	paved	DRF	none	
U5	West Point Campground Road	West Point Campground	12N30 (U1)	Campground	0.1	dirt	DRF	none	
U6	Camino Cove Campground Road	Camino Cove Campground	12N30 (U1)	Campground	0.3	paved	DRF	none	
U7	Peninsula Road	Sunset Campground	Ice House Road	Campground	1.6	paved	DRF	none	
U8	Jones Fork Campground Road	Jones Fork Campground	Ice House Road	Campground	0.6	paved	DRF	none	
U9	Big Hill Road	Big Hill Telecommunication and Met Station	Ice House Road	Big Hill Summit	2.5	paved	LV1	X	X
U10	Peavine Ridge Road	Union Valley and Jaybird Facilities	Ice House Road	Jaybird Springs Road	3.2	paved	LV1,HV2	JM XXX	X
U11	Riverton Yard Road	Riverton Yard	Ice House Road	Riverton Yard	0.2	paved	LV1, HV2	X	X
U12	Round Tent Road	Telecommunication Repeater	Peavine Ridge Road	Repeater	6.1	paved/ gravel	LV5		

Table 4.6-3. Union Valley Development roads.

ID	Road(s) Name	Destination	Start	End	Distance	Surface	Use	Maintain Road	Plow Snow
U13	Bryant Springs Road	Union Valley Dam	Peavine Ridge Road	Dam	5.7	paved	LV1,HV1	JM XXX	X
U14	West Point Boat Ramp Road	West Point Boat ramp	12N30 (U1)	Boat Launch	0.1	paved	LV4	JM	X
U15	12N30E (Union Valley Powerhouse Road)	Union Valley Powerhouse	Bryant Springs Road	Powerhouse	0.8	paved	LV1,HV1	X	X
U16	Union Valley Switchyard Road	Union Valley Switchyard	Bryant Springs Road	Switchyard	0.6	paved	LV2,HV2	X	X
U17	No Name	Telecommunication Repeater	Union Valley Dam	Repeater	4.1	dirt	LV5		

4.6.1.4 Ice House Development

The Ice House Development has nine road segments totaling 14.1 miles of roads that SMUD personnel use. Three additional roads (1.8 miles) in this development are roads to UARP-related developed recreation facilities (DRF) or undeveloped recreation sites (URS). Of the twelve total road segments, 4.6 miles (seven roads) are paved; the remaining roads are dirt. Five of the road segments (2.3 miles) are maintained by SMUD. Snow plowing is done on four roads (2.8 miles). More than 100 light-vehicle trips are made annually by SMUD personnel on three road segments (2.3 miles). Between 20 and 100 trips are made annually by SMUD personnel on five road segments (3.3 miles); between three and ten trips are made annually on one road segment (8.5 miles). Table 4.6-4 provides details as to road segment names, length, surface, use, maintenance and snow plowing.

Table 4.6-4. Ice House Development roads.

ID	Road(s) Name	Destination	Start	End	Distance	Surface	Use	Maintain Road	Plow Snow
I1	Ice House Reservoir and Dam Road	Ice House Reservoir and Dam	Ice House Road	Reservoir & Dam	1.4	paved	LV1		X
I2	Jones Fork Gate House Road	Jones Fork Gate House	Ice House Reservoir and Dam Road	Gate House	0.5	paved	LV2	X	X
I3	Strawberry Point Campground Road	Strawberry Point Campground	Ice House - Wrights Lake Road	Campground	0.1	paved	DRF	none	

Table 4.6-4. Ice House Development roads.

ID	Road(s) Name	Destination	Start	End	Distance	Surface	Use	Maintain Road	Plow Snow
I4	Northwind Campground Road	Northwind Campground	Ice House - Wrights Lake Road	Campground	0.1	paved	DRF	none	
I5	Ice House Dam and Facilities Access Road	Ice House Dam, Gage, and Outlet Facilities	Ice House Road	Ice House Dam	0.8	dirt	LV2	XX	
I6	SF Silver Creek Gage Road	SF Silver Creek Gage	Ice House Dam and Facilities Access Road (I5)	Gage Station	0.1	dirt	LV2	X	
I7	Ice House Dam Outlet Road	Ice House Dam Outlet	Ice House Dam and Facilities Access Road (I5)	Outlet Facilities	0.3	dirt	LV2	X	
I8	11N52	North Shore Ice House Reservoir	Ice House Dike Road	SF Silver Creek	1.6	dirt	URS	none	
I9	Jones Fork Powerhouse Road	Jones Fork Powerhouse	Ice House Road	Powerhouse	0.6	paved	LV1	X	X
I10	Ice House Boat Launch and Jones Fork Intake	Jones Fork Intake	Ice House Reservoir and Dam Road	Intake	0.3	paved	LV1		X
I11	Ice House Dike Road	Ice House Dike	Ice House Reservoir and Dam Road (I1)	Dike	1.6	paved	LV2		
I12	Jones Fork Transmission Line Road	Jones Fork Transmission Line (in total)	Jones Fork Powerhouse	Union Valley Switchyard	8.5	dirt	LV4		

4.6.1.5 Jaybird Development

The Jaybird Development has twelve road segments totaling 17.2 miles of roads that SMUD personnel use. There are no developed recreational facilities or undeveloped recreation sites at the Jaybird development. Of the twelve total road segments, two (7.7 miles) are paved; the remaining roads are dirt or gravel. Six of the road segments (6.4 miles) are maintained by SMUD; one road (4.6 miles) is maintained jointly by SMUD and other entities (e.g., ENF, El Dorado County). Snow plowing is done on four roads (3.2 miles). More than 100 light-vehicle trips are made annually by SMUD personnel on two road segments (7.7 miles). Between 20 and 100 light-vehicle trips are made annually by SMUD personnel on one road segment (0.5 mile); between ten and 20 trips are made annually on one road segment (1.3 miles); between three and ten trips are made annually on six road segments (7.4 miles); between one and two trips are made annually on one road segment (0.3 mile). Heavy equipment trips are made on two road segments

(7.7 miles) between ten and 50 times annually; heavy equipment trips are also made on one road segment (1 mile) between one and ten times annually, and similar load trips are made on one road (1.3 miles) one to two times every ten years. Table 4.6-5 provides details as to road segment names, length, surface, use, maintenance and snow plowing.

Table 4.6-5. Jaybird Development roads.

ID	Road(s) Name	Destination	Start	End	Distance	Surface	Use	Maintain Road	Plow Snow
J1	Junction Dam Road	Junction Dam	Bryant Springs Road	Junction Dam	1	dirt/gravel	LV4, HV1	XX	X
J2	Junction Reservoir Boat Launch Road	Junction Boat Launch	Junction Dam Road	Boat Launch	0.3	dirt	LV5 URS	XX	
J3	12N37 (0.5) to ROW (0.9)	T74 - T80	Junction Dam Road	Bryant Springs Road	1.4	dirt	LV4		
J4	No Name (2.7) to 11N71A (0.2)	T81 - T89	12N37	T80	2.9	dirt	LV4		
J5	Jaybird Springs Road	T-Line Crossover	Peavine Ridge Road	T-Line Crossover	4.6	paved	LV1, HV2	JM	X
J6	11N71	Jaybird Adit	Jaybird Springs Road	Adit	1.3	dirt	LV3, HV3	XX	
J7	ROW	T90 - T97	Jaybird Springs Road	Jaybird Springs Road	1.3	dirt	LV4		
J8	Jaybird Canyon Road	Jaybird Powerhouse	T-Line Crossover	Powerhouse	3.1	paved	LV1, HV2	XXX	X
J9	Jaybird Gate House Road	Jaybird Gate House	Jaybird Canyon Road (J8)	Gate House	0.5	dirt	LV2	XX	X
J10	Jaybird Surge Shaft Road	Jaybird Surge Shaft	Jaybird Gate House Road (J9)	Surge Shaft	0.2	dirt	LV4	XX	
J11	No Name	T99	Jaybird Gate House Road (J9)	T99	0.2	dirt	LV4		
J12	No Name	T100 - T103	Jaybird Gate House Road (J9)	T103	0.4	dirt	LV4		

4.6.1.6 Camino Development

The Camino Development has 15 road segments totaling 24.2 miles of roads that SMUD personnel use, including one road that is associated with an undeveloped recreation site. Of the 15 road segments, two (8.8 miles) are paved; the remaining roads are dirt or gravel. Six of the road segments (13.1 miles) are maintained by SMUD. Snow plowing is done on two roads (4.4 miles). More than 100 light-vehicle trips are made annually by SMUD personnel on three road

segments (9.0 miles). Between 20 and 100 light-vehicle trips are made annually by SMUD personnel on one road segment (0.4 miles); between ten and 20 trips are made annually on one road segment (3.6 miles); between three and ten trips are made annually on nine road segments (10.9 miles); between one and two trips are made annually on one road segment (0.3 mile). Heavy equipment trips are made on two road segments (8.8 miles) between 10 and 50 times annually; heavy equipment trips are also made on two road segments (3.8 miles) between one and ten times annually. Table 4.6-6 provides details as to road segment names, length, surface, use, maintenance and snow plowing.

Table 4.6-6. Camino Development roads.

ID	Road(s) Name	Destination	Start	End	Distance	Surface	Use	Maintain Road	Plow Snow
C1	Camino Dam Road	Camino Dam	End of Jaybird Canyon Road (J8)	Dam	0.2	dirt	LV1, HV1	XX	X
C2	Forebay Road / FS Road 14	Camino Powerhouse	End of county-maintained road	Power-house	4.6	paved	LV1, HV2	XXX	
C3	No Name	End of Slab Reservoir	Forebay Road / FS Road 14 (C2)	Slab Creek Reservoir	0.3	dirt	URS, LV5	X	
C4	Forebay Road / FS Road 14	Brush Creek Reservoir	Forebay Road bridge over SFAR (C2)	Brush Creek Reservoir	4.2	paved	LV1, HV2	XXX	X
C5	Camino Surge Shaft Road	Camino Surge Shaft	Brush Creek Reservoir Road (C4)	Surge Shaft	0.1	dirt	LV4	X	
C6	Camino Penstock Road	Camino Penstock	Brush Creek Reservoir Road (C4)	Penstock	0.4	dirt	LV2	XX	
C7	Camino Adit Road	Camino Adit	Brush Creek Reservoir Road (C4)	Adit	3.6	dirt	LV3, HV1	XX	
C8	12N34 (Poho Ridge Road) to Camp 7 Road	Jaybird-Camino Transmission Line	Brush Creek Reservoir Road (C4)	12N54 (Sugar Pine Road) (C9)	5.3	dirt	LV4		
C9	12N54 (Sugar Pine Road)	Jaybird-Camino Transmission Line	12N34(Poho Ridge Road) (C8)	No Name	1.3	dirt	LV4		
C10	No Name	T112 – T116	12N54(Sugar Pine Road) (C9)	T112	1.3	dirt	LV4		
C11	No Name	T117	12N54(Sugar Pine Road) (C9)	T117	0.3	dirt	LV4		

Table 4.6-6. Camino Development roads.

ID	Road(s) Name	Destination	Start	End	Distance	Surface	Use	Maintain Road	Plow Snow
C12	No Name	T118	12N54(Sugar Pine Road) (C9)	T118	0.2	dirt	LV4		
C13	12N34K	T119	12N34(Poho Ridge Road) (C8)	T119	0.2	dirt	LV4		
C14	11N20Y	T124 - T127	12N34(Poho Ridge Road) (C8)	12N34 (C8)	1.8	dirt	LV4		
C15	No Name	T132	Brush Creek Reservoir Road (C4)	T132	0.4	dirt	LV4		

4.6.1.7 White Rock Development

The White Rock Development has 17 road segments totaling 9.5 miles of roads that SMUD personnel use, including one road that is associated with an undeveloped recreation site. Of the 17 road segments, three (1.5 miles) are paved; the remaining roads are dirt or gravel. Seven of the road segments (4.8 miles) are maintained by SMUD. Since the elevation is below the snow elevation, snow plowing is rarely done within the White Rock development. More than 100 light-vehicle trips are made annually by SMUD personnel on three road segments (2.3 miles). Between 20 and 100 light-vehicle trips are made annually by SMUD personnel on one road segment (0.2 miles); between ten and 20 trips are made annually on two road segments (2.3 miles); between three and ten trips are made annually on ten road segments (4.1 miles); between one and two trips are made annually on one road segment (0.6 mile). Heavy equipment trips are made on one road segment (1.0 miles) between 10 and 50 times annually; heavy equipment trips are also made on three road segments (2.3 miles) between one and ten times annually. Table 4.6-7 provides details as to road segment names, length, surface, use, maintenance and snow plowing.

Table 4.6-7. White Rock Development roads.

ID	Road(s) Name	Destination	Start	End	Distance	Surface	Use	Maintain Road	Plow Snow
W1	12N34H (Akin Powerhouse Road)	Camino – White Rock Transmission Line	Forebay Road	No Name Road to Towers	1.4	dirt/gravel	LV3		
W2	No Name	T134/606	12N34H (Akin Powerhouse Road) (W1)	T134/606	0.3	dirt	LV4		
W3	12N34J	T137/609	Camino Powerhouse Road (C2)	T137/609	0.3	dirt	LV4		

Table 4.6-7. White Rock Development roads.

ID	Road(s) Name	Destination	Start	End	Distance	Surface	Use	Maintain Road	Plow Snow
W4	No Name	T138/610	Camino Powerhouse Road (C2)	T138/610	0.2	dirt	LV4		
W5	No Name	T139/611 - T140/612	Camino Powerhouse Road (C2)	T140/612	0.2	dirt	LV4		
W6	11N82	T141/613	Cable Road	T141/613	0.2	dirt	LV4		
W7	No Name	T143/615 - T145/617	Cable Road	T145/617	0.8	dirt	LV4		
W8	ROW	T168/640 - T171/643	Mosquito Road	T171/643	0.3	dirt	LV4		
W9	White Rock Surge Shaft Road	White Rock Surge Shaft	Highland Drive	Surge Shaft	0.4	dirt	LV4	XX	
W10	Slab Creek Dam Access Road	Slab Creek Dam	North Canyon Road	Dam	1.2	gravel	LV1, HV1	XX	
W11	Slab Creek Reservoir Access Road	Undeveloped Boat Launch	Slab Creek Dam	Boat Launch	0.8	gravel	URS, LV3	XX	
W12	White Rock Tunnel Adit No. 1 Road	White Rock Tunnel Adit No. 1	Slab Creek Dam	Tunnel Adit	0.2	paved	LV2	XX	
W13	White Rock Tunnel Adit No. 2 Road	White Rock Tunnel Adit No. 2	Kona Lane	Tunnel Adit	1	dirt	LV4, HV1	XX	
W14	White Rock Tunnel Adit No. 3 Road	White Rock Tunnel Adit No. 3	Mosquito Road	Tunnel Adit	0.4	dirt	LV4		
W15	White Rock Powerhouse Road	White Rock Powerhouse	Meadow Lane at SMUD Gate	Powerhouse	1	paved	LV1, HV2	X	
W16	White Rock Penstock Road	White Rock Penstock	Meadow Lane	Penstock	1	dirt	LV1, HV1	XX	
W17	No Name	Communications Repeater	Cable Road	Communications Repeater	0.6	dirt	LV5		
W18	No Name	Transmission line tower	Rock Creek Road	Trans-mission line tower	0.4	dirt	LV5		

4.6.1.8 Meteorological Stations

Meteorological stations are located in El Dorado and Amador Counties. These stations typically provide weather data (temperature, humidity, wind speed/direction). There are eleven road segments totaling 36.9 miles of roads that SMUD personnel use. Of the eleven road segments, two (12.5 miles) are paved or paved/dirt combination; the remaining roads are dirt or gravel. One road segment (0.5 mile) is maintained by SMUD. Since the stations are serviced during the summer months and access is precluded in the winter, no snow plowing is done. Between 20 and 100 light-vehicle trips are made annually by SMUD personnel on one road segment (0.5 miles); between three and ten trips are made annually on five road segments (18.6 miles); between one and two trips are made annually on four segments (17.8 miles). No heavy equipment trips are made on any of the road segments. Table 4.6-8 provides details as to road segment names, length, surface, use, maintenance and snow plowing.

Table 4.6-8. Meteorological station roads.

ID	Road(s) Name	Destination	Start	End	Distance	Surface	Use	Maintain Road	Plow Snow
M1	13N22	Van Vleck Met Station	Ice House Road	Hydro Met Station	5.2	dirt	LV4		
M2	13N15	Robbs Saddle Met Station	Ice House Road	Hydro Met Station	0.4	dirt	LV4		
M3	Picket Pen Road to12N86 to 12N17	Morattini Met Station	Ice House Road	Hydro Met Station	8	dirt	LV4		
M4	Ice House - Wright's Lake Road	Wright's Lake Met Station	Ice House Dike Road (I11)	Hydro Met Station	8	paved	LV5		
M5	Forni Road (11N284)	Alpha Met Station	Highway 50 - Wrights Lake Road	Hydro Met Station	1	dirt	LV5		
M6	17E24	Mud Lake Met Station	Highway 88	Hydro Met Station	2.2	dirt	LV5		
M7	14N34	Lost Corner Met Station	Highway 89	Hydro Met Station	6.6	dirt	LV5		
M8	10N97	Iron Mountain Met Station	Mormon Emigrant Trail	Hydro Met Station	0.5	dirt	LV4		
M10	Bonetti Road (3.0) 10N64	Baltic Mountain Met Station	Mormon Emigrant Trail	Hydro Met Station	4.5	paved/dirt	LV4		
M11	Slate Mountain Road	Slate Met Station and Telecommunications	Mosquito Road	Hydro Met Station	0.5	dirt	LV2	X	

4.6.1.9 Historic Roads Evaluation

The UARP area supports a network or roads, including improved (paved) and unimproved (unpaved). As far back as the early 1900s the UARP area had a significant number of roads. According to the Denny's Pocket Map of El Dorado County (1916), about 65 miles of roads existed in the immediate vicinity where the eastern portion of the UARP (Buck Island, Loon Lake, Gerle Creek, Robbs Peak, Union Valley, Ice House and Junction Reservoirs) would eventually be located. It is assumed that most of these roads were not improved roads and were probably dirt base. About 100 miles of road existed in the entire eastern portion of the UARP area from Buck Island Reservoir to Highway 50, including the historic Wentworth Spring Road that extended to Buck Island Reservoir along Gerle Creek. Historically, there were many roads established in the area of what is now Ice House Reservoir north through Union Valley to Loon Lake Reservoir. According to historic records, the ENF built the Big Hill lookout tower road in 1934, although the facilities atop Big Hill now serve various communications needs (ENF, SMUD, El Dorado County, State of California). Many logging roads were established in the area north and south of what is now Union Valley Reservoir. Several of these roads were later upgraded (graveled or paved) to roads in the area that exist today.

By the early 1950s, about 30 miles of road were added in the area from U.S. Highway 50 to Pleasant (Loon) Lake. The USGS maps also note a significant number of unimproved trails in existence at that time, primarily near Loon Lake, although some of these may have been hiking trails rather than jeep trails.

In 1958, the ENF proposed a significant upgrade of Ice House Road, extending from Highway 50 to the north. The ENF proposed to construct a 26-foot-wide timber haul road from Riverton to Wentworth Springs (a 33-mile distance) at a cost of $1 million. The first phase was intended to provide access to a timber harvest area located in the vicinity where Ice House Reservoir would be located, called the "Gobi" area. This proposal was supported by El Dorado County and by the Michigan-California Lumber Company. The existing road from Riverton to Ice House Summit was upgraded within the following years. El Dorado County incorporated the road into the county highway system upon completion, and presently assumes maintenance of the road.

When UARP construction was initiated in the late 1950s, there was already in existence a sustainable network of roads that had been established for timber harvesting, mining, cattle transport and recreational use. Many of the existing transmission lines in the UARP area were sited along existing roads (e.g., From Loon Lake powerhouse to Ice House Road). Nevertheless, a number of roads were created or improved by SMUD to accommodate mobilization of equipment and subsequent UARP construction.

4.6.1.10 Evaluation of Road System Relative to Impacts

Impacts of the road system used by SMUD staff to access UARP facilities have been comprehensively addressed in the Sources of Sediment Study that was performed under the direction of the Aquatic Technical Working Group. This study consisted of a survey of the roads contained in Tables 4.6-1 through 4.6-8. The survey included driving or walking along the roads

and identifying erosion or sediment that had the potential to reach a watercourse. When potential problems were observed, a closer observation was conducted by walking the road area and taking photos to document the problem area.

The roads can be divided into several general categories that have similar characteristics. The first category is the main access roads to project features and campgrounds that have paved surfacing. These roads generally have a formal drainage system, implemented erosion control measures and little or no observed erosion and sediment transport. These roads are generally well maintained.

The largest group of roads is the access roads to transmission line towers. These roads are generally surfaced with native materials and followed the natural grade with very little cut and fill. The grade of these roads was sometimes steep and often very narrow. The drainage features were normally water bars. Ruts were observed on several of these roads but the sediment most often did not leave the roadway; in the worst cases it migrated 15 to 20 feet from the road. With the small amount of usage these roads get each year, there is little maintenance done except for identified problems. These roads are typically high on the top of ridges and far from any stream or river. There is little chance of sediment from these roads reaching any project watercourses.

A third group of roads is those roads that provide access to project features but are surfaced with gravel or native material. These roads are typically constructed with cut and fill sections and have drainage features, including side ditches, water bars and cross culverts. Some of these roads are located near watercourses and the have potential to transport sediment to the water. Most of these roads have a higher usage and appear to be maintained to provide access to the feature.

There were very few problem areas identified within any of the above road groups. Many of the problems that exist can generally be corrected with normal maintenance. However, there were some areas with potential problems. A more detailed description of the survey results is provided in the *Project Sources of Sediment Report* (DTA 2004u).

4.6.2 Management of the Transmission Line System

SMUD implements a vegetation management program to maintain clearances along the transmission line. SMUD voluntarily complies with California Public Utility Commission (CPUC) rules and regulations regarding power line clearances (General Order 95). The vegetation management program was recently adopted and memorialized as SMUD policy. The management program guides management of vegetation within the transmission line right of way (ROW). The purpose of the plan is to set forth management direction to maintain an adequate distance between overhead transmission lines, and vegetation within the ROW, which is required by the FERC.

Aerial photographs of the transmission line ROW (Appendix B) show the landscape consisting primarily of coniferous forest in the upper half of the UARP development areas (Loon Lake

down to Jaybird), chaparral in the lower development area (Jaybird to White Rock), and oak grassland for the remainder of the transmission line route from White Rock to Folsom Junction.

SMUD primarily uses mechanical means, such as hand cutting and bulldozing, to clear the ROW outside the ENF. On ENF lands, the Forest Service recently authorized SMUD to use herbicides in addition to mechanical treatment within the ROW. Herbicides allow for selective treatment of vegetation where undesirable plant species, such as exotics or noxious weeds, are selectively treated, and desirable species, such as low-growing trees and shrubs that provide wildlife habitat or food for foraging, are preserved. The reduction of fuels within the ROW has an added benefit to El Dorado County and the ENF as it creates a fuel break that would contribute to the control or containment of a wildfire.

4.7 Effects Associated with Management of UARP Lands and Access Roads

The section of the report on effects associated with management of UARP lands and access roads addresses Objective 7 and Issue Questions 13 and 14. The task identifies and documents the effects of the UARP to the ENF, local governments and private landowners associated with management and maintenance of UARP lands and access roads primarily in the Crystal Basin area. Representatives of the Eldorado National Forest and the El Dorado County Sheriff's Department were interviewed as part of the *Socioeconomics Impact Technical Report* (DTA and CH2MHILL 2004a) and applicable needs are summarized below. For the purposes of this study, "needs" refer to specific requests or requirements identified by agency staff through telephone or email communication but for which no substantiating documents were provided. In addition, Sierra Pacific Industries and SMUD personnel familiar with issues associated with private landowners downstream of the Crystal Basin area were interviewed; the information from the phone conversations is presented here.

4.7.1 Eldorado National Forest

The ENF believes that the UARP reservoirs in the Crystal Basin area have directly influenced increased dispersed camping in the area, which has resulted in an increase in fire risk. To address this risk, the ENF believes it needs additional fire suppression and prevention capabilities for the Crystal Basin area (DTA and CH2MHILL 2004a). Equipment and staffing needs for fire suppression and prevention are the addition of one engine module, one squad, and one fire prevention technician. An engine module consists of one engine and seven firefighters and the module would respond to fires. The squad would consist of one engine and four firefighters that would respond to medical and/or vehicle accidents. The fire prevention technician would patrol the area for illegal campfire use and provide education to the public about proper techniques for camping in undeveloped areas. ENF staff estimate that the additional fire suppression and prevention capabilities consist of a one-time cost of $150,000 to purchase equipment with annual costs of $267,660 for payroll of 12 staff and maintenance expenses of $33,840 for an annual total of $301,500. The Forest Service's mission statement includes specific objectives for fire suppression and prevention (USDA 2004b), and the ENF receives federal (congressional) appropriations to accomplish these objectives. The funding appropriated is based on factors that determine fire risk including fuel type and level of recreation use.

Dispersed recreational use on most ENF-managed lands is encouraged by the ENF (e.g., an ENF information sheet titled "Pick Your Own Spot Camping" is made available to the public at ENF Ranger District Offices describing where and where not to camp). In addition, the ENF issues fire permits to visitors who want to have a campfire or other flame-producing device on ENF-managed lands outside of a developed campground; the free permit is valid for the entire calendar year, although campfires are typically prohibited when fire danger becomes greater (Source: *Pick Your Own Spot Camping,* ENF information sheet described above). The *Visitor Use and Impact Technical Report* (DTA and LBG 2005c) documents the relicensing studies conducted to assess the relationship between dispersed recreationists on ENF-managed lands and the UARP. To date, however, the views of the ENF and SMUD differ regarding the conclusions to be reached based on the results of these studies.

4.7.2 El Dorado County Sheriff's Office

The *Socioeconomic Impact Technical Report* (DTA and CH2MHILL 2004a) reported incident data for the Crystal Basin, which were obtained from the El Dorado County Sheriff's Department and the ENF. According to the Sheriff's Office, providing adequate land patrols of the Crystal Basin area would require three additional deputy positions (one day shift, and two swing shifts) and three additional patrol vehicles. The cost for the deputies, their equipment and operating expenses is estimated at $353,400 annually (for the five month period of May through September). In addition to the annual costs, there would be a one-time-only capital expenditure of $90,400 to purchase equipment.

The *Socioeconomic Impact Technical Report* (DTA and CH2MHILL 2004a) also addresses law enforcement needs on UARP reservoirs. El Dorado County Sheriff's Office is responsible for law enforcement on the following UARP reservoirs: Loon Lake, Gerle Creek, Union Valley and Ice House. The Sheriff's Office identified additional staffing and equipment needs necessary to provide adequate patrols of the reservoirs. The Sheriff's Office anticipates that it would need one Deputy Sheriff per day, a patrol boat and associated equipment, and operational expenses. Costs associated with such needs include $80,000 for one-time-only equipment expenses, and $76,000 in annual costs (for the five month period of May through September) for one deputy and equipment operating expenses.

4.7.3 El Dorado Department of Transportation

The El Dorado Department of Transportation was contacted multiple times in the summer of 2004. A department representative indicated data would be compiled and forwarded regarding departmental needs associated with the UARP. No information has been received to date.

4.7.4 Sierra Pacific Industries

SPI has similar concerns to those of the ENF with regard to recreation use in the Crystal Basin. SPI believes the attraction of recreationists to Gerle Creek, Union Valley, and Ice House reservoirs and campgrounds has resulted in trespassing and vandalism of SPI property and equipment (Feller, 2004). According to SPI, people camp at these reservoirs and then ride their

Off Highway Vehicles (OHVs) on SPI access roads. These users trespass onto SPI property and have destroyed SPI road gates, vandalized timber harvest equipment, left fires unattended and dumped trash. In addition, the use of OHVs during times when the roads are wet has resulted in the destruction of water bars (i.e., an angled trough across the road that diverts water and reduces erosion) on the SPI roads, which results in erosion of the road (Feller 2004).

4.7.5 Other Private Land Owners

There are two access routes to Slab Creek Reservoir, one via Forebay Road at the upstream end of the reservoir, and the other via Slab Creek Dam Access Road then on Slab Creek Reservoir Access Road to the undeveloped boat launch site. Slab Creek Dam Access Road is accessed off of North Canyon Road. The upper portion of Slab Creek Dam Access Road is a county road, from which private land is accessed, after which the road traverses ENF land, and is within the FERC Project Boundary. Access via Slab Creek Dam Access Road is shorter than Forebay Road from the local communities of Placerville and Camino.

Slab Creek Reservoir is in a remote location and is used by local anglers and other recreationists. illegal campfires and dumping have occurred along the two access routes, and there are concerns about potential fire starts associated with the illegal campfires.

The past and present landowners of private property accessed off of Slab Creek Dam Access Road have been concerned about the illegal activities that have occurred along the road and at the end of the Slab Creek Reservoir Access Road near the informal boat ramp at Slab Creek Reservoir. In response to the local property owner's concerns, SMUD installed an automatic gate that is opened primarily during daylight hours. In response to safety concerns for anglers, the gate has an automatic opening function that allows egress for those that are at the reservoir before it closes for the day.

As stated in Section 4.1.7.2, access at Slab Creek Reservoir is likely to change as a result of security issues. Based on the findings of a confidential, FERC-required security study conducted throughout the UARP, which is unrelated to the relicensing effort, it is likely that access to Slab Creek Reservoir will be restricted in the near future. If this restriction is implemented, recreational pursuits may no longer be available on the reservoir.

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APPENDIX A

LAND USE OWNERSHIP MAPS

- Camino Development
- Jaybird Development
- Jones Fork Development
- Loon Lake Development
- Robbs Peak Development
- Transmission Line Corridors
- Union Valley Development
- White Rock Development

Land Ownership
Camino Development

- USDA Forest Service
- Bureau of Land Management
- SMUD
- Submerged Lands - SMUD
- Private - Sierra Pacific Industries
- Private - Other

- Lands within 1/2-mile of FERC Boundary for this Development
- FERC Boundary, excluding Transmission Line Corridors
- Project Transmission Line Corridors
- Stream Channels
- Major Access Roads
- Other Roads

North

0 1000 2000 3000 4000 5000 6000 feet

Scale 1:40000

June 22, 2004

Camino Diversion Reservoir

Brush Creek Reservoir

Reservoir

Land Ownership
Jaybird Development

- USDA Forest Service
- Bureau of Land Management
- SMUD
- Submerged Lands - SMUD
- Private - Sierra Pacific Industries
- Private - Other

- Lands within 1/2-mile of FERC Boundary for this Development
- FERC Boundary, excluding Transmission Line Corridors
- Project Transmission Line Corridors
- Stream Channels
- Major Access Roads
- Other Roads

North

0 1000 2000 3000 4000 5000 6000 feet

Scale 1:40000

June 22, 2004

Union Valley Reservo

Junction Reservoir

Camino Diversion Reservoir

Ice House-
Loon Lake Road

Silver Creek
Sugar Pine Creek
Jay Bird Canyon
Round Tent Canyon
Little Soldier Creek
South Fork Silver Creek
Big Hill Canyon
South Fork
Cox

Land Ownership
Jones Fork Development

- USDA Forest Service
- Bureau of Land Management
- SMUD
- Submerged Lands - SMUD
- Private - Sierra Pacific Industries
- Private - Other

- Lands within 1/2-mile of FERC Boundary for this Development
- FERC Boundary, excluding Transmission Line Corridors
- Project Transmission Line Corridors
- Stream Channels
- Major Access Roads
- Other Roads

North

0 1000 2000 3000 4000 5000 6000 feet

Scale 1:40000

June 22, 2004

Big Silver Creek
Silver Creek
Fork
Lakes
Driscoll Creek
South Fork Silver Creek
Silver Creek
Big Hill Canyon
Ice House-
Loon Lake Road
Ice House Reservoir
Silver
Creek
South Fork
Peavine Creek
South Fork Silver Creek

Land Ownership
Loon Lake Development

- USDA Forest Service
- Bureau of Land Management
- SMUD
- Submerged Lands - SMUD
- Private - Sierra Pacific Industries
- Private - Other

- Lands within 1/2-mile of FERC Boundary for this Development
- FERC Boundary, excluding Transmission Line Corridors
- Project Transmission Line Corridors
- Stream Channels
- Major Access Roads
- Other Roads

North

0 1000 2000 3000 4000 5000 6000 feet

Scale 1:40000

June 22, 2004

Loon Lake Reservoir

Ellis Creek

Little Rubicon River

Rubicon River

Richardson Lake

Spider Lake

Hidden Lake

Lake Winifred

Buck Island Reservoir

Rockbound Lake

Desolation Wilderness

Gerle Creek

Rocky Basin Creek

Francis Lake

Wentworth Springs Road

Rubicon Reservoir

South Fork Rubicon River

Shadow Lake

Highland Creek

Gerle Creek Reservoir

Angel Creek

Lake Zitella

Highland Lake

Horseshoe Lake

Forni Lake

Land Ownership
Robbs Peak Development

- USDA Forest Service
- Bureau of Land Management
- SMUD
- Submerged Lands - SMUD
- Private - Sierra Pacific Industries
- Private - Other

- Lands within 1/2-mile of FERC Boundary for this Development
- FERC Boundary, excluding Transmission Line Corridors
- Project Transmission Line Corridors
- Stream Channels
- Major Access Roads
- Other Roads

North

0 1000 2000 3000 4000 5000 6000 feet

Scale 1:40000

June 22, 2004

Wentworth Springs Road

Gerle Creek Reservoir

Angel Creek

Gerle Creek

South Fork Rubicon River

Rubicon River

South Fork Rubicon River

Wentworth Springs Road

Ice House-
Loon Lake Road

Frog Pond

Shields Brooke

Pilot Creek

Plum Creek

Honey Creek

Wild Creek

Anderson Creek

Dilley Creek

Silver Creek

Little Silver Creek

Cheese Camp Creek

Tells

Yellow Jacket

Tells Creek

Bassi Fork

Land Ownership
Transmission Line Corridors

- USDA Forest Service
- Bureau of Land Management
- SMUD
- Submerged Lands - SMUD
- Private - Sierra Pacific Industries
- Private - Other

- Lands within 1/2-mile of Project Transmission Line
- FERC Boundary, excluding Transmission Line Corridors
- Project Transmission Line Corridors
- Stream Channels
- Major Access Roads
- Other Roads

North

0 1 2 3 Miles

Scale 1:110000

June 22, 2004

Loon Lake

Wentworth Springs Road

Stumpy Meadows Reservoir

Union Valley Reservoir

Junction Reservoir

Camino Diversion Reservoir

Brush Creek Reservoir

Ice House Reservoir

Ice House Road

Highway 50

Land Ownership
Union Valley Development

- USDA Forest Service
- Bureau of Land Management
- SMUD
- Submerged Lands - SMUD
- Private - Sierra Pacific Industries
- Private - Other

- Lands within 1/2-mile of FERC Boundary for this Development
- FERC Boundary, excluding Transmission Line Corridors
- Project Transmission Line Corridors
- Stream Channels
- Major Access Roads
- Other Roads

North

0 1000 2000 3000 4000 5000 6000 feet

Scale 1:40000

June 22, 2004

Union Valley Reservoir

Junction Reservoir

Ice House-
Loon Lake Road

Ice House-
Loon Lake Road

Frog Pond

Camp Creek

Cheese Creek

Tells

Yellow Jacket Creek

Bassi Fork

Big Silver Creek

Silver Creek

Little Silver Creek

South Fork Silver Creek

Big Hill Canyon

Creek

Lones Fork

Driscoll Creek

Onion Creek

Land Ownership
White Rock Development

- USDA Forest Service
- Bureau of Land Management
- SMUD
- Submerged Lands - SMUD
- Private - Sierra Pacific Industries
- Private - Other

- Lands within 1/2-mile of FERC Boundary for this Development
- FERC Boundary, excluding Transmission Line Corridors
- Project Transmission Line Corridors
- Stream Channels
- Major Access Roads
- Other Roads

North

0 1000 2000 3000 4000 5000 6000 feet

Scale 1:40000

June 22, 2004

Brush Creek Reservoir

Highway 50

APPENDIX B

AERIAL PHOTOGRAPHS OF PROPOSED IOWA HILL PUMPED STORAGE DEVELOPMENT PROJECT AREA

[Provided on CD]