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Filed Electronically

September 23, 2022

Ms. Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE, Room 1-A
Washington, DC 20426

**Subject: Rush Creek Hydroelectric Project, FERC Project No. 1389-059;
Revised Study Plan**

Dear Secretary Bose:

Southern California Edison Company (SCE) is the owner and operator of the Rush Creek Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC or Commission) Project No. 1389. Pursuant to Section 5.13(a) of the Commission's regulations, SCE hereby files the attached Revised Study Plan (RSP) for relicensing of the Project.

On December 16, 2021, SCE filed a Notice of Intent (NOI) and Pre-Application Document (PAD) for its continued operation and maintenance of the Project, which included 15 draft technical study plans. FERC issued a Notice of Commencement of Pre-Filing Process and Scoping Document 1 (SD1) for the Project on February 14, 2022, to advise all interested parties of the proposed scope of FERC's National Environmental Policy Act (NEPA) document and solicit comments on the list of issues and alternatives to be addressed in the NEPA document. In addition, FERC concurrently solicited study requests from stakeholders.

In response to stakeholder study requests/comments filed with FERC, as well as stakeholder comments received during a series of technical working group meetings held to address additional questions on individual study plans, SCE revised the 15 draft study plans and included them in its Proposed Study Plan (PSP) filed with FERC on May 30, 2022. Pursuant to 18 CFR § 5.11(e), SCE held a public meeting virtually on June 16, 2022, with the purpose of clarifying the PSP, discussing stakeholder study requests/comments, and attempting to resolve any outstanding issues on the PSP.

Pursuant to 18 C.F.R. § 5.12, stakeholders were afforded 90 days from the date of the PSP filing to provide comments on the PSP or to request additional studies. Four comment letters were received on the PSP.

In the attached RSP, SCE has addressed specific study plan comments either as a modification to the previously filed PSP, or by specifically providing a rationale why a comment or new study request was not adopted.

Information developed during implementation of the RSP, combined with existing information, will be used to analyze environmental effects of SCE's relicensing proposal, pursuant to FERC's obligations under NEPA and the Federal Power Act. If needed, new protection, mitigation, and

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enhancement measures to address any Project effects will be proposed in SCE's License Application.

In accordance with FERC's Process Plan and Schedule included in Appendix A of SD2, stakeholders have until October 12, 2022, to file comments on the RSP, after which FERC will issue its Study Plan Determination by October 27, 2022. FERC encourages electronic filing or commenting. Instructions regarding using FERC's eFiling or eComment systems are available at <http://www.ferc.gov/docs-filing/efiling.asp>

This RSP and all relevant relicensing documents for the Project are available on SCE's Rush Creek Project Relicensing website (www.sce.com/rushcreek), as well as FERC's eLibrary.

This letter has been reviewed and approved by SCE's Dam & Public Safety Department.

SCE looks forward to our continued work with FERC staff and stakeholders on the Rush Creek Project relicensing. If you have any questions regarding this filing, please contact Matthew Woodhall, SCE Relicensing Project Manager, by phone at (909) 362-1764 or via e-mail at matthew.woodhall@sce.com.

Sincerely,

DocuSigned by:

106CF18A73D445F...
Wayne P. Allen
Principal Manager
Regulatory Support Services
SOUTHERN CALIFORNIA EDISON COMPANY

Attachment:

- Revised Study Plan for the Rush Creek Hydroelectric Project

cc: Distribution List

SOUTHERN CALIFORNIA EDISON COMPANY

Rush Creek Hydroelectric Project FERC Project No. 1389

REVISED STUDY PLAN



**Prepared by:
Southern California Edison Company
1515 Walnut Grove Avenue
Rosemead, CA 91770**

September 2022

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ATTACHMENTS

Attachment A. Stakeholder Comments on the Proposed Study Plan
Attachment B. Revised Study Plans

ABBREVIATIONS

AR	American Rivers
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
CSPA	California Sportfishing Protection Alliance
ESSLIA	East Shore Silver Lake Improvement Association
FERC	Federal Energy Regulatory Commission
FOI	Friends of the Inyo
Forest Service	United States Forest Service
HPMP	Historic Properties Management Plan
ILP	Integrated Licensing Process
ISR	Initial Study Report
JLRPAC	June Lake Regional Planning Advisory Committee
NEPA	National Environmental Policy Act
NOI	Notice of Intent
PAD	Pre-Application Document
Project	Rush Creek Project
PSP	Proposed Study Plan
RSP	Revised Study Plan
SCE	Southern California Edison Company
SD1	Scoping Document 1
SD2	Scoping Document 2
SHPO	State Historic Preservation Officer
SNYLF	Sierra Nevada Yellow-legged Frog
State Water Board	State Water Board
TSP	Technical Study Plan
TSR	Technical Study Report
TWG	Technical Working Group
USR	Updated Study Report

1.0 INTRODUCTION

Southern California Edison Company (SCE) is the owner and operator of the Rush Creek Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC) Project No. 1389. SCE currently operates the Project under a 30-year license that was issued by FERC on February 4, 1997 (78 FERC ¶ 61,109). Because the current license will expire on January 31, 2027, SCE is seeking renewal of its license to continue operation and maintenance of a modified Project.

Pursuant to the Code of Federal Regulations (CFR), Title 18, Section 5.13 (18 CFR § 5.13), SCE is filing this Revised Study Plan (RSP) with FERC within 30 days following the deadline for comments in support of Project relicensing. This RSP addresses comments provided by regulatory agencies, non-governmental organizations, and other interested parties, collectively referred to as stakeholders.

1.1 BACKGROUND

On December 16, 2021, SCE filed a Notice of Intent (NOI) and Pre-Application Document (PAD) to initiate the Integrated Licensing Process (ILP) to obtain a new license for the Rush Creek Project. As part of the PAD, SCE included 15 draft technical study plans for stakeholders to review and provide comments. FERC issued Scoping Document 1 (SD1) on February 14, 2022, with the intention to advise all interested parties of the proposed scope of FERC's National Environmental Policy Act (NEPA) document for the Project (i.e., an Environmental Impact Statement or Environmental Assessment) and solicited comments and suggestions on the preliminary list of issues and alternatives to be addressed in the NEPA document. FERC also requested interested parties to identify any studies that would help provide a framework for collecting pertinent information on the resource areas under consideration for FERC's NEPA document with a deadline of April 15, 2022 to file comments. Based on comments filed with FERC in response to the PAD, SD1, and stakeholder study requests, FERC issued Scoping Document 2 (SD2) on May 27, 2022, which included a revised list of issues to address in the NEPA document.

Following filing of the PAD, SCE convened a series of Technical Working Group (TWG) meetings in February, March, and April of 2022 (Table 1). The purpose of the meetings was to review and refine the draft technical study plans included in the PAD prior to SCE's filing of its Proposed Study Plan (PSP). TWG meetings included presentations on each study plan and dialogue with participants to answer questions and discuss refinement of the study approach and methodologies. Both verbal and written comments were provided by stakeholders and if it was warranted or requested, SCE followed-up with stakeholders on specific topics to try to reach resolution.

In accordance with 18 CFR § 5.11 and in response to stakeholder study comments/requests filed with FERC, as well as stakeholder comments received during the TWG meetings, SCE revised the 15 draft study plans included in the PAD and provided them in its PSP filed with FERC on May 30, 2022.

Pursuant to 18 CFR § 5.11(e), SCE held a public meeting virtually on June 16, 2022, with the purpose of clarifying the PSP, discussing stakeholder study requests/comments, and attempting to resolve any outstanding issues on the PSP. The PSP meeting was attended by representatives from SCE and its consultants, in addition to regulatory agencies, non-governmental organizations, and other interested parties. Stakeholders were afforded 90 days from the date of the PSP filing (i.e., until August 29, 2022, as August 28 fell on a weekend) to provide comments on the PSP or to request additional studies.

2.0 COMMENTS RECEIVED ON THE PROPOSED STUDY PLAN

SCE's PSP filing included 15 study plans that encompass various resource topics, including aquatic, cultural, land, recreation, terrestrial, and tribal resources. The overall objective of the study plans is to address data gaps in existing information such that sufficient information is available to evaluate potential Project impacts and collaborate on the Proposed Project included in the License Application.

Four comment letters in response to SCE's PSP were filed with FERC. Commenters included the following entities:

- East Shore Silver Lake Improvement Association (ESSLIA)
- Joint Letter from June Lake Regional Planning Advisory Committee (JLRPAC), Friends of the Inyo (FOI), American Rivers (AR), and the California Sportfishing Protection Alliance (CSPA)
- State Water Resources Control Board (State Water Board)
- United States Forest Service (Forest Service)

Copies of all comment letters filed with FERC are provided in Attachment A. In addition, all comment letters can be accessed via FERC's eLibrary at <https://elibrary.ferc.gov/eLibrary/> under docket P-1389.

Table 2 provides a summary of stakeholder comments and SCE's responses. Table 2 also identifies the minor modifications made to six study plans in redline/strikeout format.

General comments on the PAD, SD2, or the scope of FERC's NEPA analysis are not addressed in this document, however, SCE will consider these comments during preparation of the License Application and incorporate relevant information and analysis, as appropriate.

3.0 REVISED STUDY PLAN

Based on stakeholder comments filed on the PSP, minor modifications to six studies were made by SCE to address stakeholder comments and/or add clarification in the RSP (refer to Table 3). SCE's RSP is included in Attachment B.

3.1 COMMENTS ON THE REVISED STUDY PLAN

As presented in FERC's SD2 Appendix A, stakeholders may file comments on this RSP within 15 days of filing (i.e., on or before October 12, 2022). Within 30 days of filing this RSP, FERC will issue its Study Plan Determination (anticipated October 27, 2022), which will identify studies and information necessary to meet its NEPA obligations and information required under the Federal Power Act.

4.0 STUDY IMPLEMENTATION

Table 4 provides a schedule for completing the technical studies and associated reporting (2022–2024). It should be noted that due to the limited study season and to meet commitments made during the TWG meetings, SCE has or intends to initiate implementation of several study components in the summer/fall of 2022 prior to receiving FERC's Study Plan Determination (refer to Table 4).

4.1 PROVISIONS FOR PERIODIC PROGRESS REPORTS

SCE will follow the standard FERC Study Plan progress reporting and meeting sequence as described in 18 CFR § 5.15(c) and (f). SCE will file an Initial Study Report (ISR) within 1 year following FERC's Study Plan Determination (estimated October 27, 2023) and an Updated Study Report (USR) no later than 2 years after FERC's Study Plan Determination (estimated October 27, 2024). The reports will describe the progress of implementing each study, including data collected to date, any deviations in technical approaches or schedules, and a proposed schedule for completion of the remaining study plan components. The ISR and USR will also include a description of any proposed modifications to the approved studies or new studies proposed by SCE.

A Study Plan meeting with stakeholders and FERC staff will take place within 15 days of the ISR and USR filings to discuss the study results and SCE's or other participant's proposals, if any, to modify the study plans in light of the progress of the study plan and data collected. Within 15 days following each meeting, SCE will file a meeting summary, including any modification to ongoing studies or new studies proposed by SCE. The timing of these activities will be e-mailed to stakeholders in advance and posted on SCE's relicensing website at www.sce.com/RushCreek.

In addition, SCE has a well-defined process for the manner and extent information obtained during implementation of the study plan will be provided to stakeholders. Each technical study contains a detailed schedule for data collection and analysis, development and distribution of Draft Technical Study Reports, and stakeholder review and comment. Table 4 provides an overview of these activities for each study. In general, a 90-day comment period is provided for stakeholder review of each Draft Technical Study Report.

An additional 60- to 90-day period is also allocated in the schedule to resolve stakeholder comments on the Draft Technical Study Reports and to develop and distribute the Final Technical Study Reports.

5.0 INTEGRATED LICENSING PROCESS PLAN AND SCHEDULE

The Process Plan and Schedule outlined in Table 5 depicts the schedule for remaining ILP pre-filing milestones as defined in FERC's SD2, Appendix A. Note that (1) italicized actions are unnecessary if there are no study disputes; (2) when an activity is contingent on completion of a previous activity, the schedule assumes the previous activity is completed the latest date possible for that activity, unless otherwise indicated; and (3) according to 18 CFR § 385.2007(a)(2), if a filing date falls on a Saturday, Sunday, or federal legal public holiday, the deadline for filing becomes the next business day.

TABLES

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Table 1. Technical Working Group Meeting Schedule

Technical Study Plan	Week Starting									
	31-Jan	7-Feb	14-Feb	21-Feb	28-Feb	7-Mar	14-Mar	21-Mar	28-Mar	4-Apr
Aquatic Resources										
AQ 1 – Instream Flow / AQ 5 – Geomorphology		Feb 8 1-4 pm			Mar 1 1-4 pm			Mar 24 1-4 pm		
AQ 2 – Hydrology	Feb 1 1-4 pm			Feb 22 9 am-12 pm			Mar 15 1-4 pm			
AQ 3 – Water Temperature	Feb 3 9 am-12 pm			Feb 23 9 am-12 pm			Mar 16 9 am-12 pm			
AQ 4 – Water Quality										
AQ 6 – Fish Population and Barriers			Feb 15 1-4 pm			Mar 8 1-4 pm			Mar 29 1-4 pm	
AQ 7 – Special-status Amphibians										
Cultural and Tribal Resources										
CUL 1 – Built Environment		Feb 9 9 am-12 pm			Feb 28 9 am-12 pm			Mar 22 9 am-12 pm		
CUL 2 – Archaeology										
TRI 1 – Tribal										
Land Resources										
LAND 1 – Aesthetics				Feb 24 1-4 pm			Mar 17 9 am-12 pm			Apr 5 1-4 pm
LAND 2 – Noise										
Recreation Resources										
REC 1 – Recreation			Feb 17 9 am-12 pm			Mar 10 1-4 pm			Mar 31 9 am-12 pm	
Terrestrial Resources										
TERR 1 – Botanical		Feb 10 1-4 pm			Mar 3 9 am-12 pm			Mar 23 9 am-12 pm		
TERR 2 – Wildlife										

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Table 2. Stakeholder Study Requests and Associated SCE Responses

Comment	Reference	Study Plan	Comment	SCE Response to Comment
East Shore Silver Lake Improvement Association (ESSLIA)				
Date filed with FERC: August 22, 2022				
ESSLIA-1	Page 1, Paragraph 1	N/A	ESSLIA continues to have concerns that the Rush Creek Project, FERC Project No. 1389 Rush Creek Proposed Study Plan (PSP) will continue to accelerate sediment accretion in Rush Creek and the Silver Lake inlet due to the proposed upstream hydroelectric activity...	ESSLIA's concerns regarding accelerated sediment accretion in Rush Creek and at the Silver Lake inlet are noted and understood by SCE. The technical studies to be implemented as part of this Revised Study Plan will document sediment conditions and sediment transport within the Rush Creek Watershed, including at the Rush Creek inlet into Silver Lake. Results of these studies will inform if the Project is adversely impacting sediment input and transport in Rush Creek. If Project-related impacts are identified, SCE will develop appropriate mitigation measures in the License Application.
ESSLIA-2	Page 1, Paragraph 3	N/A	ESSLIA strongly advocates for frequent, multi seasonal, cross-sectional and multi transect measurements taken in Rush Creek and Silver Lake over an extensive study period and throughout the proposed 50 year licensing period to ensure that adequate precautions are taken to not negatively impact fisheries, spawning, recreation and wetland and riparian habitats with accelerated sediment accretion due to upstream hydroelectric activity.	Based on study results and impact analysis completed as part of the License Application, if Project-related impacts are identified, SCE will propose appropriate mitigation measures to be implemented over the term of the new license.
ESSLIA-3	Page 1, Paragraph 4	N/A	ESSLIA strongly advocates for ongoing maintenance dredging to be a REQUIREMENT for a 50 year relicensing.	Refer to response to ESSLIA-1 and ESSLIA 2.
ESSLIA-4	Page 2, Paragraph 2	N/A	In addition, on July 6, 2022, ESSLIA hosted a joint SCE and ESSLIA discussion regarding the PSP and Proposed FERC Project No. 1389...On a site visit following the meeting, ESSLIA also recommended the Beneficial Uses project in case SCE required wetland mitigation and/or habitat creation for Federally-Listed amphibians associated with FERC Project 1389.	Refer to response to ESSLIA-2.
Joint Letter from June Lake Regional Planning Advisory Committee (JLRPAC), Friends of the Inyo (FOI), American Rivers (AR) and the California Sportfishing Protection Alliance (CSPA)				
Date filed with FERC: April 29, 2022				
JLRPAC, FOI, AR, CSPA-1	Page 3, Paragraph 1 Page 4, Paragraph 1	Reiterated Request for full decommissioning study	USFS-Proposed Study of Full Decommissioning Option In comments filed in response to Scoping Document 1 and the Pre-Application Document (PAD), the USFS has requested inclusion in the study plan of a study for the evaluation of a full decommissioning option as one of the several possible outcomes for the project. The USFS has submitted a Technical Study Plan proposal in support of this, following the Commission's required format. This study request was supported by numerous additional stakeholders in comments filed in response to SD1 and the PAD. The rationale for requesting this study was that there are known and specific legal disagreements between the licensee and managing agency which could potentially impact the ability to relicense the project. These legal issues are as yet unresolved, and there is no firm timeline for their resolution. Normal prudence would dictate that under such circumstances, outcomes where issuing a new license is not possible should be accounted for during the technical study phase... We respectfully request that the Commission consider the above rationale, and the factors that are unique to this case, and therefore require SCE to perform the USFS-proposed decommissioning study as part of the final study plan.	SCE maintains its position to not adopt the Forest Service's Wilderness Project Decommissioning Assessment study request. SCE disagrees with the view that there is uncertainty regarding the pathway to relicense the Project in the Wilderness. Both the FERC-issued license for the Project and associated power site reservation created under section 24 of the Federal Power Act predate the Wilderness Act of 1964, in which the Minarets Wilderness Area (subsequently renamed as Ansel Adams Wilderness) was designated. As such, the Project is an "existing private right" under section 4(c) of the Wilderness Act. In fact, FERC previously relicensed the Project following the establishment of the Wilderness Area, which confirms that the Project is an existing private right. For additional details, please refer to SCE's recent filing (May 20, 2022) on this issue (FERC Accession No. 20220520-5230). While SCE acknowledges that the Forest Service raised a concern that the Project's location within a wilderness area may prohibit FERC's jurisdiction to relicense the Project, the Commission invited the Forest Service to provide additional information to substantiate that concern. To date, the Forest Service has not provided any information demonstrating that the Project is not an "existing private right" under the Wilderness Act. Because the Forest Service's request for a decommissioning study for Gem Dam is premised on the misapprehension of the Commission's jurisdiction to relicense the Project, there is no basis for its proposed decommissioning assessment. Moreover, the proposed decommissioning assessment is inconsistent with well-established FERC precedent maintaining that decommissioning is not a reasonable alternative to relicensing. SCE has stated its unequivocal intent to seek a new license for the Project. This Project offers valuable carbon-free capacity and energy to SCE's generation portfolio, supports local recreation, is strategically located, provides local reliable power and energy during islanding events, and will become more valuable as the electric grid continues to transition to non-emitting resources. SCE is firmly committed to continuing to operate and maintain the Gem Lake Development of the Project through a new license term. For additional details, please refer to SCE's recent filing (May 20, 2022) on this issue (FERC Accession No. 20220520-5230). Further, in FERC's SD2 it states the following, "Commission policy has held that decommissioning is not a reasonable alternative, if not proposed by the licensee (SCE). Further, the relicensing process for the project is currently in the pre-filing stage of the Commission's Integrated Licensing Process (ILP). The purpose of the pre-filing process is to inform stakeholders about the project proposal, consult with stakeholders to identify issues (i.e., scoping), identify study needs, and to gather information and conduct

Comment	Reference	Study Plan	Comment	SCE Response to Comment
				<p>studies to provide information for the licensee to prepare its license application for filing with the Commission. Information in the application and the project record is used to inform staff's environmental analyses and evaluate recommendations for environmental measures in the NEPA document. Therefore, it is premature to demonstrate whether any potential serious resource issues exist that could not be mitigated with appropriate measures to include in any license issued for the project that would make decommissioning a reasonable alternative. Also, the relative level of effort required to remove or disable the operation of existing project facilities (e.g., dams, diversions, conduits) is not a factor that is considered for decommissioning a project.</p> <p>Commission policy is to not recommend requests for decommissioning cost studies and/or establishment of decommissioning funds where there is no evidence in the project record indicating the life the project will end during the term of any new license that may be issued for the project and there is no indication that the licensee would lack the financial resources if it were to be decommissioned."</p>
<p>State Water Resources Control Board (State Water Board) Date filed with FERC: April 29, 2022</p>				
SWB-1	Page 1–2, Paragraph 2–4	AQ 4 – Water Quality	<p>Stater Water Board Control Board (State Water Board) staff reviewed the PSP and have one comment. In its PAD, SCE proposed one year of water quality monitoring in the AQ4 – Water Quality Technical Study Plan (Water Quality TSP). State Water Board staff comments on the PAD stated that one year of data collection is not sufficient to analyze Project impacts on water quality. SCE did not incorporate this request into the Water Quality TSP. SCE's response to this comment states:</p> <p>“The TSP includes a statement that ‘If potential water quality issues are identified, additional follow-up sampling may be necessary. Additional sampling, if necessary, will be determined in consultation with the resource agencies and other interested parties.’</p> <p>SCE recommends evaluation of 2023 water quality sampling results be completed in consultation with State Water Board, resource agencies, and [Technical Working Group] participants to determine if a second year of data collection (2024) is necessary.”</p> <p>State Water Board staff would like to reiterate the insufficiency of only one year of water quality monitoring. One year of data is not adequate to inform water quality protection measures needed, in a water quality certification, over the 30–50-year Project license term. This limited data sample could allow anomalous conditions to misrepresent Project impacts. Further, one year of sampling does not allow analysis of Project impacts in different water year types.</p> <p>State Water Board staff recognize that the Water Quality TSP allows for additional monitoring if needed. However, this does not guarantee additional monitoring. This could also extend the relicensing process if agency staff and SCE disagree on the need for additional monitoring and require dispute resolution. Staff request that SCE revise the Water Quality TSP to include a minimum of two years of water quality monitoring.</p>	<p>Rush Creek is high-elevation, pristine waterway. No water quality issues have been identified to date within the Rush Creek Watershed. As is typical in most FERC relicensings, SCE has proposed to implement one year of water quality monitoring with the option to extend the study to a second year if water quality issues are identified. Specifically, if water quality sampling reveals an exceedance above the water quality objectives/criteria identified in the Basin Plan or with other relevant water quality standards (refer to Table AQ 4-2), SCE will implement a second year of water quality sampling focused on those parameters that were exceeded. However, if no exceedance is observed, SCE does not propose to conduct a second year of sampling.</p> <p>To further clarify SCE's approach to implementing a second year of studies, SCE made the following modifications to the AQ 4 – Water Quality TSP.</p> <p>Deleted Bullet (pg. AQ 4-3)</p> <ul style="list-style-type: none"> • If potential water quality issues are identified, additional follow-up sampling may be necessary. Additional sampling, if necessary, will be determined in consultation with the resource agencies and other interested parties. <p>Added Section (pg. AQ 4-5) ADDITIONAL SAMPLING</p> <ul style="list-style-type: none"> • <u>If water quality sampling results (2023) indicate an exceedance of objectives/criteria identified in the Basin Plan or with other relevant water quality standards (refer to Table AQ 4-2), SCE will implement a second year of water quality sampling (2024) focused on those parameters that were exceeded. The specific sampling approach will be developed in consult with the State Water Board, resource agencies, and the Technical Working Group.</u>
<p>U.S. Forest Service, Inyo National Forest (Forest Service) Date filed with FERC: April 29, 2022</p>				
FS-1	Page 1, Paragraph 2	N/A	<p>In general SCE's study plan provide a general framework of proposed goals and methods to investigate various issues. These proposals are intended to be further developed in collaboration with relicensing participants. However, at present, there are inconsistencies between plans as some are well described, while others provide generic frameworks and do not give sufficient detail of the kind of products that will be produced, or how this information relates to project operations or future alternatives.</p>	<p>SCE believes that each study has sufficient description regarding study implementation, work products, and schedule. SCE collaborated with stakeholders during a series of Technical Working Group meetings to review and discuss all proposed study plans (refer to Table 1). During these meetings SCE worked with stakeholders to refine the approaches and methodologies, and make sure they understood study components and schedule.</p> <p>In addition, Section 2.1 of SCE's Proposed Study Plan states that the Draft Technical Study Plans include the evaluation of existing resource conditions under ongoing routine operation and maintenance of the Project, and analysis and/or development of models to support evaluation of potential protection, mitigation, and enhancement measures. In addition, the study plans were expanded and are broader in scope due to the complexity of the actions under consideration in the relicensing proceeding, including:</p> <ul style="list-style-type: none"> • Continued operation and maintenance of the modified project; • Partial or full removal of Agnew and Rush Meadows dams; • Dam modification and retrofitting of Gem Dam; • Restoration of the former inundation zone of Waugh (Rush Meadows), Agnew, and Gem lakes;

Comment	Reference	Study Plan	Comment	SCE Response to Comment
				<ul style="list-style-type: none"> Enhancement of the Lower Rush Creek and South Rush Creek channels; and Assessment of sediment deposition in Rush Creek near the Silver Lake inlet.
FS-2	Page 1, Paragraph 2	Reiterated Request for full decommissioning study	Moreover, no study plan currently proposed by SCE addresses consistency for the non-conforming project works in wilderness, or investigates the effects of decommissioning these features. The Forest Service reiterates its previous request for the proposed LAND3 study, as this information is necessary to investigate project alternatives that conform with the Wilderness Act.	<p>Response Forest Service-2:</p> <p>The Project is an “existing private right” under section 4(c) of the Wilderness Act, and it predates both the establishment of Ansel Adams Wilderness—and even the Wilderness Act itself. Both FERC and the Forest Service were well aware during the prior relicensing process in the 1990s that the Project is located within the Ansel Adams Wilderness, and yet the Project was relicensed at that time. Moreover, over the current license term, both agencies have consistently recognized the project works “as non-conforming uses”. For additional details, please refer to SCE’s recent filing (May 20, 2022) on this issue (FERC Accession No. 20220520-5230).</p> <p>In addition, refer to response to JLRPAC, FOI, AR, CSPA-1.</p>
FS-3	Page 1, Paragraph 3	<p>AQ 4 – Water Quality</p> <p>AQ 6 – Fish Population and Barriers</p>	Further, SCE’s study proposals AQ-4 and AQ-6, to investigate seasonal water quality parameters and fish populations within the project reservoirs propose the use of motorized watercraft within Gem Lake. Gem Lake is part of the Ansel Adams Wilderness, where motorized vehicle use is prohibited. The Forest Service and SCE met to discuss how to meet the needs of SCE’s proposed studies without motorized vehicle use. Based on our conversations with SCE, California Department of Fish and Wildlife, and our analysis, the Forest Service has determined that sufficient alternative non-motorized access methods exist and could be used to collect the data associated with AQ-4 and AQ-6, if approved.	<p>Response Forest Service-3:</p> <p>SCE previously met with the Forest Service and CDFW to discuss motorized boat use on Gem Lake regarding implementation of the AQ 6 TSP (May 9, 2022). The meeting focused on motorized boat use to facilitate placement of gill nets in Gem Lake which is located within the Ansel Adams Wilderness. At the meeting, the Forest Service proposed use of non-motorized methods to place gill nets. SCE strongly opposed the use of float tubes or other non-motorized methods to install gill nets due to safety concerns.</p> <p>Historically, SCE has used motorized vessels on Gem Lake for routine operation and maintenance activities consistent with Forest Service 4(e) Condition No. 8 (amended February 29, 2000; 90 ¶ FERC 61,222). The need for the use of motorized vessels on Gem Lake is typically included in SCE’s Annual Operating Plan and is discussed with the Forest Service in the Annual Consultation Meeting. Refer to SCE’s most recent notice of annual meeting filed with FERC on May 31, 2022 that indicates a discussion item for Gem Lake barge use. To safely conduct select elements of the AQ 4 – Water Quality TSP and AQ 6 – Fish Population TSP in Gem Lake, SCE provided information to the Forest Service on May 13, 2022 outlining the need for the use of a motorized boat on Gem Lake.</p> <p>While the Forest Service comment letter states that it has determined that “sufficient alternative non-motorized access methods exist”, SCE strongly disagrees. Due to the remote location, potential for wind and weather to develop quickly, weight and bulkiness of equipment, potential for entanglement if not working from a stable appropriately-sized vessel, and other work methods outlined in the AQ 4 and AQ 6 TSPs, utilizing non-motorized alternatives is unsafe and SCE cannot conduct the surveys as proposed by the Forest Service.</p> <p>Specifically, collection of water grab samples and reservoir/lake profiles in Gem Lake requires two sampling periods (June and September) at two locations (mid-lake and near dam). The work will include the following equipment: (1) in-situ water quality meters with 2–300-foot-long cords; (2) Kemmerer or Van Doren type sampling devices with associated 2–300-foot lines and weights; (3) Secchi disk with associated line (e.g., 50 feet); (4) ice chest for preserving water quality samples; (5) water sample bottles; and (6) personal safety gear.</p> <p>Collection of fish samples includes gill net sets at three general locations (six specific locations) within the reservoir. At each general site one net will be stretched sloping from near shore out into the reservoir and one net will be placed out in the reservoir anchored vertically in the water column. The nets typically will be 125 feet long and have a lower lead and upper floating line. Nets will be anchored in place with typical boat anchors attached at each end of the sloping nets and at the bottom of the vertical nets. Anchors and nets need to be transported into place on the reservoir and deployed and then retrieved the following day. Depending on the number of fish, fish will be processed (weighed and measured) in the boat after the nets are retrieved into the boat.</p> <p>Using a motorized vessel is the only reasonable and safest way to conduct water quality sampling and gill netting in Gem Lake. The studies are coordinated such that SCE proposes to use a motorized vessel on Gem Lake for approximately six partial days during the field season.</p>

Comment	Reference	Study Plan	Comment	SCE Response to Comment
				<p>If any required authorization from the Forest Service to use a motorized vessel on Gem Lake to conduct components of the AQ 4 and AQ 6 TSP is not obtained, then SCE cannot conduct the field sampling on Gem Lake due to safety concerns.</p> <p>To clarify SCE's position, the following bullets were added to the AQ 4 – Water Quality TSP:</p> <p>Seasonal Water Quality Grab Samples (pg. AQ 4-3)</p> <ul style="list-style-type: none"> It should be noted that Gem Lake is located within the Ansel Adams Wilderness Area. Collection of seasonal water quality grab samples in Gem Lake requires the use of a motorized vessel for the safety of field workers. If any required authorization from the Forest Service to use a motorized vessel on Gem Lake is not obtained, SCE cannot implement the study plan component to collect seasonal water quality grab samples in Gem Lake. <p>Reservoir/Lake Profiles (pg. AQ 4-4)</p> <ul style="list-style-type: none"> It should be noted that Gem Lake is located within the Ansel Adams Wilderness Area. Collection of reservoir/lake profiles in Gem Lake requires the use of a motorized vessel for the safety of field workers. If any required authorization from the Forest Service to use a motorized vessel on Gem Lake is not obtained, SCE cannot implement the study plan component to collect reservoir/lake profiles in Gem Lake. <p>In addition, a footnote was added to Table AQ 4-1 that reads:</p> <p><u>b. Water quality sampling in Gem Lake is contingent on obtaining any required Forest Service authorization for use of a motorized boat.</u></p> <p>To clarify SCE's position, the following bullet was added to the AQ 6 – Fish Population and Barriers TSP:</p> <p>Fish Populations – Project Reservoirs (pg. AQ 6-4)</p> <ul style="list-style-type: none"> It should be noted that Gem Lake is located within the Ansel Adams Wilderness Area. Collection of fish population data using gill nets in Gem Lake requires the use of a motorized vessel for the safety of field workers. If any required authorization from the Forest Service to use a motorized vessel on Gem Lake is not obtained, SCE cannot implement the study plan component to collect fish population data using gill nets in Gem Lake. <p>In addition, a footnote was added to Table AQ 6-1 that reads:</p> <p><u>b. Fish population sampling in Gem Lake is contingent on obtaining any required Forest Service authorization for use of a motorized boat.</u></p>
FS-4	Page 2, Paragraph 1	AQ 1 – Instream Flow AQ 3 – Water Temperature AQ 5 – Geomorphology TERR 1 – Botanical Resources	In a related note, for study elements proposed within the Ansel Adams Wilderness, SCE needs to provide a complete catalog of all temporary installations or equipment including but not limited to: transect markers, their locations, timeline of scheduled use, and recommend disposal methods or removal prior to any installation. The Forest Service shall review all requested installations and use of motorized equipment prior to study implementation and requires confirmation of removal of any temporary installations at the end of the study period.	<p>Response Forest Service-4:</p> <p>SCE will continue to work closely with the Forest Service regarding study activities occurring within the Ansel Adams Wilderness. For studies that include temporary installations or equipment, SCE has added a commitment to communicating with the Forest Service on these activities. Specifically, SCE has added the following bullet to the "Extent of Study Area" sections of the AQ 1 – Instream Flow (pg. AQ 1-3), AQ 3 – Water Temperature (pg. AQ 3-2), AQ 5 – Geomorphology (pg. AQ 5-3), and TERR 1 – Botanical Resources (pg. TERR 1-4) TSPs.</p> <ul style="list-style-type: none"> For study elements proposed within the Ansel Adams Wilderness, SCE will provide a complete catalog of all temporary installations or equipment including, but not limited to, transect markers, their locations, timeline of scheduled use, and recommended disposal methods or removal, prior to any installation. SCE will also provide confirmation of removal of any temporary installations to the Forest Service at the end of the study period.

Table 3. SCE Revised Study Plans

Study Plan	Modified from PSP	No Change from PSP
AQ 1 – Instream Flow	X	
AQ 2 – Hydrology		X
AQ 3 – Water Temperature	X	
AQ 4 – Water Quality	X	
AQ 5 – Geomorphology	X	
AQ 6 – Fish Population and Barriers	X	
AQ 7 – Special-status Amphibians		X
CUL 1 – Built Environment		X
CUL 2 – Archaeology		X
TRI 1 – Tribal		X
LAND 1 – Aesthetics		X
LAND 2 – Noise		X
REC 1 – Recreation		X
TERR 1 – Botanical	X	
TERR 2 – Wildlife		X

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Table 4. Study Plan Implementation Schedule

Technical Study Plan	2022												2023												2024												2025												
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	
AQ 1 – Instream Flow																																																	
Select Project-affected stream segments for instream modeling, complete mesohabitat mapping, and select study sites																																																	
Consult with the interested resource agencies and stakeholders regarding: target species and life stages, habitat suitability criteria, and habitat modeling methods																																																	
Conduct field data collection (topography, water surface elevations, velocities, substrate/cover)																																																	
Analyze data and prepare draft report																																																	
Distribute draft report to resource agencies and stakeholders																																																	
Resource agency and stakeholders review and provide comments on draft report (90 days)																																																	
Resolve comments and prepare final report																																																	
Distribute final report in Draft License Application																																																	
AQ 2 – Hydrology																																																	
Collaborate with stakeholder modeling working group on approach for refining the historical, existing, and unimpaired hydrology (as appropriate); and developing the Proposed Project hydrology																																																	
Install temporary flow gages																																																	
Develop Proposed Project hydrology and refine analysis of historical, existing, and unimpaired hydrology																																																	
Complete the hydrologic alteration analysis and flood-frequency analysis																																																	
Summarize data and prepare draft report (incorporating October 2022–September 2023 data)																																																	
Distribute draft report to stakeholders																																																	
Stakeholders review and provide comments on draft report (90 days)																																																	
Resolve comments and prepare final report																																																	
Uninstall temporary flow gages																																																	
Distribute draft final report in Draft License Application (incorporating October 2023–September 2024 data)																																																	
Distribute final report in Final License Application (incorporating comments by stakeholders on the draft final report filed with the Draft License Application)																																																	

Technical Study Plan	2022												2023												2024												2025											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
AQ 3 – Water Temperature																																																
Install and maintain temperature probes																																																
Maintain low elevation (≤7,300 feet; powerhouse elevation) temperature probes																																																
Analyze data and prepare draft report																																																
Distribute draft report to stakeholders																																																
Stakeholders review and provide comments on draft report (90 days)																																																
Resolve comments and prepare final report																																																
Distribute final report in Draft License Application																																																
AQ 4 – Water Quality																																																
Conduct spring water quality <i>in-situ</i> and grab sampling																																																
Conduct monthly <i>in-situ</i> reservoir/lake profiling																																																
Conduct summer/fall water quality <i>in-situ</i> and grab sampling																																																
Analyze data and prepare draft report																																																
Distribute draft report to stakeholders																																																
Stakeholders review and provide comments on draft report (90 days)																																																
Resolve comments and prepare final report																																																
Distribute final report in Draft License Application																																																
AQ 5 – Geomorphology																																																
Conduct channel surveys (e.g., mesohabitat and Rosgen mapping)																																																
Complete data analysis																																																
Conduct sediment capture/deposition surveys, sediment transport field surveys, sediment source surveys, and evaluation of potential restoration/enhancement measures in coordination with instream flow surveys																																																
Analyze data and prepare draft report																																																
Distribute draft report to stakeholders																																																
Stakeholders review and provide comments on draft report (90 days)																																																
Resolve comments and prepare final report																																																
Distribute final report in Draft License Application																																																
AQ 6 – Fish Population and Barriers																																																
Characterize fish barriers/migration in Project-affected stream segments																																																
Conduct fish population sampling in Project-affected stream segments and Project reservoirs																																																
Analyze data and prepare draft report																																																
Distribute draft report to stakeholders																																																
Stakeholders review and provide comments on draft report (90 days)																																																
Resolve comments and prepare final report																																																
Distribute final report in Draft License Application																																																

Technical Study Plan	2022												2023												2024												2025											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
AQ 7 – Special-Status Amphibians																																																
Complete habitat mapping and conduct visual encounter surveys																																																
If occupied breeding/rearing habitat for SNYLF is identified in stream segments evaluated as part of implementation of the AQ 1 – Instream Flow TSP, quantification of habitat versus flow relationships will be developed																																																
Analyze data and prepare draft report																																																
Distribute draft report to stakeholders																																																
Stakeholders review and provide comments on draft report (90 days)																																																
Resolve comments and prepare final report																																																
Distribute final report in Draft License Application																																																
CUL 1 – Built Environment																																																
Convene interested stakeholders to discuss Draft Study Plan and adequacy of the APE	█	█	█	█																																												
Consult with SHPO regarding adequacy of the APE		█	█	█																																												
Conduct archival research and background review																																																
Conduct field inventory																																																
Analyze data and prepare draft TSR																																																
Distribute draft TSR to stakeholders																																																
Stakeholder review and provide comments on draft TSR (90 days)																																																
Resolve comments and prepare final TSR																																																
Develop Draft HPMP																																																
Distribute final TSR and Draft HPMP in Draft License Application																																																
CUL 2 – Archaeology																																																
Convene interested stakeholders to discuss Draft Study Plan and adequacy of the APE	█	█	█																																													
Consult with SHPO regarding adequacy of APE		█	█	█																																												
Conduct archival research and background review																																																
Develop and obtain consensus on Inventory and National Register of Historic Places Evaluation strategy and permitting approach																																																
Conduct field studies																																																
Analyze data and prepare draft TSR																																																
Distribute draft TSR to stakeholders																																																
Stakeholder review and provide comments on draft TSR (90 days)																																																
Resolve comments and prepare final TSR																																																
Develop Draft HPMP																																																
Distribute final TSR and Draft HPMP in Draft License Application																																																

Technical Study Plan	2022												2023												2024												2025																									
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D														
TRI 1 – Tribal																																																														
Meet with Tribal groups and resource agencies/stakeholders to discuss Draft Study Plan and adequacy of the APE		█	█	█	█																																																									
Consult with SHPO regarding adequacy of APE			█	█	█																																																									
Submit Tribal Resources technical qualifications to INF													█																																																	
Conduct archival research													█	█	█	█	█	█	█	█	█	█	█	█	█																																					
Engage Tribal groups to arrange meetings and establish protocols													█	█	█	█	█	█	█	█	█	█	█	█	█																																					
Conduct Tribal interviews to identify Tribal resources													█	█	█	█	█	█	█	█	█	█	█	█	█																																					
Compile results of data gathered, evaluate Tribal resources, and prepare draft TSR																										█	█	█	█	█	█																															
Distribute draft TSR to stakeholders																											█																																			
Stakeholder review and provide comment on draft TSR (90 days)																											█	█	█	█	█																															
Resolve comments and prepare final TSR																																																														
Develop Draft HPMP																																																														
Distribute final TSR and HPMP in Draft License Application																																																														
LAND 1 – Aesthetics																																																														
Summarize land management direction and objectives, establish KOPs, and develop inventory forms													█	█	█																																															
Inventory, photo document, and assess Project facilities																																																														
Photo document and characterize Horsetail Falls at five different flows, assuming spill flows are available																																																														
Analyze data and prepare draft report																																																														
Distribute draft report to stakeholders																																																														
Stakeholders review and provide comments on draft report (90 days)																																																														
Resolve comments and prepare final report																																																														
Distribute final report in Draft License Application																																																														
LAND 2 – Noise																																																														
Identify sensitive receptors/ points of interest with resource agencies and stakeholders																																																														
Conduct noise surveys																																																														
Analyze data and prepare draft report																																																														
Distribute draft report to stakeholders																																																														
Stakeholders review and provide comments on draft report (90 days)																																																														
Resolve comments and prepare final report																																																														
Distribute final report in Draft License Application																																																														

Technical Study Plan	2022												2023												2024												2025											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
REC 1 – Recreation																																																
Gather and analyze existing available use data (including wilderness permit data from the INF)																																																
Develop the survey instrument in consultation with the Forest Service and CDFW																																																
Interview key information sources (i.e., INF, Frontier Pack Station Outfitter, local guides and outfitters, and June Lake homeowner’s association representatives)																																																
Conduct use counts and visitor surveys, and establish and maintain a temporary self-registration box at the Rush Creek Trail Trailhead																																																
Analyze data and prepare draft report																																																
Distribute draft report to stakeholders																																																
Stakeholders review and provide comments on draft report (90 days)																																																
Resolve comments and prepare final report																																																
Distribute final report in Draft License Application																																																
TERR 1 – Botanical																																																
Collect data to characterize riparian vegetation at long-term riparian monitoring sites (consistent with USFS 4[e] Condition 7)																																																
Conduct field surveys																																																
Analyze data and prepare draft report																																																
Distribute draft report to stakeholders																																																
Stakeholders review and provide comments on draft report (90 days)																																																
Resolve comments and prepare final report																																																
Distribute final report in Draft License Application																																																
TERR 2 – Wildlife																																																
Consult with resource agencies to obtain information on Sierra Nevada bighorn sheep																																																
Conduct wildlife reconnaissance surveys, raptor nest surveys, and transmission line/power line pole evaluation																																																
Conduct bat surveys																																																
Analyze data and prepare draft report																																																
Distribute draft report to stakeholders																																																
Stakeholders review and provide comments on draft report (90 days)																																																
Resolve comments and prepare final report																																																
Distribute final report in Draft License Application																																																

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Table 5. Integrated Licensing Process Milestones for the Rush Creek Project

Responsible Party	Pre-Filing Milestone	Date	FERC Regulation 18 CFR §
All Stakeholders	File Comments on SCE's Proposed Study Plan	8/28/22	5.12
Applicant	File Revised Study Plan	9/27/22	5.13(a)
All Stakeholders	File Comments on SCE's Revised Study Plan	10/12/22	5.13(b)
FERC	Issue Study Plan Determination	10/27/22	5.13(c)
FERC	Study Plan Approved, if No Disputes Filed	11/16/22	5.14(d)
<i>Mandatory Conditioning Agencies / Tribes</i>	<i>File Study Disputes</i>	<i>11/16/22</i>	<i>5.14(a)</i>
<i>Dispute Panel</i>	<i>Select Third Dispute Resolution Panel Member</i>	<i>12/1/22</i>	<i>5.14(d)</i>
<i>Dispute Panel</i>	<i>Convene Dispute Resolution Panel</i>	<i>12/6/22</i>	<i>5.14(d)(3)</i>
<i>Applicant</i>	<i>File Comments on Study Disputes</i>	<i>12/11/22</i>	<i>5.14(i)</i>
<i>Dispute Panel</i>	<i>Dispute Resolution Panel Technical Conference</i>	<i>12/16/22</i>	<i>5.14(j)</i>
<i>Dispute Panel</i>	<i>Issue Dispute Resolution Panel Findings</i>	<i>1/5/23</i>	<i>5.14(k)</i>
<i>FERC</i>	<i>Issue Study Dispute Determination</i>	<i>1/25/23</i>	<i>5.14(l)</i>
Applicant	Conduct First Study Season (2023)	10/27/23	5.15(a)
Applicant	File Initial Study Report	10/27/23	5.15(c)(1)
All Stakeholders	Conduct Initial Study Report Meeting	11/11/23	5.15(c)(2)
Applicant	File Initial Study Report Meeting Summary	11/26/23	5.15(c)(3)
Applicant	Conduct Second Study Season (2024)	Spring/Summer 2024	5.15(a)
Applicant	File Updated Study Report	10/26/24	5.15(f)
All Stakeholders	Conduct Updated Study Report Meeting	11/10/24	5.15(f)
Applicant	File Updated Study Report Meeting Summary	11/25/24	5.15(f)
Applicant	File Draft License Application	9/3/24	5.16(a)-(c)
All Stakeholders	File Comments on Draft License Application	12/2/24	5.16(e)
Applicant	File Final License Application	1/31/25	5.17
Applicant	Issue Public Notice of Final License Application Filing	2/14/25	5.17(d)(2)

Source:

FERC, Scoping Document 2, Appendix A - Process Plan and Schedule, Rush Creek Hydroelectric Project No. 1389, May 27, 2022.

Notes:

1. Italicized actions are unnecessary if there are no study disputes.
2. When an activity is contingent on completion of a previous activity, the schedule assumes the previous activity is completed the latest date possible for that activity, unless otherwise indicated.
3. According to 18 CFR § 385.2007(a)(2), if a filing date falls on a Saturday, Sunday, or federal legal public holiday, the deadline for filing becomes the next business day.

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ATTACHMENT A

Stakeholder Comments Filed with the Federal Energy Regulatory Commission on Southern California Edison's Proposed Study Plan for the Rush Creek Project (FERC Project No. 1389)

East Shore Silver Lake Improvement Association

Dear FERC Members:

The East Shore Silver Lake Improvement Association, Inc. (ESSLIA) respectfully submits this additional public comment to meet the August 28, 2022 filing deadline.

SUMMARY AND REQUESTED ACTION STEPS

Comment 1 | ESSLIA continues to have concerns that the Rush Creek Project, FERC Project No. 1389 Rush Creek Proposed Study Plan (PSP) will continue to accelerate sediment accretion in Rush Creek and the Silver Lake inlet due to the proposed upstream hydroelectric activity: decommission and potential alteration or removal of Agnew and Rush Meadows Dams; lower Gem Dam to current FERC Restriction Level; and, total system impoundment capacity reduction from 24,000 AF to ~10,600AF.

Although ESSLIA applauds SCE's extensive study scope and its interest in obtaining community participation and input, ESSLIA continues to be concerned that the SCE's PSP measurements and methodologies must accurately predict the continued accelerated sediment accretion that will result due to proposed FERC Project No. 1389.

Comment 2 | **ESSLIA strongly advocates for frequent, multi seasonal, cross-sectional and multi transect measurements taken in Rush Creek and Silver Lake over an extensive study period and throughout the proposed 50 year licensing period to ensure that adequate precautions are taken to not negatively impact fisheries, spawning, recreation and wetland and riparian habitats with accelerated sediment accretion due to upstream hydroelectric activity.**

Comment 3 | **ESSLIA strongly advocates for ongoing maintenance dredging to be a REQUIREMENT for a 50 year relicensing.** Without periodic maintenance dredging, the accelerated sediment accretion due to upstream hydroelectric activity, especially under the proposed FERC Project No. 1389, will stifle free water flow and impact water availability and flow in Rush Creek and Silver Lake. It is foreseeable that downstream water access could be significantly impacted in the future, including Lower Rush Creek, Grant Lake and Mono Lake. It is also foreseeable that without periodic maintenance dredging being a Condition of the relicensing permit that the ecological balance of Rush Creek at the Silver Lake inlet would continue to be negatively impacted.

ESSLIA Rush Creek Project PSP Community Participation

ESSLIA has serious concerns that past SCE Hydroelectric activity has had accelerated sedimentation impacts for Rush Creek and the Silver Lake inlet.

Because of our concerns, ESSLIA has been actively engaged and has participated in each and every step of the Rush Creek Project, FERC Project No. 1389 Hydroelectric Relicensing from the project start by responding to the SCE Project Information Questionnaire on April 21, 2021. Our concerns regarding the Proposed Project were submitted and detailed at that time along with photographic evidence of "Sedimentation Accretion in Rush Creek and Silver Lake Delta from 1940-2020."

ESSLIA continued its engagement with multiple association members participating in each one of Rush Creek Project, FERC Project No. 1389's Eight Technical Working Groups meetings, asking questions and raising concerns.

ESSLIA submitted a FERC Project e-filing on April 15, 2022 again stating our concerns regarding Sedimentation Accretion in Rush Creek and the Silver Lake inlet. In that e-filing, ESSLIA suggested a Beneficial Uses Dredging and Wetland Habitat project dredging the accreted sediment as an environmentally-sound means to deal with the accelerated sediment accretion due to current upstream hydroelectric activity. Please note, ESSLIA believes, based upon historical observation, that the proposed FERC Project No. 1389 may further accelerate accretion.

Comment 4

In addition, on July 6, 2022, ESSLIA hosted a joint SCE and ESSLIA discussion regarding the PSP and Proposed FERC Project No. 1389. More than half of association members were represented. On a site visit following the meeting, ESSLIA also recommended the Beneficial Uses project in case SCE required wetland mitigation and/or habitat creation for Federally-Listed amphibians associated with FERC Project 1389.

This letter serves as our most recent contribution to this important Project.

Background

Since 1924, ESSLIA has been an association comprised of 27 Silver Lake adjacent cabin owners and US Forest Service Special Permit Holders. ESSLIA has witnessed much change in the flow of water and the deposit of sediment in Rush Creek and in the Silver Lake inlet from 1940-present day.

A change in the Rush Creek delta from sedimentation occurred dramatically over time from 1940 to current. The Rush Creek channel, as it existed in 1940, depicts a wider, single channel system in the general location of where it is today. ESSLIA agrees that it is part of a natural process that lakes eventually accrete with sediment over hundreds, if not thousands of years. **However, acceleration of sedimentation in the Rush Creek delta occurred at a much higher rate during the last 50-60 years than would be expected from natural sedimentation rates and natural processes.** Only during episodic high flow events do sediments actually mobilize significantly and travel into Silver Lake. During typical flow regimes, little mobilization is occurring. By confining the stream channel to the original configuration, water velocities would be sufficient to keep the sand scoured out for approximately 20 years, improving the sediment transport capability of Rush Creek in the Project Area.

ESSLIA has been a steward of Rush Creek and Silver Lake and is concerned that accelerated sedimentation will have negative environmental impacts among them preventing access to zones for upstream salmonid spawning; potential impact to possible Sierra Nevada Yellow-legged frog and/or Yosemite Toad habitats; prevention of access by recreational boaters and anglers to the stream channel; and, the reduced ability of the Silver Lake inlet to pass along flood water flows such as experienced in 2016 causing unnecessary area flooding potentially risking some lower elevation cabin properties.

ESSLIA began to have increased concern regarding the accelerated rate of sedimentation deposits at the Silver Lake Inlet and commissioned an extensive study of the problem summarized in an August 19, 1997 "Sedimentation in Silver Lake Delta Analysis and Remediation" prepared by David P. Groeneveld, Ph.D and Julia J. Thompson, Ph.D.. Based upon those findings, ESSLIA commissioned further work to consider potential restorative project options to reduce the rate of sedimentation accretion and the growth of the Silver Lake Inlet.

The proposed restoration project was summarized in a July 2003 CEQA permit application prepared by ENTRIX, Inc.

Based upon the two commissioned extensive field studies and analysis of the sedimentation problem, ESSLIA began discussions with relevant local, state and federal agencies surrounding this accelerated sediment accretion issue.

As stated in our April 21, 2022 FERC e-filing public comment submission:

“Over the past twenty plus years, ESSLIA has entered into discussions with the CA Department of Fish and Game (CDFG), Mono County, the U.S. Army Corps of Engineers (COE) the California State Lands Commission, Lahontan Regional Water Quality Control Board, and the U.S. Forest Service (USFS) concerning sedimentation in the Rush Creek delta. In 2004, the ESSLIA Project Team recommended a beneficial uses (BU) of dredge material plan in Rush Creek at the headwaters of Silver Lake. The BU Plan would have been required to re-establish a navigable channel in the lower portion of Rush Creek near the Silver Lake Headwater. The California State Lands Commission owns the property where such a project would have taken place.”

In 2004, ESSLIA obtaining the necessary approvals and entered into “Agreement Regarding Proposed Stream and Lake Alteration, Dated August 25, 2004” with the State of California Department of Fish and Game to dredge and haul away dredged material to reestablish a navigable channel in Rush Creek addressing some of the sediment accretion. At the time of the dredging, Mono County viewed the dredging as a benefit to the county. A more efficient and environmentally successful process would have utilized a BU dredging and wetland creation at the boundary of the current Silver Lake wetlands. This methodology and expected positive results is summarized in the April 15, 2022 ESSLIA FERC e-filing submission. At the time, the Lahontan Water District failed to approve this plan resulting in the more costly dewatering and hauling of dredged material from Rush Creek and Silver Lake through the town of June Lake for use as road base material.

Post dredging, beginning in 2006, ESSLIA has continuously monitored and measured the sedimentation accretion with annual monitoring and measurement of water and sedimentation depths against a benchmark standard measure to calibrate water and sedimentation level variation over time at 16 specific and consistent Rush Creek and Silver Lake locations.

ESSLIA has noted a measurable increase in sedimentation deposit along Rush Creek and at the Silver Lake delta after the Federal Government Seismic Safety required 2017 notching at the base of Agnew Dam and the 2018 Rush Meadows Spillway modifications.

Conclusion

Based upon ESSLIA’s long historical engagement with relevant local, regional and national agencies and our long history of concern and care for Rush Creek and Silver Lake, it is our hope that FERC will take our recommendations- ongoing measurement and monitoring, and licensing required periodic dredging- very seriously.

ESSLIA will continue to pursue our objective to preserve and protect the Rush Creek and Silver Lake waterways and natural environs. With recreational fishing serving as a one of Mono County's primary tourism drivers and Silver Lake being a noted rainbow and brown trout fishery, these waters certainly merit every protection possible. We look forward to working with others who share our concern for Rush Creek and Silver Lake to ensure these natural resources will be enjoyed for many generations of visitors and Mono County residents alike.

Respectfully submitted,



Mark Shoemaker
ESSLIA President

**Joint Letter from June Lake Regional Planning Advisory
Committee, Friends of the Inyo, American Rivers, and
the California Sportfishing Protection Alliance**



American Rivers
Rivers Connect Us®



**FRIENDS
OF THE INYO**
SINCE 1986

*June Lake Regional
Planning Advisory
Committee*

August 29, 2022

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, D. C. 20426
Via Electronic Filing

Re: Comments of June Lake Regional Planning Advisory Committee (JLRPAC), Friends of the Inyo (FOI), American Rivers (AR) and the California Sportfishing Protection Alliance (CSPA) on Scoping Document 2 and the Proposed Study Plan for the relicensing of the Rush Creek Hydroelectric Project, P-1389-059

Dear Ms. Bose:

June Lake Regional Planning Advisory Committee (JLRPAC), Friends of the Inyo (FOI), American Rivers (AR) and the California Sportfishing Protection Alliance (CSPA) respectfully submit these comments on Scoping Document 2 (SD2)¹ and the Proposed Study Plan² for the relicensing of the Rush Creek Hydroelectric Project, P-1389-059, located in Mono County, California and owned and operated by Southern California Edison (SCE).

I. Comments on Scoping Document 2

We appreciate the consideration of the Commission of the comments we submitted on Scoping Document 1,^{3,4,5} including modification of the study plan to include effects of construction on flood control in the Water Resources section and to include effects of the project on the Sierra Nevada red fox in the Terrestrial Resources section.⁶ However, we do wish to address the Commission's response to our comments on decommissioning.

¹ See Scoping Document 2, Rush Creek Hydroelectric Project, P-1389, California (May 27, 2022), eLibrary accession no. 20220527-3004.

² See Rush Creek Hydroelectric Project, FERC Project No. 1389-059; Proposed Study Plan (May 26, 2022), eLibrary accession no. 20220526-5149.

³ See Comments of American Rivers and California Sportfishing Protection Alliance on Scoping Document 1 for the relicensing of the Rush Creek Hydroelectric Project under P-1389, eLibrary accession no. 20220415-5011.

⁴ See Comments on Scoping Document for Friends of the Inyo, eLibrary accession no. 20220415-5200.

⁵ See JLRPAC, Rush Creek Partners, David Rosky comments on Scoping SD1 and PAD, eLibrary accession no. 20220415-5211.

⁶ See SD2, p.9

A. Consideration of Full Decommissioning as a Reasonable Alternative

The Commission has declined to include decommissioning as a reasonable alternative because it was not proposed by the licensee, and because “it is premature to demonstrate whether any potential serious resource issues exist that could not be mitigated with appropriate measures to include in any license issued for the project that would make decommissioning a reasonable alternative”.⁷ The Commission also states, “Commission policy is to not recommend requests for decommissioning cost studies and/or establishment of decommissioning funds where there is no evidence in the project record indicating the life the project will end during the term of any new license that may be issued for the project and there is no indication that the licensee would lack the financial resources if it were to be decommissioned.”⁸ We request that the Commission reconsider this decision for the following reasons.

1. The Commission’s assertion that it is premature to demonstrate resource issues that cannot be mitigated by license terms has merit in the case of actual resource issues. However, resource concerns, which would need to be examined and specified during the study period, are not the reason full decommissioning should be considered as a possible outcome for the Rush Creek project. Instead, there are *existing, already specified* legal disagreements between key stakeholders that are sufficiently serious to have the potential to resolve in a manner unfavorable to relicensing. The nature and depth of these disagreements suggest that their resolution has the potential to result in the inability to issue a new license. Additionally, the disagreements are fundamental in nature, and are not issues that lend themselves to being handled through license terms – they involve the fundamental ability to license the project.

Consideration of decommissioning as a reasonable alternative will lead to increased efficiency in the licensing process. Questions raised by the U.S. Forest Service (USFS) about the legality of the existing FERC license for this project, based on the precedent set by *High Sierra Hikers v. U.S. Forest Service* 436 F.Supp.2d 1117 (E.D. Cal. 2006), suggest the likelihood that full project decommissioning will need to be considered during the licensing process. Inclusion of full decommissioning in the study plan now will help prevent delays and inefficiencies as the licensing process progresses, as might reasonably happen if this study is later found to be necessary and it has not been included now.

2. Although Southern California Edison (SCE) has not proposed consideration of full project decommissioning, including Gem Lake dam, in this licensing proceeding, it had previously requested recovery of decommissioning funds for all three facilities of the Rush Creek project from California Public Utilities Commission (CPUC). According to the CPUC general rate case decision from just last year, “SCE estimates a 50 percent probability of decommissioning” for Gem Lake.⁹ Furthermore, SCE’s own analysis indicates a toss-up between the costs of decommissioning as compared to the costs of

⁷ See SD2, p.7

⁸ *ibid.*

⁹ See Public Utilities Commission of the State of California, Decision on Test Year 2021 General Rate Case for Southern California Edison (Date of issuance Aug 20, 2021). Decision 21-08-036. p.525.
<https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M401/K299/401299406.PDF>

continued operation.¹⁰ Based on SCE’s own studies and requests to the CPUC, the project’s future contains sufficient uncertainty at this point in time such that decommissioning can be identified as a potential reasonable outcome during the coming licensing term and should be considered now.

II. Comments on Proposed Study Plan

A. USFS-proposed study of full decommissioning option

In comments filed in response to Scoping Document 1 and the Pre-Application Document (PAD), the USFS has requested inclusion in the study plan of a study for the evaluation of a full decommissioning option as one of the several possible outcomes for the project. The USFS has submitted a Technical Study Plan proposal in support of this, following the Commission’s required format. This study request was supported by numerous additional stakeholders in comments filed in response to SD1 and the PAD. The rationale for requesting this study was that there are known and specific legal disagreements between the licensee and managing agency which could potentially impact the ability to relicense the project. These legal issues are as yet unresolved, and there is no firm timeline for their resolution. Normal prudence would dictate that under such circumstances, outcomes where issuing a new license is not possible should be accounted for during the technical study phase.

SCE declined to include this study in the Proposed Study Plan. It states: “SCE disagrees with the Forest Service’s view that there is uncertainty regarding the pathway to relicense the Project in the Wilderness.”¹¹ SCE is not the arbiter of this legal question, however, and prior to any full resolution of the dispute, its view does not supersede the view and legal opinion of the USFS. A fundamental disagreement still exists, and this disagreement reinforces rather than negates the possibility of future litigation.

Additionally, SCE’s denial of USFS’s study plan request ignores the fact that SCE itself has in fact already undertaken a decommissioning study, which was submitted to CPUC as part of the 2021 General Rate Case proceeding.¹² Despite SCE’s statements to the contrary in its response to USFS, it would appear the licensee considered decommissioning as a sufficiently viable option to be studied. All stakeholders in the licensing proceeding should have access to this information, and it should be provided to the Commission in order to better facilitate an informed licensing decision.

We recognize the possibility that some of the data and other information in SCE’s study submitted to the CPUC may have changed somewhat over the past few years, and that the format and parameters of the existing study may be different than what is required of a similar study for relicensing purposes. Nevertheless, the foundational work for evaluating the option of full decommissioning has been performed. As such, while the previously described rationale alone justifies including the USFS-requested study in the Final Study Plan, it is also

¹⁰ *ibid*, p.525

¹¹ See Proposed Study Plan, p.3

¹² See Southern California Edison, Excerpt of Workpapers for SCE-05 Vol. 01; Generation Book A: Pages 113-194 and Book B: 2 - 162; Public. CPUC Application No. A.19-08-013. p.124.

<https://docs.cpuc.ca.gov/PublishedDocs/SupDoc/A1908013/2854/341370286.pdf>

the case that much of the foundational work for such a study has already been carried out by SCE.

Comment 1

We respectfully request that the Commission consider the above rationale, and the factors that are unique to this case, and therefore require SCE to perform the USFS-proposed decommissioning study as part of the final study plan.

Thank you for the opportunity to comment on Scoping Document 2 and the Proposed Study Plan.

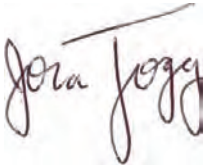
Respectfully,



Colleen McNally-Murphy
Assoc. National Director, Hydropower Reform
American Rivers
1101 14th St. NW, Suite 1400
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David Rosky
Rush Creek Relicensing Contact
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Chris Shutes
FERC Projects Director
California Sportfishing Protection Alliance
1608 Francisco St.
Berkeley, CA 94703

Attachments:

Attachment A: Public Utilities Commission of the State of California (CPUC), Decision on Test Year 2021 General Rate Case for Southern California Edison

Attachment B: Southern California Edison, Excerpt of Workpapers for SCE-05 Vol. 01; Generation Book A: Pages 113-194 and Book B: 2 - 162; Public.

Note: SCE has not included Attachments A and B referenced in this comment letter. These attachments can be obtained from FERC's eLibrary by searching docket P-1389 or Accession No. 20220829-5167.

State Water Resources Control Board



State Water Resources Control Board

August 29, 2022

Wayne P. Allen
Principal Manager, Regulatory Support
Services
Southern California Edison Company
1515 Walnut Grove Avenue
Rosemead, CA 91770
Sent via email: Wayne.Allen@sce.com

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington D.C. 20426
Via e-filing

**Rush Creek Hydroelectric Project
Federal Energy Regulatory Commission Project No. 1389
Mono County
Rush Creek**

COMMENTS ON RUSH CREEK HYDROELECTRIC PROJECT PROPOSED STUDY PLAN

Dear Mr. Allen and Secretary Bose,

On May 26, 2022, the Southern California Edison Company (SCE) submitted a Proposed Study Plan (PSP) for the Rush Creek Hydroelectric Project (Project). The PSP outlines proposed environmental resources studies for Project relicensing and provides SCE's responses to agency study requests and comments on the Pre-Application Document (PAD).

State Water Resources Control Board (State Water Board) staff reviewed the PSP and have one comment. In its PAD, SCE proposed one year of water quality monitoring in the AQ4 – Water Quality Technical Study Plan (Water Quality TSP). State Water Board staff comments on the PAD stated that one year of data collection is not sufficient to analyze Project impacts on water quality. SCE did not incorporate this request into the Water Quality TSP. SCE's response to this comment states:

“The TSP includes a statement that ‘If potential water quality issues are identified, additional follow-up sampling may be necessary. Additional sampling, if necessary, will be determined in consultation with the resource agencies and other interested parties.’

SCE recommends evaluation of 2023 water quality sampling results be completed in consultation with State Water Board, resource agencies, and

Comment 1

[Technical Working Group] participants to determine if a second year of data collection (2024) is necessary.”

State Water Board staff would like to reiterate the insufficiency of only one year of water quality monitoring. One year of data is not adequate to inform water quality protection measures needed, in a water quality certification, over the 30–50-year Project license term. This limited data sample could allow anomalous conditions to misrepresent Project impacts. Further, one year of sampling does not allow analysis of Project impacts in different water year types.

State Water Board staff recognize that the Water Quality TSP allows for additional monitoring if needed. However, this does not guarantee additional monitoring. This could also extend the relicensing process if agency staff and SCE disagree on the need for additional monitoring and require dispute resolution. Staff request that SCE revise the Water Quality TSP to include a minimum of two years of water quality monitoring.

State Water Board staff appreciate the opportunity to comment on the PSP. As the studies proceed, the need for additional information may occur; staff will make every effort to identify information needs as early as possible. Staff also appreciate SCE engaging stakeholders in early relicensing activities and its continued effort to work collaboratively with the State Water Board and other relicensing participants.

If you have questions regarding this letter, please contact Savannah Downey, Project Co-lead, by email at Savannah.Downey@waterboards.ca.gov. Written correspondence should be directed to:

State Water Resources Control Board
Division of Water Rights – Water Quality Certification Program
Attn: Savannah Downey
P.O. Box 2000
Sacramento, CA 95812-2000

Sincerely,



Savannah Downey, Environmental Scientist
Water Quality Certification Program
Division of Water Rights

ec: Continued on next page.

Comment 1

Mr. Wayne P. Allen

August 29, 2022

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United States Forest Service

**File Code:** 2770**Date:** August 29, 2022

Wayne Allen
Principal Manager, Southern California Edison
1515 Walnut Grove Ave.
Rosemead, CA 91770

Dear Mr. Allen:

This letter provides comments on Southern California Edison's Company's (SCE or Licensee) proposed relicensing studies for the Rush Creek Hydroelectric Project, FERC No. 1389. These studies were originally described in the Pre-Application Document Appendix C "Licensee's Proposed Relicensing Study Plan," but have since been slightly modified by SCE in response to comments from relicensing participants. This response is being submitted by the USDA Forest Service, Inyo National Forest, hereafter referred to as "Forest Service," to comply with the Federal Energy Regulatory Commission's (FERC) July 23, 2003 Final Rule at §5.12, 90 day response period according to the published process plan and schedule.

Since the filing of its proposed Study Plan, SCE and the relicensing participants have met a handful of times to discuss SCE's proposals, discuss details and timing, and to seek consensus.

Comment 1

In general SCE's study plan provide a general framework of proposed goals and methods to investigate various issues. These proposals are intended to be further developed in collaboration with relicensing participants. However, at present, there are inconsistencies between plans as some are well described, while others provide generic frameworks and do not give sufficient detail of the kind of products that will be produced, or how this information relates to project operations or future alternatives. Moreover, no study plan currently proposed by SCE addresses

Comment 2

consistency for the non-conforming project works in wilderness, or investigates the effects of decommissioning these features. The Forest Service reiterates its previous request for the proposed LAND3 study, as this information is necessary to investigate project alternatives that conform with the Wilderness Act.

Comment 3

Further, SCE's study proposals AQ-4 and AQ-6, to investigate seasonal water quality parameters and fish populations within the project reservoirs propose the use of motorized watercraft within Gem Lake. Gem Lake is part of the Ansel Adams Wilderness, where motorized vehicle use is prohibited. The Forest Service and SCE met to discuss how to meet the needs of SCE's proposed studies without motorized vehicle use. Based on our conversations with SCE, California Department of Fish and Wildlife, and our analysis, the Forest Service has determined that sufficient alternative non-motorized access methods exist and could be used to collect the data associated with AQ-4 and AQ-6, if approved.



Wayne Allen

2

Comment 4

In a related note, for study elements proposed within the Ansel Adams Wilderness, SCE needs to provide a complete catalog of all temporary installations or equipment including but not limited to: transect markers, their locations, timeline of scheduled use, and recommend disposal methods or removal prior to any installation. The Forest Service shall review all requested installations and use of motorized equipment prior to study implementation and requires confirmation of removal of any temporary installations at the end of the study period. Forest Service personnel will continue to assess the plans as they are updated in response to the Revised Study Plan.

We look forward to working with the Licensee on this project. If you have any questions regarding this filing, please contact Sheila Irons, Inyo National Forest Lands Officer, at 760-965-9609 or by electronic mail at sheila.iron@usda.gov.

Sincerely,

LESLEY
YEN

Digitally signed by
LESLEY YEN
Date: 2022.08.29
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LESLEY YEN
Forest Supervisor

Cc: FERC Service List
Stephanie Heller, Mono Lake District Ranger

ATTACHMENT B

Revised Study Plans

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Attachment B

Revised Study Plans

B.1 INTRODUCTION

Southern California Edison Company (SCE) developed 15 Technical Study Plans to address data gaps in existing information such that sufficient information is available to evaluate potential Project impacts and collaborate on the Proposed Project included in the License Application. The study plans are organized into five major resource areas – Aquatic, Cultural and Tribal, Land, Recreation, and Terrestrial. The plans are identified below and are provided in their entirety herein.

Aquatic Resources
AQ 1 – Instream Flow AQ 2 – Hydrology AQ 3 – Water Temperature AQ 4 – Water Quality AQ 5 – Geomorphology AQ 6 – Fish Population and Barriers AQ 7 – Special-status Amphibians
Cultural and Tribal Resources
CUL 1 – Built Environment CUL 2 – Archaeology TRI 1 – Tribal
Land Resources
LAND 1 – Aesthetics LAND 2 – Noise
Recreation Resources
REC 1 – Recreation
Terrestrial Resources
TERR 1 – Botanical TERR 2 – Wildlife

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AQ 1 – INSTREAM FLOW TECHNICAL STUDY PLAN

**Rush Creek Hydroelectric Project
FERC Project No. 1389**



September 2022

AQ 1 – Instream Flow Technical Study Plan

POTENTIAL RESOURCE ISSUES

- Modification of aquatic and riparian habitat.
- Suitable channel maintenance flows (sediment scour/deposition).
- Rush Creek channel within the former lakebed of Waugh Lake.
- Localized flooding adjacent to the lower Rush Creek and South Rush Creek channels near State Route 158 (SR-158).

PROJECT NEXUS

- Project operations modify the flow regime in Project-affected stream segments.¹ The modified flow regime may affect the amount and distribution (temporal and spatial) of aquatic and riparian habitat, and channel maintenance (sediment scour/deposition).
- The Proposed Project would eliminate storage in Waugh Lake thereby reestablishing a permanent stream channel (Rush Creek) in the former lakebed (potential restoration site).
- The loss of reservoir storage under the Proposed Project may influence localized flooding adjacent to the lower Rush Creek and South Rush Creek channels near SR-158 in high-runoff years (potential enhancement site).

RELEVANT INFORMATION

The following information is available to characterize instream flows in the vicinity of the Rush Creek Project (refer to Southern California Edison Company's [SCE] Pre-Application Document [PAD] Section 2.7 for a summary of instream flow requirements [SCE 2021]):

- Section 2.0, Project Location, Facilities, and Operation, and Section 4.3, Water Use and Hydrology of the Rush Creek PAD, present a summary of Project operations and water use; available stream gage data; and daily historical, existing, and unimpaired hydrology for Project-affected stream segments and Project reservoirs.
- PAD Section 4.5, Fish and Aquatics presents a summary of fish population and instream flow information.

¹ Stream segments as used in this document are typically long sections of stream with a relatively homogeneous flow regime. Segments may be subdivided into smaller reaches for study and/or due to fluvial geomorphology (e.g., stream gradient, channel confinement).

- Federal Energy Regulatory Commission (FERC) Environmental Assessment for Hydropower License, Rush Creek Project, FERC Project No. 1389 (FERC 1992).
- FERC Relicensing Studies (EA Engineering Science and Technology 1986, 1987) related to instream flows.
- Gaging data from United States Geological Survey (USGS), SCE, and Los Angeles Department of Water and Power (LADWP).

POTENTIAL INFORMATION GAPS

- Updated information on the relationship between instream flow and aquatic and riparian habitat.
- Data on potential flow fluctuations in Rush Creek downstream of the Rush Creek Powerhouse Tailrace.
- Availability of appropriate channel maintenance flows.
- Hydraulic information necessary to evaluate: (1) potential restoration of the Rush Creek channel within the former lakebed of Waugh Lake; and (2) potential enhancement of the Rush Creek and South Rush Creek channels near SR-158 to address localized flooding.
- Hydraulic information necessary to evaluate potential scour/deposition of sediment in Rush Creek near the Silver Lake inlet.

STUDY OBJECTIVES

- The overall study objective is to:
 - Characterize aquatic and riparian habitat and channel maintenance as a function of flow using ecological principles and hydraulic/habitat modeling (e.g., Bovee et al. 1998), and
 - Provide hydraulic modeling data, as needed, to evaluate:
 - Potential restoration of the Rush Creek channel within the former lakebed of Waugh Lake;
 - Potential enhancement of the Rush Creek and South Rush Creek channels near SR-158 to address localized flooding; and
 - Sediment scour/deposition in Rush Creek near the Silver Lake inlet.

EXTENT OF STUDY AREA

- The study area for evaluation of the instream flow is the Project-affected stream segments identified in Table AQ 1-1 and Map AQ 1-1.
- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain) or on private property for which SCE has not received specific approval from the landowner to enter the property to perform the study.
- For study elements proposed within the Ansel Adams Wilderness, SCE will provide a complete catalog of all temporary installations or equipment including, but not limited to, transect markers, their locations, timeline of scheduled use, and recommended disposal methods or removal, prior to any installation. SCE will also provide confirmation of removal of any temporary installations to the Forest Service at the end of the study period.

STUDY APPROACH

INSTREAM FLOW MODELING

The following describes the instream flow habitat modeling approach which includes:

- Summary of the previous Instream Flow Incremental Methodology (IFIM) study;
- Selection of stream segments for modeling;
- Quantification of habitat versus flow relationships in the selected stream segments including:
 - Characterization of flow versus aquatic habitat in selected stream segments;
 - Characterization of flow versus riparian habitat stage-discharge relationship and high flow recession rates at selected transects; and
 - Characterize flow versus initiation of sediment movement and bankfull flow data for selected transects.

Previous IFIM Study

- Summarize the instream flow modeling that was developed during the previous relicensing effort (EA Engineering, Science, and Technology 1986) in Rush Creek below Rush Meadows Dam, including:
 - Data collection locations
 - Calibration flows
 - Target species and life stages

- Habitat Suitability Criteria (HSC) curves
- Weighted usable area (WUA) curves
- Rationale/criteria for establishment of the current minimum instream flows, if available

Selected Stream Segments

- Model instream flow hydraulics and/or habitat in the following Project-affected stream segments (see Table AQ 1-1; Map AQ 1-1).
- Model additional locations/cross-sections identified in the TERR 1 – Botanical Technical Study Plan (TSP) and AQ 5 – Geomorphology TSP related to initiation of sediment motion / bankfull flow and riparian community inundation.

Quantification of Habitat Versus Flow Relationships

Target Species / Life Stages/ Habitat Suitability Criteria

- The target species and life stages for instream flow habitat modeling will be finalized in collaboration with interested resource agencies and stakeholders (Aquatic Technical Working Group meetings) based on management importance and/or sensitivity to Project operations.
 - SCE proposes to model rainbow trout and brown trout² life stages (juvenile rearing, adult rearing, and spawning/incubation life stages) and potentially brook trout life stages in the selected Project-affected stream segments as follows:
 - SCE proposes to use the rainbow trout HSC recently developed in collaboration with resource agencies for the Placer County Water Agency (PCWA) Middle Fork Project relicensing (PCWA 2011).
 - SCE proposes to use HSC developed from the brown habitat use data (fish observed data) presented in Smith and Aceituno (1987).
 - SCE proposes to evaluate available use data and/or HSC data for brook trout and determine if suitable brook trout HSC can be developed from the existing resources. Limited data is available for brook trout in western streams.
 - Sierra Nevada yellow-legged frogs (SNYLF) will only be modeled (using existing habitat suitability information³) if occupied breeding and rearing habitat

² Model brown trout in stream segments where they are known to occur and a management priority.

³ Habitat characteristics required by Sierra Nevada yellow-legged frogs (e.g., US Fish and Wildlife Service. 2016. Designation of Critical Habitat for the Sierra Nevada Yellow-Legged Frog, the Northern Distinct Population Segment of the Mountain Yellow-Legged Frog, and the Yosemite Toad; Final Rule. Federal Register, Vol. 81, No. 166, Pages 59046–59119. August 26, 2016.)

is identified in Project-affected stream segments/reaches⁴ as part of implementation of the AQ 7 – Special-status Amphibians TSP.

- Generate a species distribution map and life stage periodicity chart (i.e., season of occurrence) for fish, special-status amphibians, and riparian resources within Project-affected stream segments/reaches based on existing information (e.g., literature and agency consultation) and results from implementation of the AQ 6 – Fish Population and Passage TSP, AQ 7 – Special-status Amphibian TSP, and TERR 1 – Botanical Resources TSP.

Data Collection and Sampling Approach for Hydraulic and Aquatic Habit Modeling

- Data collection for hydraulic and aquatic habitat modeling will be accomplished at representative mesohabitat types (see AQ 5 – Geomorphology TSP) to support one-dimensional hydrodynamics and habitat models (Table AQ 1-1). However, in some reaches two-dimensional models will be used, particularly where other issues such as channel enhancement/restoration or sediment scour/deposition are also being addressed (Table AQ 1-1). In plunge pool habitats, empirical hydraulic and habitat data will be collected.
 - Data from each mesohabitat type will be weighted and combined to develop a representation of hydrodynamics and habitat for the larger stream segment.
 - The weighting will be based on the percentage of each mesohabitat within the stream segment.
- Within a stream segment, mesohabitat types will be sampled approximately in proportion to their abundance.
 - Adjustments to the proportional sampling may be made based on the importance or variability of particular mesohabitat types.
 - Typically, ten mesohabitat units within a stream segment will be sampled (modeled). This provides enough sampling to replicate each major mesohabitat type (e.g., two mesohabitat samples of each type) and provides for additional sampling in abundant and/or important mesohabitat types (e.g., three or more mesohabitat samples of abundant and/or important types).
 - Each major mesohabitat type (greater than approximately 5–10% of the geomorphic/hydrologic stream segment) will be modeled (see below for exceptions).

⁴ Reaches as used in this document are shorter sections of river within a longer stream segment (length of stream with homogeneous flow) that are delineated due to differences in fluvial geomorphology (e.g., stream gradient, channel confinement) or locations selected for collection of study data.

- Rare mesohabitat types (<5%) that provide unique or important habitat (e.g., spawning, passage) will be modeled, if present in the study site. In particular, patches of spawning gravel may be important habitat features to sample in the study sites.
 - Mesohabitat types (e.g., cascades, falls/chutes) that do not contain significant habitat for the primary target species or rare mesohabitat types (<5%) that do not have unique habitat importance will not be modeled.
- SCE will make the initial selection of the mesohabitat units to sample based on selecting representative units in areas that facilitate access. Final selection of the mesohabitat units for modeling will be completed in collaboration with interested resource agencies and stakeholders. SCE does not recommend random sampling of mesohabitat units because unrepresentative results could occur due to small sample size.
- Data collection in mesohabitat units will incorporate the following approach:
 - Typically, one to three cross-sections will be placed in each mesohabitat unit to represent habitat over a range of flows for one-dimensional modeling.
 - Fewer cross-sections may be placed in simple mesohabitat units with little variability or where the cross-sections are being placed to sample a variety of mesohabitat units of a particular type and not necessarily to fully characterize a specific mesohabitat unit.
 - In some cases, additional cross-sections may be placed in highly variable mesohabitat units, if appropriate.
 - Where two-dimensional hydraulics and habitat modeling are conducted, the entire habitat units will be represented.
 - Channel topography will generally be in the form of cross-sections (1-D). Cross-sections will be marked with semi-permanent headpins and GPS locations will be recorded. In the case of two-dimensional modeling, topography will be collected as topographic surveys and break lines.
 - Empirical water surface elevations will be measured (surveyed) for at least three calibration discharges at each cross-section for one-dimensional modeling and at least two calibration discharges along the length of the two-dimensional modeling reaches. The discharges will span the range of flows of interest (Table AQ 1-1,). The calibration flows will be determined in consultation with interested resource agencies and stakeholders once the Project hydrology has been compiled (AQ 2 – Hydrology TSP). For reference, Table AQ 1-2 provides unimpaired flow at various exceedance values at four locations on Rush Creek.

- Empirical velocity data will be collected across each cross-section (15–20 cells/locations) at typically the high calibration discharge for one-dimensional modeling and, validation velocity data (collected on cross-sections), will be collected for two-dimensional modeling. However, because of the difficult access and steep channels the medium calibration discharge will be used unless the high flow calibration flow is safe and to access (Table AQ 1-1).
 - All velocities will be collected with calibrated velocity meters. Discharges will be measured using standard gaging techniques (e.g., Rantz 1982).
- In steep gradient reaches, plunge pool mesohabitat units will be empirically mapped at the same calibration flows proposed for hydrodynamics modeling (Table AQ 1-1). The amount of the plunge pool rearing habitat for fish species will be mapped at each flow. A flow versus habitat area relationship will be estimated for each individual plunge pool and the habitat versus flow relationships will be integrated into the stream segment-wide habitat versus flow relationships.

Evaluation of Silver Lake Backwater Effects

- To assess the effects of Silver Lake water surface elevations on upstream hydraulics (backwater effects) and flow fluctuations below the Rush Creek Powerhouse, develop an hourly time series of water surface and discharge as follows:
 - Install pressure transducers (≤ 15 minute data collection) at the Silver Lake outflow and in the Rush Creek channel in two locations upstream of Silver Lake (near SR-158 downstream of the powerhouse tailrace, near the instream flow site upstream of the Silver Lake inlet).
 - Verify that the LADWP Rush Creek gage above Grant Lake collects 15-minute data, if not, then install a pressure transducer at the gage location.
 - Develop a stage-discharge relationships at each stage recording location, as necessary.

Hydrodynamics Modeling

- PHABSIM (e.g., Milhous et al. 1989) or equivalent one-dimensional or two-dimensional hydraulics modeling procedures will be used for modeling water surface elevations and velocities across each cross-section. These procedures include stage-discharge regressions, Manning's equations, backwater step models (e.g., WSP, HEC-RAS), IFG4, and/or two-dimensional models.
- Hydrodynamics (depth, velocity, water surface elevations) will be modeled over a range of discharges, appropriate to the Project hydrology for each stream segment (Table AQ 1-1).

Habitat Modeling

- Habitat modeling will be conducted using an approach consistent with the IFIM approach (Bovee et al. 1998). The general approach will be as follows:
 - Collect substrate and cover information for habitat modeling across each cross-section (1-D) or throughout the modeled channel (2-D) that is compatible with the HSC criteria.
 - Develop habitat modeling approaches appropriate for each selected species and life stage.
 - Develop habitat versus flow relationships for each species life stage over a wide range of flows (15-30 flows).
 - Complete a habitat time series analysis comparing the seasonal and daily distribution of habitat under Proposed Project, historical, existing, and unimpaired hydrology.
 - Compare and contrast the amount of habitat during different biologically significant time periods (e.g., reproduction, rearing) and identify potential habitat limiting factors and time periods.
 - In Rush Creek downstream of the Rush Creek Powerhouse, characterize the effects of flows and flow fluctuations on Silver Lake / Rush Creek stage. Also, incorporate the AQ 2 – Hydrology TSP operations model sub-daily flow analysis based on existing and Proposed Project operations, into the habitat modeling to address potential effects of flow fluctuations on fish habitat.
- Develop wetted perimeter versus flow relationships in the selected stream segments to characterize available habitat for other aquatic species (i.e., macroinvertebrates and amphibians) under different flow regimes.
- Identify the time periods, flow conditions, and life stages when habitat may be a limiting factor for fish, special-status amphibians, benthic macroinvertebrates, and riparian resources under historical, existing, Proposed Project, and unimpaired hydrology.
- Develop analytical tools to quantify the potential effects of other alternative flow scenarios on aquatic and riparian habitat for use during preparation of the License Application.

Empirical Plunge Pool Modeling

- Representative plunge pools will be selected (Table AQ 1-1) in steep gradient reaches and mapped at calibration flows for hydrodynamics modeling. The amount of the plunge pool that provides rearing habitat for fish species (not too shallow or turbulent) will be mapped. A flow versus suitable habitat area relationship will be estimated for each individual plunge pool and based on the average of all plunge pools mapped.

Riparian and Sediment Transport Modeling

- Characterize flow versus riparian habitat stage-discharge relationship and high flow recession rates at selected transects identified in the TERR 1 – Botanical Resources TSP.
- Characterize flow versus initiation of sediment movement and bankfull flow data at selected transects identified in the AQ 5 – Geomorphology TSP.

EVALUATION OF POTENTIAL RUSH CREEK CHANNEL RESTORATION IN THE FORMER LAKEBED OF WAUGH LAKE

The following describes the collection/analysis of information to evaluate potential restoration of the Rush Creek channel in the former lakebed of Waugh Lake including:

- Summarize the unimpaired hydrology developed in the AQ 2 – Hydrology TSP.
- Collect detailed topographic data for the channel using a combination of methods, including Light Detection and Ranging (LiDAR), aerial photogrammetry and supplemental total station surveys, as needed.
- Characterize/map the channel and floodplain substrate for hydraulic roughness characterization and erosion modeling.
- Collect model calibration water surface elevations along the channel at, at least two different flows.
- Use HEC-RAS 1D/2D and River2d (if needed) to characterize channel hydraulics (stage-discharge relationships along the channel) and erosion potential over the range of unimpaired flows (e.g., 10% to 90% exceedance flows).

EVALUATION OF POTENTIAL ENHANCEMENT OF RUSH CREEK AND SOUTH RUSH CREEK CHANNELS NEAR SR-158

The following describes the collection/analysis of information necessary to identify/evaluate potential enhancement of the Rush Creek/South Rush Creek channels near SR-158 to address potential local flooding during high-runoff events including:

- Summarize local hydrology in Rush Creek and South Rush Creek near SR-158, Rush Creek Powerhouse Tailrace, Reversed Creek, and inflow to Silver Lake developed in the AQ 2 – Hydrology TSP for historical, existing, Proposed Project, and unimpaired hydrology.
- Collect detailed topographic information for South Rush Creek near SR-158 and the needed cross-sections/topography in the Rush Creek and powerhouse tailrace channels, using a combination of LiDAR, aerial photogrammetry, and total station surveys, as needed.
- Characterize/map the channel and floodplain channel substrate and riparian vegetation (see TERR 1 – Botanical TSP) suitable for hydraulic roughness characterization.
- Collect model calibration water surface elevations along the channel at, at least two different flows.
- Use the stage-discharge relationship of Silver Lake over a range of flows (developed above) to incorporate backwater effects in the channel hydraulic modeling.
- Identify current channel conditions (i.e., downed trees, sediment, riparian encroachment, culverts) which impede flows in Rush Creek and South Rush Creek near SR-158 (see TERR 1 – Botanical TSP for riparian vegetation characterization and AQ 5 – Geomorphology TSP for channel and large woody debris characterization).
- Use HEC-RAS 1D/2D and River2d (if needed) to characterize channel and culvert hydraulics and identify potential flooding near SR-158 under the Proposed Project, existing, historical and unimpaired hydrology.
- Potential enhancements (e.g., berms, channel modification, clearing of the channel) for Rush Creek and South Rush Creek channels will be developed, as appropriate, during preparation of the License Application.

RUSH CREEK AT THE SILVER LAKE INLET

The following describes the collection/analysis of information necessary to evaluate hydrology related scour/deposition of sediment in the Rush Creek channel near the inlet of Silver Lake:

- Summarize the Rush Creek inflow hydrology to Silver Lake developed in the AQ 2 – Hydrology TSP for historical, existing, Proposed Project, and unimpaired hydrology.
- Collect detailed topographic information for Rush Creek near the inlet using a combination of LiDAR, aerial photogrammetry, total station surveys, and/or GPS tagged sonar, as needed.
- Characterize/map the channel and floodplain channel substrate and riparian vegetation (see TERR 1 – Botanical TSP) suitable for hydraulic roughness characterization.
- Collect model calibration water surface elevations along the channel at, at least two different flows.
- Use the stage-discharge relationship of Silver Lake over a range of flows (see above) to incorporate backwater effects in the channel hydraulic modeling.
- Use HEC-RAS 1D/2D and River2d (if needed) to characterize channel hydraulics and identify potential sediment scour/deposition conditions under the Proposed Project, existing, historical and unimpaired hydrology.

REPORTING

- Study methods and results will be documented in an AQ 1 – Instream Flow Technical Study Report (TSR). The TSR will include summary tables and maps, as appropriate.
- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

SCHEDULE

Date	Activity
September–November 2022	Select Project-affected stream segments for instream modeling, complete mesohabitat mapping, and select study sites
January–April 2023	Consult with the interested resource agencies and stakeholders regarding target species and life stages, habitat suitability criteria, and habitat modeling methods
April–October 2023	Conduct field data collection (topography, water surface elevations, velocities, substrate/cover)
October 2023–February 2024	Analyze data and prepare draft report

Date	Activity
March 2024	Distribute draft report to resource agencies and stakeholders
April–June 2024	Resource agency and stakeholders review and provide comments on draft report (90 days)
June–July 2024	Resolve comments and prepare final report
August 2024	Distribute final report in Draft License Application

REFERENCES

- Bovee, K.D., B.L. Lamb, J.M. Bartholow, C.B. Stalnaker, J. Taylor and J. Henriksen. 1998. Stream habitat analysis using the instream flow incremental methodology. U.S. Geological Survey, Biological Resources Division Information and Technology Report USGS/BRD-1998-0004. 131 p.
- EA Engineering, Science, and Technology. 1986. Instream flow and fisheries studies for the upper Rush Creek Hydroelectric Project. Lafayette, California, November. 30 pp.
- . 1987. Addendum 1 to instream flow and fisheries studies for the Rush Creek Hydroelectric Project. Lafayette, California. November. 45 pp.
- FERC (Federal Energy Regulatory Commission). 1992. Environmental Assessment for Hydropower License. Rush Creek Project No. 1389. FERC eLibrary No. 19920604-0017.
- Milhous, R.T., M.A. Updike, and D.M. Schneider. 1989. Physical habitat simulation system reference manual -- version II. Washington, DC: U.S. Fish and Wildlife Service. Biological Report 89(16).1-403p.
- PCWA (Placer County Water Agency). 2011. Application for New License. Middle Fork American River Project (FERC Project No. 2079). AQ 1 – Instream Flow Technical Study Report (2010). Exhibit E, Volume 3, Supporting Document B. Filed with FERC February 23, 2011.
- Rantz, S.E. 1982. Measurement and computation of streamflow: Volume 1. Measurements of stage and discharge. United States Geological Survey Water Supply Paper 2175. 284p.
- SCE (Southern California Edison Company). 2021. Rush Creek Project (FERC Project No. 1389) Pre-Application Document. December.
- Smith, G.E., and M.E. Aceituno. 1987. Habitat Preference Criteria for Brown, Brook, and Rainbow Trout in Eastern Sierra Nevada Stream. State of California, Department of Fish and Game Stream Evaluation Report No. 87-2.

TABLES

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Table AQ 1-1. Location of Selected Stream Segments for Instream Flow Modeling.

Stream Segment Name	Segment Length (miles) / River Miles (RM)	Sampling Location River Mile / Site ID	Methods	Purpose	Flow Range of Interest ⁵	Water Surface Elevation Calibration Flows (cfs) ⁶	Velocity Calibration/ Validation Flows (cfs) ⁷
Rush Creek							
Waugh Lake	1.51 (RM 22.24–23.75)	RM 22.24–23.75	HEC-RAS 1D/2D and River2d (if needed)	Hydraulic modeling for potential channel restoration	0.7–189 cfs	1–3 cfs* 7–12 cfs* 50–60 cfs*	7–12 cfs* 50–60 cfs* if safe
Rush Creek below Rush Meadows Dam	1.83 (RM 20.41–22.24)	RM 20.41–22.24	Cross-section hydraulic modeling	Sediment transport, bankfull flow, and riparian vegetation	0.7–189 cfs	1–3 cfs* 7–12 cfs* 50–60 cfs*	7–12 cfs*
Rush Creek Below Gem Dam to the Confluence with Reversed Creek	1.99 (RM 17.49–19.48)	RM 18.40–18.60 and RM 17.50–17.60	Cross-sections in 5 mesohabitat units (pool, run, low and high gradient riffle) in approx. proportion to availability	Hydraulic modeling, aquatic habitat modeling, sediment transport, bankfull flow, and riparian vegetation	1.0–279 cfs	1–4 cfs 13–20 cfs 70–85 cfs	13–20 cfs
		RM 17.65–18.40 and RM 19.18–19.46	5 empirical plunge pool habitats	Empirical aquatic habitat modeling	1.0–279 cfs	1–4 cfs 13–20 cfs 70–85 cfs	13–20 cfs
		RM 17.50–17.60	HEC-RAS 1D/2D	Hydraulic modeling to evaluate potential enhancement of the Rush Creek Channel	1.0–279 cfs	1–4 cfs 13–20 cfs 70–85 cfs	13–20 cfs 70–85 cfs if safe
Rush Creek Powerhouse Tailrace	—	—	HEC-RAS 1D/2D	Hydraulic modeling to evaluate potential backwater effects at the SR-158 culvert	0–100 cfs	10–20 cfs 40–60 cfs 90–100 cfs	— (not needed for this prismatic channel)
Rush Creek Above Silver Lake, including Lake Inlet	1.01 (RM 16.48–17.49)	RM 16.48–17.49	HEC-RAS 1D/2D and River2d (if needed)	<ul style="list-style-type: none"> Hydraulic modeling, aquatic habitat modeling, sediment transport, bankfull flow, and riparian vegetation Hydraulic modeling to evaluate sediment scour/ deposition at Silver Lake Inlet 	1.0–383 cfs	1–6 cfs 25–35 cfs 100–130 cfs	25–35 cfs 100–130 cfs if safe
Rush Creek Below Silver Lake	2.69 (RM 13.20–15.89)	RM 13.20–15.89	Cross-sections in 10 mesohabitat units (e.g., pool, run, low and high gradient riffle) in approx. proportion to availability	Hydraulic modeling, aquatic habitat modeling, sediment transport, bankfull flow, and riparian vegetation	1.0–383 cfs	1–6 cfs 25–35 cfs 100–130 cfs	25–35 cfs
South Rush Creek							
South Rush Creek	0.46 (RM 0.0–0.46)	RM 0.0–0.2	HEC-RAS 1D/2D and River2d (if needed)	<ul style="list-style-type: none"> Hydraulic modeling, aquatic habitat modeling, sediment transport, bankfull flow, and riparian vegetation Hydraulic modeling for potential enhancement of the Rush Creek and/or South Rush Creek channel 	0–60 cfs	0.5–3 cfs* 10–20 cfs* 40–60 cfs*	10–20 cfs* 40–60 cfs* if safe

Notes:
 cfs = cubic feet per second
 RM = River Mile

⁵ 5% to 95% unimpaired flow exceedance values

⁶ Approximate/target flow ranges for hydraulic model data collection. Actual flows at time of data collection may be different.

* Flow data collection dependent on natural flow availability.

⁷ If the high calibration flow is accessible and safe to collect velocity data, collect velocity data at high flow instead of the medium flow. Otherwise collect velocities at medium flow.

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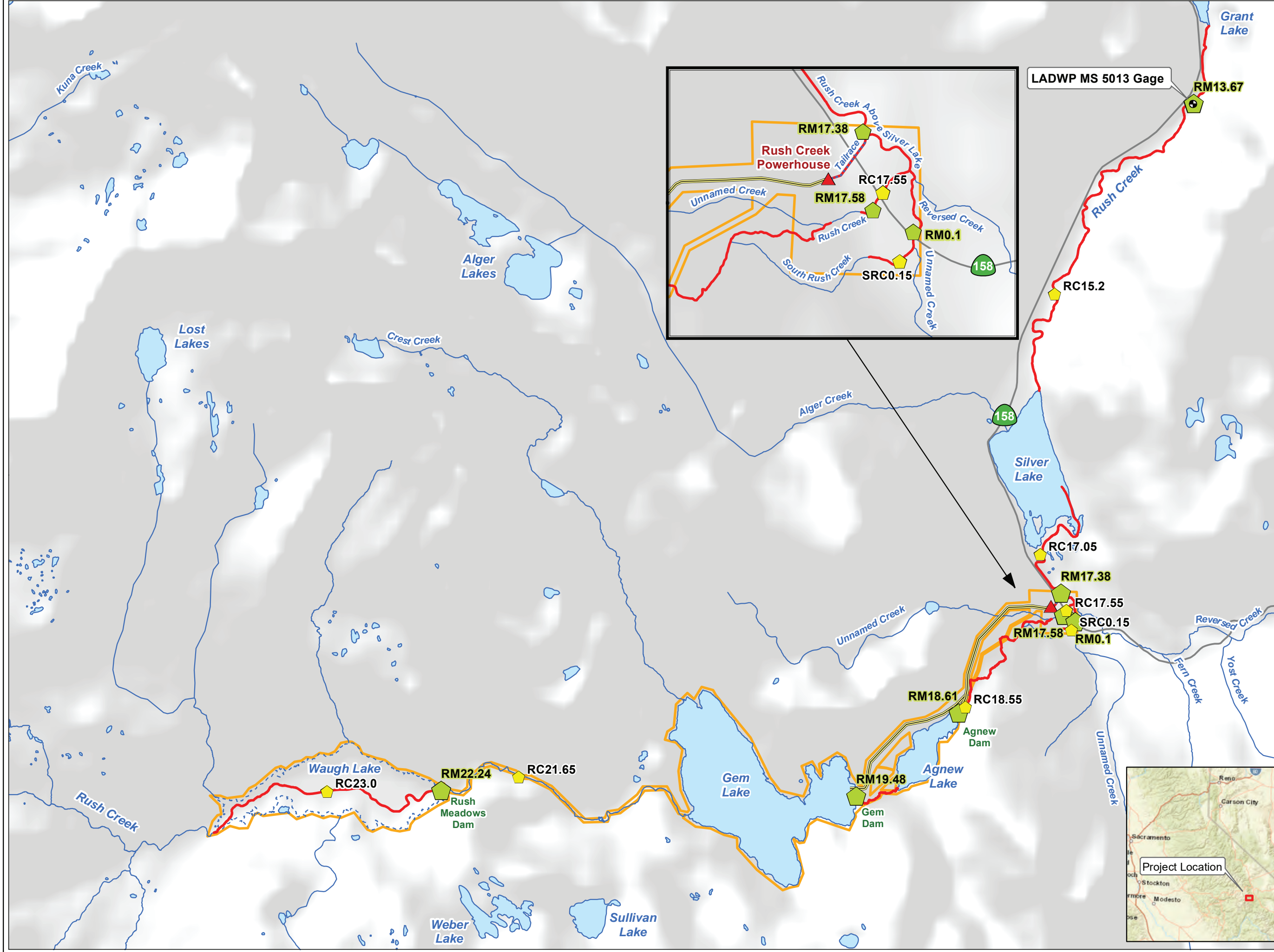
Table AQ 1-2. Unimpaired Flow at Various Exceedance Values at Four Locations on Rush Creek

Exceedance Value (%)	Rush Creek Unimpaired Flow (cfs)			
	Below Rush Meadows Dam	Below Gem Dam	Below Agnew Dam	Below Silver Lake
95	0.7	1.0	1.1	6.5
90	1.2	1.8	1.9	8.2
80	2.5	3.7	3.9	12.0
50	8.9	13.1	13.8	25.5
20	51.7	76.4	80.9	112.6
10	116.0	171.5	181.4	234.2
5	188.5	278.8	294.7	382.9


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MAPS

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- SCE Facilities**
- Dam
 - Powerhouse
 - Flowline / Penstock
 - Tailrace
- Other Features**
- Highway
 - River/Stream
 - Lake/Reservoir
 - Dry Lake/Reservoir
 - FERC Boundary
- Study Sites and Reaches**
- Hydrology Analysis Site
 - Geomorphology/Riparian Site
 - Instream Flow Modeling Reaches




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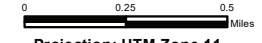
Rush Creek Project (FERC 1389)

Map AQ 1-1


Analysis and Survey Locations



Date: 11/3/2021



Projection: UTM Zone 11
Datum: NAD 83



Project Location

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AQ 2 – HYDROLOGY TECHNICAL STUDY PLAN

**Rush Creek Hydroelectric Project
FERC Project No. 1389**



September 2022

AQ 2 – Hydrology Technical Study Plan

POTENTIAL RESOURCE ISSUES

- Modification of Rush Creek hydrology.

PROJECT NEXUS

- Project operations modify the hydrology in Project-affected stream segments¹ and Project reservoirs.

RELEVANT INFORMATION

The following information is available to characterize hydrology in the vicinity of the Rush Creek Project (refer to Southern California Edison Company's [SCE] Pre-Application Document [PAD] Section 4.3 for a summary of water use and hydrology information [SCE 2021]).

- Gaging data from United States Geological Survey (USGS), SCE, and Los Angeles Department of Water and Power (LADWP).
- Section 2.0 Project Location, Facilities, and Operation, and Section 4.3, Water Use and Hydrology of the Rush Creek PAD, presents a summary of Project operations and water use; available stream gage data; and daily historical, existing, and unimpaired hydrology for Project-affected stream segments and Project reservoirs.
- Hydrological analysis methodologies (Chen et al. 2017; England et al. 2018; Flynn et al. 2006; Gotvald et al. 2012; Richter et al. 1996; Veilleux et al. 2014).

POTENTIAL INFORMATION GAPS

- Modeled Proposed Project, historical, and existing hydrology, and refinement (as needed) of the analysis of unimpaired hydrology presented in the PAD Section 4.3 (SCE 2021).
- Hydrologic alteration analyses and high flow/flood-frequency analyses for the different flow regimes in Project-affected stream segments.
- Hydrology of the lower Rush Creek and South Rush Creek channels near State Route 158 (SR-158) related to potential enhancement.

STUDY OBJECTIVES

- Model the Proposed Project, historical, and existing hydrology, and refine (as needed) the analysis of unimpaired hydrology presented in the PAD Section 4.3 (SCE 2021).

¹ Stream segments as used in this document are typically long sections of stream with a relatively homogeneous flow regime. Segments may be subdivided into smaller reaches for study and/or due to fluvial geomorphology (e.g., stream gradient, channel confinement).

- Perform a hydrologic alteration analysis for the unimpaired, existing, and Proposed Project flow regimes in the select Project-affected stream segments.
- Conduct a high flow/flood-frequency analysis for the different flow regimes in the select Project-affected stream segments.
- Develop hydrology data for the lower Rush Creek and South Rush Creek channels near SR-158 to facilitate the evaluation of potential enhancements to address local flooding of residences during high-runoff events.

EXTENT OF STUDY AREA

- The study area for development of the Proposed Project, historical, existing, and unimpaired hydrology includes Project-affected stream segments (Table AQ 2-1 and Map AQ 2-1). The locations for the hydrological alteration analyses and high flow/flood-frequency analyses are also included in Table AQ 2-1 and Map AQ 2-1.
- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain) or on private property for which SCE has not received specific approval from the landowner to enter the property to perform the study.

STUDY APPROACH

The following describes the study approach for developing Project hydrology; conducting a hydrologic alteration analyses and flood-frequency analyses; developing potential channel enhancement hydrology; and reporting.

HYDROLOGY DEVELOPMENT

- Conduct stakeholder hydrological modeling working group meetings to review and help guide the hydrological modeling approach.
- Use the 2000–2021 period of record (POR) for hydrological modeling based on data availability (historical gage data) (SCE 2021).
- Refine the modeled unimpaired (without the Project²) daily average flow hydrology presented in PAD Section 4.3 for the POR based on modeling working group input, as appropriate.
- Develop and use a spreadsheet operations model (or a HEC-ResSim model, if needed)³, to characterize the Proposed Project (future operations⁴), historical

² The unimpaired hydrology (2000–2019) presented in the PAD represents synthesized instream flows in Rush Creek without the influence of the Rush Creek Project.

³ If limitations in representing the daily hydrology using a spreadsheet model are identified by the stakeholder modeling group, a HEC-ResSim model will be used. The goal of the operations model is to accurately and transparently represent operations.

⁴ The Proposed Project hydrology is the modeled hydrology based on how the Project will be operated in the future with removal of Waugh Lake and the reservoir portion of Agnew Lake and modified operations (including maximum storage) at Gem Lake.

(operations prior to reservoir seismic restrictions⁵), existing (current operations under seismic restrictions⁶) daily average flow hydrology for the POR based on the modeling working group input, as appropriate.

- Downstream of the Rush Creek Powerhouse, incorporate a sub-daily component into the operations model results (post processor) or into the model to characterize the range of flow fluctuations related to powerhouse operations.
- Identify available climate change data / modeling applicable to the Rush Creek Watershed. If data / modeling exists, incorporate, as appropriate, to characterize future climate change hydrology (unimpaired, Proposed Project) over the term of the new license (e.g., 50 years).

HYDROLOGIC ALTERATION ANALYSIS

- Analyze and compare Proposed Project, historical, existing, and unimpaired daily average flows using the following data and approaches in select Project-affected stream segments (Table AQ 2-1 and Map AQ 2-1) (e.g., Richter et al. 1996).
 - Monthly flow exceedance plots / tables for the POR.
 - Time-series plots for the POR.
 - January to December (annual) plots / tables showing mean daily and 95%, 90%, 75%, 50% (median), 25%, 10%, and 5% exceedance flows.
 - Tables and summary analysis showing differences in the following:
 - Monthly timing and magnitude of mean and median flow conditions (e.g., high and low flows).
 - Magnitude, duration, and timing of annual high flow and low flow conditions (1-day, 3-day, 7-day, monthly, etc.), including the presence of pulse flow events.
 - Rate, timing, and frequency of hydrograph changes (e.g., rate and timing of the declining limb of the spring high flow hydrograph).

⁵ The historical hydrology (2000–2011) will be used to develop / calibrate the historical hydrology model over the 2000–2021 POR. The historical hydrology represents instream flows and Project operation under the existing license conditions prior to implementation of the seismic restrictions in 2012.

⁶ The existing hydrology (2012–2019) will be used to develop / calibrate the existing hydrology model over the 2000–2021 POR. The existing hydrology represents instream flows and Project operation under the existing license conditions and implementation of the seismic restrictions in 2012.

FLOOD FREQUENCY

- Generate a flood-frequency analysis for the Proposed Project, historical, existing, and unimpaired flows using annual peak daily flow data and peak flow estimates in select Project-affected stream segments.
 - Determine the best method to estimate peak flow from peak daily flow (e.g., Chen et al. 2017) and generate a 2000–2021 annual peak flow data set.
 - Use PeakFQ (Veilleux et al. 2014; Flynn et al. 2006), a software package developed by the USGS, which uses Bulletin 17c (England et al. 2018) procedures for flood-frequency analysis of streamflow records, or equivalent, and estimate flood magnitudes (annual daily average peak) and their corresponding annual exceedance probabilities.
 - Use regional flood-frequency curves (Gotvald et al. 2012) to develop an additional estimate of unimpaired peak flow magnitudes and their corresponding annual exceedance probabilities.
 - Summarize any other peak flow or probable maximum flood (PMF) data available for the study area (e.g., PMF calculations for the SCE dams by Geotechnical Water Resources in 2011), including historical flow data outside of the 2000–2021 analysis period of record. Include this data, as appropriate, in the characterization of high flow events.

POTENTIAL ENHANCEMENT HYDROLOGY

- Generate hydrological data for the lower Rush Creek and South Rush Creek channels near SR-158 to facilitate the evaluation of potential enhancements to address local flooding of residences during high-runoff events including:
 - Determine the Rush Creek/South Rush Creek percent flow split downstream of Horseshoe Falls over a range of flow conditions (e.g., minimum flow releases from Agnew Dam to peak flow events).
 - Use temporary gage data from South Rush Creek (see gage installation below) and data from USGS gage 10287289 (Rush Creek at Flume below Agnew Lake near June Lake, California) to determine the flow split relationship. Also, use any historical data collected to help determine the flow split relationship (e.g., 2017 empirical flow data).
 - Determine additional flows entering South Fork Rush Creek and Rush Creek near SR-158.

- Install and operate⁷ temporary gages (October 2022 to September 2024) at the following locations:
 - South Rush Creek upstream of SR-158 (River Mile [RM] 0.2).
 - Unnamed tributary entering South Rush Creek upstream of SR-158 (RM 0.12).
 - Unnamed tributary entering Rush Creek upstream of SR-158 (RM 17.66).
 - Reversed Creek upstream of the confluence with Rush Creek (RM 0.25).
- Use the empirical data and watershed area to develop a time series of accretion to South Rush Creek, Rush Creek upstream of SR-158, and Reversed Creek to Rush Creek.
- Estimate the peak design flow for each of the channels / culverts at SR-158 (South Rush Creek, Rush Creek, and Powerhouse Tailrace). Potential backwater effects from Silver Lake on the channels and culverts near SR-158 during spring high flows will be developed in the AQ 1 – Instream Flow Technical Study Plan.

REPORTING

- The study methods and results will be documented in an AQ 2 – Hydrology Technical Study Report (TSR). The TSR will include summary tables and maps, as appropriate.
- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

SCHEDULE

Date	Activity
September–November 2022	Collaborate with stakeholder modeling working group on approach for refining the historical, existing, and unimpaired hydrology (as appropriate); and developing the Proposed Project hydrology Install temporary flow gages
January–April 2023	Develop the Proposed Project hydrology and refine the analysis of the historical, existing, and unimpaired hydrology
April–June 2023	Complete the hydrologic alteration analysis and flood-frequency analysis

⁷ During the winter time period the gages will be operated to the extent reasonably possible given the potential for ice and snow cover. The primary operation period will focus on fall, spring, and summer.

Date	Activity
July–December 2023	Summarize data and prepare draft report (incorporating October 2022–September 2023 data)
January 2024	Distribute draft report to stakeholders
February–April 2024	Stakeholders review and provide comments on draft report (90 days)
April–May 2024	Resolve comments and prepare final report
August–September 2024	Uninstall temporary flow gages Distribute draft final report in Draft License Application (incorporating October 2023–September 2024 data)
January 2025	Distribute final report in Final License Application (incorporating comments by stakeholders on the draft final report filed with the Draft License Application)

REFERENCES

- Chen, Bo, W.F. Krajewski, F. Liu, W. Fang; and Z Xu. 2017. Estimating instantaneous peak flow from mean daily flow. *Hydrology Research* 48 (6): 1474–1488.
- England, J.F., Jr., T.A. Cohn, B.A. Faber, J.R. Stedinger, W.O. Thomas, Jr., A.G. Veilleux, J.E. Kiang, and R.R. Mason, Jr. 2018. Guidelines for determining flood flow frequency--Bulletin 17C: U.S. Geological Survey Techniques and Methods, book 4, chap. B5, 148 p., <https://doi.org/10.3133/tm4B5>.
- Flynn, K.M., W.H. Kirby, and P.R. Hummel. 2006. User's manual for program PeakFQ, Annual Flood Frequency Analysis Using Bulletin 17B Guidelines: U.S. Geological Survey Techniques and Methods Book 4, Chapter B4, 42 pgs.
- Gotvald, A.J., N.A. Barth, A.G. Veilleux, and Charles Parrett. 2012. Methods for determining magnitude and frequency of floods in California, based on data through water year 2006: U.S. Geological Survey Scientific Investigations Report 2012-5113, 38 p., 1 pl.
- Richter, B.D., J.V. Baumgartner, J. Powell, and D.P. Braun. 1996. A method for assessing hydrologic alteration within ecosystems. *Conservation Biology* 10:1163-1174.
- SCE (Southern California Edison Company). 2021. Rush Creek Project (FERC Project No. 1389) Pre-Application Document. December.
- Veilleux, A.G., T.A. Cohn, K.M. Flynn, R.R. Mason, Jr., and P.R. Hummel. 2014. Estimating magnitude and frequency of floods using the PeakFQ 7.0 program: U.S. Geological Survey Fact Sheet 2013-3108, 2 p., <https://dx.doi.org/10.3133/fs20133108>.

TABLES

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Table AQ 2-1. Hydrology Analysis Locations in Project-affected Stream Segments.

Location Name	Location (RM)	Proposed Project, Historical, Existing, Unimpaired Hydrology			Proposed Project Hydrology Potential Enhancement Hydrology Data Collection (2022–2023)
		Daily Average Hydrology (2000–2021 POR)	Hydrological Alteration Analysis (2000–2021 POR)	High Flow / Flood-Frequency Analysis (2000–2021 POR)	
Rush Creek					
Rush Creek at Rush Meadows Dam	RM 22.24	X	X	X	—
Rush Creek at Gem Dam	RM 19.48	X	X	X	—
Rush Creek Below Agnew Dam	RM 18.61	X	X	X	—
Rush Creek above SR-158	RM 17.58	X	X	X	X
Rush Creek Above Silver Lake	RM 17.38	X	X	X	—
Rush Creek Below Silver Lake	RM 13.67	X	X	X	—
South Rush Creek					
South Rush Creek	RM 0.1	X	X	X	X

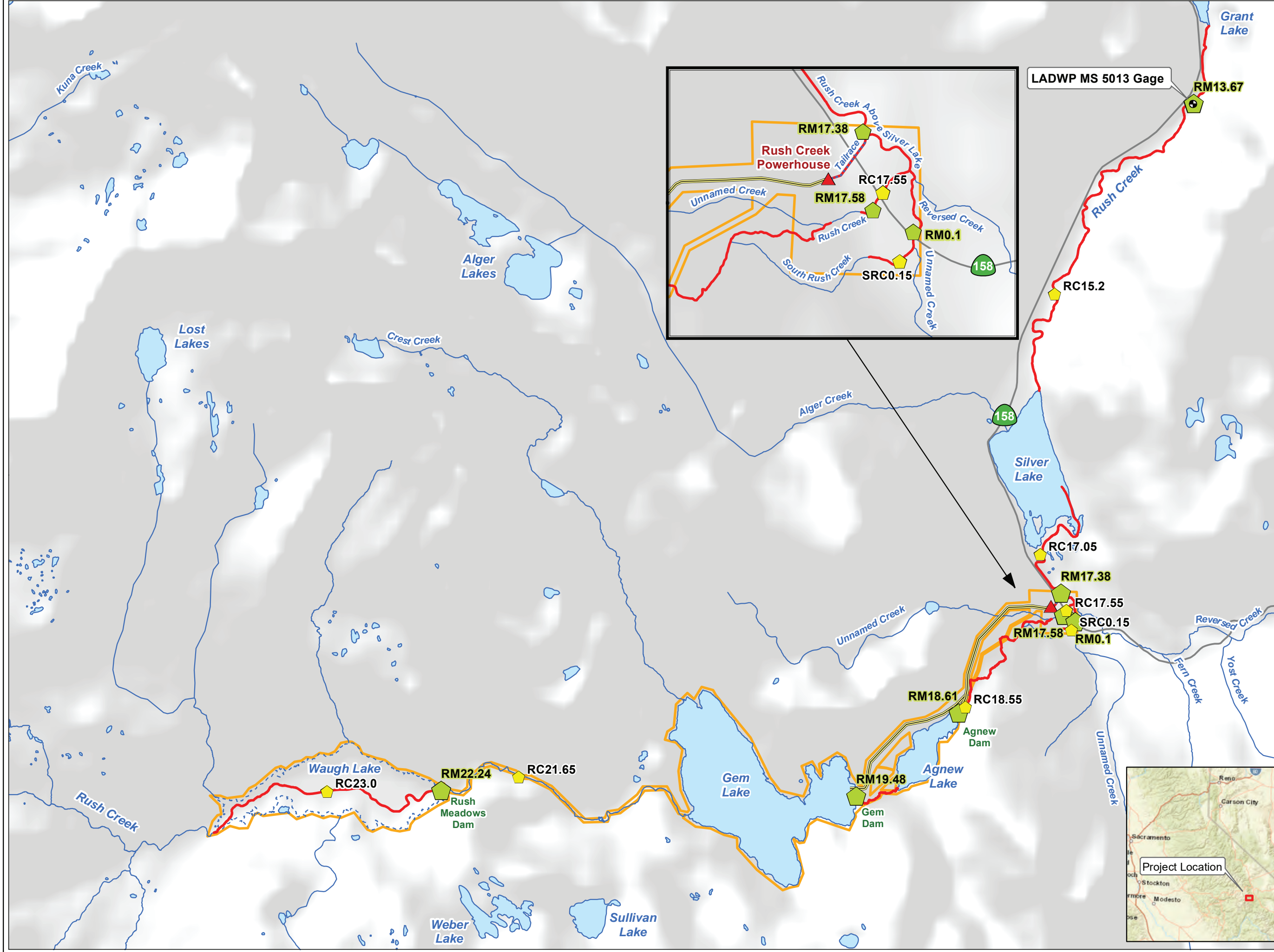
Notes:

- POR = Period of Record
- RM = River Mile


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MAPS

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- SCE Facilities**
- Dam
 - ▲ Powerhouse
 - ▬ Flowline / Penstock
 - ⋯ Tailrace
- Other Features**
- Highway
 - River/Stream
 - ▭ Lake/Reservoir
 - - - Dry Lake/Reservoir
 - ▭ FERC Boundary
- Study Sites and Reaches**
- ◊ Hydrology Analysis Site
 - ◊ Geomorphology/Riparian Site
 - ~ Instream Flow Modeling Reaches




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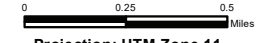
Rush Creek Project (FERC 1389)

Map AQ 2-1

Analysis and Survey Locations



Date: 11/3/2021



Projection: UTM Zone 11
Datum: NAD 83

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AQ 3 – WATER TEMPERATURE TECHNICAL STUDY PLAN

**Rush Creek Hydroelectric Project
FERC Project No. 1389**



September 2022

AQ 3 – Water Temperature Technical Study Plan

POTENTIAL RESOURCE ISSUES

- Aquatic habitat quantity and quality.
- Basin Plan objectives compliance.

PROJECT NEXUS

- Project operations and reservoirs modify the flow regime in Project-affected stream segments¹ influencing instream water temperatures.

RELEVANT INFORMATION

The following information is available to characterize water temperature in the vicinity of the Rush Creek Project (refer to Southern California Edison Company's [SCE] Pre-Application Document [PAD] Section 4.4 Water Quality for a summary of water temperature information [SCE 2021]).

- Federal Energy Regulatory Commission (FERC) Environmental Assessment for Hydropower License, Rush Creek Project, FERC Project No. 1389 (FERC 1992).
- FERC Order Issuing New License, Rush Creek Project (FERC 1997).
- FERC Relicensing Studies (EA Engineering Science and Technology 1986 and 1988; Lund 1988) related to instream flows and reservoir water quality.
- Inland fishes of California, University of California Press, Berkeley (Moyle 2002).
- Water Quality Control Plan for the Lahontan Region (Basin Plan) (CRWQCB 2019).
- United States Geological Survey's (USGS) National Water Information System and the California Environmental Data Exchange Network (CEDEN) online databases provided water quality information.

POTENTIAL INFORMATION GAPS

- Water temperature conditions in Project-affected stream segments and Project reservoirs.

¹ Stream segments as used in this document are typically long sections of stream with a relatively homogeneous flow regime. Segments may be subdivided into smaller reaches for study and/or due to fluvial geomorphology (e.g., stream gradient, channel confinement).

STUDY OBJECTIVES

- Characterize existing water temperature and meteorological conditions in Project-affected stream segments.
- Characterize existing water temperature information (profiles) in Project reservoirs and Silver Lake. This is developed and evaluated as part of the AQ 4 – Water Quality Technical Study Plan (TSP).
- Qualitatively assess the potential effects of increased air temperature due to global warming on water temperatures over the term of the new FERC license.

EXTENT OF STUDY AREA

- The study area for characterization of water temperature includes Project-affected stream segments and Reversed Creek. Water temperature sampling locations are identified in Table AQ 3-1 and Map AQ 3-1.
- The study area also includes the Project reservoirs (Gem Lake, Agnew Lake) and Silver Lake (see AQ 4 – Water Quality TSP).
- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain) or on private property for which SCE has not received specific approval from the landowner to enter the property to perform the study.
- For study elements proposed within the Ansel Adams Wilderness, SCE will provide a complete catalog of all temporary installations or equipment including, but not limited to, transect markers, their locations, timeline of scheduled use, and recommended disposal methods or removal, prior to any installation. SCE will also provide confirmation of removal of any temporary installations to the Forest Service at the end of the study period.

STUDY APPROACH

- Collect existing water temperature and meteorological conditions in Project-affected stream segments and Reversed Creek identified in Table AQ 3-1 from May 15 to October 15, 2023 at the high elevation sites (>7,300 feet; powerhouse elevation) and from May 15 to December 1, 2023 at the lower elevation sites (\leq 7,300 feet), weather and access permitting.
 - Install and maintain redundant water temperature probes at nine locations in Project-affected stream segments and one location in Reversed Creek.

- Obtain meteorological station data (relative humidity, wind speed, solar radiation, air temperature) from three existing locations (Gem Pass, June Mountain Summit, and near Rush Creek Powerhouse).²
 - Download data bi-monthly from the water temperature probes.
 - Summarize temperature and meteorological data, including depiction of seasonal patterns and daily averages, minimums, and maximums as a function of time and location in Project-affected stream segments and aquatic species requirements (e.g., Moyle 2002).
- Coordinate with the AQ 4 – Water Quality TSP to obtain water temperature profiles from Gem Lake, Agnew Lake, and Silver Lake.
 - Review available literature predictions of changes in air temperature as a result of global warming to qualitatively evaluate the resulting effect on water temperature over the anticipated term of the new FERC license (30-50 years).

REPORTING

- Study methods and results will be documented in an AQ 3 – Water Temperature Technical Study Report (TSR). The TSR will include summary tables and maps, as appropriate.
- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

SCHEDULE

Date	Activity
May 15–October 15, 2023	Install and maintain temperature probes
October 15–December 1, 2023	Maintain low elevation ($\leq 7,300$ feet; powerhouse elevation) temperature probes
October 2023–February 2024	Analyze data and prepare draft report
March 2024	Distribute draft report to stakeholders
April–June 2024	Stakeholders review and provide comments on draft report (90 days)
June–July 2024	Resolve comments and prepare final report
August 2024	Distribute final report in Draft License Application

² Gem Pass (CA Dept of Water Resource; 2014 to Present) <https://cdec.water.ca.gov/webgis/?appid=cdecstation&sta=GEM>; June Mountain Summit (SCE, Bishop; 2012 to Present) <https://cdec.water.ca.gov/webgis/?appid=cdecstation&sta=JMS>; Rush Creek Powerhouse (US Forest Service; 2005 to Present) <https://cdec.water.ca.gov/webgis/?appid=cdecstation&sta=RSH>.

REFERENCES

- CEDEN (California Environmental Data Exchange Network). Online Database. Available at: <http://www.ceden.org/>.
- CRWQCB (California Regional Water Quality Control Board) Lahontan Region. 2019. Water Quality Control Plan for the Lahontan Region, North and South Basins (Basin Plan). Revised October 2019. Available at: https://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/references.html.
- EA Engineering, Science, and Technology. 1986. Instream flow and fisheries studies for the upper Rush Creek Hydroelectric Project. Lafayette, California, November 1986. 30 pp.
- . 1988. East side hydroelectric relicensing study: Fish populations on the upper Rush Creek Hydroelectric Project. Lafayette, California, January 1988. 35 pp.
- FERC (Federal Energy Regulatory Commission). 1992. Environmental Assessment for Hydropower License. Rush Creek Project No. 1389. FERC eLibrary No. 19920604-0017.
- . 1997. Order Issuing New License, Rush Creek Project. FERC Accession No. 19970210-0301. 78 FERC ¶ 61,109. February.
- Lund, L. 1988. Water quality of Bishop Creek and selected eastern Sierra Nevada lakes. Report of Research for 1986 to 1988. SCE. 110 pp.
- Moyle, P. 2002. Inland fishes of California. University of California Press, Berkeley. 502 pp.
- SCE (Southern California Edison Company). 2021. Rush Creek Project (FERC Project No. 1389) Pre-Application Document. December.
- USGS (United States Geological Survey). National Water Information System Online Database. Available at: <https://waterdata.usgs.gov/nwis>.

TABLES

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Table AQ 3-1. Water Temperature Sampling Locations.

Stream Segment Name	Segment Length (miles) / River Mile (RM)	Sampling Location River Mile / Site ID	Sampling Dates
Rush Creek			
Waugh Lake	1.51 (RM 22.24–23.75)	RM 23.4 / RC23.4	May 15–Oct 15, 2023
Rush Creek Below Rush Meadows Dam	1.83 (RM 20.41–22.24)	RM 21.65 / RC21.65	May 15–Oct 15, 2023
Gem Lake	0.93 (RM 19.48–20.41)	GL-1 (mid-lake) GL-2 (near the dam) [Sampled as part of AQ 4 – Water Quality TSP]	Jun, Jul, Aug, Sep, Oct 2023
Rush Creek Below Gem Dam	0.30 (RM 19.18–19.48)	RM 19.25 / RC19.25	May 15–Oct 15, 2023
Agnew Lake	0.58 (RM 18.60–19.18)	AL-1 (mid-lake) [Sampled as part of AQ 4 – Water Quality TSP]	Jun, Jul, Aug, Sep, Oct 2023
Rush Creek Below Agnew Dam	0.40 (RM 18.2–18.60)	RM 18.55 / RC18.55	May 15–Oct 15, 2023
Rush Creek Horsetail Falls	0.54 (RM 17.66–18.2)	—	—
Rush Creek Powerhouse Tailrace	—	PHTR	May 15–Dec 1, 2023
Reversed Creek	—	100–200 feet upstream of the confluence with South Rush Creek / RVC0.26	May 15–Dec 1, 2023
Rush Creek Above Silver Lake	0.94 (RM 16.72–17.66)	RM 17.15 / RC17.15 RM 17.6 / RC17.6	May 15–Dec 1, 2023
Silver Lake	0.83 (RM 15.89–16.72)	SL-1 (mid-lake) SL-2 (near outlet) [Sampled as part of AQ 4 – Water Quality TSP]	Jun, Jul, Aug, Sep, Oct 2023
Rush Creek Below Silver Lake	2.69 (RM 13.20–15.89)	RM 15.6 / RC15.6 RM 13.7 / RC13.7 (LADWP gaging station location)	May 15–Dec 1, 2023
South Rush Creek			
South Rush Creek	0.46 (RM 0.0–0.46)	RM 0.15 / SRC0.15	May 15–Dec 1, 2023

Notes:

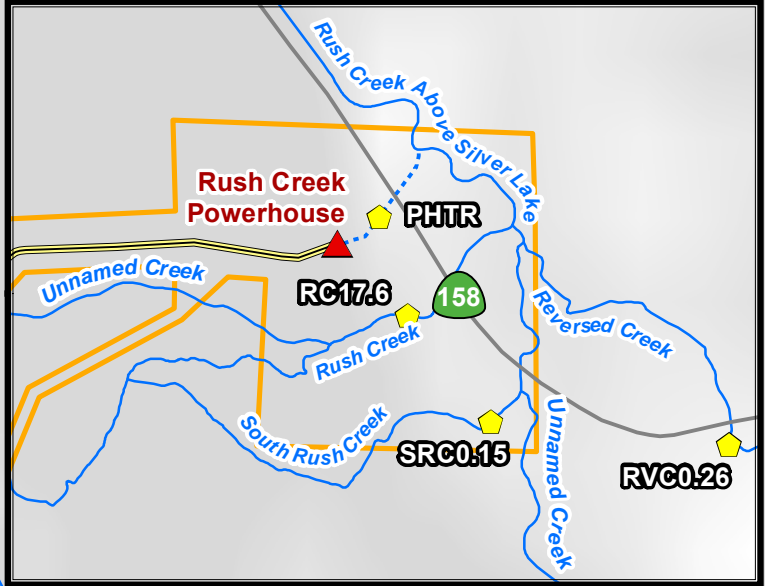
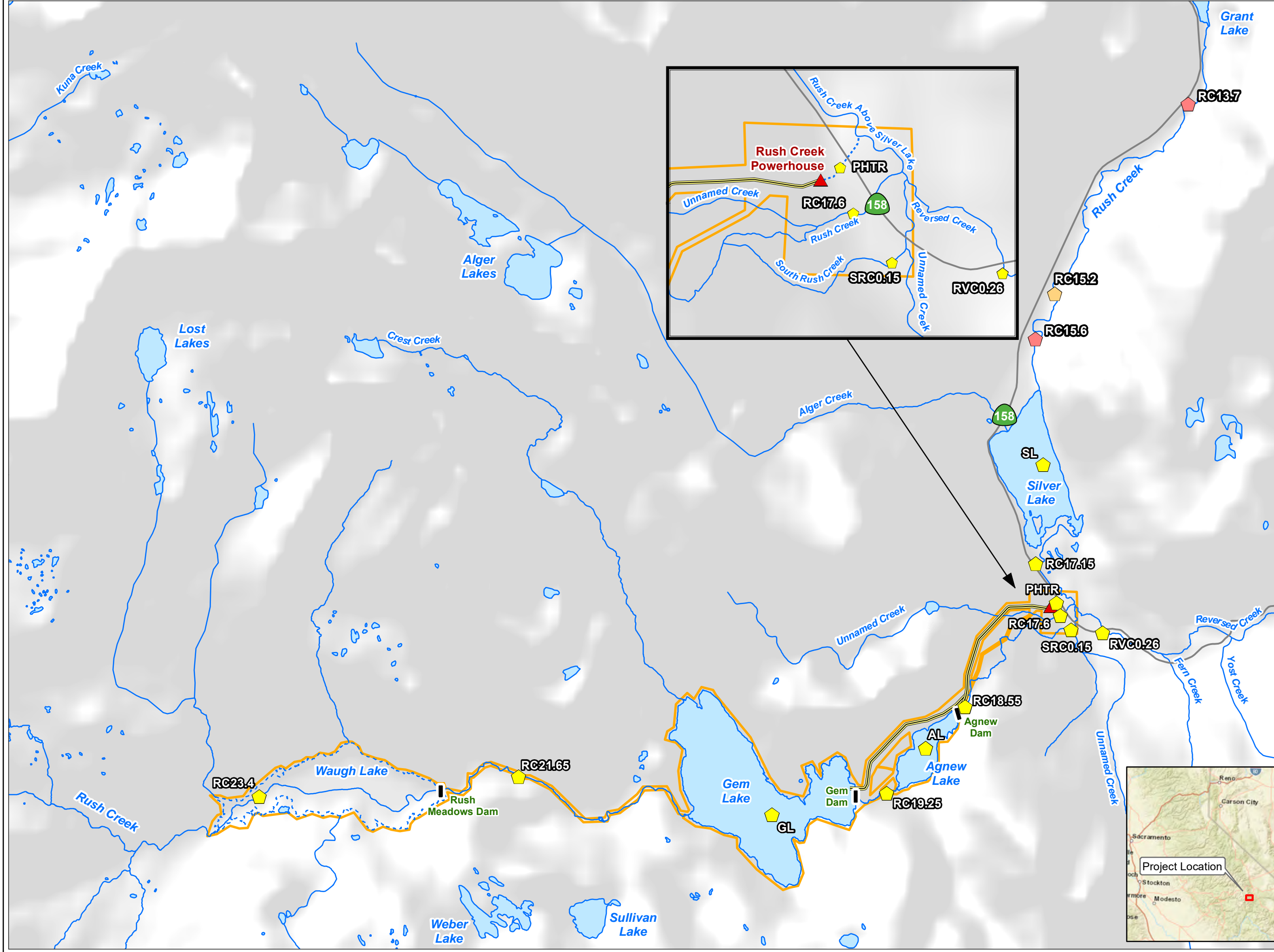
RM = River Mile

TSP = Technical Study Plan

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MAPS

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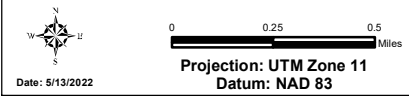
- SCE Facilities**
- Dam
 - Powerhouse
 - Flowline / Penstock
 - Tailrace
- Other Features**
- Highway
 - River/Stream
 - Lake/Reservoir
 - Dry Lake/Reservoir
 - FERC Boundary
- Sampling Locations**
- Water Temp
 - Water Quality
 - Water Temp, Water Quality



Rush Creek Project (FERC 1389)

Map AQ 3-1

Sampling Locations



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AQ 4 – WATER QUALITY TECHNICAL STUDY PLAN

**Rush Creek Hydroelectric Project
FERC Project No. 1389**



September 2022

AQ 4 – Water Quality Technical Study Plan

POTENTIAL RESOURCE ISSUES

- Water quality compliance with regulatory requirements.

PROJECT NEXUS

- Project operations and maintenance activities could affect water quality in Project-affected stream segments¹ and Project reservoirs.

RELEVANT INFORMATION

The following information is available to characterize water quality in the vicinity of the Rush Creek Project (refer to Southern California Edison Company's [SCE] Pre-Application Document [PAD] Section 4.4 for a summary of water quality information [SCE 2021]):

- California Toxics Rule (CTR) "Water Quality Standards: Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California" (Federal Register, 65 FR 31682, EPA 2000).
- Federal Energy Regulatory Commission (FERC) Environmental Assessment for Hydropower License, Rush Creek Project, FERC Project No. 1389 (FERC 1992).
- FERC Order Issuing New License, Rush Creek Project (FERC 1997).
- National Toxics Rule (NTR) Water Quality Standards: Establishment of Numeric Criteria for Priority Toxic Pollutants" (Federal Register, 57 FR 60848, EPA 1992).
- Water Quality Control Plan for the Lahontan Region (Basin Plan) (CRWQCB 2019).
- United States Geological Survey's (USGS) National Water Information System and the California Environmental Data Exchange Network (CEDEN) online databases provided water quality information.

POTENTIAL INFORMATION GAPS

- Water quality conditions in Project-affected stream segments and Project reservoirs.

¹ Stream segments as used in this document are typically long sections of stream with a relatively homogeneous flow regime. Segments may be subdivided into smaller reaches for study and/or due to fluvial geomorphology (e.g., stream gradient, channel confinement).

STUDY OBJECTIVES

- Collect seasonal water quality data (physical, chemical, and bacterial) in Project-affected stream segments and Project reservoirs.
- Compare water quality conditions to the objectives/criteria of the Basin Plan (CRWQCB 2019) and other water quality standards.

EXTENT OF STUDY AREA

- The study area for the water quality assessment includes Project-affected stream segments and Project reservoirs. Water quality sampling locations are identified in Table AQ 4-1 and Map AQ 4-1.
- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain) or on private property for which SCE has not received specific approval from the landowner to enter the property to perform the study.

STUDY APPROACH

- The following describes the water quality sampling field program which includes seasonal *in-situ* water quality measurements; seasonal water quality grab sampling; reservoir/lake profiles; and laboratory analysis and reporting.

WATER QUALITY SAMPLING LOCATIONS

- Water quality sampling locations are identified in Table AQ 4-1 and depicted on Map AQ 4-1.
- Exact sampling locations will be determined in the field based on sampling suitability (i.e., well-mixed and deep enough for representative sampling) and accessibility.
- Sampling locations will be documented using hand-held global positioning system (GPS) units.

SEASONAL *IN-SITU* FIELD MEASUREMENTS – STREAMS

- Collect *in-situ* water quality measurements, dissolved oxygen (DO) (mg/L and % saturation), pH, specific conductance ($\mu\text{S}/\text{cm}$), salinity (ppt), alkalinity (mg/L), turbidity (NTU), and water temperature ($^{\circ}\text{C}$) in Rush Creek and Reversed Creek.
 - Samples will be collected once during the spring runoff (June, access permitting), and once during the late summer/early fall base-flow period (September, in coordination with AQ 6 – Fish Population and Passage Technical Study Plan).
 - At stream sampling locations, measurements will be made approximately 0.1 meter (m) beneath the surface in flowing, well-mixed riffle or run areas.

- Samples will be collected using a multi-parameter water quality meter (HydroLab, YSI, or similar DataSonde) and field kit (e.g., alkalinity).
- Pre- and post-sampling calibration of in-situ instrumentation will be conducted following the manufacturer's instructions.

SEASONAL WATER QUALITY GRAB SAMPLES

- Collect water quality grab samples at Project-affected stream segments and Reversed Creek; Project reservoirs; and Silver Lake.
 - Samples will be collected twice, once during the spring runoff and once during the late summer/early fall base-flow period in coordination with the in-situ water quality measurements to screen for potential water quality issues.
 - At stream sampling locations, grab samples will be collected approximately 0.1 m beneath the surface in flowing, well-mixed riffle or run areas.
 - At lake sampling locations, grab samples will be collected from the epilimnion (1 m deep) and hypolimnion (mid-depth between the thermocline and lake bottom). If the lakes are not stratified, then water grab samples will be collected approximately 1 m from the surface and at mid-depth from surface to lake bottom.
 - It should be noted that Gem Lake is located within the Ansel Adams Wilderness Area. Collection of seasonal water quality grab samples in Gem Lake requires the use of a motorized vessel for the safety of field workers. If any required authorization from the Forest Service to use a motorized vessel on Gem Lake is not obtained, SCE cannot implement the study plan component to collect seasonal water quality grab samples in Gem Lake.
- Collect samples consistent with EPA protocols for each analyte (see Laboratory Analysis below) and consistent with general water quality sampling methods (National Field Manual for the Collection of Water-Quality Data; https://www.usgs.gov/mission-areas/water-resources/science/national-field-manual-collection-water-quality-data-nfm?qt-science_center_objects=0#qt-science_center_objects).
 - The sampling team shall employ a strict quality assurance/quality control (QA/QC) program, including the collection of equipment blanks, field blanks, and field replicates.
 - Water quality samples will be decanted into laboratory-supplied sample containers and analyzed at a State-certified water quality laboratory.
 - The sample containers will be labeled with the date and time that the sample is collected and the sampling site or identification label.

- The sample container will be preserved (as appropriate), stored, and delivered to a State-certified water quality laboratory for analyses in accordance with maximum holding periods.
- A chain-of-custody record will be maintained with the samples at all times.

RESERVOIR/LAKE PROFILES

- Collect reservoir/lake profiles (DO, pH, specific conductance, salinity, turbidity, and water temperature) at Gem, Agnew, and Silver lakes.²
 - Samples will be collected monthly in June, July, August, September, and October 2023.
 - Water quality profiles in the reservoirs/lake will be based on a ≤ 1 meter (m) sampling interval through the entire water column.
 - Secchi disk depth measurements of water clarity will also be collected in each reservoir/lake.
 - Samples will be collected using a multi-parameter water quality meter.
 - Pre- and post-sampling calibration of in-situ instrumentation will be conducted following the manufacturer's instructions.
 - It should be noted that Gem Lake is located within the Ansel Adams Wilderness Area. Collection of reservoir/lake profiles in Gem Lake requires the use of a motorized vessel for the safety of field workers. If any required authorization from the Forest Service to use a motorized vessel on Gem Lake is not obtained, SCE cannot implement the study plan component to collect reservoir/lake profiles in Gem Lake.

BACTERIAL SAMPLING

- Collect surface water bacteria samples for total and fecal coliform in Gem and Agnew lakes in accessible locations near the dams (Table AQ 4-2). Sample five relatively evenly spaced times in the month of July 2023.

LABORATORY ANALYSIS

- Water quality samples collected during the field program will be processed by a State-certified laboratory approved by the State Water Resources Control Board for chemical analysis.

² The low-level outlet at Rush Meadows Dam remains open such that little/no water is currently impounded in Waugh Lake. Rush Creek essentially flows unimpeded through the historic lake bed. Therefore, in this study, Waugh Lake is treated as a stream segment for water quality sampling.

- The parameters to be analyzed by the analytical laboratory are provided in Table AQ 4-2.
- The laboratory will report each chemical parameter analyzed with the laboratory method detection limit, reporting limit, and practical quantification limit. The laboratory will attempt to attain reporting detection limits that are at or below the applicable regulatory criteria.
- Compare results from the water quality sampling with the water quality objectives/criteria identified in the Basin Plan (CRWQCB 2019) and with other relevant water quality standards.

ADDITIONAL SAMPLING

- If water quality sampling results (2023) indicate an exceedance of objectives/criteria identified in the Basin Plan or with other relevant water quality standards (refer to Table AQ 4-2), SCE will implement a second year of water quality sampling (2024) focused on those parameters that were exceeded. The specific sampling approach will be developed in consult with the State Water Board, resource agencies, and the Technical Working Group.

REPORTING

- Study methods and results will be documented in an AQ 4 – Water Quality Technical Study Report (TSR). The TSR will include summary tables and maps, as appropriate.
- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

SCHEDULE

Date	Activity
June 2023	Conduct spring water quality <i>in-situ</i> and grab sampling
June/July/August/September/October 2023	Conduct monthly <i>in-situ</i> reservoir/lake profiling
July 2023	Conduct bacteria sampling at Gem and Agnew lakes
September 2023	Conduct summer/fall water quality <i>in-situ</i> and grab sampling
October 2023–February 2024	Analyze data and prepare draft report
March 2024	Distribute draft report to stakeholders
April–June 2024	Stakeholders review and provide comments on draft report (90 days)
June–July 2024	Resolve comments and prepare final report
August 2024	Distribute final report in Draft License Application

REFERENCES

- CEDEN (California Environmental Data Exchange Network). Online Database. Available at: <http://www.ceden.org/>.
- CRWQCB (California Regional Water Quality Control Board) Lahontan Region. 2019. Water Quality Control Plan for the Lahontan Region, North and South Basins (Basin Plan). Revised October 2019. Available at: https://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/references.html.
- EPA (Environmental Protection Agency). 1992. National Toxics Rule (NTR) Water Quality Standards: Establishment of Numeric Criteria for Priority Toxic Pollutants”. Federal Register, 57 FR 60848.
- . 2000. California Toxics Rule (CTR) “Water Quality Standards: Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California”. Federal Register, 65 FR 31682.
- FERC (Federal Energy Regulatory Commission). 1992. Environmental Assessment for Hydropower License. Rush Creek Project No. 1389. FERC eLibrary No. 19920604-0017.
- . 1997. Order Issuing New License, Rush Creek Project. FERC Accession No. 19970210-0301. 78 FERC ¶ 61,109. February.
- SCE (Southern California Edison Company). 2021. Rush Creek Project (FERC Project No. 1389) Pre-Application Document. December.
- USGS (United States Geological Survey). National Water Information System Online Database. Available at: <https://waterdata.usgs.gov/nwis>.

TABLES

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Table AQ 4-1. Water Quality Sampling Locations.

Stream Segment Name	Segment Length (miles) / River Miles (RM)	Sampling Location River Mile / Site ID	Number of Sampling Locations	In-situ Field Measurements	Water Quality Grab Samples	Reservoir / Lake Profiles
Rush Creek						
Waugh Lake ^a	1.51 (RM 22.24–23.75)	RM 23.0 / RC23.0	1	X	X	—
Rush Creek Below Rush Meadows Dam	1.83 (RM 20.41–22.24)	RM 21.65 / RC21.65	1	X	X	—
Gem Lake ^b	0.93 (RM 19.48–20.41)	GL-1 (mid-lake) GL-2 (near the dam)	2	—	X	X
Rush Creek Below Gem Dam	0.30 (RM 19.18–19.48)	RM 19.25 / RC19.25	1	X	X	—
Agnew Lake	0.58 (RM 18.60–19.18)	AL-1 (mid-lake)	1	—	X	X
Rush Creek Below Agnew Dam	0.40 (RM 18.2–18.60)	RM 18.55 / RC18.55	1	X	X	—
Rush Creek Horsetail Falls	0.54 (RM 17.66–18.2)	—	—	—	—	—
Rush Creek Powerhouse Tailrace	—	PHTR	1	X	X	—
Reversed Creek	—	100–200 feet upstream of the confluence with South Rush Creek / RVC0.26	1	X	X	—
Rush Creek Above Silver Lake	0.94 (RM 16.72–17.66)	RM 17.15 / RC17.15 RM 17.6 / RC17.6	2	X	X	—
Silver Lake	0.83 (RM 15.89–16.72)	SL-1 (mid-lake) SL-2 (near outlet)	2	X	X	X

Stream Segment Name	Segment Length (miles) / River Miles (RM)	Sampling Location River Mile / Site ID	Number of Sampling Locations	In-situ Field Measurements	Water Quality Grab Samples	Reservoir / Lake Profiles
Rush Creek Below Silver Lake	2.69 (RM 13.20–15.89)	RM 15.2 / RC15.2	1	X	X	—
South Rush Creek						
South Rush Creek	0.46 (RM 0.0–0.46)	RM 0.15 / SRC0.15	1	X	X	—

Notes:

RM = River Mile

- a. The low-level outlet at Rush Meadows Dam remains open such that little/no water is currently impounded in Waugh Lake. Rush Creek essentially flows unimpeded through the historic lake bed. Therefore, Waugh Lake is treated as a stream segment for water quality sampling.
- b. Water quality sampling in Gem Lake is contingent on obtaining any required Forest Service authorization for use of a motorized boat.

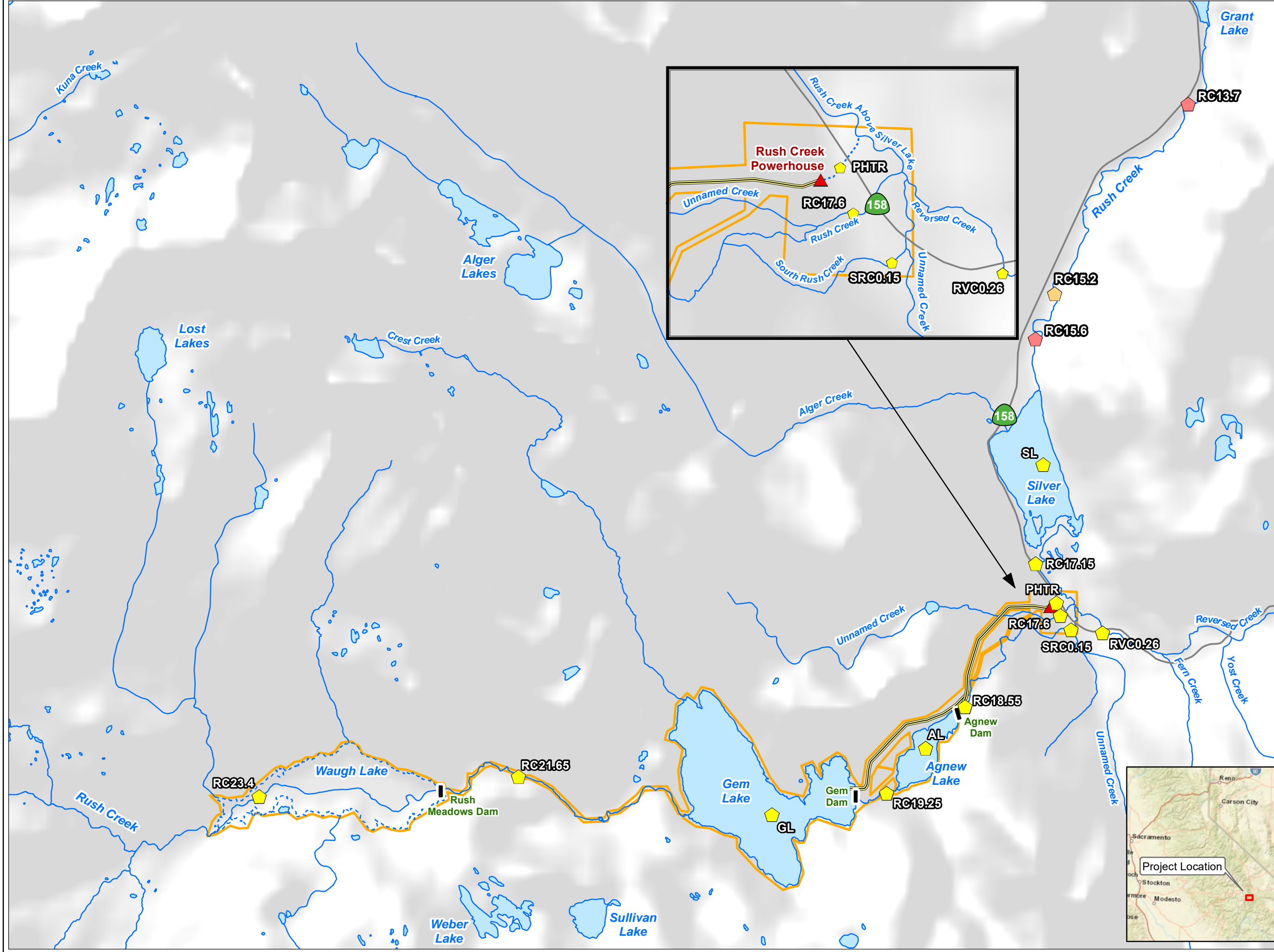
Table AQ 4-2. Parameters for Water Quality Monitoring and Laboratory Analysis

Parameter	Analysis Method	Sample Holding Times	Sample Locations to be Analyzed
Water Quality Monitoring Parameter			
<i>In-Situ Measurements</i>			
Dissolved Oxygen (DO)	Water Quality Meter	Not Applicable	All
Secchi Depth	Secchi Disk	Not Applicable	Reservoir
PH	Water Quality Meter	Not Applicable	All
Water Temperature	Water Quality Meter	Not Applicable	All
Specific Conductance	Water Quality Meter	Not Applicable	All
Laboratory Analysis Parameter			
General Parameters			
Nitrate/Nitrite	EPA - 353.2	48 hours	All
Ammonia as N	EPA - 350.1	28 days	All
Total Kjeldahl Nitrogen	EPA - 351.2	28 days	All
Total Phosphorus	EPA - 365.2	28 days	All
Ortho-phosphate	EPA - 365.1	48 hours	All
Total Dissolved Solids	EPA - 160.1	7 days	All
Total Suspended Solids	EPA - 160.2	7 days	All
Total Alkalinity	EPA - 310.1	14 days	All
Bacteria			
Total Coliform	EPA - SM9222B	24 hours	Gem and Agnew lakes
Fecal Coliform	EPA - SM9222B	24 hours	Gem and Agnew lakes


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MAPS

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- SCE Facilities**
- Dam
 - ▲ Powerhouse
 - === Flowline / Penstock
 - - - Tailrace
- Other Features**
- Highway
 - River/Stream
 - Lake/Reservoir
 - - - Dry Lake/Reservoir
 - ▭ FERC Boundary
- Sampling Locations**
- Water Temp
 - Water Quality
 - Water Temp, Water Quality




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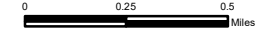
Rush Creek Project (FERC 1389)

Map AQ 4-1

Sampling Locations



Date: 5/13/2022



0 0.25 0.5 Miles

Projection: UTM Zone 11
Datum: NAD 83

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AQ 5 – GEOMORPHOLOGY TECHNICAL STUDY PLAN

**Rush Creek Hydroelectric Project
FERC Project No. 1389**



September 2022

AQ 5 – Geomorphology Technical Study Plan

POTENTIAL RESOURCE ISSUES

- Stable channel morphology and maintenance of fluvial processes.
- Project-related sources of sediment and erosion.
- Rush Creek channel within the former lakebed of Waugh Lake.
- Localized flooding adjacent to the lower Rush Creek and South Rush Creek channels near State Route 158 (SR-158).
- Sediment scour/deposition in Rush Creek near the Silver Lake inlet.

PROJECT NEXUS

- Project operations modify the flow and sediment regime in the Project-affected stream segments¹ and reservoirs potentially resulting in changes to channel morphology and fluvial processes.
- The proposed removal of Rush Meadows and Agnew dams will influence overall hydrology; sediment capture/transport; and potential erosion of the deposited sediment adjacent to the historic channels in the former lakebeds.
- The loss of reservoir storage under the Proposed Project may influence localized flooding adjacent to the lower Rush Creek and South Rush Creek channels near SR-158 in high-runoff years.

RELEVANT INFORMATION

The following information is available to characterize geomorphology in the vicinity of the Rush Creek Project (refer to Southern California Edison Company's [SCE] Pre-Application Document [PAD] Section 4.8 for a summary of geomorphology information [SCE 2021]):

- Section 2.0, Project Location, Facilities, and Operation, and Section 4.3, Water Use and Hydrology of the Rush Creek PAD, present a summary of Project operations and water use; available stream gage data; and daily historical, existing, and unimpaired hydrology for Project-affected stream segments and Project reservoirs.
- Federal Energy Regulatory Commission (FERC) Environmental Assessment for Hydropower License, Rush Creek Project, FERC Project No. 1389 (FERC 1992).

¹ Stream segments as used in this document are typically long sections of stream with a relatively homogeneous flow regime. Segments may be subdivided into smaller reaches for study and/or due to fluvial geomorphology (e.g., stream gradient, channel confinement).

- FERC Relicensing Studies (EA Engineering Science and Technology 1986, 1987) related to instream flows.
- Gaging data from United States Geological Survey (USGS), SCE, and Los Angeles Department of Water and Power (LADWP).
- Aerial imagery (Google Earth Pro 2019).
- Channel-reach morphology in mountain drainage basins (Montgomery and Buffington 1997).
- USGS 1:24,000 Topography Maps and Digital Elevation Models.
- California Fire Perimeters 1879-2019 Feature Layer (FRAP 2021).
- Rush Creek stream sediment survey Waugh Lake to Gem Lake (Hinkle 1988).

POTENTIAL INFORMATION GAPS

- Characterization of existing stream channels (morphology, mesohabitat types, and sediment conditions).
- Sediment capture in Project reservoirs.
- Identification of flows necessary to maintain geomorphic processes in the Project-affected stream segments.
- Project-related sources of sediment and erosion.
- Geomorphic information necessary to evaluate:
 - Potential restoration of the Rush Creek channel within the former lakebed of Waugh Lake;
 - Potential enhancement of the Rush Creek and South Rush Creek channels near SR-158 to address localized flooding; and
 - Sediment scour/deposition in Rush Creek near the Silver Lake inlet.

STUDY OBJECTIVES

- Characterize the existing stream channels (morphology, mesohabitat types, and sediment conditions) in the Project-affected stream segments.
- Characterize sediment capture/deposition in the Project reservoirs.
- Develop information to assist in the identification of flows necessary to maintain geomorphic processes in the Project-affected stream segments.

- Identify historical and existing sources of sediment within and adjacent to Project-affected stream segments, Project reservoirs, and other Project facilities, including major gullies; areas of vegetation and/or soil loss; hillslope destabilization; and erosion associated with ongoing operation and maintenance of the Project. Natural sources of sediment unrelated to the Project will also be documented in the Project vicinity.
- Provide a geomorphic analysis, as needed, to evaluate:
 - Potential restoration of the Rush Creek channel within the former lakebed of Waugh Lake;
 - Potential enhancement of the Rush Creek and South Rush Creek channels near SR-158 to address localized flooding; and
 - Sediment scour/deposition in Rush Creek near the Silver Lake inlet.

EXTENT OF STUDY AREA

- The study area for geomorphology includes Project-affected stream segments, Project reservoirs, and Project facilities. Geomorphology sampling sites are identified in Table AQ 5-1 and Map 5-1. Table AQ 5-2 provides a list of Project facilities.
- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain) or on private property for which SCE has not received specific approval from the landowner to enter the property to perform the study.
- For study elements proposed within the Ansel Adams Wilderness, SCE will provide a complete catalog of all temporary installations or equipment including, but not limited to, transect markers, their locations, timeline of scheduled use, and recommended disposal methods or removal, prior to any installation. SCE will also provide confirmation of removal of any temporary installations to the Forest Service at the end of the study period.

STUDY APPROACH

The following describes the geomorphology study approach which includes data collection and analyses for: (1) characterizing channel conditions in the Project-affected stream segments; (2) evaluating sediment capture/deposition in Project reservoirs; (3) identifying flows necessary to maintain geomorphic processes; (4) identifying historical and existing sediment sources and Project-related erosion areas; (5) development of potential restoration of the Rush Creek channel within the former lakebed of Waugh Lake; (6) development of potential enhancement of channels near SR-158; and (7) evaluation of sediment deposition/transport in Rush Creek near the Silver Lake inlet.

CHANNEL CONDITION IN THE PROJECT-AFFECTED STREAM SEGMENTS

Stream Segment Classification and Mesohabitat Typing

- In each of the Project-affected stream segments (Table AQ 5-1) do the following:
 - Refine the desktop channel characterization, as needed, of each stream segment (and unique reaches² within each segment) presented in Section 4.8, Geomorphology using the Montgomery-Buffington (1997) process-based categories.
 - Estimate the Rosgen Level II classification (channel pattern, entrenchment ratio, width/depth ratio, sinuosity, channel material, slope) for each stream segment/reach using available data and data collected at the sampling locations in Table AQ 5-1 (Rosgen 1994). In the Rush Meadows Dam to Gem Lake stream segment, there are lower gradient and steeper gradient reaches, collect the data necessary to characterize both reaches.
- Mesohabitat map (type) (either by helicopter, high resolution aerial photographs, and/or foot travel) all river segments using the detailed level of mesohabitat typing outlined in McCain et al. (1990) (i.e., a potential of 22 mesohabitat types). An overlap (10%; 1 mile) between on-ground and helicopter/aerial photography delineated mesohabitats will be used to calibrate/validate the helicopter/aerial photography derived mesohabitat classifications.
 - These habitat types will be collapsed into a lower level of detail to facilitate river stratification for instream flow modeling. SCE proposes to aggregate the McCain et al. (1990) mesohabitat types into approximately six types (pool, run, low-gradient riffle, high-gradient riffle, cascade, and falls/chutes) for stratification of the study sites and stream segments.

Sediment Conditions in the Project-affected Stream Segments

The amount of fine sediment in pools and the particle size composition and fine sediment content in spawning gravels will be determined in the Project-affected stream segments, as described below.

² Reaches as used in this document are shorter sections of river within a longer stream segment (length of stream with homogeneous flow) that are delineated due to differences in fluvial geomorphology (e.g., stream gradient, channel confinement) or locations selected for collection of study data.

Fine Sediment in Pools

A quantitative analysis of fine sediment in pools, V^* (Hilton and Lisle 1993), will be conducted.

- Conduct quantitative visual estimates of residual fine sediment in five pools, V^* (Hilton and Lisle 1993), at each of the sampling locations (selected stream reaches) in the Project-affected stream segments (Table AQ 5-1 and Map 5-1).
 - Visual estimates of V^* will be made using a snorkel and mask, as necessary. The visual surveys will be supported by a combination of photographic documentation of pool bottom sediments and sketch maps, and measurements of the surface area and depth of any fine sediment patches observed.
 - Pools with V^* values that are relatively low (less than 0.1) can be reasonably approximated by visual estimation (Hilton and Lisle 1993). If there are problems completing the V^* estimates (for example, due to excessive pool depths or V^* values exceed 0.1), the issue will be communicated to the resource agencies for further consultation.

Particle Size Composition and Fine Sediment Content in Spawning Gravels

- Determine particle size distribution and fine sediment content of spawning gravels in the selected stream reaches within the Project-affected stream segments using bulk sampling techniques (McNeil and Ahnell 1960). The locations are listed in Table AQ 5-1 and Map 5-1.
 - Collect bulk samples in three representative gravel patches using a modified McNeil sampler (i.e., bottomless bucket) to depths that approximate that of a trout egg pocket. Coarse sediments will be sieved and weighed on-site. Finer sediments will be packaged for transport from the field site and later dried, sieved, and weighed.
 - One “side-by-side” replicate pair of bulk samples will be taken in each of the study sites to provide a measure of the variability in particle size composition within the same gravel deposit to characterize an expected range of natural variability.
- Plot particle size composition of spawning gravel samples as cumulative distribution curves and histograms. Statistically analyze the particle size composition as represented by the D50, D16, and D84.
- Compare particle size composition and fine sediment content to standards from the scientific literature (Kondolf 1988, 2000) and, where applicable, to the relevant comparison streams.

SEDIMENT CAPTURE/DEPOSITION IN PROJECT RESERVOIRS

The capture/deposition of sediment in Project reservoirs (Waugh, Gem, and Agnew lakes) will be evaluated based on a review of existing sediment management information and data collected from field studies.

- Summarize any existing sediment management conducted by SCE Operations and Maintenance personnel.
- Map sediment facies in the exposed reservoir bed areas and determine the depth of the fine sediment deposition facies to estimate sediment volume.
- In Waugh Reservoir, use tree stump mapping (completed during implementation of the TERR 1 – Botanical Technical Study Plan [TSP]) to assist in identification of sediment deposition.

IDENTIFY FLOWS NECESSARY TO MAINTAIN GEOMORPHIC PROCESSES IN PROJECT-AFFECTED STREAM SEGMENTS

Information regarding flows that are necessary to maintain geomorphic processes in the Project-affected stream segments will be developed by comparing impaired and unimpaired hydrologic regimes and modeling sediment transport conditions under different flow regimes.

Compare Impaired and Unimpaired Hydrologic Regimes

- Compare Proposed Project, historical, existing, and unimpaired hydrologic regimes (high-flow magnitude, duration, and frequency) in Project-affected stream segments using peak flow data developed in the AQ 2 – Hydrology TSP.

Evaluate Initiation of Sediment Transport under Different Flow Regimes at Selected Stream Segment Study Sites

- Different stream reaches have different levels of hydraulic modeling (Table AQ 5-1).
 - At the locations where only sediment transport and riparian vegetation cross-sections are being modeled, select three representative cross-sections (in coordination with implementation of the AQ 1 – Instream Flow TSP and TERR 1 – Botanical TSP) and collect the following information:
 - Survey topography (including floodplain);
 - Approximate bankfull elevation, water surface elevation slope, and elevation of riparian vegetation;
 - Conduct a pebble count; and
 - Collect three water surface elevations at flows identified in AQ 1 – Instream Flow TSP.

- At the locations where instream flow habitat modeling is proposed (multiple mesohabitats) either with cross-section or two-dimensional hydrodynamics modeling (AQ 1 – Instream Flow TSP), select three riffles and collect bankfull elevations, water surface slopes, elevations of riparian vegetation, and pebble counts. Water surface elevations will be collected as part of the AQ 1 – Instream Flow TSP.
- Identify initiation of sediment transport (motion) and bankfull flows at the study sites in the selected stream segments using the hydraulic models developed in the AQ 1 – Instream Flow TSP.
 - Derive channel hydraulic conditions, including flow depth, velocity, energy slope, and bed shear stress, from the models over a range of high flows.
 - Determine flows necessary for initiation of sediment transport (motion) using a range of critical shear stress and corresponding range of discharge values for a given particle size.
 - Estimate bankfull flow using the water surface elevations modeled over a wide range of flows at each cross-section (AQ 1 – Instream Flow TSP) and the bankfull elevations identified in the field.

IDENTIFY HISTORIC AND EXISTING SOURCES OF SEDIMENT AND PROJECT-RELATED EROSION AREAS

- Document the location and relative volume of historic and existing sediment recruitment to channels from hillslope mass wasting and bank erosion processes in the Project-affected stream segments.
 - Significant sediment recruitment, mass wasting, and/or bank erosion sites will be mapped via aerial reconnaissance, ground survey, and/or aerial photography.
 - Identify whether the sources of sediment are derived from natural watershed process or Project-related effects.
 - Generalize whether sediment sources are actively or inactively contributing sediment and if so by how much (e.g., low, moderate, high delivery potential to the stream channel).
- Historic and/or ongoing erosion at the Project facilities (including Project reservoirs) will be mapped via aerial reconnaissance, ground survey, and/or aerial photography (Table AQ 5-2).

EVALUATION OF POTENTIAL RUSH CREEK CHANNEL RESTORATION IN THE FORMER LAKEBED OF WAUGH LAKE

- Coordinate with the AQ 1 – Instream Flow TSP, which includes Light Detection and Ranging (LiDAR), aerial photogrammetry, and/or total station channel surveys and hydraulic modeling of the channel in the Waugh Lake lakebed to assist in the evaluation of potential channel change related to sediment erosion/deposition.
- Use this information to assist in the evaluation of potential restoration of the Rush Creek channel within the former lakebed of Waugh Lake.

EVALUATION OF POTENTIAL ENHANCEMENT OF RUSH CREEK AND SOUTH RUSH CREEK CHANNELS NEAR SR-158

- In coordination with implementation of the TERR 1 – Botanical TSP and AQ 1 – Instream Flow TSP, characterize and map large woody debris/downed trees and riparian vegetation within the stream channels related to conveyance blockage and creation of potential flow backwater effects during high-flow events.
- Coordinate with the AQ 1 – Instream Flow TSP, which includes LiDAR, aerial photogrammetry, and/or total station surveys of the channel and hydraulic modeling of the channel to assist in development of potential enhancements (e.g., berms, channel modification, clearing of the channel) and evaluation of fluvial geomorphic change in the Rush Creek and South Rush Creek channels.

EVALUATE OF SEDIMENT DEPOSITION/TRANSPORT IN RUSH CREEK NEAR THE SILVER LAKE INLET

- Coordinate with the AQ 1 – Instream Flow TSP, which includes LiDAR, aerial photogrammetry, and/or total station surveys of the channel and hydraulic modeling of the channel to evaluate sediment scour/deposition and potential fluvial geomorphic change at the Silver Lake inlet under the Proposed Project, historical, existing, and unimpaired hydrology conditions.

REPORTING

- Study methods and results will be documented in an AQ 5 – Geomorphology Technical Study Report (TSR). The TSR will include summary tables and maps, as appropriate.
- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

SCHEDULE

Date	Activity
September–October 2022	Conduct channel surveys (e.g., mesohabitat and Rosgen mapping)
January–April 2023	Complete data analysis
April–October 2023	Conduct sediment capture/deposition surveys, sediment transport field surveys, sediment source surveys, and evaluation of potential restoration/enhancement measures in coordination with instream flow surveys
October 2023–February 2024	Analyze data and prepare draft report
March 2024	Distribute draft report to stakeholders
April–June 2024	Stakeholders review and provide comments on draft report (90 days)
June–July 2024	Resolve comments and prepare final report
August 2024	Distribute final report in Draft License Application

REFERENCES

- EA Engineering, Science, and Technology. 1986. Instream flow and fisheries studies for the upper Rush Creek Hydroelectric Project. Lafayette, California, November 1986. 30 pp.
- . 1987. Addendum 1 to instream flow and fisheries studies for the Rush Creek Hydroelectric Project. Lafayette, California, November, 1987. 45 pp.
- FERC (Federal Energy Regulatory Commission). 1992. Environmental Assessment for Hydropower License. Rush Creek Project No. 1389. FERC eLibrary No. 19920604-0017.
- FRAP (Fire and Resource Assessment Program). 2021. California Fire Perimeters 1879-2019 Feature Layer. Available at: <https://www.arcgis.com/home/item.html?id=6fd0d8d6f47d414da7bcb1dcd0539999>.
- Google Earth Pro. 2019. 7.3.3.7786. Gem Lake, California. 37°46'11.81", 119°07'43.69" Available at: <http://www.google.com/earth/index.html>. Accessed September 13.
- Hilton, Sue, and Thomas E. Lisle, 1993. Measuring the Fraction of Pool Volume Filled with Fine Sediment. Res. Note PSW-RN-414. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture.
- Hinkle, D. 1988. Rush Creek Stream Sediment Survey Waugh Lake to Gem Lake, September 21, 1988. 12 pp.

- Kondolf, G.M. 1988. Salmonid spawning gravels: A geomorphic perspective on their size distribution, modification by spawning fish, and criteria for gravel quality. PhD thesis. Johns Hopkins University, Baltimore.
- . 2000. Assessing salmonid spawning gravel quality. *Transactions American Fisheries Society*, 129: 262-281.
- McCain, M., D. Fuller, L. Decker, and K. Overton. 1990. Stream habitat classification and inventory procedures for northern California. FHR Currents: R-5's fish habitat relationships technical bulletin. No. 1. U.S. Dept. of Agriculture, Forest Service, Pacific Southwest Region, Arcata, California.
- McNeil, W.J. and W.H. Ahnell. 1960. Measurement of gravel composition of salmon stream beds. *University of Washington Fish. Res. Inst. Circ. No. 120*.
- Montgomery, D.R. and J.M. Buffington. 1997. Channel-reach morphology in mountain drainage basins. *GSA Bulletin* May 1997, v. 109, no. 5. pp.
- Rosgen, David L. 1994. "A Classification of Natural Rivers." *CATENA* 22 (3): 169–99. [https://doi.org/10.1016/0341-8162\(94\)90001-9](https://doi.org/10.1016/0341-8162(94)90001-9).
- SCE (Southern California Edison Company). 2021. Rush Creek Project (FERC Project No. 1389) Pre-Application Document. December.

TABLES

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Table AQ 5-1. Geomorphology Study Sites.

Stream Segment Name	Segment Length (miles) / River Miles (RM)	Sampling Location River Mile / Site ID	Sampling Method
Rush Creek			
Waugh Lake	1.51 (RM 22.24–23.75)	RM 23.0 / RC23.0	V*, Spawning Gravel, Initiation of Motion, Bankfull Elev., sediment deposition, restoration analysis, and Project facility sediment sources
Rush Creek Below Rush Meadows Dam	1.83 (RM 20.41–22.24)	RM 21.65 / RC21.65	V*, Spawning Gravel, Initiation of Motion, Bankfull Elev.
Gem Lake	0.93 (RM 19.48–20.41)	—	Sediment deposition / Project facility sediment sources
Rush Creek Below Gem Dam	0.30 (RM 19.18–19.48)	—	—
Agnew Lake	0.58 (RM 18.60–19.18)	—	Sediment deposition / Project facility sediment sources
Rush Creek Below Agnew Dam	0.40 (RM 18.2–18.60)	RM 18.55 / RC18.55	V*, Spawning Gravel, Initiation of Motion, Bankfull Elev.
Rush Creek Horsetail Falls	0.54 (RM 17.66–18.2)	—	—
Rush Creek Above Silver Lake	0.94 (RM 16.72–17.66)	RM 17.05 / RC17.05 RM 17.55 / RC17.55	V*, Spawning Gravel, Initiation of Motion, Bankfull Elev.
		RM 17.50–17.60 / RC17.50–17.60	Map downed trees / riparian vegetation within channel
Silver Lake	0.83 (RM 15.89–16.72)	—	—
Rush Creek Below Silver Lake	2.69 (RM 13.20–15.89)	RM 15.2 / RC15.2	V*, Spawning Gravel, Initiation of Motion, Bankfull Elev.
South Rush Creek			
South Rush Creek	0.46 (RM 0.0–0.46)	RM 0.15 / SRC0.15	V*, Spawning Gravel, Initiation of Motion, Bankfull Elev.
		RM 0.0–0.46 / SR0.0–0.46	Map downed trees / riparian vegetation within channel

Notes:
RM = River Mile

Table AQ 5-2. Rush Creek Project Facilities

Rush Meadows Dam Area
Dams
Rush Meadows Dam
Reservoirs
Waugh Lake
Valve House
Rush Meadows Dam Valve House
Stream Gages
Rush Creek below Rush Meadows (Waugh Lake) (USGS No. 10287262; SCE No. 359r)
Reservoir Gages
Waugh Lake (USGS No. 10287260; SCE No. 359)
Trails
Rush Meadows Dam Access Trail
Rush Meadows Dam/Waugh Lake Ancillary and Support Facilities
Rush Meadows Dam Equipment Shed
Rush Meadows Dam Gage House
Rush Meadows Dam Solar Facility
Gem Dam Area
Dams
Gem Dam
Reservoirs
Gem Lake
Flowline
Gem Dam to Agnew Junction Flowline
Valve House
Gem Valve House and Cabin
Gem Dam Arch 8 Valve House
Gem Flowline Valve House
Stream Gages
Rush Creek below Gem Lake (USGS No. 10287281; SCE No. 352r)
Reservoir Gages
Gem Lake (USGS No. 10287280; SCE No. 352)

Gem Dam Area (continued)
Communication Lines
Communication Line from Rush Creek Powerhouse to Gem Lake Dam
Communication Line from Gem Valve House to Arch 8 Valve House
Communication Line from Gem Tram Hoist House to Gem Valve House
Trams and Hoist Houses
Gem Tram
Gem Tram Hoist House
Gem Tram Lower/Upper Landing
Trails
Lower Gem Dam Access Trail
Gem Dam Arch 8 Access Trail
Upper Gem Dam Access Trail
Gem Dam/Lake Ancillary and Support Facilities
Gem Lake Dock
Gem Lake Motor Barge
Gem Bunkhouse
Gem Outhouse
Gem Cookhouse
Gem Dam Compressor Shed
Gem Dam Storage Shed
Gem Dam Overhead Hoist House for Dam Length
Gem Dam Overhead Hoist House
Gem Fish Release Footbridge
Gem Tram Landing Footbridge
Gem Tram Bridge
Gem Weather Station
Gem Satellite Dish
Gem Solar Facility
Gem Valve House Tunnel

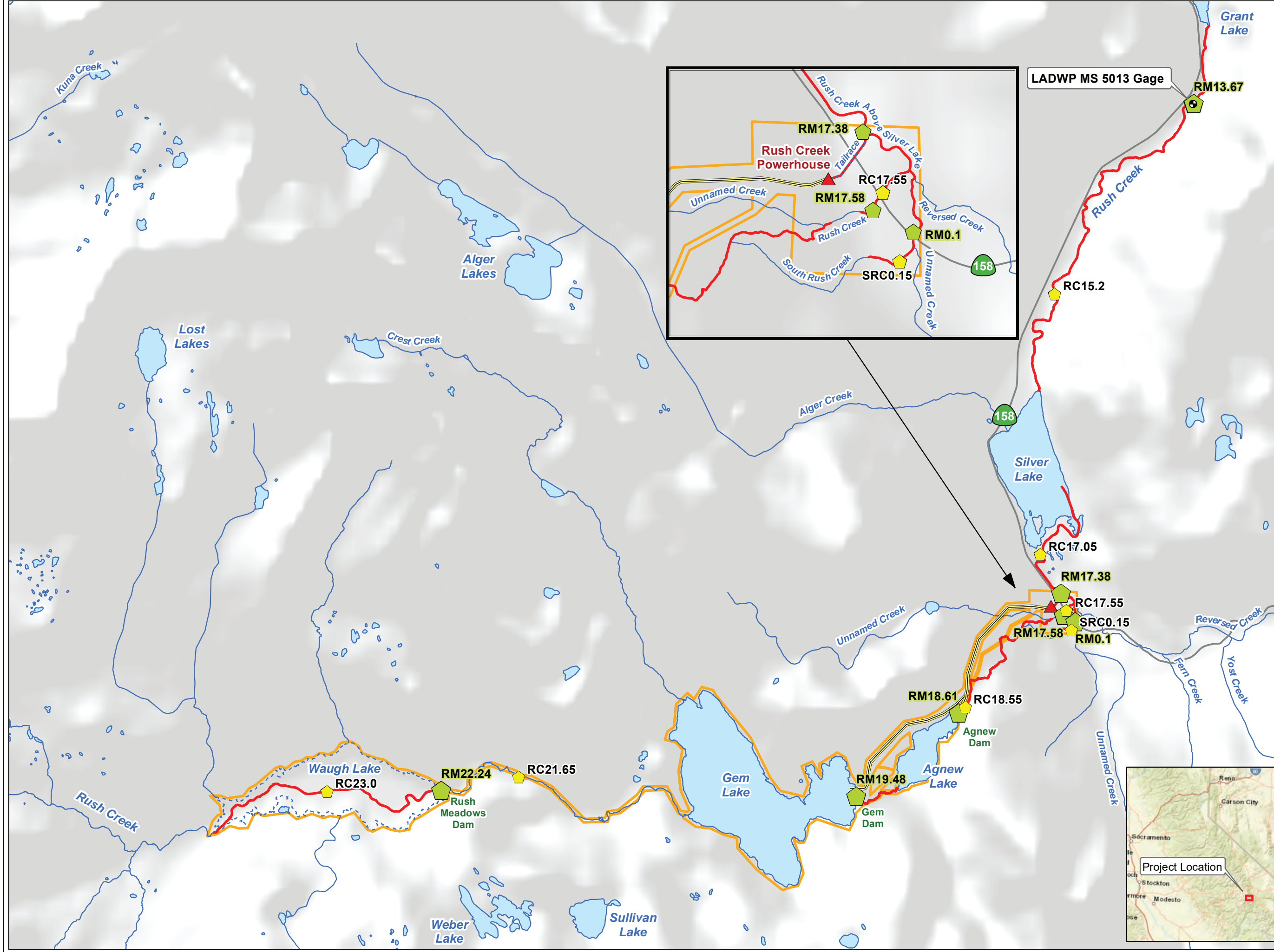
Agnew Dam Area
Dams
Agnew Dam
Reservoirs
Agnew Lake
Flowline
Agnew Dam to Agnew Junction Flowline
Valve House
Agnew Junction (Valve House and Stand Pipe)
Agnew Dam Valve House
Stream Gages
Rush Creek below Agnew Lake (USGS No. 10287289; SCE No. 357)
Reservoir Gages
Agnew Lake (USGS No. 10287285; SCE No. 351)
Power Lines
4 kV Rush Creek Powerhouse to Agnew Dam Power Line
4 kV Agnew Lake Dam Power Line
4 kV Upper Agnew Boat Dock Power Line (non-operational)
Communication Lines
Communication Line from Agnew Hoist House to Agnew Boathouse
Trams and Hoist Houses
Agnew Tram
Agnew Tram Hoist House
Agnew Tram Landing
Trails
Agnew Stream Gage Access Trail
Agnew Dam/Lake Ancillary and Support Facilities
Lower Agnew Lake Boathouse/Dock
Upper Agnew Lake Boathouse/Dock
Agnew Lake Motor Barge
Agnew Cabin
Agnew Weather Station
Agnew Flume (downstream of Agnew Dam)

Rush Creek Powerhouse Area
Penstocks
Agnew Junction to Rush Creek Powerhouse Penstock (No. 1)
Agnew Junction to Rush Creek Powerhouse Penstock (No. 2)
Powerhouse
Rush Creek Powerhouse
Gages
Rush Creek Powerhouse (USGS No. 10287300; SCE No. 367)
Transmission Lines
2.4 kV Switchyard to Powerhouse Transmission Line
Powerhouse Ancillary and Support Facilities
Rush Creek Powerhouse Complex Access Road
Cottages (2)
Garages (4)
Warehouse and Dock
Machine Shop
Pump House
Woodshed (2)
Helicopter Landing Site
Tank (propane)
Bridge over Powerhouse Tailrace
Bridge over Rush Creek


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MAPS

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- SCE Facilities**
- Dam
 - ▲ Powerhouse
 - ▬ Flowline / Penstock
 - ⋯ Tailrace
- Other Features**
- Highway
 - River/Stream
 - Lake/Reservoir
 - ⋯ Dry Lake/Reservoir
 - ▭ FERC Boundary
- Study Sites and Reaches**
- Hydrology Analysis Site
 - Geomorphology/Riparian Site
 - Instream Flow Modeling Reaches




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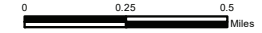
Rush Creek Project (FERC 1389)

Map AQ 5-1

Analysis and Survey Locations



Date: 11/3/2021



0 0.25 0.5 Miles

Projection: UTM Zone 11
Datum: NAD 83

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AQ 6 – FISH POPULATION AND BARRIERS TECHNICAL STUDY PLAN

**Rush Creek Hydroelectric Project
FERC Project No. 1389**



September 2022

AQ 6 – Fish Population and Barriers Technical Study Plan

POTENTIAL RESOURCE ISSUES

- Fish species composition, distribution, and abundance.
- Fish barriers/migration.

PROJECT NEXUS

- Project operations modify the flow regime in Project-affected stream segments¹ and Project reservoirs. The modified flow regime could affect the amount and distribution of fish habitat.
- Project facilities and operations may affect fish barriers/migration.

RELEVANT INFORMATION

The following information is available to characterize fish population and passage in the vicinity of the Rush Creek Project (refer to Southern California Edison Company's [SCE] Pre-Application Document [PAD] Section 4.5 for a summary of fish population and passage information [SCE 2021]).

- Federal Energy Regulatory Commission (FERC) Environmental Assessment for Hydropower License, Rush Creek Project, FERC Project No. 1389 (FERC 1992).
- FERC Relicensing Studies (EA Engineering Science and Technology 1986, 1987a, 1987b; Lund 1988) related to instream flows, fish entrainment mortality, fish sampling, and reservoir water quality.
- FERC Monitoring Studies (Sada 2001a, 2001b, 2003; SCE 2002; Read and Sada 2012) related to fish monitoring studies, entrainment mortality, and reservoir water quality.
- Inland fishes of California, University of California Press, Berkeley (Moyle 2002).
- California Department of Fish and Wildlife data and data sources (Eastern Sierra Back Country Fishing Guide, High Mountain Lake Project data, stocking data).

POTENTIAL INFORMATION GAPS

- Fish composition, distribution, and abundance.
- Upstream fish barriers.

¹ Stream segments as used in this document are typically long sections of stream with a relatively homogeneous flow regime. Segments may be subdivided into smaller reaches for study and/or due to fluvial geomorphology (e.g., stream gradient, channel confinement).

STUDY OBJECTIVES

FISH POPULATIONS

- Document fish species composition, distribution, and relative abundance in Project-affected stream segments and Project reservoirs.
- Characterize fish growth, condition factor, and population age structure in Project-affected stream segments and Project reservoirs.

FISH BARRIERS/MIGRATION

- Document the location, nature, and characteristics of fish barriers in Project-affected stream segments.
- Identify Project facilities and operations (e.g., dam, reservoir operations, instream flow releases) that may affect fish migration.

EXTENT OF STUDY AREA

- The study area for the assessment of fish population and migration includes Project-affected stream segments and Project reservoirs.
 - Fish population sampling locations are identified in Table AQ 6-1 and Map AQ 6-1.
 - Barrier surveys will include the entire length of the Project-affected stream segments.
- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain) or on private property for which SCE has not received specific approval from the landowner to enter the property to perform the study.

STUDY APPROACH

FISH POPULATIONS – SELECTED STREAM SEGMENTS

- The locations of selected stream segments for developing fish species composition, distribution, and relative abundance estimates (fish per mile and/or pounds [lbs.] per acre) are shown in Table AQ 6-1 and Map AQ 6-1.
- Stream sampling sites (electrofishing and/or snorkeling) will generally be a minimum of 100 meters (m) long to include multiple habitat types.
 - The AQ 5 – Geomorphology Technical Study Plan (TSP) mesohabitat mapping will be used to identify representative sampling sites with mesohabitat types in similar proportion to the larger geomorphic stream segment.

- Where possible, sampling sites will be chosen that overlap with the instream flow study sites (see the AQ 1 – Instream Flow TSP) and/or historic fish sampling sites.
- Table AQ 6-1 identifies the sampling location, length, and methods proposed in the selected stream segments and Project reservoirs.
- Quantitative stream sampling will be conducted during the late summer/early fall base-flow period using a combination of electrofishing (shallow water) and/or snorkeling (deep water) (Table AQ 6-1).
 - Multi-pass electrofishing (e.g., Reynolds 1996; Van Deventer and Platts 1989; Rexstad and Burnham 1992) will be used to sample and estimate fish populations in shallow stream habitats (<1.5 m) at each selected stream segment study site. Where possible, the representative study sites will be partitioned into mesohabitat types for sampling using block nets.
 - Captured fish from each pass will be kept in separate live wells or buckets. Fish will be anesthetized (carbon dioxide [CO₂]), enumerated, identified to species, measured (fork length and weight), and scale samples will be obtained. Fish will be returned to the study site when the sampling is completed.
 - Sampling protocols and field data forms will be consistent with those in Flosi et al. 1998. The lengths and widths of the habitat units sampled will be recorded to calculate fish abundance by length and area (density) of stream sampled.
- Snorkeling (e.g., Dolloff et al. 1996) will be used to assess fish populations in deep water habitats (≥1.5 m) at each representative study site (Table AQ 6-1).
 - Snorkeler(s) will survey in lanes along the stream to identify, count, and estimate the length of each fish observed. Fish data will be recorded by habitat unit type.
 - Snorkeling protocols and field data forms will be consistent with those in Flosi et al. (1998).

FISH POPULATIONS – PROJECT RESERVOIRS

- Characterize fish species composition, relative abundance, and size in the Project reservoirs using gillnets.
- Sample in each Project reservoir once during the late summer/early fall using variable mesh gillnets at three sampling locations in Gem Lake and two sampling locations in Agnew Lake.
 - Two nets will be placed vertically or sloping along the gradient of the reservoir bottom, depending on the depth of water, at each sampling locations.

- The sampling locations will be distributed evenly along the length of the reservoir with the goal of sampling both deep water and littoral zone habitats with one net at each location oriented perpendicular from the shore in the littoral zone, small mesh near the shore, and the other net in deeper water set vertically, small mesh near the surface (Figure AQ 6-1).
- Gillnets will be set in the afternoon of one day, and retrieved and processed the morning of the following day.
- Fish will be enumerated, weighed, and measured (fork length). Severely injured fish will be euthanized and dead fish will be placed in deep water (air bladders will be punctured so the fish sink) to return the biomass back to the ecological system.
- It should be noted that Gem Lake is located within the Ansel Adams Wilderness Area. Collection of fish population data using gill nets in Gem Lake requires the use of a motorized vessel for the safety of field workers. If any required authorization from the Forest Service to use a motorized vessel on Gem Lake is not obtained, SCE cannot implement the study plan component to collect fish population data using gill nets in Gem Lake.

FISH BARRIERS/MIGRATION

- Identify and classify potential fish barriers in Project-affected stream segments and drawn down Project reservoirs.
 - Use the AQ 5 – Geomorphology TSP mesohabitat mapping to identify the location and nature (natural or Project-related) of potential barriers (e.g., natural falls, tributary junctions, road crossings, shallow riffles, and dams) in Project-affected stream segments and drawn down Project reservoirs.
 - Classify each potential barrier identified in the field or from aerial methods mapping (e.g., helicopter, aerial photographs) into the falls, chute, and cascade types defined by Powers and Orsborn (1985) or as critical riffles (Thompson 1972).
 - For stream road crossings, use a classification approach consistent with Flosi et al. (2010).
 - Summarize data collected at the potential fish passage barriers during field mapping or aerial methods (e.g., fall height, plunge pool depth, photographs, and field biologist observations).

- Estimated potential for fish passage at Project-related fish barriers during the base-flow (low-flow) period using the following information:
 - The general fish barrier assessment methodology outlined in Powers and Orsborn (1985) and Thompson (1972) modified, where necessary, for the specific species (e.g., rainbow trout and brook trout) and barriers within the study area.
 - Leaping and swimming capabilities of the fish based on the literature (Powers and Orsborn 1985; Hoar et al. 1978) and fish size and water temperature information from the AQ 6 – Fish Population TSP and the AQ 3 – Water Temperature TSP.
 - Physical and hydraulic characterization of potential barriers based on measurements or aerial estimates and/or Project engineering drawings.
 - For stream road crossings, evaluate fish migration consistent with Flosi et al. (2010).

REPORTING

GENERAL

- Study methods and results will be documented in an AQ 6 – Fish Population and Barriers Technical Study Report (TSR). The TSR will include summary tables and maps, as appropriate.
- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

FISH POPULATION – SELECTED STREAM SEGMENTS

- Summarize fish standing crop estimates for each species at each study site in terms of density (e.g., fish/feet² and fish/mile) and biomass (lbs/acre and lbs/mile).
- Identify appropriate fish standing crop comparison datasets in collaboration with interested resource agencies.
- Develop a fish life stage periodicity chart (or life history chronology chart by month) for each species for each study reach based on available literature, consultation with qualified fisheries biologists, and the fish population sampling data.
- Develop length frequency histograms of sampled fish and examine distribution modality, in conjunction with scale data, to determine the age structure of fish populations.
- Summarize fish growth and age data using length frequency and scale analysis.
- Calculate fish condition factors using measured weight and length data.

FISH POPULATION – PROJECT RESERVOIRS

- Summarize fish composition, size, and relative abundance in each Project Reservoir.

FISH BARRIERS/MIGRATION

- Provide description and map of potential fish barriers in Project-affected stream segments.

SCHEDULE

Date	Activity
June–September 2023	Characterize fish barriers/migration in Project-affected stream segments
August–October 2023	Conduct fish population sampling in Project-affected stream segments and Project reservoirs
October 2023–February 2024	Analyze data and prepare draft report
March 2024	Distribute draft report to stakeholders
April–June 2024	Stakeholders review and provide comments on draft report (90 days)
June–July 2024	Resolve comments and prepare final report
August 2024	Distribute final report in Draft License Application

REFERENCES

- Doloff, A., J. Kershner, and R. Thurow. 1996. Underwater Observation. Pages 533–554 in B.R. Murphy and D.W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.
- EA Engineering, Science, and Technology. 1986. Instream flow and fisheries studies for the upper Rush Creek Hydroelectric Project. Lafayette, California, November 1986. 30 pp.
- . 1987a. Addendum 1 to instream flow and fisheries studies for the Rush Creek Hydroelectric Project. Lafayette, California, November, 1987. 45 pp.
- . 1987b. East side Sierra hydroelectric relicensing studies: Effects of unscreened intakes on fish populations in reservoirs. Lafayette, California, August, 1987. 10 pp.
- FERC (Federal Energy Regulatory Commission). 1992. Environmental Assessment for Hydropower License. Rush Creek Project No. 1389. FERC eLibrary No. 19920604-0017.

- Flosi, G., S. Downie, J. Hopelain, M. Bird, R. Coey and B. Collins. 1998. California Salmonid Stream Restoration Manual, Third Edition. State of California, The Resources Agency, California Department of Fish and Game, Inland Fisheries Division, Sacramento, California.
- Flosi, G., S. Downi, J. Hopelain, M. Bird, R. Coey, and B. Collins. 2010. California Salmonid Stream Habitat Restoration Manual Vol. II, Part IX, Fish Passage Evaluation at Stream Crossings. California Department of Fish and Game.
- Hoar, W.S. and D.J. Randall (ed). 1978. Fish Physiology. Academic Press New York.
- Lund, L. 1988. Water quality of Bishop Creek and selected eastern Sierra Nevada lakes. Report of Research for 1986 to 1988. SCE. 110 pp.
- Moyle, P. 2002. Inland fishes of California. University of California Press, Berkeley. 502 pp.
- Powers, P.D. and J.F. Orsborn. 1985. Analysis of Barriers to Upstream Migration: An Investigation of the Physical and Biological Conditions Affecting Fish Passage Success at Culverts and Waterfalls. BPA Report No. DOE/BP-36523-1.
- Read, E. and D. Sada. 2012. Analysis of Riparian Vegetation, Aquatic Habitat, and Fish Populations, Phase 2 (Year 1) and Comparison to Baseline. Prepared for Southern California Edison Company.
- Rexstad, E. and K. Burnham. 1992. User's Guide for Interactive Program CAPTURE. Colorado Cooperative Fish and Wildlife Research Unit, Colorado State University, Fort Collins, Colorado.
- Reynolds, J.B. 1996. Electrofishing. Pages 83-120 in B.R. Murphy and D.W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.
- Sada, D.W. 2001a. Turbine-induced Trout Mortality During 1998-2000 Rush Creek, Mono County, California. Prepared for SCE by Desert Research Institute 2215 Raggio Parkway, Reno, Nevada.
- . 2001b. Fish population surveys in Rush and Lee Vining Creeks, Mono County, California, 1999 and 2000. Unpublished report to Southern California Edison Company. Rosemead, California.
- . 2003. Aquatic habitat monitoring, Rush and Lee Vining Creeks, Mono County, California, 1999, 2000, 2001, and 2002. Unpublished report to Southern California Edison Company. Rosemead, California.

SCE (Southern California Edison Company). 2002. Filing to FERC Feb 25 (via Electronic Filing) Fish Entrainment at SCE's Rush Creek Hydro Project (FERC 1389).

———. 2021. Rush Creek Project (FERC Project No. 1389) Pre-Application Document. December.

Thompson, K. 1972. Determining Stream Flows for Fish Life in Pacific Northwest River Basins Commission Instream Flow Workshop, March 15–16, 1972.

Van Deventer, J.S. and W.S. Platts. 1989. Microcomputer software system for generating population statistics from electrofishing data-User's guide for MicroFish 3.0. US Department of Agriculture, Forest Service. Intermountain Research Station, General Flosi, G., S. Downi, J. Hopelain, M. Bird, R. Coey, and B. Collins. 2010. California Salmonid Stream Habitat Restoration Manual Vol. II, Part IX, Fish Passage Evaluation at Stream Crossings. California Department of Fish and Game.

TABLES

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Table AQ 6-1. Fish Population Sampling Locations.

Stream Segment Name	Segment Length (miles) / River Miles (RM)	Sampling Location River Mile / Site ID	Site Length^a (meters [m])	Sampling Method
Rush Creek				
Rush Creek Above Waugh Lake (reference reach)	0.5 (RM 23.8–24.3)	RM 23.9 / RC23.9	100 m	Electrofishing/ Snorkeling
Waugh Lake	1.51 (RM 22.24–23.75)	RM 23.0 / RC23.0	100 m	Electrofishing/ Snorkeling
Rush Creek Below Rush Meadows Dam	1.83 (RM 20.41–22.24)	RM 21.65 / RC21.65	100 m	Electrofishing/ Snorkeling
Gem Lake ^b	0.93 (RM 19.48–20.41)	Three Sampling Locations (determined in field)	—	Gillnets
Rush Creek Below Gem Dam	0.30 (RM 19.18–19.48)	—	—	—
Agnew Lake	0.58 (RM 18.60–19.18)	Two Sampling Locations (determined in field)	—	Gillnets
Rush Creek Below Agnew Dam	0.40 (RM 18.2–18.60)	RM 18.55 / RC18.55	100 m	Electrofishing/ Snorkeling
Rush Creek Horsetail Falls	0.54 (RM 17.66–18.2)	—	—	—
Rush Creek Above Silver Lake	0.94 (RM 16.72–17.66)	RM 17.05 / RC17.05 RM 17.55 / RC17.55	100 m each site	Electrofishing/ Snorkeling
Silver Lake	0.83 (RM 15.89–16.72)	—	—	—
Rush Creek Below Silver Lake	2.69 (RM 13.20–15.89)	RM 15.2 / RC15.2	100 m	Electrofishing/ Snorkeling
South Rush Creek				
South Rush Creek	0.46 (RM 0.0–0.46)	RM 0.15 / SRC0.15	100 m	Electrofishing/ Snorkeling

Notes:

m = meters
RM = River Mile

^a. Sampling in reservoir and lakes is measured in terms of effort - placement of overnight gillnets at three locations in Gem and two locations in Agnew.

^b. Fish population sampling in Gem Lake is contingent on obtaining any required Forest Service authorization for use of a motorized boat.

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FIGURES

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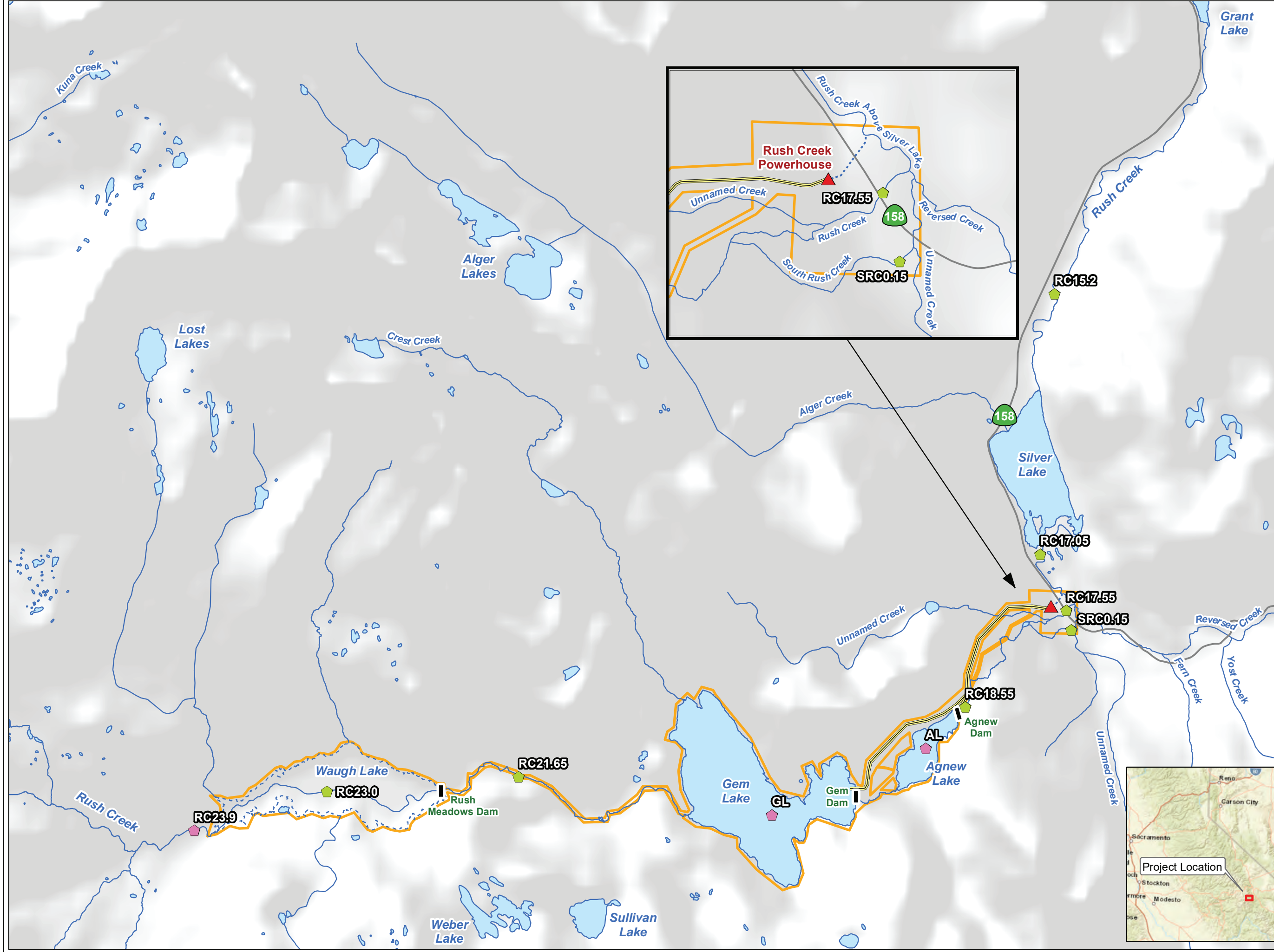


Figure AQ 6-1. Gillnet Fish Sampling Locations.

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MAPS

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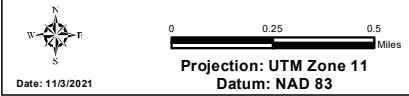
- SCE Facilities**
- Dam
 - Powerhouse
 - Flowline / Penstock
 - Tailrace
- Other Features**
- Highway
 - River/Stream
 - Lake/Reservoir
 - Dry Lake/Reservoir
 - FERC Boundary
- Sampling Locations**
- Fish Population
 - Fish Population, Amphibians



Rush Creek Project (FERC 1389)

Map AQ 6-1

Sampling Locations



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AQ 7 – SPECIAL-STATUS AMPHIBIANS TECHNICAL STUDY PLAN

**Rush Creek Hydroelectric Project
FERC Project No. 1389**



September 2022

AQ 7 – Special-Status Amphibians Technical Study Plan

POTENTIAL RESOURCE ISSUES

- Special-status amphibians and their habitats.

PROJECT NEXUS

- Direct loss or degradation of habitat.
- Disturbance or direct loss of special-status amphibians.

RELEVANT INFORMATION

The following information is available regarding special-status amphibians in the vicinity of the Rush Creek Project (refer to Southern California Edison Company's [SCE] Pre-Application Document [PAD] Section 4.5 for a summary of fish and aquatic resource information, including special-status amphibians [SCE 2021]):

- Floodplain, littoral zones, and associated wetland and riparian habitats present at Project reservoirs and Project-affected stream segments¹ (SCE's PAD Section 4.9, Riparian; SCE 2021).
- Known occurrences of special-status amphibians in the vicinity of the Project based on the California Natural Diversity Database (CNDDDB) (CDFW 2020); California Department of Fish and Wildlife (CDFW) High Mountain Lake (HML) Rush Creek Management Unit, Herps Dataset (CDFW 2016); U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPac) (USFWS 2020); and U.S. Forest Service (Forest Service) Natural Resource Information System observation data (Forest Service 2017).
- Critical Habitat located in/near the Federal Energy Regulatory Commission (FERC) Project boundary for the Sierra Nevada Yellow-legged Frog (SNYLF) and the Yosemite toad (YT), as shown on Map AQ 7-1 (USFWS 2016).
- Supplemental information (e.g., habitat descriptions and special-status species occurrences) from the following Project-specific sources:
 - FERC's Environmental Assessment for the Rush Creek Project (FERC Project No. 1389) (FERC 1992);
 - SCE's Survey Report for Phase I and Phase II Projects (SCE 2017, 2018); and
 - SCE's Survey Report for the Gem Dam Valve Upgrade (SCE 2020).

¹ Stream segments as used in this document are typically long sections of stream with a relatively homogeneous flow regime. Segments may be subdivided into smaller reaches for study and/or due to fluvial geomorphology (e.g., stream gradient, channel confinement).

POTENTIAL INFORMATION GAPS

- Updated information on potential SNYLF habitat, including Primary Constituent Elements (PCE).
- Information on the presence of SNYLF within potential breeding habitat.
- Updated information on potential YT habitat, including PCEs.
- Information on the presence of YT within potential breeding habitat.

STUDY OBJECTIVES

- Identify and map potential habitat (including PCEs) for SNYLF and YT.
- Conduct visual encounter surveys (VES) to determine the presence of SNYLF and YT.

EXTENT OF STUDY AREA

- Refer to Map AQ 7-2 for the special-status amphibian study area. The study area for:
 - Documentation of SNYLF habitat (including PCEs) includes areas within, and/or immediately adjacent to, Project-affected stream segments, Project reservoirs, and the potential enhancement area (i.e., portions of the Lower Rush Creek and South Rush Creek).²
 - SNYLF VES includes select stream reaches (i.e., sampling locations)³ (Table AQ 7-1), and meadows and meadow systems adjacent to Project-affected stream segments, Project reservoirs, and the potential enhancement area.
 - If the selected stream reaches do not contain suitable habitat (PCEs), the sampling sites will be moved to another location (within the Project-affected stream segment) which contains suitable habitat/PCEs.
 - Documentation of YT habitat (including PCEs) includes meadows and meadow systems adjacent to Project-affected stream segments, Project reservoirs, and the potential enhancement area.

² The potential enhancement area includes portions of the Rush Creek and South Rush Creek channels upstream and downstream of the State Route 158 crossing. The purpose of the potential enhancement is to address local flooding of residences during high-flow events. Refer to Map AQ 3-5.

³ Reaches as used in this document are shorter sections of river within a longer stream segment (length of stream with homogeneous flow) that are delineated due to differences in fluvial geomorphology (e.g., stream gradient, channel confinement) or locations selected for collecting study data (i.e., sampling locations).

- YT VES includes meadows and meadow systems adjacent to Project-affected stream segments, Project reservoirs, and the potential enhancement area that contain suitable habitat (PCEs).
- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain) or on private property for which SCE has not received specific approval from the landowner to enter the property to perform the study.

STUDY APPROACH

For the purposes of this study, special-status amphibians include SNYLF (Federal Endangered, State Threatened) and YT (Federal Threatened, California Species of Special Concern). The study approach for special-status amphibians is provided below.

SIERRA NEVADA YELLOW-LEGGED FROG

- Prepare preliminary maps of potential SNYLF breeding/rearing, overwintering, and dispersal habitat in the study area, based on existing data and agency habitat definitions.
- Conduct a field survey to document the presence of PCEs (as defined by USFWS [2016]) within potential SNYLF habitat in the study area.
- Develop a Geographic Information System (GIS) map of habitat and overlay information on Project facilities, construction areas, restoration areas, and the potential enhancement area.
- Conduct VES to determine the presence of SNYLF in the study area.
- Surveys will be conducted consistent with the Standardized Protocol for Surveying Aquatic Amphibians (Fellers and Freel 1995).
 - Two diurnal visits will be completed in the period between the onset of the breeding season (shortly after snowmelt) and when tadpoles are beginning to metamorphose (late summer).
 - Surveys will follow the visual search methods.
 - Binoculars will be used to scan aquatic habitats for individuals while walking slowly. The banks, rocks, logs, bottom, surface, and any floating vegetation will be scanned for the presences of SNYLF.
 - After walking 10–15 meters (33–49 feet), biologists will stop and scan ahead with binoculars before advancing further.
 - Adjacent meadows will be surveyed by walking slowly along the main channel and circling all potholes and pools of water.

- An SNYLF survey datasheet will be completed for each study site. A copy of the datasheet is provided as Attachment 1.
 - If SNYLF are observed, the individual or populations will be documented and recorded with a global positioning system (GPS) unit, photographed, and a photograph of the habitat where the individual/population is observed will be obtained. CDFW will also be notified of any SNYLF observations.
 - For all SNYLF observed, a California Native Species Field Survey Form will be completed and submitted to the CNDDDB.
 - A table and map will be developed summarizing the results of surveys and the location of SNYLF.
- If occupied breeding/rearing habitat for SNYLF is identified in the selected stream segments evaluated as part of implementation of the AQ 1 – Instream Flow Technical Study Plan (TSP), quantification of habitat versus flow relationships will be developed.
 - Incidental sightings of SNYLF observed during implementation of other technical studies will be recorded and reported to CDFW.

YOSEMITE TOAD

- Prepare preliminary maps of potential YT breeding/rearing, overwintering, and dispersal habitat in the study area.
- Conduct a field survey to document the presence of PCEs (as defined by USFWS [2016]) within potential YT habitat within the study area.
- Develop a GIS map of YT habitat and overlay information on Project facilities, construction areas, restoration areas, and the potential enhancement area.
- Conduct VES to determine the presence of YT within potential breeding habitat (e.g., meadows and meadows systems) in the study area.
- Surveys will be conducted consistent with the *Sierra Nevada Forest Plan Amendment Final Supplemental Environmental Impact Statement – Record of Decision Attachment D* (ROD Attachment D; Forest Service 2004).
 - Surveys will be timed to maximize the detection of tadpoles (when they are large enough to identify easily).
 - Two diurnal visits will be completed during the period beginning shortly after snowmelt and ending approximately 6 to 8 weeks into the summer.

- Surveys will follow the visual search methods.
 - Binoculars will be used to scan aquatic habitats for individuals while walking slowly along mainstream channels and circles all potholes and pools of water (including shallow pools and seeps as shallow as 2 centimeters [0.78 inch] deep).
 - When not following an obvious channel, a zig-zag path through meadows (with 10-meter [32-foot] wide sweeps) may be utilized.
- A YT survey datasheet will be completed for study site. A copy of the datasheet is provided as Attachment 2.
- If YT are observed, the individual or populations will be documented and recorded with a GPS unit, photographed, and a photograph of the habitat where the individual/population is observed will be obtained. CDFW will also be notified of any YT observations.
- For all YT observed, a California Native Species Field Survey Form will be completed and submitted to the CNDDDB.
- A table and map will be developed summarizing the results of surveys and the location of YT.
- Incidental sightings of YT observed during implementation of other technical studies, will be recorded and reported to CDFW.

REPORTING

- Study methods and results will be documented in an AQ 7 – Special-Status Amphibians Technical Study Report (TSR). The TSR will include summary tables and maps, as appropriate.
- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

SCHEDULE

Date	Activity
June–August 2023	Complete habitat mapping and conduct VES surveys
September–December 2023	If occupied breeding/rearing habitat for SNYLF is identified in stream segments evaluated as part of implementation of the AQ 1 – Instream Flow TSP, quantification of habitat versus flow relationships will be developed
December 2023–February 2024	Analyze data and prepared draft report
February 2024	Distribute draft report to stakeholders
March–May 2024	Stakeholders review and provide comments on draft report (90 days)

Date	Activity
May–July 2024	Resolve comments and prepare final report
August 2024	Distribute final report in Draft License Application

REFERENCES

- CDFW (California Department of Fish and Wildlife). 2016. HML Rush Creek Management Unit, Herps Dataset. October 10, 2016.
- . California Natural Diversity Database. 2020. Rarefind, Version 5.0. Online Database. California Department of Fish and Wildlife, Version 5.1.1. Accessed November 20, 2020.
- Fellers, G.M., and K.L. Freel. 1995. A Standardized Protocol for Surveying Aquatic Amphibians. National Park Service Technical Report NRTR-95-01. May 1995.
- FERC (Federal Energy Regulatory Commission). 1992. Environmental Assessment for Hydropower License. Rush Creek Project No. 1389. FERC eLibrary No. 19920604-0017.
- Forest Service (United States Forest Service). 2004. *Sierra Nevada Forest Plan Amendment Final Supplemental Environmental Impact Statement – Record of Decision Attachment D* (ROD Attachment D).
- . 2017. Natural Resource Information System. Online database. Accessed December 15, 2017.
- SCE (Southern California Edison Company). 2017. Pre-release Survey and Assessment Report, Rush Creek Emergency Project (FERC No. 1389). June.
- . 2018. Pre-Construction Survey Report. Rush Meadows Dam Modification, Rush Creek Hydroelectric System Runoff Management Project. July.
- . 2020. Biological Resources Technical Report. Gem Lake Dam Arch 8 Valve Replacement Project. April.
- . 2021. Rush Creek Project (FERC Project No. 1389) Pre-Application Document. December.
- USFWS (United States Fish and Wildlife Service). 2016. Designation of Critical Habitat for the Sierra Nevada Yellow-legged Frog, the Northern Distinct Population Segment of the Mountain Yellow-legged Frog, and the Yosemite Toad. (Federal Register, Vol. 81, No. 16, Pages 59046-59119).
- . 2020. Information for Planning and Consultation (IPaC). Online Database. Accessed November 2020.

TABLES

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Table AQ 7-1. Special-Status Amphibian Sampling Locations.

Stream Segment Name	Segment Length (miles) / River Miles (RM)	Sampling Location River Mile / Site ID
Rush Creek		
Waugh Lake	1.51 (RM 22.24–23.75)	RM 23.0 / RC23.0
Rush Creek Below Rush Meadows Dam	1.83 (RM 20.41–22.24)	RM 21.65 / RC21.65
Gem Lake	0.93 (RM 19.48–20.41)	—
Rush Creek Below Gem Dam	0.30 (RM 19.18–19.48)	—
Agnew Lake	0.58 (RM 18.60–19.18)	—
Rush Creek Below Agnew Dam	0.40 (RM 18.2–18.60)	RM 18.55 / RC18.55
Rush Creek Horsetail Falls	0.54 (RM 17.66–18.2)	—
Rush Creek Above Silver Lake	0.94 (RM 16.72–17.66)	RM 17.05 / RC17.05 RM 17.55 / RC17.55
Silver Lake	0.83 (RM 15.89–16.72)	—
Rush Creek Below Silver Lake	2.69 (RM 13.20–15.89)	RM 15.2 / RC15.2
South Rush Creek		
South Rush Creek	0.46 (RM 0.0–0.46)	RM 0.15 / SRC0.15

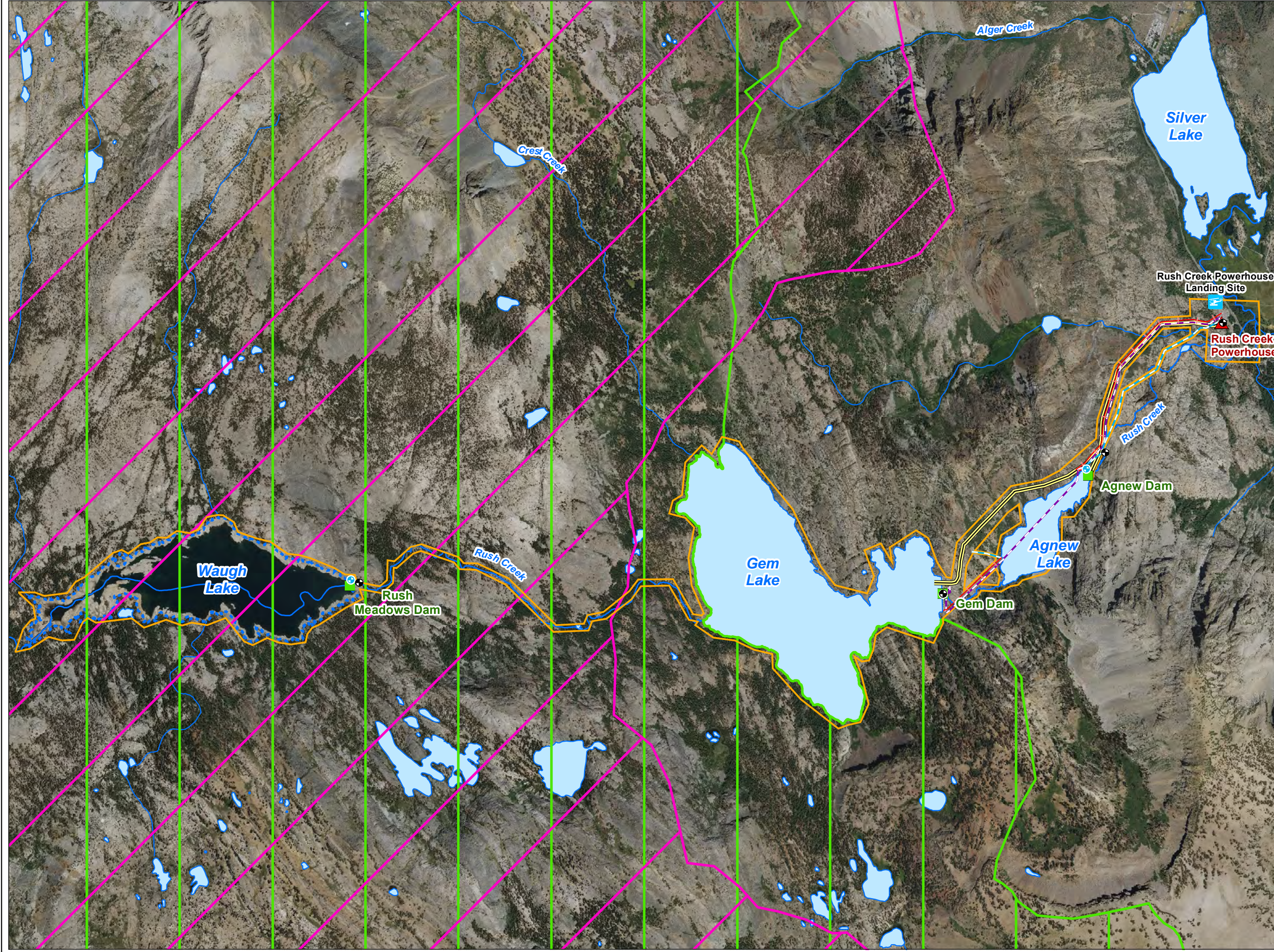
Notes:

RM = River Mile

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MAPS

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- SCE Facilities**
- Dam
 - ▲ Powerhouse
 - ▬▬▬ Flowline / Penstock
 - Stream Gage
 - Reservoir Gage
 - ✈ Helicopter Landing Site
 - ▬▬▬ Power Line
 - ▬▬▬ Communication Line
 - + Tramway
 - ▬▬▬ FERC Boundary
- Other Features**
- ▬▬▬ Highway
 - ▬▬▬ River/Stream
 - ▭ Lake
 - ▭▭▭ Dry Lake/Reservoir
- Final Critical Habitat***
- ▭▭▭ Sierra Nevada Yellow-Legged Frog¹
 - ▭▭▭ Yosemite Toad

*Source: U.S. Fish and Wildlife Service (2016)

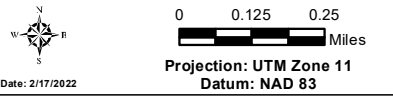
¹The U.S. Fish and Wildlife Service Critical Habitat data layer for Sierra Nevada Yellow-Legged Frog has been modified to exclude Gem Lake, consistent with the Final Rule (FR, Vol. 81, No. 16, pp. 59072)



Rush Creek Project (FERC 1389)

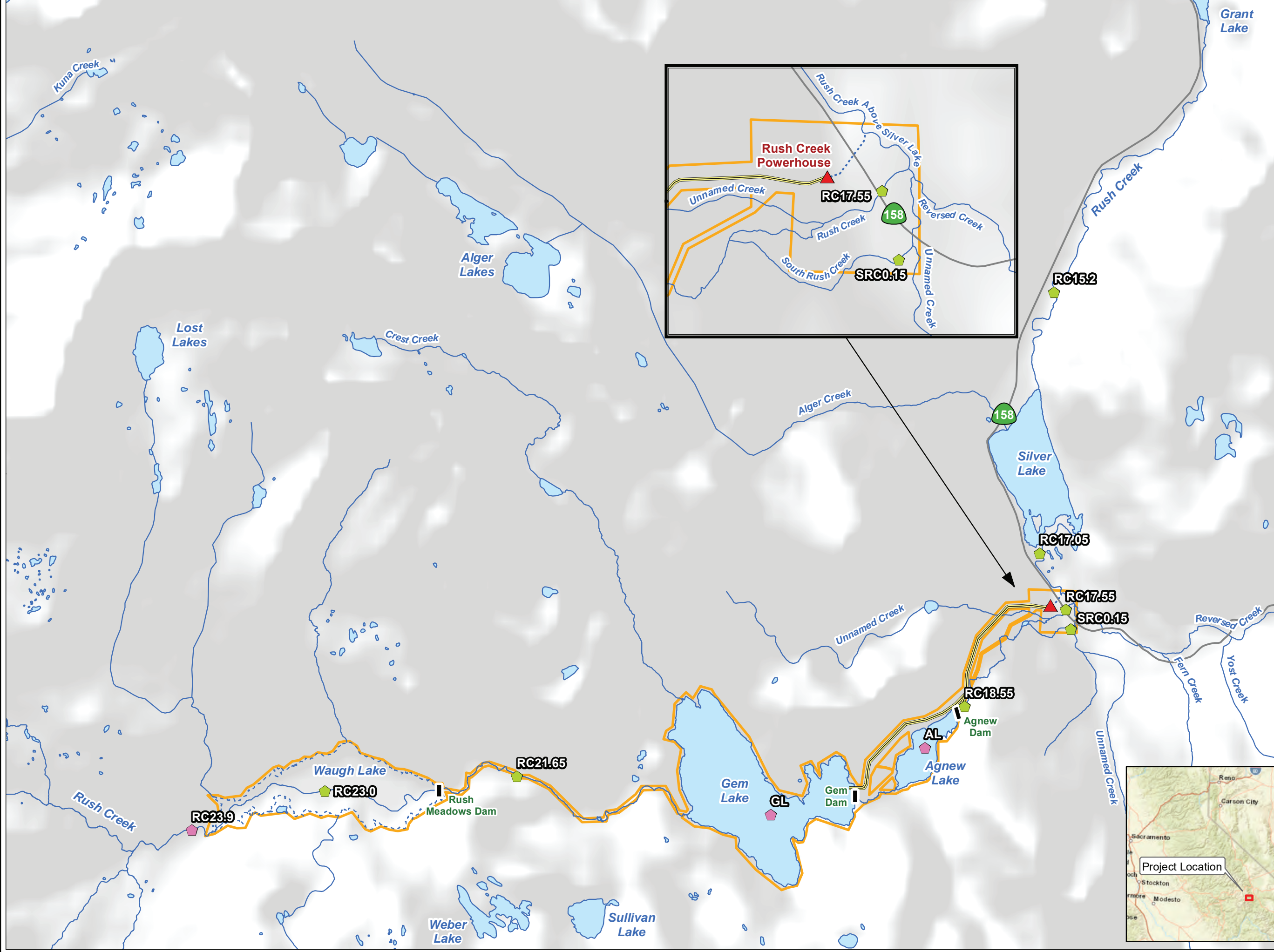
Map AQ 7-1

SNYLF and YT Critical Habitat in/near the FERC Project Boundary



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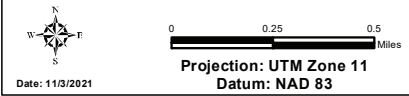
- SCE Facilities**
- Dam
 - ▲ Powerhouse
 - ▬ Flowline / Penstock
 - ⋯ Tailrace
- Other Features**
- Highway
 - River/Stream
 - Lake/Reservoir
 - ⋯ Dry Lake/Reservoir
 - ▭ FERC Boundary
- Sampling Locations**
- ◆ Fish Population
 - ◆ Fish Population, Amphibians



Rush Creek Project (FERC 1389)

Map AQ 7-2

Sampling Locations



Projection: UTM Zone 11
Datum: NAD 83

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ATTACHMENT 1

Sierra Nevada Yellow-legged Frog Datasheet

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Aquatic Survey Data Sheet

Site: _____

Date: (mm-dd-yy)	Begin Time:	Total Time:		min	Observer(s):	1 2 3 4
Locality:						Owner: ? NPS FS BLM St. Pvt. Oth.
County:	Elevation:	m	North UTM:	East UTM:	10	
		ft	GPS Map	3 4 5 6 7 8	11	
Topographic Map: 7.5' 15'			North UTM:	East UTM:	10	
			GPS Map	3 4 5 6 7 8	11	
Distance to Mapped trail:	km	Distance to Public dirt road:	km	Distance to Public paved road:	km	

Weather: Clear	Overcast	Rain	Wind: 0	5 - 20	Air Temp.: C	Water Temp.: C
Pt. Cloudy	Mostly Cloudy	Snow	(mph) < 5	> 20	(at 1 m) F	(0.5 m out) F

Habitat: Natural	Altered	Description: Lake	River	Woodland	Meadow/Wetl.	Drainage: Permanent
1 2 3 4 5		Ditch Pond	Stream	Grassland	Spring	Seasonal
Site	Aver.	Aver.	Max.	Water Flow	0	7-11 sec.
Length: m	Width: m	Depth: m	Depth: m	sec./10 ft.	< 7 sec.	> 11 sec.
Water Clear	Turbid	Mid-day	Emergent	Floating		
Turbidity: 1 2 3 4 5		Shade: %	Vegetation: %	Vegetation: %		
Water-shed: ___ Natural	___ Grazed	___ Logged (last 15 yr.)	Substrate: ___ Silt	___ < 2 mm	___ 75 - 300 mm	
___ Urban	___ Agricul.	___ Other	___ Bedrock	___ 2 - 75 mm	___ > 300 mm	
Predominant Vegetation:						

Fishing Tackle:	Fish Present:	Species and
Yes No	Yes No ?	Approx. Number:

Species	Adults	Subadults	Larvae	Eggs	DNA #	Survey Method(s)	Other
					N	Visual Hand	Voucher
					A	Aural TCS	Pathology
					A	Dip Net Seine	Photo
					N	Visual Hand	Voucher
					A	Aural TCS	Pathology
					A	Dip Net Seine	Photo
					N	Visual Hand	Voucher
					A	Aural TCS	Pathology
					A	Dip Net Seine	Photo
					N	Visual Hand	Voucher
					A	Aural TCS	Pathology
					A	Dip Net Seine	Photo

Site: _____

Date: _____

	Species	Tiss.	Sex	Weight (g)	Length (cm)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

	Species	Tiss.	Sex	Weight (g)	Length (cm)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

Comments:

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ATTACHMENT 2

Yosemite Toad Datasheet

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CUL 1 – BUILT ENVIRONMENT TECHNICAL STUDY PLAN

**Rush Creek Hydroelectric Project
FERC Project No. 1389**



September 2022

CUL 1 – Built Environment Technical Study Plan

POTENTIAL RESOURCE ISSUES

- Built environment historic properties affected by the Project.

PROJECT NEXUS

The Federal Energy Regulatory Commission’s (FERC) decision to issue a new license is considered an “undertaking” pursuant to 36 Code of Federal Regulations (CFR) § 800.16(y). The National Historic Preservation Act (NHPA) of 1966, as amended, requires Federal agencies to consider the effects of undertakings on historic properties and to provide the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on those undertakings.

Proposed Project activities could potentially affect built environment historic properties as follows:

- Removal of and/or alteration to a built environment historic property.
- Change in use of a built environment historic property.
- Alteration to the contributing resources of a National Register of Historic Places (NRHP) historic district including the Rush Creek Hydroelectric System Historic District.

RELEVANT INFORMATION

The following information is available regarding built environment cultural resources and historic properties in the vicinity of the Rush Creek Project (refer to Southern California Edison Company’s [SCE] Pre-Application Document [PAD] Section 4.13 for a summary of available cultural resource information [SCE 2021]):

- California Historical Resources Information System (CHRIS) Eastern Information Center (EIC) Records Search, received on March 16, 2021. The CHRIS provides detail regarding previous survey and documentation in the vicinity of the Project (inclusive of FERC Project boundary and a half-mile record search study area).
- Management Plan for Historic and Archaeological Resources Associated with the Rush Creek Hydroelectric Project, (FERC Project No. 1389), Mono and Inyo Counties, California (SCE 1990). The Management Plan provides documentation and background information on the known historic properties in the Project Boundary and current SCE responsibilities and requirements for managing historic properties.
- “Evaluation of the Historic Resources of the Lee Vining Creek (FERC Project No. 1388) and Rush Creek (FERC Project No. 1389) Hydroelectric Systems, Mono County, California” (Williams and Hicks 1989). This Evaluation Report details the NRHP criteria and themes of significance for the previously documented Rush

Creek Hydroelectric System Historic District, eligible for the NRHP and a historic property under Section 106 of the NHPA.

- Historic American Engineering Record (HAER) CA-166-A, Rush Creek Hydroelectric System, Powerhouse Exciters (Building 101) (Taylor 1995).
- HAER CA-166-B, Rush Creek Hydroelectric System, Worker Cottage Building 103 (Taylor 1997a).
- HAER CA-166-C, Rush Creek Hydroelectric System, Worker Cottage Building 104 (Taylor 1997b).
- HAER CA-166-D, Rush Creek Hydroelectric System, Worker Cottage Building 105 (Taylor 1997c).
- HAER CA-166-E, Rush Creek Hydroelectric System, Clubhouse Cottage Building 108 (Taylor 1997d).
- HAER CA-166-F, Rush Creek Hydroelectric System, Agnew Lake Dam (Weintraub 2013a).
- HAER CA-166-G, Rush Creek Hydroelectric System, Gem Lake Dam (Weintraub 2013b).
- HAER CA-166-H, Rush Creek Hydroelectric System, Rush Creek Meadows Dam (Weintraub 2013c).
- Agnew Tram Documentary Film filed with California Office of Historic Preservation and Inyo National Forest (INF) (<https://www.archaeologychannel.org/video-guide/video-guide/video-guide-list/2510-agnew-tramway>).

POTENTIAL INFORMATION GAPS

- Updated physical documentation and information on known built environment cultural resources located within the Area of Potential Effects (APE).
- Intensive built environment surveys of the APE using current protocols.
- NRHP evaluations or updated evaluations of historic period built environment resources that could be potentially affected by the Proposed Project (Undertaking).
- Updated NRHP evaluation of the Rush Creek Hydroelectric System Historic District that documents the current status and condition of the District contributors and includes Project facilities that were not documented as part of previous District recordation.

STUDY OBJECTIVES

- Identify all built environment cultural resources within the APE.
- Evaluate or, as appropriate, provide update evaluation under the criteria of the NRHP for built environment cultural resources in the APE to determine whether built environment historic properties may be affected by potential actions implemented in the Proposed Project.

EXTENT OF STUDY AREA AND AREA OF POTENTIAL EFFECT

- For built environment cultural resources, the study area includes the area within 0.5 mile of the FERC Project boundary (Map CUL 1-1).
 - This study area will be used for records searches and archival research to develop contextual and background information.
- Under 36 CFR Part 800, the APE is defined as “the geographic area or areas within which an undertaking may cause changes in the character or use of historic properties” (36 CFR 800.16[d]). Changes may be direct or indirect.
 - The proposed APE for the purposes of study implementation is defined as the entire area within the FERC Project boundary (Map CUL 1-1).
 - Rush Creek Project facilities are identified in Table CUL 1-1. All Project facilities will be considered as part of study implementation as part of the study survey population. Detailed maps showing the location of Project facilities are available in Section 2.0 of SCE’s PAD for the Rush Creek Project (SCE 2021).
- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain) or on private property for which SCE has not received specific approval from the landowner to enter the property to perform the study.
- The study area and APE may be expanded during the relicensing proceeding, in consultation with interested stakeholders, if any refinement/modification of the Proposed Project results in utilizing additional lands outside the FERC Project boundary or current APE.

STUDY APPROACH

The Built Environment Technical Study will involve a multi-step process that includes: (1) establishing the APE; (2) a detailed review of previous studies and site records; (3) archival research; (4) field surveys/inventory, including recording and mapping resource locations and resource condition assessments; (5) NRHP/California Register of Historical Resources (CRHR) evaluations and update of previous evaluations, as appropriate; and (6) technical study reporting and consultation with stakeholders regarding technical study products. Specific tasks that will be implemented during each step are described below.

ESTABLISH APE

- Submit the proposed APE on the behalf of FERC to the State Historic Preservation Officer (SHPO) and interested stakeholders for comments on the adequacy of the APE pursuant to 36 CFR § 800.16[d]). The APE may be expanded during the relicensing proceeding if any refinement/modification of the Proposed Project results in utilizing additional lands outside the FERC Project boundary.

REVIEW OF PREVIOUS STUDIES AND SITE RECORDS

- Review previous investigations, HAERs, survey reports, and site records to identify the methods and protocols that were used to inventory built environment resources in the APE and whether there are previously identified built environment resources that require updated documentation to align with current standards for adequacy.

ARCHIVAL RESEARCH

- Conduct supplemental background research to develop an appropriate historical context for the Project, including a general history of the contextual study area framing the APE, and coordination with the Tribal Resources Study to identify local Native American's who contributed to construction and operation of the historic hydroelectric system. This research will utilize and build upon the existing studies documenting the Project APE, most notably, "Evaluation of the Historic Resources of the Lee Vining Creek (FERC Project No. 1388) and Rush Creek (FERC Project No. 1389) Hydroelectric Systems, Mono County, California" (Williams and Hicks 1989), to support necessary NRHP evaluation and update evaluation of built environment resources in the APE. Archival research may include the following sources and other sources and repositories identified through research undertaken as part of the study:
 - California State Archives, Sacramento
 - California State Library, California History Room, Sacramento
 - Contextual research regarding utility and hydroelectric development
 - Huntington Library, SCE Records, and Photographs and Negatives Collection, San Marino
 - Library of Congress
 - Mono Basin Historical Society, Lee Vining
 - Mono Basin History Museum
 - Mono County (Official Records, Bridgeport)
 - Mono County Historical Society
 - Online research, including general and engineering periodicals

- Records of the United States Forest Service (Forest Service), Inyo National Forest (INF), Bishop
- SCE Engineering Drawings
- United States Geological Survey (USGS) Historical Topographic Map Collection
- Other data repositories as identified through the research program

BUILT ENVIRONMENT INVENTORY

- Conduct field inspection and documentation of historic period (i.e., 50 years old or older) built environment resources (i.e., buildings, structures, and objects) and resources that will be historic in age at the time of relicensing (i.e., minimally 45 years old at the time of the study) located within the APE.
 - The inventory will be conducted by qualified, professional individuals meeting the Secretary of the Interior’s Professional Qualification Standards for Architectural History and History (36 CFR Part 61).
- Record historic period built environment resources to current California Department of Parks and Recreation standards (DPR 523 series). This will include digital color photography and sketch maps of individual features that show the relationship between buildings and structures.
- Assess historic period built environment resources identified during the study as a system/district, as well as on an individual basis.
- Create record updates for resources already determined eligible for the NRHP to ensure there are no data gaps related to integrity or status of built environment resources as historic properties under Section 106 of the NHPA.

NRHP EVALUATION ELIGIBILITY

- Evaluate historic period built environment resources in the Project APE for eligibility to the NRHP under the criteria for listing. Evaluation will include consideration of both individual eligibility and eligibility as a multi-component district.
- Updated evaluation will consider previous recordation of the Rush Creek Hydroelectric System Historic District (Williams and Hicks 1989). Evaluation will include any Rush Creek Project facilities that may not have been evaluated during the previous relicensing effort.
- Evaluation will be documented on appropriate DPR 523 series forms and will utilize appropriate guidance including *NRHP Bulletin 15: How To Apply the NRHP Criteria for Evaluation* (NPS 1995).

REPORTING AND CONSULTATION

- Study methods and results from the Built Environment Technical Study will be documented in a *CUL 1 – Built Environment Technical Study Report (TSR)*. To ensure compliance with FERC reporting requirements and with the standards of Section 106 of the NHPA, the TSR will include the following sections: (1) Study Goals and Objectives; (2) Study Methods; (3) Study Results (including eligibility recommendations); and (4) Variances from the FERC-approved Study Plan. In addition, the TSR will include the following information, as appropriate:
 - Project location and description
 - Regulatory nexus
 - Historic context for the study area
 - Mapping depicting the location of built environment cultural resources within the APE
 - NRHP inventory and evaluation of all historic period built environment resources in the APE
 - An appendix containing updated and/or new DPR Series 523 forms for each built environment cultural resource, individually and collectively as a district, as appropriate

A Draft TSR will be distributed to interested stakeholders for review and comment. Comments on the Draft TSR will be addressed in a Final TSR, which will be included in the Draft License Application. Any sensitive information will be included in a confidential appendix withheld from public disclosure, in accordance with Section 304 (16 USC 4702-3) of the NHPA and the Archaeological Resources Protection Act. The California Public Records Act similarly exempts site data from disclosure while Public Resources Code Section 21082.3(c) contains provisions specific to confidentiality related to any information submitted by an American Indian Tribe during the environmental review process.

HISTORIC PROPERTIES MANAGEMENT PLAN

SCE will develop a Historic Properties Management Plan (HPMP) that utilizes the analysis and results of the TSP to develop a framework for management of historic properties in the APE that may be affected by the undertaking. The HPMP will align with the standards of Section 106 and FERC Guidelines for HPMP development.

SCHEDULE

Date	Activity
February–May 2022	Convene interested stakeholders to discuss Draft Study Plan and adequacy of the APE
March–May 2022	Consult with SHPO regarding adequacy of the APE
January–May 2023	Conduct archival research and background review
June–September 2023	Conduct field inventory
October 2023–January 2024	Analyze data and prepare draft TSR
January 2024	Distribute draft TSR to stakeholders
February–April 2024	Stakeholder review and provide comments on draft TSR (90 days)
April–June 2024	Resolve comments and prepare final TSR
April–August 2024	Develop Draft HPMP
August 2024	Distribute final TSR and Draft HPMP in Draft License Application

REFERENCES

CHRIS (California Historical Resources Information System) Eastern Information Center Records Search. March 2021.

FERC (Federal Energy Regulatory Commission). 2002. Issuance of Guidelines for the Development of Historic Properties Management Plans (accessed online at Issuance of Guidelines for the Development of Historic Properties Management Plans (ferc.gov), August 7, 2021).

NPS (National Park Service). 1995. NRHP Bulletin 15: How To Apply the NRHP Criteria for Evaluation (accessed online at National Register Bulletin 15, How to Apply the National Register Criteria for Evaluation (nrc.gov), August 7, 2021).

SCE (Southern California Edison Company). 1990. Management Plan for Historic and Archaeological Resources Associated with the Rush Creek Hydroelectric Project, (FERC Project No. 1389), Mono and Inyo Counties, California. April 1990.

—. 2021. Rush Creek Project (FERC Project No. 1389) Pre-Application Document. December.

Taylor, Thomas T. 1995. HAER CA-166-A, Rush Creek Hydroelectric System, Powerhouse Exciters.

—. 1997a. HAER CA-166-B, Rush Creek Hydroelectric System, Worker Cottage Building 103.

—. 1997b. HAER CA-166-C, Rush Creek Hydroelectric System, Worker Cottage Building 104.

- . 1997c. HAER CA-166-D, Rush Creek Hydroelectric System, Worker Cottage Building 105.
 - . 1997d. HAER CA-166-E, Rush Creek Hydroelectric System, Clubhouse Cottage Building 108.
- Weintraub, Matthew. 2013a. HAER CA-166-F, Rush Creek Hydroelectric System, Agnew Lake Dam.
- . 2013b. HAER CA-166-G, Rush Creek Hydroelectric System, Gem Lake Dam.
 - . 2013c. HAER CA-166-H, Rush Creek Hydroelectric System, Rush Meadows Dam.
- Williams, James C., Hicks, Robert A. 1989. Evaluation of the Historic Resources of the Lee Vining Creek (FERC Project No. 1388) and Rush Creek (FERC Project No. 1389) Hydroelectric Systems, Mono County, California. Submitted to Environmental Affairs Division, Southern California Edison Company, Rosemead, California. July 1989.

TABLES

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Table CUL 1-1. Rush Creek Project Facilities

Rush Meadows Dam Area
Dams
Rush Meadows Dam
Reservoirs
Waugh Lake
Valve House
Rush Meadows Dam Valve House
Stream Gages
Rush Creek below Rush Meadows (Waugh Lake) (USGS No. 10287262; SCE No. 359r)
Reservoir Gages
Waugh Lake (USGS No. 10287260; SCE No. 359)
Trails
Rush Meadows Dam Access Trail
Rush Meadows Dam/Waugh Lake Ancillary and Support Facilities
Rush Meadows Dam Equipment Shed
Rush Meadows Dam Gage House
Rush Meadows Dam Solar Facility
Gem Dam Area
Dams
Gem Dam
Reservoirs
Gem Lake
Flowline
Gem Dam to Agnew Junction Flowline
Valve House
Gem Valve House and Cabin
Gem Dam Arch 8 Valve House
Gem Flowline Valve House
Stream Gages
Rush Creek below Gem Lake (USGS No. 10287281; SCE No. 352r)
Reservoir Gages
Gem Lake (USGS No. 10287280; SCE No. 352)

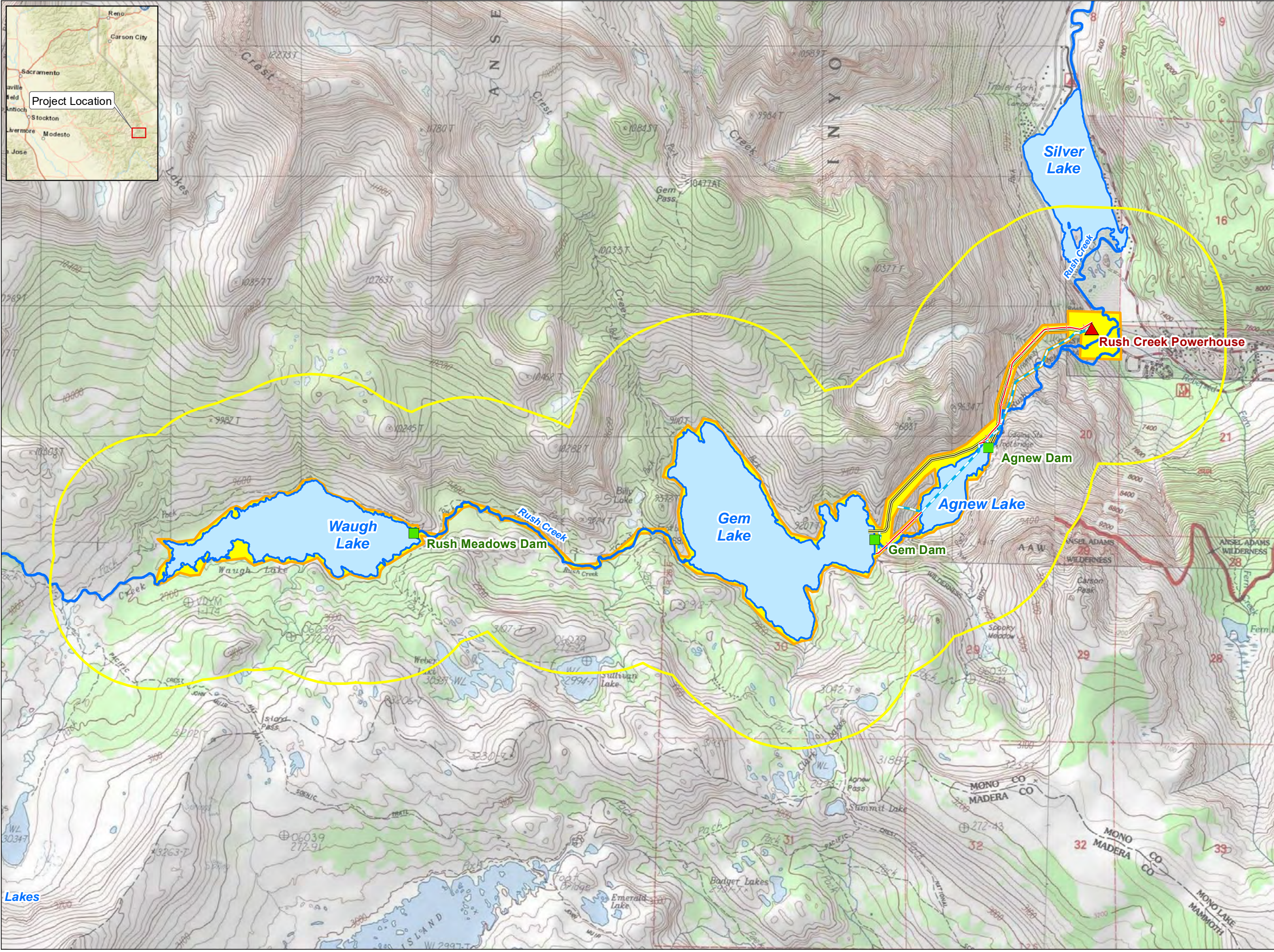
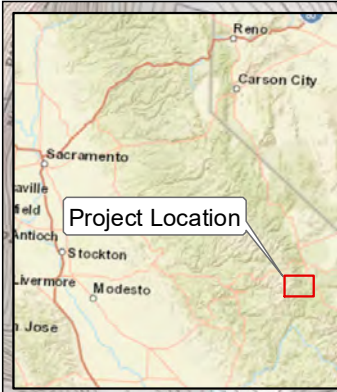
Gem Dam Area (continued)
Communication Lines
Communication Line from Rush Creek Powerhouse to Gem Lake Dam
Communication Line from Gem Valve House to Arch 8 Valve House
Communication Line from Gem Tram Hoist House to Gem Valve House
Trams and Hoist Houses
Gem Tram
Gem Tram Hoist House
Gem Tram Lower/Upper Landing
Trails
Lower Gem Dam Access Trail
Gem Dam Arch 8 Access Trail
Upper Gem Dam Access Trail
Gem Dam/Lake Ancillary and Support Facilities
Gem Lake Dock
Gem Lake Motor Barge
Gem Bunkhouse
Gem Outhouse
Gem Cookhouse
Gem Dam Compressor Shed
Gem Dam Storage Shed
Gem Dam Overhead Hoist House for Dam Length
Gem Dam Overhead Hoist House
Gem Fish Release Footbridge
Gem Tram Landing Footbridge
Gem Tram Bridge
Gem Weather Station
Gem Satellite Dish
Gem Solar Facility
Gem Valve House Tunnel

Agnew Dam Area
Dams
Agnew Dam
Reservoirs
Agnew Lake
Flowline
Agnew Dam to Agnew Junction Flowline
Valve House
Agnew Junction (Valve House and Stand Pipe)
Agnew Dam Valve House
Stream Gages
Rush Creek below Agnew Lake (USGS No. 10287289; SCE No. 357)
Reservoir Gages
Agnew Lake (USGS No. 10287285; SCE No. 351)
Power Lines
4 kV Rush Creek Powerhouse to Agnew Dam Power Line
4 kV Agnew Lake Dam Power Line
4 kV Upper Agnew Boat Dock Power Line (non-operational)
Communication Lines
Communication Line from Agnew Hoist House to Agnew Boathouse
Trams and Hoist Houses
Agnew Tram
Agnew Tram Hoist House
Agnew Tram Landing
Trails
Agnew Stream Gage Access Trail
Agnew Dam/Lake Ancillary and Support Facilities
Lower Agnew Lake Boathouse / Dock
Upper Agnew Lake Boathouse / Dock
Agnew Lake Motor Barge
Agnew Cabin
Agnew Weather Station
Agnew Flume (downstream of Agnew Dam)

Rush Creek Powerhouse Area
Penstocks
Agnew Junction to Rush Creek Powerhouse Penstock (No. 1)
Agnew Junction to Rush Creek Powerhouse Penstock (No. 2)
Powerhouse
Rush Creek Powerhouse
Gages
Rush Creek Powerhouse (USGS No. 10287300; SCE No. 367)
Transmission Lines
2.4 kV Switchyard to Powerhouse Transmission Line
Powerhouse Ancillary and Support Facilities
Rush Creek Powerhouse Complex Access Road
Cottages (2)
Garages (4)
Warehouse and Dock
Machine Shop
Pump House
Woodshed (2)
Helicopter Landing Site
Tank (propane)
Bridge over Powerhouse Tailrace
Bridge over Rush Creek

MAPS

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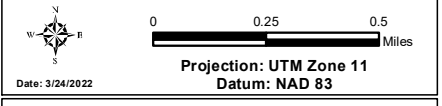
- SCE Facilities**
- ▲ Powerhouse
 - Dam
 - Flowline / Penstock
 - Power or Communication Line
 - + Tramway
 - FERC Project Boundary
- Other Features**
- ~ Rush Creek
 - Lake
- Cultural Data**
- Area of Potential Effects (APE)
 - Study Area



Rush Creek Project (FERC 1389)

Map CUL 1-1

Built Environment APE and Study Area



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CUL 2 – ARCHAEOLOGY TECHNICAL STUDY PLAN

**Rush Creek Hydroelectric Project
FERC Project No. 1389**



September 2022

CUL 2 – Archaeology Technical Study Plan

POTENTIAL RESOURCE ISSUES

- Archaeological resources and other historic properties within the Project’s Area of Potential Effect (APE).

PROJECT NEXUS

The Federal Energy Regulatory Commission’s (FERC) decision to issue a new license is considered an “undertaking” pursuant to 36 Code of Federal Regulations (CFR) § 800.16(y). The National Historic Preservation Act (NHPA) of 1966, as amended, requires Federal agencies to consider the effects of undertakings on historic properties and to provide the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on those undertakings.

Proposed Project activities could potentially affect archaeological resources by:

- Endangering those qualities that make the property eligible for inclusion in the National Register of Historic Places (NRHP).
 - Adverse effects are codified in 36 CFR 800.5 and can be direct, indirect, or cumulative.

RELEVANT INFORMATION

The following information is available regarding archaeological resources including historic properties in the vicinity of the Rush Creek Project (refer to Southern California Edison Company’s [SCE] Pre-Application Document [PAD] Section 4.13 for a summary of available archaeological resource information [SCE 2021]):

- California Historical Resources Information System (CHRIS) Eastern Information Center (EIC) Records Search, received on March 16, 2021. The CHRIS provides detail regarding previous survey and documentation in the vicinity of the Project (inclusive of FERC Project boundary and a half-mile record search study area).
- Native American Heritage Commission (NAHC) Sacred Lands File (SLF) for the Project area, received on November 6, 2020 (NAHC 2020). The NAHC SLF provides an inventory of Native American resources and sacred sites.
- “Archaeological Data Recovery Program Rush Meadow Archaeological District, Ansel Adams Wilderness, Inyo National Forest (INF), California” (Thomas Jackson 1999). Additional archaeological data recovery report for sites inundated by Rush Meadows Reservoir.
- “Archaeological Data Recovery Program - Rush Meadow. Investigations at CA-MNO-2440/H, MNO-2459, MNO-2460, MNO-2461, and MNO-2463” (Thomas Jackson 1997). Archaeological data recovery report for sites inundated by Rush Meadows Reservoir.

- Management Plan for Historic and Archaeological Resources Associated with the Rush Creek Hydroelectric Project, (FERC Project No. 1389), Mono and Inyo Counties, California (SCE 1990). The Management Plan provides documentation and background information on the known historic properties in the Project Boundary and current SCE management responsibilities and requirements for cultural resources.
- “Evaluation of the Historic Resources of the Lee Vining Creek (FERC Project No. 1388) and Rush Creek (FERC Project No. 1389) Hydroelectric Systems, Mono County, California” (William and Hicks 1989). This Evaluation Report details the NRHP criteria and themes of significance for the previously documented Rush Creek Hydroelectric System Historic District, eligible for the NRHP and a historic property under Section 106 of the NHPA.
- Background studies include several major archaeological overviews and studies conducted in the Mono Basin, Long Valley and broader region by E.L. Davis (1964), Bettinger (1982), Busby et al. (1979), and Jackson’s (1985) survey reports for timber compartments on the United States Forest Service (Forest Service) INF.

POTENTIAL INFORMATION GAPS

- Updated physical documentation and information on known archaeological resources located within the APE.
- Intensive archaeological surveys of the APE using current protocols.
- NRHP evaluations or updated evaluations of archaeological resources that could be potentially affected by the Proposed Project (Undertaking).
- Updated NRHP evaluation and condition assessment of the Rush Meadows Archaeological District (RMAD).

STUDY OBJECTIVES

- Identify all known and currently undocumented archaeological resources within the APE.
- Evaluate or, as appropriate, provide update evaluation under the criteria of the NRHP for archaeological resources in the APE to determine whether archaeological resources may be affected by potential actions implemented in the Proposed Project.

EXTENT OF STUDY AREA AND AREA OF POTENTIAL EFFECT

- For archaeological resources, the study area includes the area within 0.5 mile of the FERC Project boundary (Map CUL 2-1).
 - This study area will be used for records searches and archival research to develop contextual and background information.

- Under Section 106 of the NHPA, the APE is defined as “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist” (36 CFR § 800.16[d]). Additionally, the ACHP and the California Office of Historic Preservation has provided guidance for Federal agencies and their delegated licensees to consider potential effects that:
 - May occur immediately and directly;
 - Are reasonably foreseeable or may occur later in time;
 - Are farther removed in distance and potentially affected indirectly; and
 - Include cumulative effects that may result from the undertaking.
- The proposed APE for the purposes of study implementation is defined as the entire area within the FERC Project boundary (Map CUL 2-1).
- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain) or on private property for which SCE has not received specific approval from the landowner to enter the property to perform the study.
- The study area and APE may be expanded during the relicensing proceeding, in consultation with interested stakeholders, if any refinement/modification of the Proposed Project results in utilizing additional lands outside the FERC Project boundary or current APE.

STUDY APPROACH

The Archaeology Technical Study will involve a multi-step process that includes: (1) establishing the APE; (2) a detailed review of previous studies and site records; (3) archival research; (4) field surveys/inventory, including recording and mapping resource locations and resource condition assessments; (5) NRHP evaluations and update of previous evaluations, as appropriate; and (6) technical study reporting and consultation with stakeholders. Specific tasks that will be implemented during each step are described below.

ESTABLISH APE

- Submit the proposed APE to on the behalf of FERC to the Tribes, the State Historic Preservation Officer (SHPO), and interested stakeholders for comments on the adequacy of the APE pursuant to 36 CFR § 800.16[d]). The APE may be expanded during the relicensing proceeding if any refinement/modification of the Proposed Project results in utilizing additional lands outside the FERC Project boundary.

REVIEW OF PREVIOUS STUDIES AND SITE RECORDS

- Review previous investigations, survey reports, and site records to identify the methods and protocols that were used to inventory archaeological resources in the APE and whether there are previously identified archaeological resources that require updated documentation to align with current standards for adequacy.

ARCHIVAL RESEARCH

- Conduct archival research at the following repositories to obtain additional information specific to the prehistory, ethnography, and history in the vicinity of the Project. This research will build upon the existing studies to support necessary NRHP evaluation of archaeological resources in the APE. Archival research may include the following sources and other sources and repositories identified through research undertaken as part of the study:
 - California State Library, California History Room, Sacramento
 - EIC, University of California Riverside
 - Huntington Library, SCE Records, and Photographs and Negatives, San Marino
 - Maturango Museum, Ridgecrest
 - Mono Basin Historical Society, Lee Vining
 - Mono County (Official Records, Bridgeport)
 - Native American Heritage Commission
 - Paiute-Shoshone Cultural Center, Bishop
 - Records of the United States Forest Service (Forest Service), INF, Bishop
 - Southern California Edison Archaeological Records
 - Southern Mono Historical Society, Mammoth Lakes
 - UCLA Fowler Museum, Los Angeles
 - University of Nevada, Reno, Special Collections
 - Yosemite National Park Archives, El Portal
 - Other online repositories as applicable

ARCHAEOLOGICAL INVENTORY

- As described in 36 CFR § 800.4(b)(1), a field survey will be performed in accordance with the *Secretary of the Interior's Standards and Guidelines for Identification* to verify locations of previously recorded archaeological resources and to examine all accessible lands not previously surveyed or that need to be resurveyed to meet current professional standards (NPS 1983).
- Qualified professional archaeologists (i.e., individuals who meet the Secretary of the Interior's Professional Qualifications Standards for Archaeology [NPS 2021]) will supervise and participate in all field work.
 - During the survey, archaeologists will walk parallel transects spaced at no more than 30-meters as vegetation and terrain allow.
- Tribes will be invited to participate in archaeological inventory.
- Previously recorded archaeological sites will be relocated, and their site records will be updated only if the existing documentation does not meet current standards for recording or if the condition and/or integrity of the property has changed since its previous recording.
- Newly discovered archaeological resources, including isolated finds, will be documented following the documentation procedures outlined in *Instructions for Recording Historical Resources* (OHP 1995), which utilizes California Department of Parks and Recreation (DPR) Forms 523 A through L. Sketch maps will be drawn to-scale, and the resource will be photographed.
- Field personnel will use a Global Positioning System (GPS) receiver to document the location of archaeological resources (including isolates), which will be plotted onto the appropriate U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle using the Universal Transverse Mercator (UTM) coordinate system.
 - GPS data collection will adhere to the INF specifications for accuracy and site-specific procedures where applicable. Additionally, the areas examined will be plotted onto the appropriate USGS 7.5-minute topographic quadrangle for comparison with previous survey coverage maps.
- Archaeological surveys that occur on INF lands will require valid Organic Act permits. Any ground disturbing testing that occurs on INF lands will require valid Archaeological Resources Protection Act permits. SCE or their consultants will obtain all required permits prior to beginning field work and will notify the INF when field work is scheduled.

- Representative examples of time diagnostic artifacts will be photographed and described. All artifacts encountered during the field survey will be left in place; no artifacts will be collected during the field survey.
- A field report will be submitted to the INF according to stipulations in the archaeological permit.

NRHP ELIGIBILITY EVALUATION

- NRHP evaluations will focus on resources that may be adversely affected by proposed activities. The inventory and evaluation strategy will be developed in consultation with the INF, Tribes, and interested stakeholders. Applicable archaeological permits will be obtained from the INF.
- Tribes will be invited to participate in archaeological evaluations.
- Evaluations will be documented on appropriate DPR 523 series forms and will utilize appropriate guidance including *NRHP Bulletin 15: How To Apply the NRHP Criteria for Evaluation* (NPS 1995).

REPORTING AND CONSULTATION

- Study methods and results from the Archaeology Technical Study will be documented in a *CUL 2 – Archaeology Technical Study Report* (TSR). To ensure compliance with FERC reporting requirements and with the standards of Section 106 of the NHPA, the TSR will include the following sections: (1) Study Goals and Objectives; (2) Study Methods; (3) Study Results (including eligibility recommendations); and (4) Variances from the FERC-approved Study Plan. In addition, the TSR will include the following information, as appropriate:
 - Project location and description;
 - Regulatory nexus;
 - Pre-contact, ethnographic, and historic-era context for the study area;
 - Traditional Tribal place names for areas of the Project will be incorporated into site records and the Archaeological TSR;
 - Generalized maps showing the location of archaeological resources with respect to the APE;
 - Detailed maps that depict the following on USGS 1:24,000 topographic maps: survey area and coverage types (intensity); and the locations of all resources identified during the study; and
 - An appendix containing updated and/or new DPR Series 523 forms for each archaeological resource in the APE.

A draft TSR will be distributed to qualified stakeholders for review and comment. Sensitive information will be included in a confidential appendix withheld from public disclosure, in accordance with Section 304 (16 USC 4702-3) of the NHPA and the Archaeological Resources Protection Act. The California Public Records Act similarly exempts site data from disclosure while Public Resources Code Section 21082.3(c) contains provisions specific to confidentiality related to any information submitted by a Tribe during the environmental review process. Comments on the draft TSR will be addressed in a final TSR, which will be included in the Draft License Application.

HISTORIC PROPERTIES MANAGEMENT PLAN

SCE will develop a Historic Properties Management Plan (HPMP) that utilizes the analysis and results of the Technical Study Plan (TSP) to develop a framework for management of historic properties in the APE that may be affected by the undertaking. The HPMP will align with the standards of Section 106 and FERC Guidelines for HPMP development.

SCHEDULE

Date	Activity
February–April 2022	Convene interested stakeholders to discuss Draft Study Plan and adequacy of the APE
March–May 2022	Consult with SHPO regarding adequacy of APE
January–May 2023	Conduct archival research and background review
January–April 2023	Develop and obtain consensus on Inventory and NRHP Evaluation strategy and permitting approach
June–September 2023	Conduct field studies
October 2023–January 2024	Analyze data and prepare draft TSR
January 2024	Distribute draft TSR to stakeholders
February–April 2024	Stakeholder review and provide comments on draft TSR (90 days)
April–June 2024	Resolve comments and prepare final TSR
April–August 2024	Develop Draft HPMP
August 2024	Distribute final TSR and Draft HPMP in Draft License Application

REFERENCES

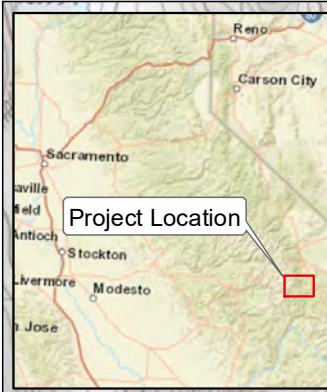
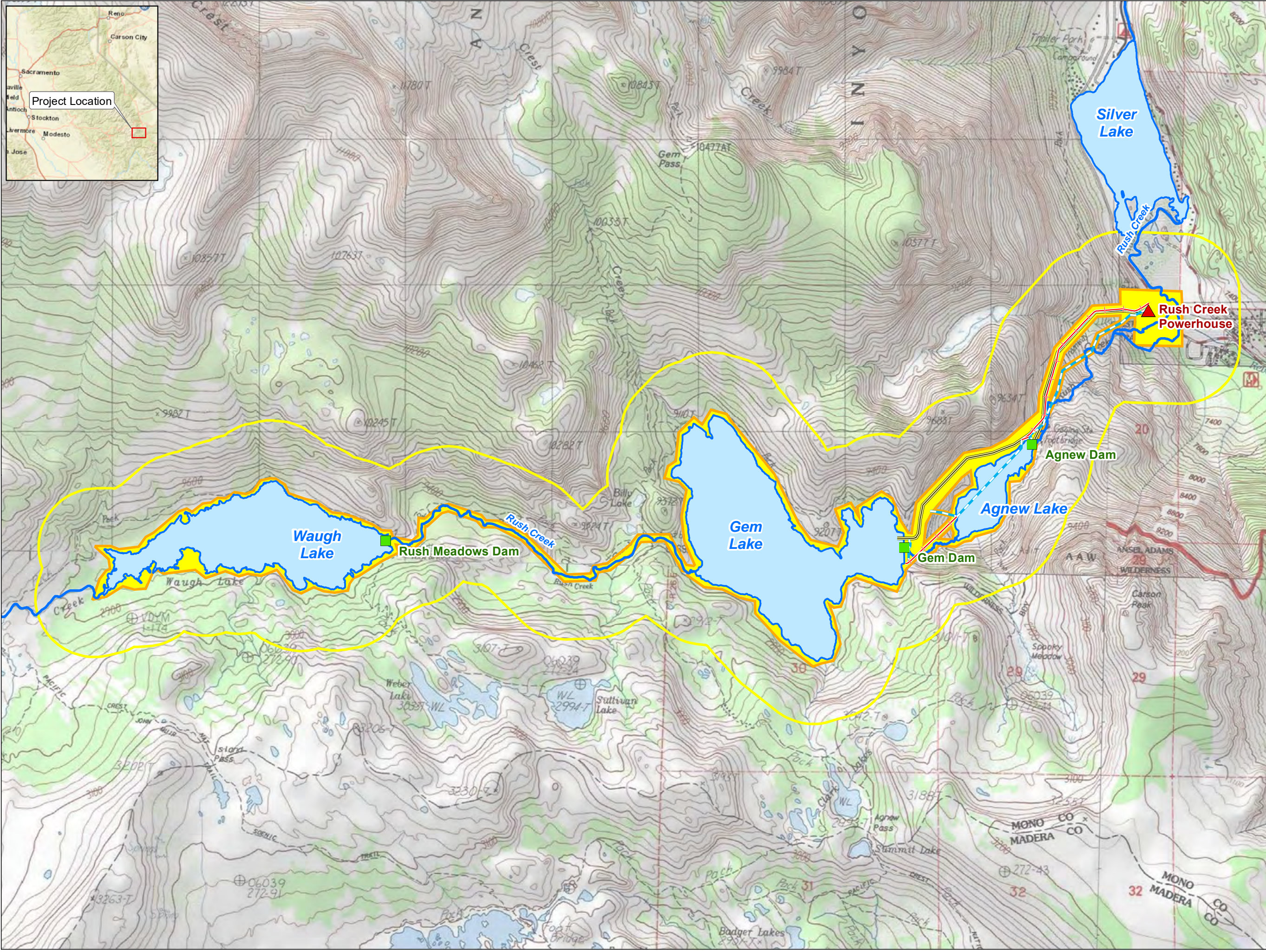
- Bettinger, Robert L. 1982. *Archaeology East of the Range of Light: Aboriginal Human Ecology of the Inyo-Mono Region of Central Eastern California*. Monographs in California and Great Basin Anthropology 1. Davis, California.
- Busby, Colin I., John M. Findlay, and James C. Bard. 1979. *A Cultural Resource Overview of the Bureau of Land Management Coleville, Bodie, Benton, and Owens Valley Planning Units, California*. Cultural Resources Publications, Bureau of Land Management, Bakersfield, California.
- CHRIS (California Historical Resources Information System) Eastern Information Center Records Search. March 2021.
- Davis, Emma Lou. 1964. *An Archaeological Survey of the Mono Basin and Excavations of Two Rockshelters, Mono County, California*. University of California Archaeological Survey Annual Report 1963-1964: 251-392. Los Angeles.
- FERC (Federal Energy Regulatory Commission). 2002. *Issuance of Guidelines for the Development of Historic Properties Management Plans* (accessed online at Issuance of Guidelines for the Development of Historic Properties Management Plans (ferc.gov), August 7, 2021).
- Jackson, Robert J. 1985. *An Archaeological Survey of the Wet, Antelope, Railroad, and Ford Timber Sale Compartments in the Inyo National Forest*. MS on file, Inyo National Forest, Bishop, California.
- Jackson, Thomas. 1997. *Archaeological Data Recovery Program- Rush Meadow. Investigations at CA-MNO-2440/H, MNO-2459, MNO-2460, MNO-2461 and MNO-2463*. Report on file at Southern California Edison, Rosemead, California.
- NAHC (Native American Heritage Commission). 2020. *Response to SLF Request, Rush Creek Hydroelectric, Mono County, California*. November 2020.
- NPS (National Park Service). 1983. *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation*. Federal Register, Volume 48, No. 190 (September 29, 1983) p. 44716. Accessed: May 15, 2021. Available online: <https://www.nps.gov/subjects/historicpreservation/upload/standards-guidelines-archeology-historic-preservation.pdf>.
- . 1995. *NRHP Bulletin 15: How To Apply the NRHP Criteria for Evaluation* (accessed online at National Register Bulletin 15, How to Apply the National Register Criteria for Evaluation (nrc.gov), August 7, 2021).
- . 2021. *Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines [As Amended and Annotated]*. Accessed: May 15, 2021. Available online: https://www.nps.gov/history/local-law/arch_stnds_9.htm

- OHP (California Office of Historic Preservation). 1995. *Instructions for Recording Historical Resources*. California Office of Historic Preservation, Sacramento, California.
- SCE (Southern California Edison Company). 1990. Management Plan for Historic and Archaeological Resources Associated with the Rush Creek Hydroelectric Project, (FERC Project No. 1389), Mono and Inyo Counties, California. April 1990.
- . 2021. Rush Creek Project (FERC Project No. 1389) Pre-Application Document. December.
- Williams, James C., and Robert A. Hicks. 1989. Evaluation of the Historic Resources of the Lee Vining Creek (FERC Project No. 1388) and Rush Creek (FERC Project No. 1389) Hydroelectric Systems, Mono County, California. Submitted to Environmental Affairs Division, Southern California Edison Company, Rosemead, California. July 1989.


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MAPS

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- SCE Facilities**
- ▲ Powerhouse
 - Dam
 - Flowline / Penstock
 - Power or Communication Line
 - + Tramway
 - FERC Project Boundary
- Other Features**
- ~ Rush Creek
 - Lake
- Cultural Data**
- Area of Potential Effects (APE)
 - Study Area




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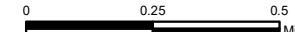
Rush Creek Project (FERC 1389)

Map CUL 2-1

Archaeological APE and Study Area



Date: 3/21/2022



0 0.25 0.5 Miles

Projection: UTM Zone 11
Datum: NAD 83

Southern California Edison (SCE) has no reason to believe that there are any inaccuracies or defects with information incorporated in this work and make no representations of any kind, including, but not limited to, the warranties of merchantability or fitness for a particular use, nor are any such warranties to be implied, with respect to the information or data, furnished herein. No part of this map may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording system, except as expressly permitted in writing by SCE.

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TRI 1 – TRIBAL RESOURCES TECHNICAL STUDY PLAN

**Rush Creek Hydroelectric Project
FERC Project No. 1389**



September 2022

TRI 1 – Tribal Resources Technical Study Plan

POTENTIAL RESOURCE ISSUES

- Tribal resources affected by the Project, including resources of traditional, cultural, or religious importance, and Traditional Cultural Properties (TCP¹).

PROJECT NEXUS

The Federal Energy Regulatory Commission's (FERC) decision to issue a new license is considered an undertaking pursuant to 36 Code of Federal Regulations (CFR) § 800.16(y). The National Historic Preservation Act (NHPA) of 1966, as amended, requires Federal agencies to take into account the effects of undertakings on historic properties and to provide the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on those undertakings.

Proposed Project activities could potentially affect Tribal resources by:

- Endangering those qualities that make the property eligible for inclusion in the National Register of Historic Places (NRHP) or that hold significant cultural value.

RELEVANT INFORMATION

The following information is available to characterize Tribal resources in the vicinity of the Rush Creek Project (refer to Southern California Edison Company's [SCE] Pre-Application Document [PAD] Section 4.13 for a summary of available cultural resource information and Section 4.14 for a summary of available Tribal information [SCE 2021]).

- Native American Heritage Commission (NAHC) Sacred Lands File (SLF) for the Project area, received on November 6, 2020 (NAHC 2020).
- Ten cultural affiliations/heritage associations were identified based on information provided by the NAHC, review of the NAHC Digital Atlas, plus a sample of relevant ethnographic and linguistic papers (Golla 2011; Goode 2020; Levy 1978; U.C. Berkeley 2019), and information from SCE's Lee Vining PAD (FERC Project No. 1388).
- Additional ethnographic literature includes Emma Lou Davis (1965), Catherine Fowler and Sven Liljeblad (1986), Liljeblad and Fowler (1986), Frederick Hulse (n.d.), C. Hart Merriam (n.d.), Willard Park (1933–1940; see also Fowler, 1989), unpublished notes from Davis, Warren d'Azevedo, Sven Liljeblad, Omer Stewart, Margaret Wheat, and others.

¹ A TCP is a property that is eligible for inclusion in the NRHP based on its associations with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community. TCPs are rooted in a traditional community's history and are important in maintaining the continuing cultural identity of the community (Parker and King 1990, 1998).

- Data on trails and other nearby resources conducted by Davis-King and Snyder (2010).
- Synthesis of information on Mono County American Indians in Davis-King (2007, 2010).
- Initial research found no investigations to date of: (1) an American Indian ethnography in the vicinity of the Project; (2) previously documented American Indian TCPs; or (3) previously documented other American Indian resources, some of which may be eligible for listing in the NRHP.
- Research has indicated there are no American Indian Federal trust lands/allotments in the vicinity of the Project. There are some Indian allotments in the region, but they are not proximate to the Project.
- Based on the information available, there is potential for Tribal resources to be located in the vicinity of the Project, as the local American Indian communities continue to access medicine plants, food plants, materials for tools, and many other items as part of their ongoing traditional cultural lifeways. These communities also have a connection with certain biological species, such as bighorn sheep; critical habit for bighorn sheep is immediately adjacent to the FERC Project boundary.

These background data are applicable to a broader territory than lands in the vicinity of the Project, as there has not been an American Indian ethnographic investigation to date of the Rush Creek Project. Previous ethnographies focused on nearby Tribal groups.

POTENTIAL INFORMATION GAPS

- Ethnohistory of lands in the vicinity of the Project (study area).
- Archival research and interviews to identify Tribal resources within the Area of Potential Effects (APE).
- Evaluation of Tribal resources for the NRHP.
- NRHP evaluations of Tribal resources that could be potentially affected by the Proposed Project (Undertaking).
- Tribal resources of value that may not be historic properties, but nonetheless are to be considered.

STUDY OBJECTIVES

- Communicate and consult with Tribes regarding the Project.
- Develop an ethnohistory associated with lands in the vicinity of the Project (study area) which will be used to assist in identification and evaluation of Tribal resources.

- Identify and document Tribal resources in the vicinity of the Project. Characterize Tribal values and resources from a Tribal perspective through outreach and contact with Tribal governments and their representatives.
- Evaluate Tribal resources, as appropriate, to determine if they are eligible for listing on the NRHP and determine whether these resources will be affected by actions of the Proposed Project.

EXTENT OF STUDY AREA AND AREA OF POTENTIAL EFFECT

- For Tribal resources, the study area includes the area within 5 miles of the FERC Project boundary (Map TRI 1-1).
 - This study area will be used for archival research and interviews to develop contextual and background information.
- Under Section 106 of the NHPA, the APE is defined as “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist” (36 CFR § 800.16[d]). Additionally, the ACHP and the California Office of Historic Preservation (OHP) has provided guidance for Federal agencies and their delegated licensees to consider potential effects that:
 - May occur immediately and directly;
 - Are reasonably foreseeable or may occur later in time;
 - Are farther removed in distance and potentially affected indirectly; and
 - Include cumulative effects that may result from the undertaking.
- The proposed APE for the purposes of study implementation is defined as the entire area within the FERC Project boundary (Map TRI 1-2).
- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain) or on private property for which SCE has not received specific approval from the landowner to enter the property to perform the study.
- The study area and APE may be expanded during the relicensing proceeding, in consultation with interested stakeholders, if any refinement/modification of the Proposed Project results in utilizing additional lands outside the FERC Project boundary or current APE.

STUDY APPROACH

The Tribal Resources Technical Study involves a multi-step process that includes: (1) meet with Tribal groups and resource agencies/stakeholders to discuss Proposed Study Plan and adequacy of the APE; (2) archival research; (3) meetings with Tribal governments; (4) interviews; (5) documentation and evaluation; and (6) technical study reporting and consultation. Specific tasks that will be implemented during each step are described below.

ESTABLISH APE

- Submit the proposed APE, on behalf of FERC, to the Tribes, the State Historic Preservation Officer (SHPO), and interested stakeholders for comments on the adequacy of the APE pursuant to 36 CFR § 800.16[d]). The APE may be expanded during the relicensing proceeding if any refinement/modification of the Proposed Project results in utilizing additional lands outside the FERC Project boundary.

ARCHIVAL RESEARCH

- Conduct archival research at some of the following repositories to obtain additional information specific to the prehistory, ethnography, and history associated with the study area. The results of the archival research will: (1) provide primary data to create an American Indian ethnohistory including maps depicting Tribal territories and traditional use areas in the study area; and (2) develop the Tribal resources historic context which will be used in identification and evaluation of Tribal resources within the APE for the NRHP. The Tribal resources team will conduct background archival research of the study area, which may include the following:
 - Autry Museum of the American West, Los Angeles
 - California State Archives, Sacramento
 - California State Library, California History Room, Sacramento
 - Emma Lou Davis Archive, Bishop
 - Hulse and Essene (Bancroft Library, Berkeley and elsewhere)
 - Huntington Library, SCE Records, and Photographs and Negatives, San Marino
 - Merriam (C. Hart) and Harrington (J. P.) notes
 - Mono Basin Historical Society, Lee Vining
 - Mono County (Official Records, Bridgeport)
 - National Archive and Records Administration, San Bruno

- Records of the United States Forest Service (Forest Service), Inyo National Forest (INF), Bishop
- Tuolumne County Carlo M. De Ferrari Archive, Sonora
- University of California, Berkeley, Bancroft Library
- University of California, Berkeley, Jepson Fieldnotes
- University of California, Davis, C. Hart Merriam Collection
- University of Nevada, Reno, Special Collections
- Yosemite National Park Research Library, El Portal

MEETINGS WITH TRIBAL GOVERNMENTS

Meetings with Tribal governments/administrators and/or attendance at Tribal Council meetings (if approved), will provide Project information to Tribal groups, elicit areas of interest, identify appropriate Tribal contacts, and establish protocols for conveying information gathering activities. To date, ten American Indian Tribes have been identified as having potential interests in the Project. These are:

- American Indian Council of Mariposa County (also known as Southern Sierra Miwuk Nation)
- Big Pine Paiute Tribe of Owens Valley
- Bishop Paiute Tribe
- Bridgeport Indian Colony
- Antelope Valley Paiute Tribe, Coleville
- Mono Lake Indian Community (Mono Lake Kukzadikaa Tribe)
- North Fork Mono Tribe of California
- North Fork Rancheria of Mono Indians
- Tuolumne Band of Me-Wuk Indians of the Tuolumne Rancheria of California
- Utu Gwaitu Paiute Tribe of the Benton Paiute Reservation, California
- Walker River Paiute Tribe
- Yerington Paiute Tribe of the Yerington Colony and Campbell Ranch

The Tribal resource investigation will make a good-faith effort at proper communication with Tribal leaders as laid out in FERC's Policy Statement on Consultation with Indian Tribes in Commission Proceedings, issued July 23, 2003 (Docket No. PL03-4-000; Order No. 635; FERC 2003). The investigation will also follow the FERC regulations at 18 CFR § 2.1c, which added a policy statement on consultation with Tribes in FERC proceedings.

INTERVIEWS

Interviews are critical for identification and description of significance, and evaluation of Tribal resources. Interviews with Tribal members provide understanding about what is important to them and why. Knowledgeable individuals from each of the interested Tribes will be interviewed, as willing. The methods and nature of the interviews are expected to vary from person to person: some may be held in the field, others held in private homes, and still others held via telephone/teleconference. Interview records are similarly likely to be variable regarding confidentiality protocols and the interviewee's willingness to share. Recording methods (handwritten notes, video, audio tape, etc.) will be determined by consulting with the interviewee.

All phases of the Tribal resource investigation will be conducted in accordance with the American Indian community consultation standards outlined by the implementing regulations of Sections 101 and 106 of the NHPA and discussed in the 2012 ACHP publication *Consultation with Indian Tribes in the Section 106 Review Process: A Handbook*.

DOCUMENTATION AND EVALUATION

Three main categories of Tribal resources may be present and documented as described below.

- **Tribal Places** are locations associated with the ancestral past, places related to current gathering and/or hunting practices or be other resource types. Those that qualify as potential historic properties will be documented on California Department of Parks and Recreation (DPR) 523 forms as appropriate and with Tribal permission, while others will be described in the TRI 1 – Tribal Resources Technical Study Report (TSR).
- **TCPs** will be documented on DPR 523 forms as appropriate and with permission of the community who has identified the TCP.
- **Tribal Government Resources** such as documentation of Indian allotments located within the study area will be documented in the TRI 1 – Tribal Resources TSR.

Because Tribal resources include both natural and cultural resources, coordination with other resource studies may be necessary in order to identify and evaluate Tribal resources fully. These will be considered in the study analysis such as the examples listed below.

- The location of culturally important plant species identified by American Indian Tribes may be incorporated into the TRI 1 – Tribal Resources TSR, as appropriate, and shared with the botanical resources study team.
- Information about culturally important aquatic species, including fisheries, identified by American Indian Tribes may be incorporated into the TRI 1 – Tribal Resources TSR, as appropriate, and shared with the proposed aquatic resources study team.
- Information about culturally important terrestrial animal species identified by American Indian Tribes may be incorporated into the TRI 1 – Tribal Resources TSR, as appropriate, and shared with the proposed terrestrial resources study team.
- The locations of culturally important plant and/or animal species may be considered in the recreation and land use studies, to the extent possible without divulging confidential information.
- Information on sites associated with prehistoric and ethnographic-period American Indian occupation and use of the landscape will be identified in both the CUL 2 – Archaeological Resources TSR and TRI 1 – Tribal Resources TSR.

All resources within or adjacent to the APE will be documented and described according to Tribal values and submitted for review to Tribal representatives. NRHP evaluation of Tribal resources suitable for DPR 523 documentation will use site-specific procedures to identify historic context of the resource, the boundaries, the jurisdiction or land ownership, the Tribal significance, integrity from a Tribal perspective, and contributing characteristics. Evaluation of other resource types may occur at the managerial or agency level.

NRHP evaluations will be conducted in adherence with National Register Bulletin No. 15, *How to Apply the National Register Criteria for Evaluation* (NPS, 1995), National Register Bulletin No. 38, *Guidelines for Evaluating and Documenting Identification of Traditional Cultural Properties* (Parker and King 1990, 1998), and National Register Bulletin 30, *Guidelines for Evaluating and Documenting Rural Historic Landscapes* (NPS, 1999).

TECHNICAL STUDY REPORTING AND CONSULTATION

A draft TSR will be distributed to interested stakeholders for review and comment. Comments on the draft TSR will be addressed in a final TSR, which will be included in the Draft License Application. The draft and final TSR will include a summary of the information and findings of the technical studies.

The TSR will include: (1) regulatory, environmental, and cultural contextual statements; (2) a discussion of research methods; (3) a discussion of Tribal resources; (4) inclusion of Tribal place names; (5) a description and evaluation of resources that are assessed as potential historic properties; and (6) management considerations.

With Tribal member permission, Tribal resource documentation would be included as public information or included in a confidential appendix withheld from public disclosure, in accordance with Section 304 (16 USC 4702-3) of the NHPA and the Archaeological Resources Protection Act. The California Public Records Act similarly exempts site data from disclosure while Public Resources Code Section 21082.3(c) contains provisions specific to confidentiality related to any information submitted by an American Indian Tribe during the environmental review process.

HISTORIC PROPERTIES MANAGEMENT PLAN

SCE will revise and update the existing Management Plan for Historic and Archaeological Resources associated with the Rush Creek Hydroelectric Project (SCE 1990). The Management Plan will align with the standards of Section 106 and FERC guidelines for Historic Properties Management Plan (HPMP) development.

SCHEDULE

Date	Activity
February–May 2022	Meet with Tribal groups and resource agencies/stakeholders to discuss Draft Study Plan and adequacy of the APE
March–May 2022	Consult with SHPO regarding adequacy of the APE
January 2023	Submit Tribal Resources technical qualifications to INF
January–October 2023	Conduct archival research
January–October 2023	Engage Tribal groups to arrange meetings and establish protocols
January–October 2023	Conduct Tribal interviews to identify Tribal resources
October 2023–January 2024	Compile results of data gathered, evaluate Tribal resources, and prepare draft TSR
January 2024	Distribute draft TSR to stakeholders
February–April 2024	Stakeholder review and provide comment on draft TSR (90 days)
April–June 2024	Resolve comments and prepare final TSR
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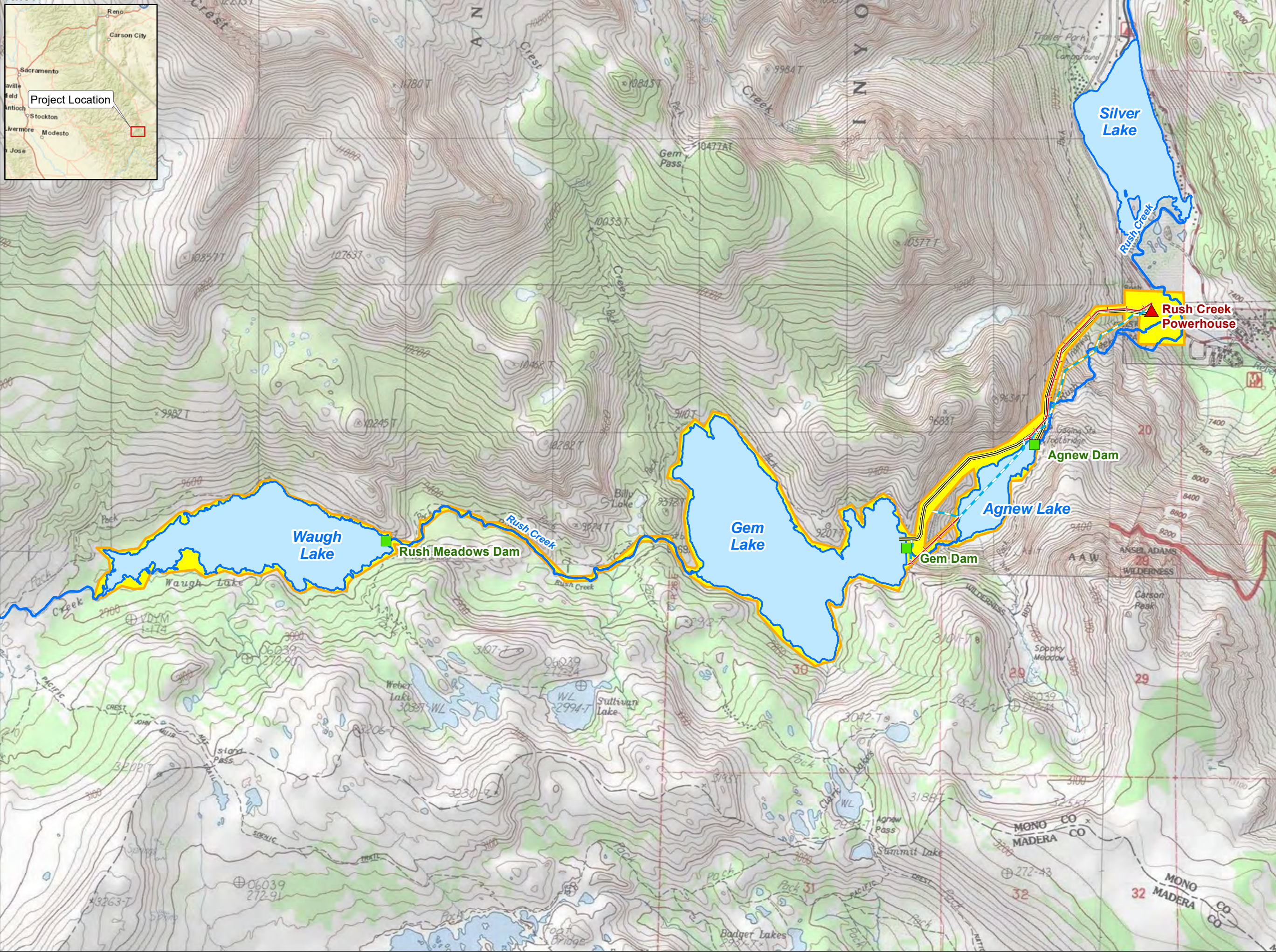
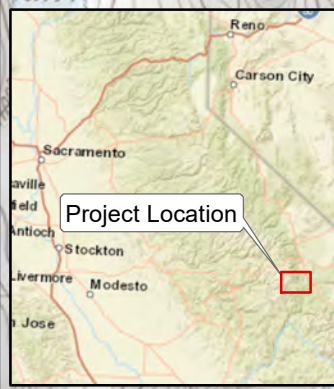
REFERENCES

- ACHP (Advisory Council on Historic Preservation). 2012. Consultation with Indian Tribes in the Section 106 Review Process: A Handbook. (Note as of 28 April 2021 this was unavailable online with the provision that “The handbook is being updated and will be available soon.”)
- Davis, Emma Lou. 1965. An Ethnography of the Kuzedika Paiute of Mono Lake, Mono County, California. University of Utah Anthropological Papers 75: 1-56.
- Davis-King, Shelly. 2007. The Land Where the Unabiya Hungalelti, Me-Wu, and Tövusidökadö Pozidadikadi Meet: Native American Background Research for the United States Marine Corps Mountain Warfare Training Center Mono County, California. Draft report submitted to United States Marine Corps Base Camp Pendleton, Camp Pendleton, California.
- . 2010. Amid the Sagebrush Plain, Atop the Lofty Peaks: Native American History in Mono County, California. Submitted to California Department of Transportation, District 9, Bishop, California.
- Davis-King, Shelly, and James B. Snyder. 2010 The Silver Thread: Upper Tuolumne River American Indian Land Use in Yosemite National Park: Ethnographic Context for the Tuolumne Wild and Scenic River Comprehensive Management Plan and Environmental Impact Statement, Tuolumne County, California. Submitted to USDI, National Park Service, Yosemite National Park, California.
- FERC (Federal Energy Regulatory Commission). 2002. Issuance of Guidelines for the Development of Historic Properties Management Plans (accessed online at Issuance of Guidelines for the Development of Historic Properties Management Plans (ferc.gov), August 7, 2021).
- Fowler, Catherine S., Compiler and Editor. 1989. Willard Z. Park's Ethnographic Notes on the Northern Paiute of Western Nevada, 1933-1944. Volume I. University of Utah Anthropological Papers 114. Salt Lake City.
- Fowler, Catherine S., and S. Liljeblad. 1986. Northern Paiute. In Handbook of North American Indians, Volume 11: Great Basin, edited by Warren L. d'Azevedo, pp. 435-465. Smithsonian Institution, Washington, D.C.
- Golla, Victor. 2011. California Indian languages. Berkeley, California: University of California Press.
- Goode, R.W. 2020. The North Fork Mono Trail, Nium Trail Network. Original Segment Published in Water Stores I, Tribal Water Summit 2009. Updated 2020.
- Hulse, Frederick S. n.d. [1930s] Lee Vining Paiute Ethnographic Notes. CU-23.1, 149. Manuscript on file, Bancroft Library, University of California, Berkeley.

- Liljeblad, Sven, and Catherine S. Fowler. 1986. Owens Valley Paiute. In *Handbook of North American Indians, Volume 11: Great Basin*, edited by Warren L. d'Azevedo, pp. 412-434. Smithsonian Institution, Washington, D.C.
- Levy, R. 1978. Eastern Miwok. In *California*. Robert F. Heizer (editor). 398-413 pp. *Handbook of North American Indians Vol. 8*, William G. Sturtevant (editor). Washington, D.C.: Smithsonian Institution.
- Merriam, C. Hart. n.d. 1898-1938. Journals [California] of C. Hart Merriam. Manuscript Division. Library of Congress, Washington, D.C.
- NAHC (Native American Heritage Commission). 2020. Response to SLF Request, Rush Creek Hydroelectric, Mono County, California. November 2020.
- NPS (National Park Service). 1995. *How to Apply the National Register Criteria for Evaluation*, National Register Bulletin No. 15. U.S. Department of the Interior, National Park Service, Washington, D.C.
- . 1999. *Guidelines for Evaluating and Documenting Rural Historic Landscapes*, National Register Bulletin 30. U.S. Department of the Interior, National Park Service, Washington, D.C.
- Park, Willard Z. 1933-1940. Paviotso Field Notes. On file, Special Collections 96-05 Box 1, File 96-05, University of Nevada, Reno, Nevada.
- Parker, Patricia L., and Thomas F. King. 1990. *Guidelines for Evaluating and Documenting Traditional Cultural Properties*, National Register Bulletin 38, U.S. Department of the Interior, National Park Service, Washington, D.C.
- Parker, Patricia L., and Thomas F. King. 1998. *Guidelines for Evaluating and Documenting Traditional Cultural Properties*, National Register Bulletin 38. U.S. Department of the Interior, National Park Service, Washington, D.C.
- SCE (Southern California Edison Company). 1990. *Management Plan for Historic and Archaeological Resources Associated with the Rush Creek Hydroelectric Project*, (FERC Project No. 1389), Mono and Inyo Counties, California. April 1990.
- . 2021. Rush Creek Project (FERC Project No. 1389) Pre-Application Document. December.
- U.C. Berkeley (University of California, Berkeley). 2019. *Survey of California and Other Indian Languages*, Department of Linguistics, Berkeley, California.

MAPS

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- SCE Facilities**
- ▲ Powerhouse
 - Dam
 - Flowline / Penstock
 - Power or Communication Line
 - + Tramway
 - FERC Project Boundary
- Other Features**
- ~ Rush Creek
 - Lake
- Cultural Data**
- Area of Potential Effects (APE)



Rush Creek Project (FERC 1389)

Map TRI 1-1

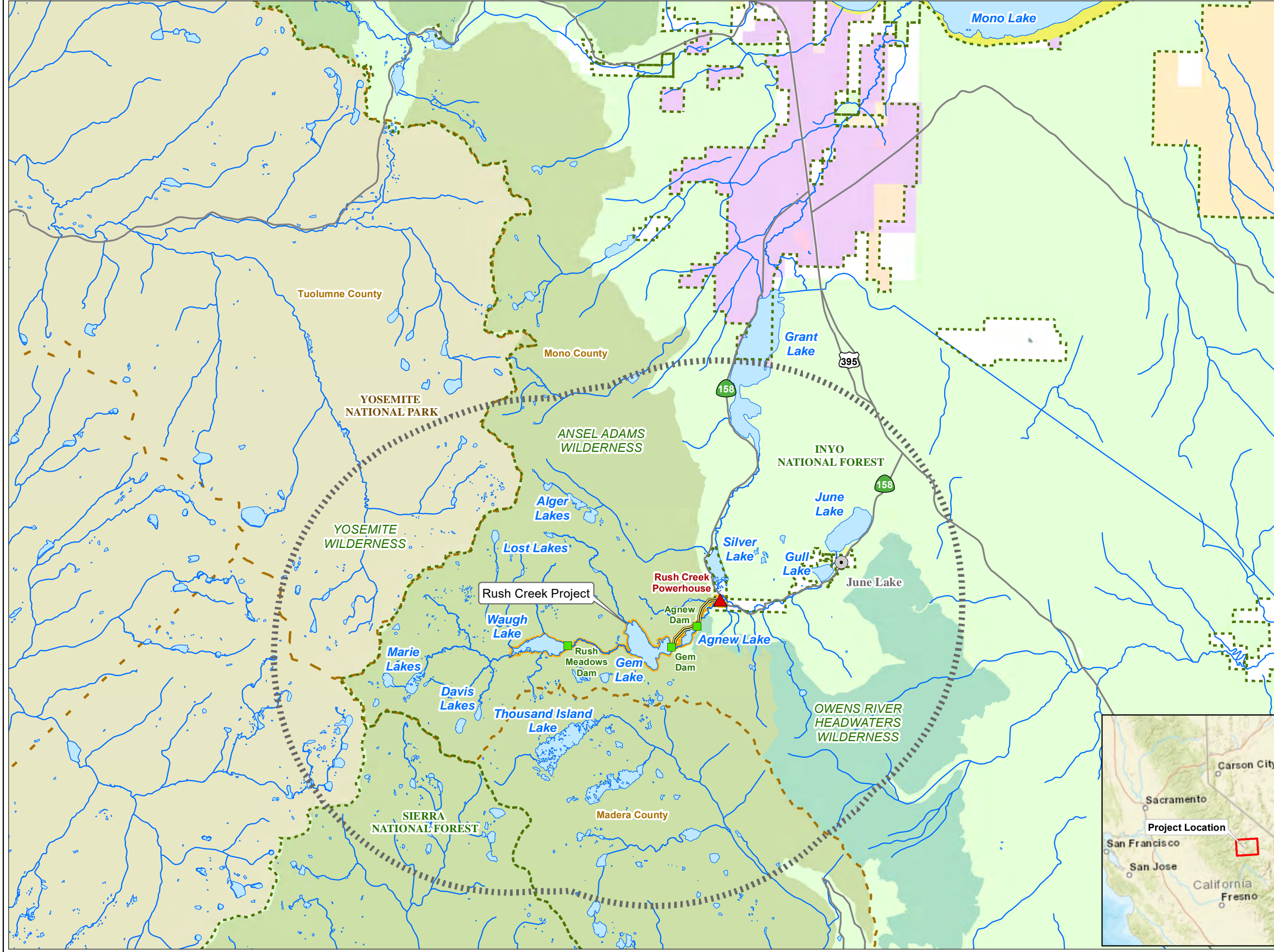
Tribal Resources APE



Projection: UTM Zone 11
Datum: NAD 83

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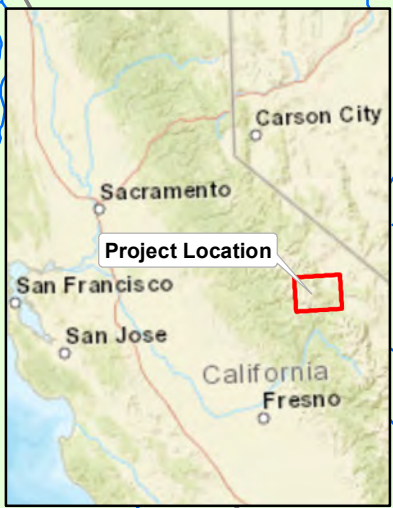



- SCE Facilities**
- Dam
 - ▲ Powerhouse
 - Flowline / Penstock
 - FERC Boundary
- Other Features**
- City/Town
 - Highway
 - River/Stream
 - Lake
 - County Boundary

- Land Jurisdiction and National Wilderness Areas/Parks***
- Local Government
 - LADWP
 - State Government
 - Bureau of Land Management
 - U.S. Forest Service
 - Ansel Adams Wilderness (U.S. Forest Service)
 - Owens River Headwaters Wilderness (U.S. Forest Service)
 - Yosemite National Park / Yosemite Wilderness (National Park Service)
 - Private (Blank)

*SOURCES: BLM, 2020.
Mono Co., 2019.
Wilderness.net, 2019.

- Cultural Data**
- Tribal Resources Study Area






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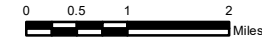
Rush Creek Project (FERC 1389)

Map TRI 1-2

Tribal Resources Study Area



Date: 5/17/2022



0 0.5 1 2 Miles

Projection: UTM Zone 11
Datum: NAD 83

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LAND 1 – AESTHETICS TECHNICAL STUDY PLAN

**Rush Creek Hydroelectric Project
FERC Project No. 1389**



September 2022

LAND 1 – Aesthetics Technical Study Plan

POTENTIAL RESOURCE ISSUES

- Visual quality.

PROJECT NEXUS

- The presence of Project facilities and/or Project operations could potentially affect visual quality.

RELEVANT INFORMATION

The following information is available regarding aesthetics in the vicinity of the Rush Creek Project (refer to Southern California Edison Company's [SCE] Pre-Application Document [PAD] Section 4.12 for a summary of aesthetic information [SCE 2021]).

- Forest Service Handbook, Landscape Aesthetics – A Handbook for Scenery Management (Forest Service 1995), which describes the Forest Service Scenery Management System (SMS), a system to inventory and analyze aesthetic values of National Forest System (NFS) land.
- Management prescriptions and direction included in the Land Management Plan (LMP) for the Inyo National Forest (INF) (Forest Service 2019) that pertain to Project facilities located in the INF.
- The Wilderness Management Plan for the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses (Forest Service 2001), which includes management directives applicable to visual resources in the Ansel Adams Wilderness.
- Visual resource management goals and policies identified in the Mono County General Plan (Mono County 2015) that pertain to Project facilities located on private (SCE) land.

POTENTIAL INFORMATION GAPS

- Characterization of the existing scenic integrity (ESI) of the Project facilities on NFS land compared to surrounding landscape conditions and scenic integrity objectives (SIO) established by the INF.
- Characterization of the existing visual condition of the Project facilities on private land compared to visual resource management goals and policies established by Mono County.
- Visual character of Horsetail Falls under different flow conditions.

STUDY OBJECTIVES

- Establish Key Observation Points (KOP) from which the Project facilities are visible by the public.

- Document the ESI of the existing Project facilities on NFS land and their associated viewsheds relative to the Forest Service SIOs.
- Document the visual condition of the existing Project facilities on private land relative to Mono County goals and policies that pertain to visual resources.
- Document the visual character of Horsetail Falls under different flow conditions.
- Prepare visual renderings of the Proposed Project alternatives.

EXTENT OF STUDY AREA

- The study area for the visual resource assessment includes the Project facilities identified in Table LAND 1-1 and their associated viewsheds.
 - For the purposes of this study, a viewshed is defined as an area of the landscape that is visible from a particular location or series of points (e.g., an overlook or a trail, respectively). The viewsheds include the primary travel routes and recreation areas from which the existing Project facilities are visible to the public.
- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain) or on private property for which SCE has not received specific approval from the landowner to enter the property to perform the study.

STUDY APPROACH

The majority of Project facilities are located on federal land within the INF and Ansel Adams Wilderness Area and managed by the Forest Service. The INF LMP (Forest Service 2019) established SIOs for INF lands using the Forest Service SMS (Forest Service 1995). The SIOs identify the desired level of scenic quality and diversity of a landscape based on physical and sociological characteristics of an area. Therefore, Project facilities located on NFS land will be assessed with respect to the management objectives established by the INF. Forest Service SIOs do not apply to private land.

Some Project facilities are located on private land within Mono County. Project facilities on private lands will be assessed relative to the goals and policies outlined in the Mono County General Plan that pertain to visual resources, to the extent these goals and policies apply to the Project.

Section 4.13, Aesthetic Resources of the PAD (SCE 2021) includes information about visual resources in the vicinity of the Project. The visual resource study steps described below will build on the information presented in the PAD.

ESTABLISH KOPs AND DESCRIBE THE LANDSCAPE CHARACTER OF THE PROJECT FACILITY VIEWSHEDS

- Select representative KOPs and define the Project facility viewsheds from each KOP.

- The KOPs will be selected at locations along primary travel corridors (i.e., State Route 158 [SR-158] and Rush Creek Trail) from which the Project facilities are readily visible by the public. KOP selection will be completed in consultation with the INF and Mono County, as applicable.
 - The location of each KOP will be recorded using a sub-meter Global Positioning System (GPS) unit for mapping purposes. If allowed by the Forest Service and/or Mono County, select KOP locations will also be physically marked with a pin so that they can be easily and accurately relocated, if necessary.
 - The location of each KOP will be depicted on a map(s) with respect to the Project facilities and INF SIOs (where applicable).
- Develop a standardized inventory form in consultation with INF. The standardized inventory form will be developed to prompt a consistent descriptive account of the Project facility viewsheds from each KOP in terms of landscape attributes (forms, lines, colors and textures that comprise the view); ecological unit descriptions; and scenic attractiveness.
 - Narratively document the Project facility viewsheds from each KOP utilizing the standardized inventory form. Documentation shall take place during the summer.
 - Photo document the Project facility viewsheds from each KOP. Documentation shall take place during the summer and should be concurrent with the narrative documentation.
 - Synthesize, in writing, a description of the landscape character of the Project facility viewshed from each KOP utilizing data collected on the standardized inventory form.

DOCUMENT THE ESI OF THE EXISTING PROJECT FACILITIES RELATIVE TO FOREST SERVICE SIOS

- Based on the landscape character description, establish an ESI rating for each Project facility viewshed using the same rating system as used in the SMS for scenic integrity: very high, high, moderate, low, and very low.
- Based on the ESI ratings, assess the compatibility of Project facilities with surrounding landscape conditions and determine whether the Project facilities conform to established Forest Service SIOs.

DETERMINE CONSISTENCY OF THE EXISTING PROJECT FACILITIES WITH RELEVANT MONO COUNTY GOALS AND POLICIES

- Based on the landscape character description, determine whether the Project facilities viewsheds are consistent with established Mono County General Plan (Mono County 2015) visual resource goals and policies.

CHARACTERIZE HORSETAIL FALLS UNDER VARIOUS FLOW CONDITIONS

- Identify two-three locations (i.e., KOPs) from which Horsetail Falls is readily visible by the public (e.g., from SR-158 and from the Rush Creek Trail).
 - To facilitate comparison over time, the location of each KOP will be recorded using a sub-meter GPS unit and the view angle will be recorded with a compass. In addition, each KOP will be physically marked with a pin (as allowed) so it can be accurately relocated.
- Proposed target flows for characterization include: (1) a spill event¹; (2) 70-85² cubic feet per second (cfs); (3) 13-20³ cfs; (4) 5-8 cfs; and (5) 1 cfs (current minimum instream flow release requirement).
- Photo document visual conditions of Horsetail Falls from the established KOPs at the five target flows, using the same camera/lens settings and view angle during each flow.
- Utilize the photographs to describe and characterize the view of Horsetail Falls under different flow conditions.

PREPARE VISUAL RENDERINGS OF PROPOSED PROJECT ALTERNATIVES

- From the representative KOPs, prepare two visual renderings (one looking upstream and one looking downstream) of each Proposed Project alternative, including:
 - Rush Meadows Dam – full and partial removal
 - Gem Dam – retrofit
 - Agnew Dam – full and partial removal
- Utilize the visual renderings to assess the compatibility of the Proposed Project alternatives with surrounding landscape conditions and determine conformance to established Forest Service SIOs.

REPORTING

- Study methods and results will be documented in a LAND 1 – Aesthetics Technical Study Report (TSR). The TSR will include summary tables and maps, as appropriate.

¹ Assuming a spill events occurs during study implementation.

² This evaluation will be conducted in coordination with the AQ 1 – Instream Flow Technical Study Plan.

³ This evaluation will be conducted in coordination with the AQ 1 – Instream Flow Technical Study Plan.

SCHEDULE

Date	Activity
January–March 2023	Summarize land management direction and objectives, establish KOPs, and develop inventory forms
June–August 2023	Inventory, photo document, and assess Project facilities
May–August 2023	Photo document and characterize Horsetail Falls at five different flows, assuming spill flows are available
September 2023–January 2024	Analyze data and prepare draft report
February 2024	Distribute draft report to stakeholders
March–May 2024	Stakeholders review and provide comments on draft report (90 days)
June–July 2024	Resolve comments and prepare final report
August 2024	Distribute final report in Draft License Application

REFERENCES

Forest Service (United States Forest Service). 1995. Landscape Aesthetics – A Handbook for Scenery Management. December.

———. 2001. Wilderness Management Plan for the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. April.

———. 2019. Land Management Plan for the Inyo National Forest. September.

Mono County. 2015. Mono County General Plan Update. Conservation/Open Space Element. Available at: <https://monocounty.ca.gov/planning/page/general-plan>

SCE (Southern California Edison Company). 2021. Rush Creek Project (FERC Project No. 1389) Pre-Application Document. December.

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TABLES

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Table LAND 1-1. Project Facilities

Rush Meadows Dam Area
Dams
Rush Meadows Dam
Reservoirs
Waugh Lake
Valve House
Rush Meadows Dam Valve House
Stream Gages
Rush Creek below Rush Meadows (Waugh Lake) (USGS No. 10287262; SCE No. 359r)
Reservoir Gages
Waugh Lake (USGS No. 10287260; SCE No. 359)
Trails
Rush Meadows Dam Access Trail
Rush Meadows Dam/Waugh Lake Ancillary and Support Facilities
Rush Meadows Dam Equipment Shed
Rush Meadows Dam Gage House
Rush Meadows Dam Solar Facility
Gem Dam Area
Dams
Gem Dam
Reservoirs
Gem Lake
Flowline
Gem Dam to Agnew Junction Flowline
Valve House
Gem Valve House and Cabin
Gem Dam Arch 8 Valve House
Gem Flowline Valve House
Stream Gages
Rush Creek below Gem Lake (USGS No. 10287281; SCE No. 352r)
Reservoir Gages
Gem Lake (USGS No. 10287280; SCE No. 352)

Gem Dam Area (continued)
Communication Lines
Communication Line from Rush Creek Powerhouse to Gem Lake Dam
Communication Line from Gem Valve House to Arch 8 Valve House
Communication Line from Gem Tram Hoist House to Gem Valve House
Trams and Hoist Houses
Gem Tram
Gem Tram Hoist House
Gem Tram Lower/Upper Landing
Trails
Lower Gem Dam Access Trail
Gem Dam Arch 8 Access Trail
Upper Gem Dam Access Trail
Gem Dam/Lake Ancillary and Support Facilities
Gem Lake Dock
Gem Lake Motor Barge
Gem Bunkhouse
Gem Outhouse
Gem Cookhouse
Gem Dam Compressor Shed
Gem Dam Storage Shed
Gem Dam Overhead Hoist House for Dam Length
Gem Dam Overhead Hoist House
Gem Fish Release Footbridge
Gem Tram Landing Footbridge
Gem Tram Bridge
Gem Weather Station
Gem Satellite Dish
Gem Solar Facility
Gem Valve House Tunnel

Agnew Dam Area
Dams
Agnew Dam
Reservoirs
Agnew Lake
Flowline
Agnew Dam to Agnew Junction Flowline
Valve House
Agnew Junction (Valve House and Stand Pipe)
Agnew Dam Valve House
Stream Gages
Rush Creek below Agnew Lake (USGS No. 10287289; SCE No. 357)
Reservoir Gages
Agnew Lake (USGS No. 10287285; SCE No. 351)
Power Lines
4 kV Rush Creek Powerhouse to Agnew Dam Power Line
4 kV Agnew Lake Dam Power Line
4 kV Upper Agnew Boat Dock Power Line (non-operational)
Communication Lines
Communication Line from Agnew Hoist House to Agnew Boathouse
Trams and Hoist Houses
Agnew Tram
Agnew Tram Hoist House
Agnew Tram Landing
Trails
Agnew Stream Gage Access Trail
Agnew Dam/Lake Ancillary and Support Facilities
Lower Agnew Lake Boathouse / Dock
Upper Agnew Lake Boathouse / Dock
Agnew Lake Motor Barge
Agnew Cabin
Agnew Weather Station
Agnew Flume (downstream of Agnew Dam)

Rush Creek Powerhouse Area
Penstocks
Agnew Junction to Rush Creek Powerhouse Penstock (No. 1)
Agnew Junction to Rush Creek Powerhouse Penstock (No. 2)
Powerhouse
Rush Creek Powerhouse
Gages
Rush Creek Powerhouse (USGS No. 10287300; SCE No. 367)
Transmission Lines
2.4 kV Switchyard to Powerhouse Transmission Line
Powerhouse Ancillary and Support Facilities
Rush Creek Powerhouse Complex Access Road
Cottages (2)
Garages (4)
Warehouse and Dock
Machine Shop
Pump House
Woodshed (2)
Helicopter Landing Site
Tank (propane)
Bridge over Powerhouse Tailrace
Bridge over Rush Creek

LAND 2 – NOISE TECHNICAL STUDY PLAN

**Rush Creek Hydroelectric Project
FERC Project No. 1389**



September 2022

LAND 2 – Noise Technical Study Plan

POTENTIAL RESOURCE ISSUES

- Protection of noise sensitive receptors (i.e., residences, businesses, recreation areas, and wildlife areas).

PROJECT NEXUS

- Routine operation of the Rush Creek Project Powerhouse may create excessive noise impacting sensitive receptors.
- Use of helicopters, construction equipment, and trucks to support construction and restoration activities associated with retrofitting/removal of Project dams, and potential enhancements in the lower Rush Creek channel may create excessive noise impacting sensitive receptors.

RELEVANT INFORMATION

The following information is available and was reviewed to determine Project noise study needs:

- Noise level limitations and definitions identified in the Mono County Code, Chapter 10.16, Noise Regulation (Mono County 2015a).
- Goals, objectives, and policies designed to control and abate environmental noise and to limit community exposure as outlined in the Mono County General Plan, Noise Element (Mono County 2015b).
- California Department of Transportation guidance on identifying potential for adverse effects due to noise or vibration (Caltrans 2020a, 2020b).
- Guidance for screening air traffic actions for potential noise impacts outlined in the Federal Aviation Administration’s Desk Reference (FAA 2020).

POTENTIAL INFORMATION GAPS

- Ambient noise (no generation at powerhouse) and noise emanating from the Rush Creek Powerhouse under different generation loads.
- Information on ambient noise and anticipated noise levels associated with use of helicopters, construction equipment, and trucks during construction and restoration activities associated with retrofitting/removal of Project dams, and potential enhancements in the lower Rush Creek channel.

STUDY OBJECTIVES

Characterize ambient and Project-generated noise at sensitive receptor areas (i.e., residences, businesses, recreation areas, and wildlife areas) and compare to applicable state and local noise regulations/ordinances associated with the following activities:

- Routine operations of the Rush Creek Powerhouse
- Retrofitting/removal of dams and potential enhancement of the lower Rush Creek channel
 - Helicopter use
 - Construction equipment use
 - Truck use

EXTENT OF STUDY AREA

- Refer to Map LAND 2-1 for the noise assessment study area. The study area for the noise assessment includes sensitive receptors:
 - In the vicinity of the Rush Creek Powerhouse (powerhouse noise).
 - Along the helicopter flight path from June Mountain Ski Area Parking Lot to top of ridge near Agnew Dam (helicopter noise).
 - Adjacent to the June Mountain Ski Area Parking Lot and the potential enhancement area in lower Rush Creek channel (construction equipment noise).
 - Along State Route 158 (SR-158) from June Mountain Ski Area Parking Lot to U.S. Highway 395 (US-395) (truck noise).
- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain) or on private property for which Southern California Edison (SCE) has not received specific approval from the landowner to enter the property to perform the study.

STUDY APPROACH

GENERAL APPROACH

Identify Noise Sensitive Receptors/Points of Interest

Residences, businesses, recreation areas, and wildlife areas represent locations most at risk to noise impacts and are considered noise sensitive receptors or Points of Interest (POI). The identification of applicable POI for the noise analysis will consider the local terrain, existing land uses, recreational activities, and wildlife occurrences. For each of the study components, selection of POI will be identified in consultation with resource agencies and interested stakeholders.

Field Characterize of Ambient/Project-Induced Noise

Accurately field characterizing of ambient/Project-induced noise requires measurements at or near identified POI using appropriate equipment for the level of accuracy desired. To accomplish this goal, field measurements will utilize an integrating sound level meter similar to a Larson Davis 824/831 and associated pre-amplifier and microphone. The entire system will be certified by an independent authority attesting to the accuracy of the equipment meeting the following performance standards describing tolerance limits and operational temperature range:

- IEC 61672-1:2013, Class 1 (IEC 2013)
- ANSI S1.4, ANSI S1.43 Type 1 (ANSI 1983, ANSI 1997)

A separate acoustic calibrator will be used before and after field measurements to ensure proper equipment function.

The goal is to capture typical conditions at each POI. Summer through fall comprises the primary vacationing period within the study area with numbers of visitors peaking roughly July and August. Because noise generating activity associated with recreation (primarily vehicle traffic) fluctuates based on numbers of visitors, a single ambient noise measurement would be inadequate to fully describe the existing noise environment and potential for impacts. Therefore, ambient noise measurements would be performed at each site during the following three periods:

1. June: Early in the recreation season with fewer visitors and lower anticipated ambient noise levels.
2. August: Peak recreation season with the most visitors expected and the greatest ambient noise levels.
3. October: End of recreation season with fewer visitors and lower anticipated ambient noise levels.

For each study component, the noise study team will engage the resource agencies and interested stakeholders for background information to guide the planning of these measurements, particularly in determining the most appropriate deployment dates.

Analysis Metrics

Noise metrics quantify sounds so they can be compared with each other, and with their effects, in a standard way. This noise study will rely upon the following metrics to describe the noise environment in the study area.

- **Maximum Sound Level (L_{max})** represents the highest A-weighted sound level measured during a single event in which the sound changes with time. L_{max} is the maximum level that occurs over a fraction of a second so it does not fully describe the noise, because it does not account for how long the sound is heard.
- **Equivalent Sound Level (L_{eq})** is a “cumulative” metric that combines a series of noise events representing the decibel average of all sounds in the time period. The time period of an L_{eq} measurement is usually related to some activity and is given along with the value. Periods of 1 hour provide an appropriate assessment period for many environmental measurements with the time period often shown in parenthesis ($L_{eq(1)}$ for 1 hour).
- **Community Noise Equivalent Level (CNEL)** is a variation of the Day-Night Average Sound Level (DNL) that is prescribed by the State of California for airport noise rating and building code standards (California Code of Regulations, title 21 Public Works, subchapter 6; California Administrative Code, Title 25, Building Standards, Chapter 2.5). CNEL is a cumulative metric that accounts for all noise events in a 24-hour period. Similar to $L_{eq(24)}$ except DNL contains an evening and nighttime noise penalty of 4.77 and 10 dB, respectively, to account for the added intrusiveness of environmental noise during those periods.

SPECIFY STUDY COMPONENTS

- The following describes the approach for each study component.

Powerhouse Operation

- Identify noise sensitive POI in the vicinity of the Rush Creek Powerhouse.
 - SCE currently proposes to establish the following POI:
 - Within 100 meter (m) of the Rush Creek Powerhouse, and
 - Two to three POI in the vicinity of the powerhouse (pending landowner permission) to be identified in consultation with resource agencies and interested stakeholders.

- Characterize ambient noise (no generation at the powerhouse) and noise emanating from the Rush Creek Powerhouse under different generation loads at noise sensitive POI.
 - Ambient noise levels will be characterized, in terms of L_{max} and $L_{eq(1)}$, at each POI.
 - Because CNEL requires at least 24-hours to measure directly at each POI, which may be impractical, the level will be approximated from $L_{eq(1)}$ with the appropriate period adjustments prescribed by the CNEL metric. If it is observed at any POI that the captured $L_{eq(1)}$ includes significant human contributions likely to vary throughout the day (i.e. people or vehicular traffic) then additional evening or nighttime $L_{eq(1)}$ measurements at that POI may be captured as well to refine the CNEL approximation of the ambient noise.
 - When capturing the powerhouse noise contribution, the loudest condition may occur at the greatest equipment load or potentially at a reduced load if such a condition excites the equipment's resonant frequency. Due to this uncertainty, coordination with the powerhouse operators and local stakeholders will be conducted to determine the appropriate load conditions to capture. Analysis of historical load conditions at the Rush Creek Powerhouse can guide this consideration.
 - Consistent with the ambient condition, L_{max} and L_{eq} will be measured at each POI for various powerhouse operating loads. If the powerhouse equipment noise dominates the ambient noise and is stable over time, a full 1-hour measurement of L_{eq} will not be required and can be shortened to 1 to 2 minutes for each condition. CNEL will then be calculated for the various powerhouse load conditions based upon L_{eq} .
- Compare noise levels to applicable state and county regulations/ordinances.
 - Both the ambient and power generation noise levels will be compared to state and Mono County noise level standards, which describe maximum allowable exterior noise exposure by land use in terms of CNEL.

Helicopter Use

- Identify noise sensitive POI in the vicinity of the helicopter flight path.
 - SCE currently proposes to establish the following POI:
 - Within 100 m of the June Mountain Ski Area Parking Lot, and
 - Two to three POI along the flight path (pending landowner permission) to be identified in consultation with resource agencies and interested stakeholders.

- Characterize ambient and Project-induced noise levels at each sensitive POI.
 - Ambient noise levels will be captured in terms of L_{max} and $L_{eq(1)}$. The captured $L_{eq(1)}$ values will be used to calculate ambient CNEL at applicable POI along the helicopter flight path.
 - Helicopter noise from Project activities will be characterized using noise modeling software. The Department of Defense NOISEMAP suite of computer programs for aircraft noise modeling and analysis includes the Rotorcraft Noise Model (RNM) (Wyle 1998; Wasmer Consulting 2006a, 2006b). The RNM will be used to predict far-field noise for single or multiple flight operations while calculating the effects of sound propagation over varying ground terrain.
 - Noise levels are computed in the time domain and with a variety of integrated metrics, including L_{max} , L_{eq} , and CNEL, at receiver positions on or above the ground at specific POI and over a uniform grid. Software noise modeling is accomplished by determining and building each aircraft's flight tracks (paths over the ground) and flight profiles (which include data such as altitude, airspeed, power settings, and other flight conditions). RNM includes a database of noise spheres for various helicopters. If the specific airframe that will be used for this Project is not available a surrogate will be selected. RNM will be used to calculate L_{max} , L_{eq} , and CNEL at POI along the flight path for helicopter operations.
- Compare noise levels to applicable state and county regulations/ordinances.
 - Results will be compared with state and Mono County noise level standard for maximum allowable exterior noise exposure by land use in terms of CNEL. Single event L_{max} levels will be discussed in terms of the context and intensity of the existing environment.

Construction Equipment

- Identify noise sensitive POI adjacent to the June Mountain Ski Area Parking Lot and the potential enhancement area in the lower Rush Creek channel.
 - SCE currently proposes to establish the following POI:
 - Within 100 m of the June Mountain Ski Area Parking Lot,
 - On SCE land near SR-158 and the potential enhancement area, and
 - Two to three POI adjacent to the June Mountain Ski Area Parking Lot and the potential enhancement area to be identified in consultation with resource agencies and interested stakeholders.

- Characterize ambient and Project-induced noise levels at each sensitive POI.
 - Ambient noise levels to be captured in terms of L_{max} and $L_{eq(1)}$. The captured $L_{eq(1)}$ values will be used to calculate ambient CNEL at applicable POI.
 - Noise associated with construction equipment activity will be calculated using the Federal Highway Administration's (FHWA) software tool, the Roadway Construction Noise Model (RCNM) (FHWA 2006).
 - Input requires identification of the types of equipment (i.e., front end loader, dump truck, etc.) to be operated and the hours of operations. If such details are not available, then conservative assumptions will be made.
 - The software includes the ability to compute L_{max} and L_{eq} . With knowledge of the equipment operating hours, the construction equipment CNEL will be approximated, and the results compared to the Mono County noise level standard.
- Compare noise levels to applicable state and county regulations/ordinances.
 - Results will be compared with state and Mono County noise level standard for maximum allowable exterior noise exposure by land use in terms of CNEL. Single event L_{max} levels will be discussed in terms of the context and intensity of the existing environment.

Truck Use

- Identify noise sensitive POI along SR-158 from June Mountain Ski Area Parking Lot to US-395.
 - SCE currently proposes to establish the following POI:
 - Two POI located adjacent to Silver Lake (at Silver Lake Campground and Silver Lake Resort).
 - These POI are in addition to the POI previously identified for assessment of construction equipment use.
- Characterize ambient noise levels at each sensitive POI.
 - Ambient noise levels to be captured in terms of L_{max} and $L_{eq(1)}$ at each of the POI along SR-158. The captured $L_{eq(1)}$ values will be used to calculate ambient CNEL at applicable POI.
 - Recent environmental studies will be reviewed to determine if existing noise levels have already been measured or calculated along SR-158.

- If not available, the FHWA provides the following guidelines for establishing baseline conditions through measurement:
 - Noise measurements are usually taken at Level of Service C (LOS C) or better. LOS C is the point where traffic is as congested as it can be but moving the fastest speed allowable by law (LOS A = virtually no traffic, LOS D = gridlock).
 - Noise readings should be taken on a Tuesday, Wednesday, or Thursday.
 - Three noise readings should be taken per site in 20-minute increments and then averaged.
- Characterize Project-induced noise levels at each sensitive POI.
 - The FHWA provides the Traffic Noise Model (TNM) for road vehicular noise analysis. TNM Version 2.5 includes a Low Volume Tool as a simple noise calculator for a single roadway (FHWA 2004).
 - This study will utilize the TNM Low Volume Tool to calculate the $L_{eq(1)}$ at POI along SR-158 due to the proposed truck hauling noise. $L_{eq(1)}$ values will be used to calculate CNEL at applicable POI with the addition of truck hauling noise.
- Compare noise levels to applicable state and county regulations/ordinances.
 - Results will be compared with state and Mono County noise level standard for maximum allowable exterior noise exposure by land use in terms of CNEL. Single event L_{max} levels will be discussed in terms of the context and intensity of the existing environment.

SCHEDULE

Date	Activity
March–May 2023	Identify sensitive receptors/ POI with resource agencies and stakeholders
June–October 2023	Conduct noise surveys
October 2023–January 2024	Analyze data and prepare draft report
February 2024	Distribute draft report to stakeholders
March 2024–May 2024	Stakeholders review and provide comments on draft report (90 days)
June–July 2024	Resolve comments and prepare final report
August 2024	Distribute final report in Draft License Application

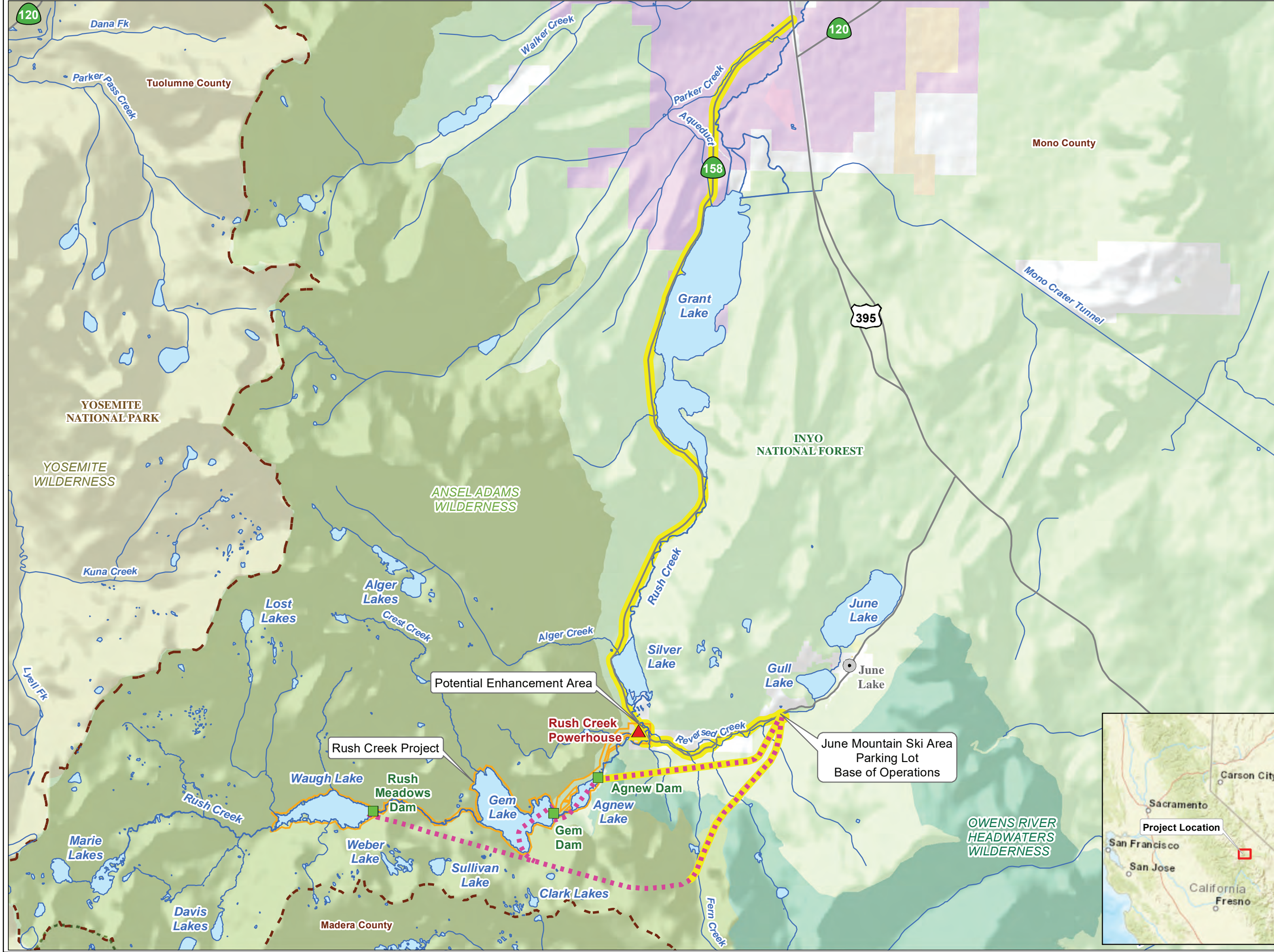
REFERENCES

- ANSI (American National Standards Institute). 1983. American National Standard S1.4-1983. Specification for Sound Level Meters. 17 February.
- . 1997. American National Standard S1.43-1997. Specifications for Integrating-Averaging Sound Level Meters. Reaffirmed 16 March 2007.
- Caltrans. 2020a. Traffic Noise Analysis Protocol Update - For New Highway Construction, Reconstruction, and Retrofit Barrier Projects. April.
- . 2020b. Transportation and Construction Vibration Guidance Manual Update. April.
- FAA (Federal Aviation Administration). 2020. 1050.1F Desk Reference. Federal Aviation Administration Office of Environment and Energy. Version 2. February.
- FHWA (Federal Highway Administration). 2004. FHWA Traffic Noise Model User's Guide Version 2.5. April.
- . 2006. FHWA Roadway Construction Noise Model User's Guide. January.
- IEC (International Electrotechnical Commission). 2013. International Standard 61672-1. Electroacoustics – Sound level meters – Part 1: Specifications
- Mono County. 2015a. Mono County Code. Chapter 10.16 – Noise Regulation.
- . 2015b. Mono County General Plan Update. Noise Element.
- Page, J.A., C. Wilmer, and K.J. Plotkin. 2010. Rotorcraft Noise Model Technical Reference and User Manual (Version 7.1). Wyle Report WR 08-04, Wyle Laboratories Inc. February.
- Wasmer Consulting. 2006a. BaseOps 7.3 User's Guide, Fred Wasmer and Fiona Maunsell, Wasmer Consulting.
- . 2006b. NMPlot 4.955 User's Guide.
- Wyle. 1998. NMAP 7.0 User's Manual. Wyle Research Report WR 98-13, Czech and Plotkin. November.

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MAPS


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- SCE Facilities**
- Dam
 - ▲ Powerhouse
 - FERC Boundary
- Other Features**
- Major City/Town
 - Highway
 - River/Stream
 - Lake
 - County Boundary
 - Approximate Helicopter Flight Path
- Land Jurisdiction and National Wilderness Areas/Parks***
- U.S. Forest Service
 - Ansel Adams Wilderness (U.S. Forest Service)
 - Owens River Headwaters Wilderness (U.S. Forest Service)
 - Yosemite National Park / Yosemite Wilderness (National Park Service)
 - Local Government
 - LADWP
 - State Government
 - Bureau of Land Management
 - Private (Blank)
- *SOURCES: BLM, 2020.
Mono Co., 2019.
Wilderness.net, 2019.

- LAND-2 Study**
- Noise Assessment Study Area






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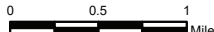
Rush Creek Project (FERC 1389)

LAND 2-1

Overview of Study Area



Date: 10/11/2021



Projection: UTM Zone 11
Datum: NAD 83

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REC 1 – RECREATION TECHNICAL STUDY PLAN

**Rush Creek Hydroelectric Project
FERC Project No. 1389**



September 2022

REC 1 – Recreation Technical Study Plan

POTENTIAL RESOURCE ISSUES

- Recreation use and opportunities in the vicinity of the Project.
- Public safety.
- Flow fluctuations in Rush Creek downstream of the Rush Creek Tailrace.

PROJECT NEXUS

- Maintaining recreation opportunities and public safety associated with operations and maintenance of the Project.

RELEVANT INFORMATION

The following information is available regarding recreation in the vicinity of the Rush Creek Project (refer to Southern California Edison Company's [SCE] Pre-Application Document [PAD] Section 4.11 for a summary of recreation information [SCE 2021]).

- Management prescriptions and direction relevant to recreation included in the Land Management Plan for the Inyo National Forest (INF) (Forest Service 2019).
- Management directives applicable to recreation in the Ansel Adams Wilderness in the Wilderness Management Plan for the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses (Forest Service 2001a).
- Programmatic direction and management strategies for the Ansel Adams Wilderness in the Final Environmental Impact Statement (FEIS) (and FEIS appendices): Management Direction for the Ansel Adams, John Muir and Dinkey Lakes Wildernesses (Forest Service 2001b).
- Goals, policies, and objectives identified in the Mono County General Plan (Mono County 2015) that pertain to outdoor recreation opportunities in the County.
- Section 2.0, Project Location, Facilities, and Operation, and Section 4.3, Water Use and Hydrology of the Rush Creek PAD, present a summary of Project operations and water use; available stream gage data; and daily historical, existing, and unimpaired hydrology for Project-affected stream segments¹ and Project reservoirs.
- SCE's Public Safety Plan for the Rush Creek Project (SCE 2016).

¹ Stream segments as used in this document are typically long sections of stream with a relatively homogeneous flow regime. Segments may be subdivided into smaller reaches for study purposes and/or based on fluvial geomorphology (e.g., stream gradient, channel confinement).

- Safety-related information that may be included in the Federal Energy Regulatory Commission (FERC) Environmental Inspection Reports for the Project.
- Safety Incident Reports that may have been filed by SCE, as required by Title 18 of the Code of Federal Regulations §12.10.

POTENTIAL INFORMATION GAPS

- Non-commercial recreation use data for the Rush Creek Trail, including day and overnight use, and destination.
- Commercial recreation use data for the Rush Creek Trail and the pack station camps in the vicinity of the Project, including the Billy Lake Stock Camp, and Frontier Pack Station Camp.
- Data on flow fluctuations in Rush Creek downstream of the Rush Creek Tailrace.
- Recreation trends and potential future recreation demand.
- Project facility conditions, and operation and maintenance activities relative to public safety.

STUDY OBJECTIVES

- Characterize the recreation setting and opportunities in the Rush Creek Watershed and in the immediate vicinity of the Project.
- Characterize non-commercial recreation use along the Rush Creek Trail and in the vicinity of the Project, including day and overnight use.
- Characterize commercial use along the Rush Creek Trail and in the vicinity of the Project, including day and overnight trips.
- Characterize angling opportunities and use at the Project reservoirs and adjacent Project-affected stream segments.
- Characterize sub-daily changes in water surface elevation in Rush Creek downstream of the Rush Creek Powerhouse Tailrace associated with Project operations.
- Estimate potential future recreation use in the vicinity of the Project using existing use data and published recreation trends information.
- Document potential public safety issues and existing programs and measures that are implemented by SCE to protect public health and safety.

EXTENT OF STUDY AREA

The study area includes the Rush Creek Watershed from its headwaters near Mt. Lyell to Rush Creek confluence with Grant Lake (see PAD Map 4.2-1). The study area will be used when developing general information about the recreation resources in the vicinity of the Project for contextual purposes. The following areas will be the primary focus of the study:

- The trail network in the vicinity of the Project, including: the Rush Creek Trail from a developed trailhead located near Silver Lake to its intersection with the Pacific Crest Trail; and the trails that connect to the Rush Creek Trail (e.g., Spooky Meadows Trail, Clark Lakes Trail, Alger Lakes Trail, and Weber Lake Trail).
- Project-affected stream segments from Waugh Lake to the confluence of Rush Creek and Grant Lake. Table REC 1-1 identifies the Project-affected stream segments.
- The three Project reservoirs (Waugh, Gem, and Agnew lakes) and Silver Lake (non-Project natural lake) including the area immediately surrounding these reservoirs/lakes.
- Commercial pack stations camps located along the Rush Creek Trail, including the Billy Lake Stock Camp, and Frontier Pack Station Camp.

These areas are shown on Map REC 1-1 with respect to the primary Project facilities, FERC Project boundary, and land jurisdiction.

- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain) or on private property for which SCE has not received specific approval from the landowner to enter the property to perform the study.

STUDY APPROACH

Section 4.11, Recreation Resources of the PAD (SCE 2021) characterizes the recreation setting and opportunities in the vicinity of the Project (including with narrative descriptions accompanied by maps and tables), based on data and information readily available from existing information sources. The study elements described below will build on the information presented in the PAD.

CHARACTERIZE NON-COMMERCIAL RECREATION USE ALONG THE RUSH CREEK TRAIL AND IN THE VICINITY OF THE PROJECT

- Interview INF Wilderness Rangers familiar with the Rush Creek Watershed regarding trail use in the vicinity of the Project and popular backcountry destinations.

- Utilize overnight use data (five most recent years) collected by the INF under their wilderness permit system to develop the following information regarding use along the Rush Creek Trail and in the vicinity of the Project reservoirs. Wilderness permits are only required from May 1 through November 1. Therefore, use estimates will cover this period.
 - Identify common overnight destinations that are accessed from the Rush Creek Trailhead.
 - Identify other trailheads used to access the Rush Creek Watershed.
 - Estimate the number of overnight visitors who use the Rush Creek Trail, starting from the Rush Creek Trailhead or other connected trailheads.
 - Identify destination, average group size, and length of stay, focusing on use in the vicinity of the Project- affected stream segments and Project reservoirs.
 - Estimate weekday, weekend and holiday use, if possible given the information available on the wilderness permits.
 - Document the number of times the overnight quota at the Rush Creek Trailhead was met or exceeded.
 - Identify the area of origin of the visitors who utilize the Rush Creek Trail.
- Consult with INF staff to obtain estimates of day use along the Rush Creek Trail based on observations made by Forest Service staff.
- Conduct recreation use counts and visitor surveys at the Rush Creek Trail Trailhead. Recreation use counts and visitor surveys will focus on incoming and outgoing users of the Rush Creek Trail, as opposed to the Parker Bench Trail, which is also accessible from the same trailhead. Information collected will be used to help document recreation use levels along the Rush Creek Trail, and to develop information about visitor and angling use. Information will be gathered using in-person counts and visitor surveys, as well as via a self-registration box, as described in the following.
 - In-person visitor counts and surveys will be conducted as follows:
 - A survey technician will be stationed at the Rush Creek Trailhead² to count visitors and administer surveys a total of 34 days throughout the 2023 recreation season (i.e., between May 1 and November 1, 2023), when the trail is accessible.

² The survey technician may be stationed just south of the main trailhead to avoid counting or surveying users heading northeast along the Parker Bench Trail.

- Counts and surveys will be conducted on one weekday and one weekend day every other week (randomly selected), and on all holidays, resulting in:
 - 13 weekdays;
 - 13 weekend days; and
 - 3 holidays - Memorial Day (May 27–29, 2023), Independence Day (July 3–4, 2023), Labor Day (September 2–4, 2023).
- The survey technician will be present during one of two randomly selected time blocks defined as follows: Block 1 – 8:00am-12:00pm and Block 2 – 4:00pm-sunset.
- During each survey period, the survey technician will:
 - Record the total number of people accessing the trail distinguishing between overnight and day-users. The survey technician will also record the total number of anglers.
 - Intercept visitors and ask them to participate in a brief survey, which will be administered using a survey form developed in consultation with the INF and California Department of Fish and Wildlife (CDFW). The survey form will focus on collecting demographic, destination, and recreation activity information, including angling.
- The temporary self-registration box at the Rush Creek Trailhead will be established as follows:
 - The self-registration box will be maintained from May 1 through November 1, commensurate with the quota system.
 - The self-registration box will consist of a painted steel weatherproof box mounted on a painted steel post (or existing information board/kiosk).
 - Signage encouraging/directing day users and anglers of the Rush Creek Trail³ (whether entering or exiting) to complete a short survey will be mounted adjacent to the box.
 - The box will contain survey forms (developed in consultation with the INF and CDFW as described above).

³ The signage shall specify day users and anglers of the Rush Creek Trail to avoid capturing information from users headed northeast on the Parker Bench Trail.

CHARACTERIZE COMMERCIAL RECREATION USE ALONG THE RUSH CREEK TRAILHEAD AND IN THE VICINITY OF THE PROJECT

- Interview the Frontier Pack Station outfitter to identify the most popular pack routes and most popular backcountry destinations in the vicinity of the Project.
- Obtain and compile the most recent five years of overnight use data from the pack station outfitters and/or the INF to characterize commercial use along the Rush Creek Trail and at the overnight pack camps located in the vicinity of the Project.

CHARACTERIZE FLOW FLUCTUATION IN RUSH CREEK DOWNSTREAM OF THE RUSH CREEK POWERHOUSE TAILRACE

- To characterize flow fluctuations in Rush Creek below the Rush Creek Powerhouse Tailrace related to Project operations, a sub-daily analysis of water surface and discharge will be developed as part of implementation of the AQ 1 – Instream Flow Technical Study Plan (TSP) and the AQ 2 – Hydrology TSP.
- The sub-daily analysis will characterize flow fluctuation in Rush Creek under both existing and Proposed Project operations to characterize stream-based recreation opportunities and constraints.

ESTIMATE FUTURE RECREATION USE AND DEMAND

- Estimate future recreation needs in the vicinity of the Project.
 - Utilize census data and information available in current relevant federal, state, and local comprehensive plans to identify population projections and to document outdoor recreation use trends and needs.
 - Utilize use estimates and visitor survey responses, along with trends and population projections to estimate future recreation needs over the license period (assumed to be 50 years).
 - Determine whether future recreation needs can be met in the vicinity of Project.

DOCUMENT PUBLIC SAFETY

- Identify and describe existing programs and measures implemented by SCE to protect public health and safety (i.e., buoy lines, fencing, signage, and alarms). The inventory will include a description of the condition of the existing safety features.
- Characterize the number, type, and location of safety incidents related to recreation that have occurred in the vicinity of the Project over the past ten years. This effort will be conducted by reviewing existing records and databases maintained by the FERC and by consulting with SCE staff.

REPORTING

- Study methods and results will be documented in an REC 1 – Recreation Technical Study Report (TSR). The TSR will include summary tables and maps, as appropriate.

SCHEDULE

Date	Activity
January–March 2023	Gather and analyze existing available use data (including wilderness permit data from the INF)
January–April 2023	Develop the survey instrument in consultation with the Forest Service and CDFW Interview key information sources (i.e., INF, Frontier Pack Station Outfitter, local guides and outfitters, and June Lake homeowner’s association representatives)
May 1–November 1, 2023	Conduct use counts and visitor surveys, and establish and maintain a temporary self-registration box at the Rush Creek Trail Trailhead
October 2023–January 2024	Analyze data and prepare draft report
February 2024	Distribute draft report to stakeholders
March–May 2024	Stakeholders review and provide comments on draft report (90 days)
June–July 2024	Resolve comments and prepare final report
August 2024	Distribute final report in Draft License Application

REFERENCES

- Forest Service (United States Forest Service). 2001a. Wilderness Management Plan for the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. April.
- . 2001b. Management Direction for the Ansel Adams, John Muir and Dinkey Lakes Wilderness. Final Environmental Impact Statement. March.
- . 2019. Land Management Plan for the Inyo National Forest. September.
- Mono County. 2015. Mono County General Plan Update. Conservation/Open Space Element.
- SCE (Southern California Edison Company). 2016. Public Safety Plan for the Rush Creek Project, FERC Project No. 1389. November.
- . 2021. Rush Creek Project (FERC Project No. 1389) Pre-Application Document. December.

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TABLES

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Table REC 1-1. Stream Segments.

Stream Segment Name	Segment Length (miles) / River Miles (RM)	Elevation Range (feet) (% gradient)	Type	Description
Rush Creek				
Waugh Lake	1.51 (RM 22.24–23.75)	9,392 ¹	—	Project Reservoir
Rush Creek Below Rush Meadow Dam	1.83 (RM 20.41–22.24)	9,036–9,371.6 (3.47%)	Project-affected Stream Segment	Moderate Gradient Mountain Stream
Gem Lake	0.93 (RM 19.48–20.41)	9,027.5 ¹	—	Project Reservoir
Rush Creek Below Gem Dam	0.30 (RM 19.18–19.48)	8,539.2–9,008 (29.60%)	Project-affected Stream Segment	Steep Mountain Stream
Agnew Lake	0.58 (RM 18.60–19.18)	8,470 ¹	—	Project Reservoir
Rush Creek Below Agnew Dam	0.40 (RM 18.2–18.60)	8,214–8,460 (11.65%)	Project-affected Stream Segment	Steep Mountain Stream
Rush Creek Horsetail Falls	0.54 (RM 17.66–18.2)	7,306.8–8,214 (31.82%)	Project-affected Stream Segment	Steep Mountain Stream
Rush Creek Above Silver Lake	0.94 (RM 16.72–17.66)	7,216.2–7,306.8 (1.83%)	Project-affected Stream Segment	Low-Gradient Meadow Stream ³
Silver Lake	0.83 (RM 15.89–16.72)	7,215 ²	—	Natural Lake
Rush Creek Below Silver Lake	2.69 (RM 13.20–15.89)	7,131–7,214.7 (0.59%)	Project-affected Stream Segment	Low-Gradient Stream
Grant Lake	3.88 (RM 9.32–13.20)	7,131 ²	—	Non-Project Reservoir; LADWP Controlled
Rush Creek Below Grant Lake	9.32 (RM 0.0–9.32)	6,327–7,080 (1.44%)	Non-Project Stream Segment; LADWP Controlled	Low-Gradient Stream
South Rush Creek				
South Rush Creek	0.46 (RM 0.0–0.46)	7,221–7,551.7 (13.62%)	Project-affected Stream Segment	Steep Mountain Stream ³

Notes:

LADWP = Los Angeles Department of Water and Power
 RM = River Mile

¹ Maximum seismic restriction elevation

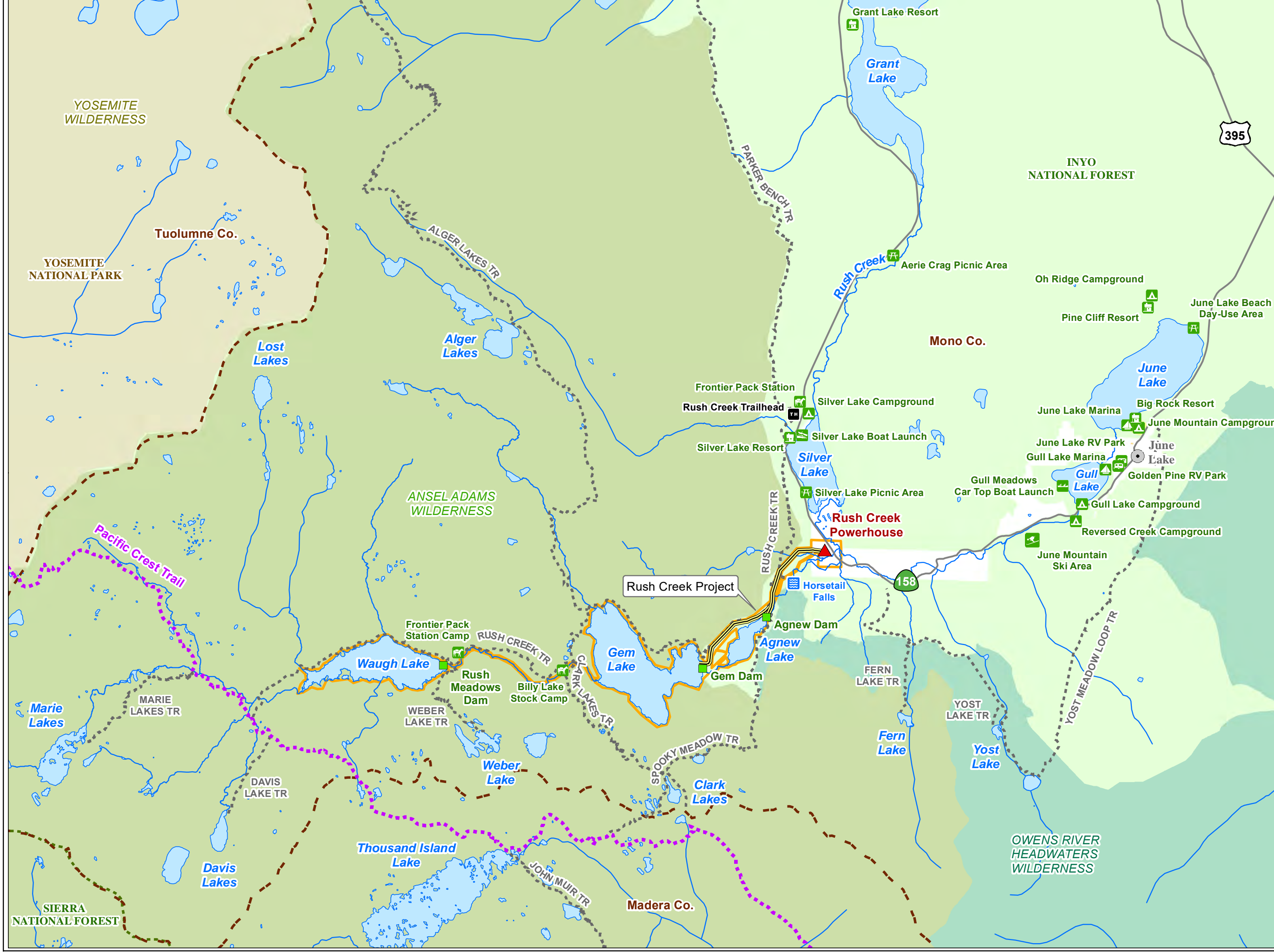
² Approximate ordinary high water mark

³ This stream segment has some very low gradient and some steeper gradient sections

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MAPS

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- SCE Facilities**
- Dam
 - ▲ Powerhouse
 - Flowline / Penstock
 - FERC Boundary
- Other Features**
- Major City/Town
 - Highway
 - River/Stream
 - Lake
 - County Boundary

- Land Jurisdiction and National Wilderness Areas/Parks***
- U.S. Forest Service
 - Ansel Adams Wilderness (U.S. Forest Service)
 - Owens River Headwaters Wilderness (U.S. Forest Service)
 - Yosemite National Park / Yosemite Wilderness (National Park Service)
 - Private (Blank)

*SOURCES: BLM, 2020.
Mono Co., 2019.
Wilderness.net, 2019.

- Developed Recreation Facilities and Trails**
- Boat Launch
 - ▲ Marina
 - Car Top Boat Launch
 - ▲ Campground
 - Day-Use Area and/or Picnic Area
 - Pack Station
 - RV Park
 - Resort
 - Ski Area
 - - - Pacific Crest Trail
 - - - Other Major Trail




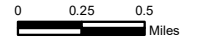
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Rush Creek Project (FERC 1389)

Map REC 1-1

Recreation Setting in the Vicinity of the Rush Creek Project





0 0.25 0.5
Miles

Projection: UTM Zone 11
Datum: NAD 83

Date: 10/26/2021

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TERR 1 – BOTANICAL RESOURCES TECHNICAL STUDY PLAN

**Rush Creek Hydroelectric Project
FERC Project No. 1389**



September 2022

TERR 1 – Botanical Resources Technical Study Plan

POTENTIAL RESOURCE ISSUES

- Potential loss or degradation of vegetation alliances.
- Potential effects on jurisdictional waters of the United States (U.S.) and the state.
- Potential alteration of habitat or loss of special-status plants.¹
- Potential introduction or spread of non-native invasive plant (NNIP) populations.

PROJECT NEXUS

- Direct loss or degradation of vegetation alliances, including communities afforded special recognition by state and federal agencies (e.g., riparian communities and jurisdictional Waters of the U.S./State).
- Removal or disturbance of special-status plant, moss, and lichen populations.
- Introduction or spread of NNIPs.

RELEVANT INFORMATION

The following information is available regarding botanical resources in the vicinity of the Rush Creek Project (refer to Southern California Edison Company's [SCE] Pre-Application Document [PAD] Section 4.6 for a summary of wildlife resource information and to Section 4.9 for a summary of wetland, riparian and littoral habitat resource information [SCE 2021]):

VEGETATION ALLIANCES

- Classification and Assessment with land satellite (LANDSAT) imagery of Visible Ecological Groupings (CALVEG) United States Forest Service (Forest Service) Region 5.

SPECIAL-STATUS PLANTS

- Inyo National Forest (INF) Forest Service Plant Species of Conservation Concern (SCC) list and associated spatial data layer (NRM TESP-IS) (Forest Service 2019a).
- California Native Plant Society (CNPS) Inventory of Rare, Threatened and Endangered Plants (CNPS 2020).

¹ For the purposes of this study plan, the term special-status plant is defined to include plants (vascular and non-vascular plants [e.g., moss]) or lichen species that are granted protection by a federal or state agency.

- U.S. Fish and Wildlife Service (USFWS) Information for Planning, and Conservation System (IPaC) list of federal endangered and threatened species (USFWS 2020).
- California Natural Diversity Database (CNDDDB) (CNDDDB 2020).
- Federal Energy Regulatory Commission's (FERC's) Environmental Assessment, Rush Creek Project (FERC Project No. 1389) (FERC 1992).
- Rush Creek Emergency Project (FERC No. 1389) Pre-release Survey and Assessment Report (SCE 2017a).
- Rush Creek (Phase II) Project (FERC No. 1389) Pre-construction Biological Survey and SCE's Survey Report for Phase I and Phase II Projects (SCE 2017b, 2018).

NON-NATIVE INVASIVE PLANTS

- INF list of invasive plants of management concern for the Forest and associated spatial data layer (NRM TESP-IS) (Forest Service 2017).
- Final Environmental Impact Statement (FEIS) for the revision of the INF Land Management Plan (Forest Service 2019b).
- California Invasive Plant Inventory (Cal-IPC 2020).

RIPARIAN RESOURCES

- Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979).
- Environmental Assessment for Hydropower License, Rush Creek, FERC Project No. 1389-001, California (FERC 1992).
- Baseline Riparian Monitoring of Lee Vining and Rush Creeks, Year 1 (1999) Annual Report (Psomas 2000).
- Rush and Lee Vining Creeks Riparian Monitoring Baseline Summary (Psomas 2004).
- Biological Resources Evaluation Technical Report for the SCE South Lake Dam, Agnew Lake Dam, Saddlebag Lake Dam, and Tioga Lake Dam, and Auxiliary Dam Maintenance and Geo-membrane Lining Projects (Psomas 2010).
- Analysis of Riparian Vegetation Phase 2 (Year 1) and Comparison to Baseline (Read 2010).
- Vegetation Transect Survey Memorandum for California Department of Fish and Wildlife Temporary Variance of License Article 401 Curtailing Water Level

Requirements for Gem and Waugh Lakes for Seismic Concerns, SCE Rush Creek Hydroelectric Project (Psomas 2017).

- Rush Creek Emergency Project (FERC No. 1389) Pre-release Survey and Assessment Report (SCE 2017a).
- Rush Creek (Phase II) Project (FERC No. 1389) Pre-construction Biological Survey and Assessment Report Rush Meadows Dam Project Area (SCE 2017b).
- Analysis of Riparian Vegetation and Aquatic Habitat: 2018 Field Season and Comparison to Previous Years (Read and Salamunovich 2019).
- The USFWS National Wetlands Inventory (NWI) (USFWS 2021).

POTENTIAL INFORMATION GAPS

- Updated information on vegetation alliances, including riparian alliances.
- Updated information on special-status plant, moss, and lichen populations.
- Updated information on NNIPs.
- Information on historic and existing botanical resources within the inundation zones of the Project reservoirs.
- Characterization of the riparian community at riparian sampling sites along Project-affected stream segments,² including the relationship between the riparian community and stream flow.
- Detailed mapping of wetland and riparian communities within the potential enhancement area.³

STUDY OBJECTIVES

- Update vegetation alliances, including the riparian community, within 1 mile of the FERC Project boundary.
- Document special-status plant populations within the FERC Project boundary.⁴
- Document NNIP populations within the FERC Project boundary.

² Refer to Table TERR 1-1 for a list of riparian sampling sites.

³ The potential enhancement area includes portions of the Rush Creek and South Rush Creek channels upstream and downstream of the State Route 158 crossing. The purpose of the potential enhancement is to address local flooding of residences during high-flow events. Refer to Map TERR 1-2 and PAD Map 3-5.

⁴ Special-status plants along the Project-affected stream segments will only be documented at riparian sampling sites. Refer to Table TERR 1-1 for a list of riparian sampling sites.

- Characterize historic and current botanical resources in the historic inundation zones of Project reservoirs, including:
 - Document the historic location, distribution, and size of trees within the inundations zones; and
 - Document current plant species composition, distribution, and abundance in the historic inundation zones.
- Characterize riparian resources at riparian sampling sites along Project-affected stream segments, including the relationship between the riparian community and stream flow.
- Document the riparian community and wetlands in the potential enhancement area.

EXTENT OF STUDY AREA

- Refer to Map TERR 1-1 for the botanical resources study area. The study area for:
 - Vegetation alliances, including riparian communities, includes areas within 1 mile of the FERC Project boundary.
 - Special-status plant, moss, and lichen populations includes lands within the FERC Project boundary.⁵
 - NNIP populations includes lands within the FERC Project boundary.⁶
 - Historic and existing botanical resources includes the historic inundation zones of Project reservoirs.
 - Characterization of the riparian community at riparian sampling sites along Project-affected stream segments (Table TERR 1-1 and Map TERR 1-2).
 - Documentation of the riparian community and wetlands in the potential enhancement area.
- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain) or on private property for which SCE has not received specific approval from the landowner to enter the property to perform the study.
- For study elements proposed within the Ansel Adams Wilderness, SCE will provide a complete catalog of all temporary installations or equipment including, but not limited to, transect markers, their locations, timeline of scheduled use, and

⁵ Special-status plants along the Project-affected stream segments will only be documented at riparian sampling sites. Refer to Table TERR 1-1 for a list of riparian sampling sites.

⁶ NNIPs along the Project-affected stream segments will only be documented at riparian sampling sites. This includes documentation of invasive aquatic plants and algae (i.e., Didymo [*Didymosphenia geminata*]). Refer to Table TERR 1-1 for a list of riparian sampling sites.

recommended disposal methods or removal, prior to any installation. SCE will also provide confirmation of removal of any temporary installations to the Forest Service at the end of the study period.

STUDY APPROACH

VEGETATION ALLIANCES AND WILDLIFE HABITATS

The study approach for vegetation alliances and wildlife habitat is provided below.

- Develop vegetation alliance maps of the study area based on CALVEG mapping and vegetation alliance descriptions.⁷
 - Preliminary vegetation alliance information is presented in the PAD, Section 4, Existing Resource Information (SCE 2021), including the following:
 - Section 4.6, Botanical and Wildlife Resources provides a draft map of CALVEG vegetation alliances within 1 mile of the FERC Project boundary; and
 - Section 4.9, Riparian Resources provides a draft map showing CALVEG riparian vegetation alliances along the Project-affected stream segments and Project reservoirs.
- Verify the accuracy of CALVEG data and update vegetation alliances using recent aerial photographs.
- Conduct ground-truthing of vegetation alliances within 1 mile of the FERC Project boundary, concentrating in areas where concerns about vegetation community identification or boundaries arise from review of aerial photographs.
 - Ground-truthing will include documentation of small-scale riparian alliances along Project-affected stream segments (Table TERR 1-1) and around Project reservoirs. Inaccessible areas will be evaluated using aerial photograph review.
- Develop a final Geographic Information System (GIS) map of vegetation alliances and overlay information on Project facilities, construction areas, restoration areas, and the potential enhancement area.
- Develop a final GIS map of riparian vegetation alliances and overlay information on the Project-affected stream segments and Project reservoirs.

⁷ The CALVEG system was developed by U.S. Forest Service (Forest Service) to classify existing vegetation present on federally managed forestlands based on LANDSAT color infrared satellite imagery. Data are verified using soil-vegetation maps and professional guidance from various sources statewide. CALVEG data for the Southern Sierra were updated by the Forest Service in 2014 (Forest Service 2014).

SPECIAL-STATUS PLANTS

For the purposes of this study plan, a special-status plant is defined as any plant, moss, or lichen species that is granted protection by a federal or state agency. Federally listed plant species granted status by the USFWS under the Federal Endangered Species Act (ESA) include threatened (FT), endangered (FE), proposed threatened or endangered (FPT, FPE), candidate (FC), or listed species proposed for delisting (FPD). Special-status plants designated by the INF as FSCC are also included.

State of California listed plant species, which are granted status by the California Department of Fish and Wildlife (CDFW) under the California Endangered Species Act (CESA) include state threatened (ST), state endangered (SE), state rare (SR), and California Species of Special Concern (CSC).

Under the California Environmental Quality Act (CEQA), special-status plants are also defined to include those species identified in the CNPS California Rare Plant Rank (CRPR) system as rare, threatened, or endangered plants in California. This includes the following CRPR:

- 1A (presumed extirpated in California and either rare or extinct elsewhere);
- 1B (rare, threatened, or endangered in California and elsewhere);
- 2A (presumed extirpated in California, but common elsewhere); and
- 2B (rare, threatened, or endangered in California, but common elsewhere).

The study approach for special-status plants is provided below.

- Identify and map occurrences of special-status plants within the study area, based on agency consultation and a review of existing information. Preliminary information is presented in the PAD Section 4.6, Botanical and Wildlife Resources (SCE 2021).
- Develop a list of special-status plant species potentially occurring in the study area based on literature review and agency consultation. A preliminary list is provided in the PAD Section 4.6, Botanical and Wildlife Resources, Table 4.6-2 (SCE 2021).
- Conduct focused special-status plant surveys, according to the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018).
 - Field surveys will be conducted at the proper time of year when rare, threatened, endangered species, or forest species of conservation concern species are both evident and identifiable. Generally, this is when the plants are flowering. Based on the blooming periods for plants known or potentially occurring within the vicinity of the Project, two surveys will be conducted during the appropriate bloom period (Table TERR 1-2).

- Timing of surveys will be verified based on reference population monitoring. SCE will coordinate with resource agencies to identify reference populations and conduct reference population monitoring. The results of reference population monitoring will be provided to agencies to verify the appropriate survey timing.
 - Systematic field techniques will be implemented (e.g., zigzag patterns, random meandering, and linear transects) in the study area.
 - If a special-status plant species population is identified on the perimeter of the study area, the study area will be expanded to document the full extent of the population.
 - Surveys will be floristic in nature and taxonomy will be based on The Jepson Manual (Baldwin et al. 2012). A comprehensive list of species observed during field surveys will be compiled.
 - Digital photographs, Global Positioning System (GPS) information, an estimate of the number of individuals present, and a description of associated vegetation alliance will be collected for each special-status plant population observed.
 - Moss and lichen specimens will be collected and labeled with the date and collection location. Moss and lichen specimens will later be identified to species by a qualified bryologist.
- Develop a comprehensive species list, and a map (i.e., GIS layers) of special-status plant populations; and overlay information on Project facilities.
 - Prepare and submit California Native Species Field Survey Forms for all special-status plant populations recorded to CNDDDB.

NON-NATIVE INVASIVE PLANTS

The FEIS for the revision of the INF Land Management Plan defines invasive species, including plants, as “alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health; species that cause, or is likely to cause harm and that is exotic to the ecosystem it has infested” (Forest Service 2019b).

The study approach for NNIPs is provided below.

- Identify and map infestations of NNIPs based on agency consultation and a review of existing information. Preliminary information is presented in the PAD Section 4.6, Botanical and Wildlife Resources (SCE 2021).
- Develop a list of priority NNIPs for focused NNIP surveys in consultation with the Forest Service.
- Conduct focused NNIP surveys in conjunction with special-status plant surveys.

- Collect data and report survey results as follows:
 - Date collected will include species, location, and number of acres infested by NNIPs.
 - If a NNIP population is identified on the perimeter of the study area, the study area will be expanded to document the extent of the population.
 - Levels of infestation will be reported as: low (<5% cover); moderate (6–25% cover), and high (>25% cover). Areas that have been surveyed and found to be weed-free will also be identified.
- Develop a comprehensive species list, and a map (GIS layer) of NNIPs, and overlay information on Project facilities.

HISTORIC AND EXISTING BOTANICAL RESOURCES WITHIN THE INUNDATION ZONES OF PROJECT RESERVOIRS

The study approach for documenting historic and existing botanical resources within the inundation zone of Project reservoirs is provided below.

- Obtain information on the historic location, distribution, size, and species of trees within the historical inundation zone of Project reservoirs:
 - Use Light Detection and Ranging (LiDAR) imagery, aerial photogrammetry, and/or supplemental total station surveys to develop a map (GIS layer) showing the location and distribution of tree stumps within the inundation zones.
 - Obtain information on the size class and species of stumps within inundation zones.
 - Establish transects within the inundation zones of Project reservoirs, from the base (waterline) to the top of the historical inundation zone.
 - Collect the following data for each stump within 5 meters on either side of the transect line:
 - GPS coordinates
 - Photograph of stump
 - Diameter of stump at ground level
 - Species identification
 - > Obtain cross-sections of tree stumps (maximum of five per transect, focused on stumps with highest structural integrity).

- > Obtain tree cores of representative living trees (at least one core for each species that comprise the tree assemblage in the vicinity of the reservoir, selecting the oldest possible trees). Note: This is dependent on Forest Service authorization to obtain cores from live trees within the Wilderness Area.
- > Provide the cross-sections and live tree cores to a qualified dendrochronologist for comparison and determination of species.
- Develop a map (GIS layer) of the location of stumps within the inundation zones, and a table summarizing the number and size of stumps.
- Compare the tree stump cross-sections to the live tree cores and develop a table of the species composition along the transects.
- Obtain information on current plant species composition, distribution, and abundance within the inundation zones of Project reservoirs:
 - Review LiDAR imagery, aerial photogrammetry, and/or supplemental total station data to identify areas within the historic inundation zone that currently support plant communities.
 - Establish transects in areas within the plant communities.
 - To the degree possible, studies at Waugh Lake and Gem Lake will incorporate transects previously established by SCE as part of riparian vegetation studies (Psomas 2017).
 - Transects will begin at the current waterline and extend to the top of the historical inundation zone.
 - Both ends of the transect will be temporarily marked (e.g., with rebar stakes), recorded with a GPS unit with sub-meter accuracy, and photo-documented.
 - 5 x 5-meter sampling plots will be collected along transect. The number and location of plots will vary depending on the length of the transect. The following data will be collected within each sampling plot:
 - GPS coordinates (center point of plot)
 - Photograph of plot
 - List of all plant species/estimated number of individuals or cover, depending on species

- Percent cover within each sampling plot for graminoids, herbaceous, shrubs, and trees
- Live tree and shrub species, dbh (for trees), or number of stems and approximate height (for shrubs)
- Develop a map (GIS layer) showing the location of transects and sampling plots, and lists/tables documenting plant species composition, distribution, and abundance.

AQUATIC RESOURCES (WETLAND) DELINEATION

Provided below is the study approach for determining jurisdictional waters of the U.S./state (e.g., wetlands) within the potential enhancement area.

- Conduct an aquatic resources delineation consistent with U.S. Army Corps of Engineers (USACE) protocols:
 - USACE Wetlands Delineation Manual (Environmental Laboratory 1987).
 - A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (Lichvar and McColley 2008).
 - Regional Supplement to the USACE Wetland Delineation Manual: Arid West Region (Version 2.0) (Environmental Laboratory 2008).
- Develop an aquatic resources delineation report and maps consistent with the Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (USACE 2016).

CHARACTERIZATION OF RIPARIAN COMMUNITY ALONG PROJECT-AFFECTED STREAM SEGMENTS

The study approach for the characterization of riparian community along Project-affected stream segments is provided below:

- Provide an overview of life history requirements of dominant woody riparian species and associated riparian vegetation processes along stream corridors similar to Rush Creek.
 - Based on a review of existing literature, summarize the life history requirements of the dominant woody riparian species occurring along Rush Creek, including: seed initiation (e.g., dispersal, germination, and initial seed/root growth); microsite characteristics necessary for germination (e.g., water table depth, substrate); establishment (survival and growth until maturity); and maturation (e.g., age of maturity, rooting depth, and tree height).

- Summarize patterns of riparian vegetation establishment, including the role hydrological events (magnitude, frequency, timing, flow recession, inundation) in the establishment and/or scouring of riparian vegetation.
- Conduct a field assessment of the riparian communities along Project-affected stream segments. Project-affected stream segments are delineated as long sections of stream with a relatively homogeneous flow regime (e.g., Rush Creek below Rush Meadows Dam to Gem Lake) (Refer to Table TERR 1-1). The stream segments selected for study are those with channels or riparian vegetation that would be responsive to Project-induced changes in flow or sediment regime. Stream segments that are primarily bedrock and not responsive to changes in hydrology or sediment regime (e.g., Horsetail Falls) were not selected for study.
- Map the extent of riparian vegetation along the selected stream segments (Table TERR 1-1 and Map TERR 1-2) on high-resolution aerial imagery. Based on the species observed, classify riparian communities based on A Manual of California Vegetation (Sawyer et al. 2009).
 - Establish survey transects at riparian sampling sites along Project-affected stream segments.⁸
 - Re-establish transects associated with long-term riparian monitoring along Rush Creek from Rush Meadows Dam to Gem Lake.⁹
 - Establish a minimum of three transects at each of the remaining riparian sampling sites listed in Table TERR 1-1.
 - The location of transects at these riparian sampling sites will be coordinated with the selection of mesohabitat units as part of the AQ 1 – Instream Flow and AQ – 5 Geomorphology technical study plans.
 - Establish 5 x 5-meter sampling plots along each transect. The number and location of plots will vary depending on the length of the transect. The following data will be collected within each sampling plot:
 - GPS coordinates (center point of plot)
 - Photograph of plot

⁸ Riparian sampling sites include sites previously established as part of long-term riparian monitoring along Rush Creek below Rush Meadows Dam to Gem Lake, and additional sites in at Project-affected stream segments that are accessible and support wetland and/or riparian vegetation based on existing documentation.

⁹ Long-term riparian monitoring transects are monitored consistent with Forest Service Final 4(e) Condition No. 7 – Monitoring (FERC 1997). The next long-term monitoring event is planned for 2022. Historical riparian data, and data collected during the 2022 monitoring event, will be used to meet the requirement of this TSP.

- Percent cover and age class¹⁰ for each dominant woody riparian trees/shrubs, by species
 - Percent cover of riparian/wetland herbaceous and graminoid plants, by species.
 - Size classes of the substrate present (bedrock, boulder, cobble, gravel, sand, silt).
- Characterize the relationship between the riparian vegetation and flow conditions in each selected stream segment included in AQ 1 – Instream Flow studies:
 - Using the historical,¹¹ existing,¹² Proposed Project,¹³ and unimpaired¹⁴ hydrology (developed in the AQ 2 – Hydrology TSP) at each of the selected stream segments, complete the following hydrology analyses:
 - Annual Hydrology Patterns – Annual hydrographs of the monthly average daily flows by water year type;
 - Recurrence Intervals – Flood frequency curves for each flow condition to compare the magnitude and frequency of peak high flow events;
 - Timing of High Flows – The numbers of days that the impaired and unimpaired flows are exceeded (1) by month, (2) by water year type and (3) all years combined; and
 - Recession Rates (rate of change in stage over time [days]) – Recession rates of spring/early summer flows during the time of spring seed release and seed setting (during the receding limb of the hydrograph) by water year type.
 - Flows will be converted to stage using the stage-discharge relationships developed for the AQ 1 – Instream Flow studies.

¹⁰ Age class structure will be determined based on categories of shrub stem densities per individual and tree diameters, as follows: Young (Y): shrubs with less than 10 stems per individual or trees with diameters (diameter at breast height (DBH) less than 3 inches; Medium-aged (M): shrubs with between 10 and 60 stems per individual or trees with DBHs between 3 and 9 inches; and Old/Mature (O): shrubs with more than 60 stems per individual or trees with DBHs greater than 9 inches.

¹¹ The historical hydrology (2000-2011 POR) represents instream flows and Project operation under the existing license conditions prior to implementation of the seismic restrictions in 2012.

¹² The existing hydrology (2012-2019 POR) represents instream flows and Project operation under both the existing license conditions and implementation of the seismic restrictions in 2012.

¹³ The Proposed Project hydrology (2000-2019) represents synthesized instream flows and Project operations under the Proposed Project.

¹⁴ The unimpaired hydrology (2000-2019) represents synthesized instream flows in Rush Creek without the influence of the Rush Creek Project.

- Develop a summary of relationship between existing inundation characteristics (e.g., frequency, depth, and width of inundation) and the distribution of dominant riparian species across the floodplain at each of the selected Project-affected stream segments in coordination with the AQ 1 – Instream Flow TSP.

DOCUMENTATION OF RIPARIAN COMMUNITY WITHIN THE POTENTIAL ENHANCEMENT AREA

- Conduct a field assessment to document riparian communities within the potential enhancement area (refer to Map TERR 1-1).
 - Map the extent of riparian vegetation within the potential enhancement area using high-resolution aerial imagery and/or supplemental total station data. Based on the species observed, classify riparian communities based on A Manual of California Vegetation (Sawyer et al. 2009).
 - Conduct an inventory of dominant woody riparian shrubs and trees within the enhancement area. Data collected will include:
 - Overall percent cover.
 - Percent cover and age class¹⁵ for all dominant woody riparian trees/shrubs, by species.
- Develop a final map of riparian communities and tables summarizing the results of the inventory.

REPORTING

- Study methods and results will be documented in a TERR 1 – Botanical Resources Technical Study Report (TSR). The TSR will include summary tables and maps, as appropriate.
- GIS data and tabular data will be provided to USFS with the draft TSR. This data will also be provided to other resource agencies and interested stakeholders, upon request.

¹⁵ Age class structure will be determined based on categories of shrub stem densities per individual and tree diameters, as follows: Young (Y): shrubs with less than 10 stems per individual or trees with diameters (diameter at breast height (DBH) less than 3 inches; Medium-aged (M): shrubs with between 10 and 60 stems per individual or trees with DBHs between 3 and 9 inches; and Old/Mature (O): shrubs with more than 60 stems per individual or trees with DBHs greater than 9 inches.

SCHEDULE

Date	Activity
July–August 2022	Collect data to characterize riparian vegetation at long-term riparian monitoring sites (consistent with USFS 4[e] Condition 7)
June–September 2023	Conduct field surveys
October 2023–January 2024	Analyze data and prepare draft report
February 2024	Distribute draft report to stakeholders
March–May 2024	Stakeholders review and provide comments on draft report (90 days)
June–July 2024	Resolve comments and prepare final report
August 2024	Distribute final report in Draft License Application

REFERENCES

- Baldwin, Bruce G. (Editor), Douglas Goldman (Editor), David J Keil (Editor), Robert Patterson (Editor), Thomas J. Rosatti (Editor). 2012. *The Jepson Manual, Vascular Plants of California*. Second Edition.
- Cal-IPC. 2020. California Invasive Plant Inventory. Online Database. Available at: www.cal-ipc.org. Accessed November 20, 2020.
- CDFW (California Department of Fish and Wildlife). 2018. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities*. State of California, California Natural Resources Agency, Department of Fish and Wildlife. March 20, 2018.
- CNDDDB (California Natural Diversity Database). 2020. Rarefind, Version 5.0. Online Database. California Department of Fish and Wildlife, Version 5.1.1. Accessed November 20, 2020.
- CNPS (California Native Plant Society). 2020. *Inventory of Rare and Endangered Plants* (online edition, v8-02). California Native Plant Society, Sacramento, California. Available at: <http://www.rareplants.cnps.org>. Accessed November 20, 2020.
- Cowardin, L.M., V. Cater, F.C. Golet, and E.T. LaRoe. 1979 *Classification of Wetlands and Deepwater Habitats of the United States*. Reprinted in 1991. FWS/OBS-17/31. Performed for the U.S. Department of Interior, Fish and Wildlife Service, Office of Biological Service. 132 pp.
- Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*
- . 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*.

- FERC (Federal Energy Regulatory Commission). 1992. Environmental Assessment for Hydropower License. Rush Creek Project No. 1389. FERC eLibrary No. 19920604-0017.
- . 1997. Order Issuing New License, Rush Creek Project. FERC Accession No. 19970210-0301. 78 FERC ¶ 61,109. February.
- Forest Service (United State Forest Service) 2014. CALVEG Geographic Information Systems (GIS) data and vegetation descriptions. South Sierran Ecological Province. Available at: <http://www.fs.usda.gov/detail/r5/landmanagement/resourcemanagement/?cid=stelprdb5347192>.
- . 2017. Inyo National Forest List of Invasive Plants of Management Concern.
- . 2019a. Inyo National Forest Species of Conservation Concern. June.
- . 2019b. Final Environmental Impact Statement for Revision of the Inyo National Forest Land Management Plan. September.
- Lichvar and McColley. 2008. A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States
- Psomas. 2000. Baseline Riparian Monitoring of Lee Vining and Rush Creeks, Year 1 (1999), Annual Report. Prepared for Southern California Edison, Hydro Generation Division. Draft February 2, 2000.
- . 2004. Rush and Lee Vining Creek Riparian Monitoring Baseline Summary (Draft). Prepared for Southern California Edison, Hydro Generation Division. May 2004.
- . 2010. Biological Resources Evaluation Technical Report for the Southern California Edison South Lake Dam, Agnew Lake Dam, Saddlebag Lake Dam, and Tioga Lake Dam, and Auxiliary Dam Maintenance and Geo-Membrane Lining Projects. Prepared for Southern California Edison, Eastern Hydro Division. November 2010.
- . 2017. Vegetation Transect Survey Memorandum for California Department of Fish and Wildlife Temporary Variance of License Article 401 Curtailing Water Level Requirements for Gem and Waugh Lakes for Seismic Concerns, Southern California Edison Rush Creek Hydroelectric Project (FERC Project No. 1389). November 21, 2017.
- Read, E. 2010. Analysis Riparian Vegetation Phase 2 (Year 1) and Comparison to Baseline, Rush Creek Project (FERC Project No. 1389). Prepared by E Read and Associates, Inc. for Southern California Edison Co., Eastern Hydro Division.

- Read, E. and T. Salamunovich. 2019. Analysis of Riparian Vegetation and Aquatic Habitat: 2018 Field Season and Comparison to Previous Years, Rush Creek Project (FERC Project No. 1389). Prepared by E Read and Associates, Inc. and Normandeau Associates for Southern California Edison Co, Eastern Hydro Division.
- Sawyer, J. T. Keeler-Wolf, J. Evens. 2009. A Manual of California Vegetation, Second Edition.
- SCE (Southern California Edison Company). 2017a. Pre-release Survey and Assessment Report, Rush Creek Emergency Project (FERC No. 1389). June.
- . 2017b. Pre-Construction Biological Survey and Assessment Report, Rush Meadows Dam Project Area. Rush Creek (Phase II) Project (FERC No. 1389). August 2017.
- . 2018. Pre-Construction Survey Report. Rush Meadows Dam Modification, Rush Creek Hydroelectric System Runoff Management Project. July.
- . 2021. Rush Creek Project (FERC Project No. 1389) Pre-Application Document. December.
- USACE (U.S. Army Corps of Engineers). 2016. Minimum Standards for Acceptance of Aquatic Resources Delineation Reports. January 2016. Sacramento District.
- USFWS (United States Fish and Wildlife Service). 2020. Information for Planning and Consultation (IPaC). Online Database. Accessed November 2020.
- . 2021. National Wetlands Inventory. Online database. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Available at <https://www.fws.gov/wetlands/data/mapper.html>.

TABLES

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Table TERR 1-1. Riparian Vegetation Sampling/Study Sites.

Stream Segment Name	Segment Length (miles) / River Miles (RM)	Sampling/Study Site River Mile / Site ID
Rush Creek		
Waugh Lake	1.51 (RM 22.24–23.75)	RM 23.0 / RC23.0
Rush Creek Below Rush Meadows Dam	1.83 (RM 20.41–22.24)	RM 21.65 / RC21.65 (includes long-term baseline riparian monitoring sites) ¹
Gem Lake	0.93 (RM 19.48–20.41)	—
Rush Creek Below Gem Dam	0.30 (RM 19.18–19.48)	—
Agnew Lake	0.58 (RM 18.60–19.18)	—
Rush Creek Below Agnew Dam	0.40 (RM 18.2–18.60)	RM 18.55 / RC18.55
Rush Creek Horsetail Falls	0.54 (RM 17.66–18.2)	—
Rush Creek Above Silver Lake	0.94 (RM 16.72–17.66)	RM 17.05 / RC17.05 RM 17.55 / RC17.55
Silver Lake	0.83 (RM 15.89–16.72)	—
Rush Creek Below Silver Lake	2.69 (RM 13.20–15.89)	RM 15.2 / RC15.2
South Rush Creek		
South Rush Creek	0.46 (RM 0.0–0.46)	RM 0.15 / SRC0.15

¹ Includes long-term baseline riparian monitoring sites that have historically been monitored consistent with Forest Service Final 4(e) Condition No. 7 – Monitoring (FERC 1997).

Table TERR 1-2. Blooming Periods for Special-Status Plants Identified by Resource Agencies as Potentially Occurring in the Rush Creek Project Vicinity.

Scientific/Common Name	Blooming Period											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Claytonia megarhiza</i> fell-fields claytonia												
<i>Pinus albicaulis</i> whitebark pine												
<i>Sabulina stricta</i> bog sandwort												
<i>Agrostis humilis</i> alpine bentgrass												
<i>Arabis repanda</i> var. <i>greenei</i> Greene's rockcress												
<i>Astragalus johannis-howellii</i> Long Valley milk-vetch												
<i>Astragalus lemmonii</i> Lemmon's milk-vetch												
<i>Astragalus monoensis</i> Mono milk-vetch												
<i>Astragalus serenoii</i> var. <i>shockleyi</i> Shockley's milk-vetch												
<i>Boechnera bodiensis</i> Bodie Hills rockcress												
<i>Boechnera cobrensis</i> masonic rockcress												
<i>Boechnera tularensis</i> Tulare rockcress												

Scientific/Common Name	Blooming Period											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Botrychium ascendens</i> upswept moonwort												
<i>Botrychium crenulatum</i> scalloped moonwort												
<i>Botrychium lineare</i> slender moonwort												
<i>Botrychium lunaria</i> common moonwort												
<i>Botrychium paradoxum</i> paradox moonwort												
<i>Calyptridium pygmaeum</i> pygmy pussypaws												
<i>Carex davyi</i> Davy's sedge												
<i>Carex idahoa</i> Idaho sedge												
<i>Carex petasata</i> Liddon's sedge												
<i>Carex praticola</i> northern meadow sedge												
<i>Carex scirpoidea</i> ssp. <i>pseudoscirpoidea</i> western single-spiked sedge												
<i>Carex stevenii</i> Steven's sedge												
<i>Carex vallicola</i> western valley sedge												

Scientific/Common Name	Blooming Period											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Cinna bolanderi</i> Bolander's woodreed												
<i>Cusickiella (=Draba) quadricostata</i> Bodie Hills cusickiella												
<i>Cymopterus globosus</i> globose cymoptera												
<i>Draba asterophora</i> var. <i>asterophora</i> Tahoe draba												
<i>Draba cana</i> canescent draba												
<i>Draba cruciata</i> Mineral King draba												
<i>Draba incrassata</i> Sweetwater Mountains draba												
<i>Draba praealta</i> tall draba												
<i>Dryoptera filix-mas</i> male fern												
<i>Erigeron aequifolius</i> Hall's daisy												
<i>Erigeron uncialis</i> var. <i>uncialis</i> limestone daisy												
<i>Eriogonum mensicola</i> Pinyon Mesa buckwheat												
<i>Eriogonum nutans</i> var. <i>nutans</i> nodding buckwheat												

Scientific/Common Name	Blooming Period											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Festuca minutiflora</i> small-flowered fescue												
<i>Hackelia brevicula</i> Poison Canyon stickseed												
<i>Hulsea brevifolia</i> short-leaved hulsea												
<i>Hulsea vestita</i> ssp. <i>inyoensis</i> Inyo hulsea												
<i>Jamesia americana</i> var. <i>rosea</i> fivepetal (rosy-petalled) cliffbush												
<i>Kobresia myosuroides</i> (= <i>bellardii</i>) seep kobresia												
<i>Lupinus duranii</i> Mono Lake lupine												
<i>Lupinus lepidus</i> var. <i>culbertsonii</i> Hockett Meadows lupine												
<i>Lupinus padre-crowleyi</i> Father Crowley's lupine												
<i>Meesia uliginosa</i> broad-nerved hump moss												
<i>Mentzelia torreyi</i> Torrey's blazing star												
<i>Monardella beneolens</i> sweet-smelling monardella												
<i>Parnassia parviflora</i> small-flowered grass-of-Parnassus												

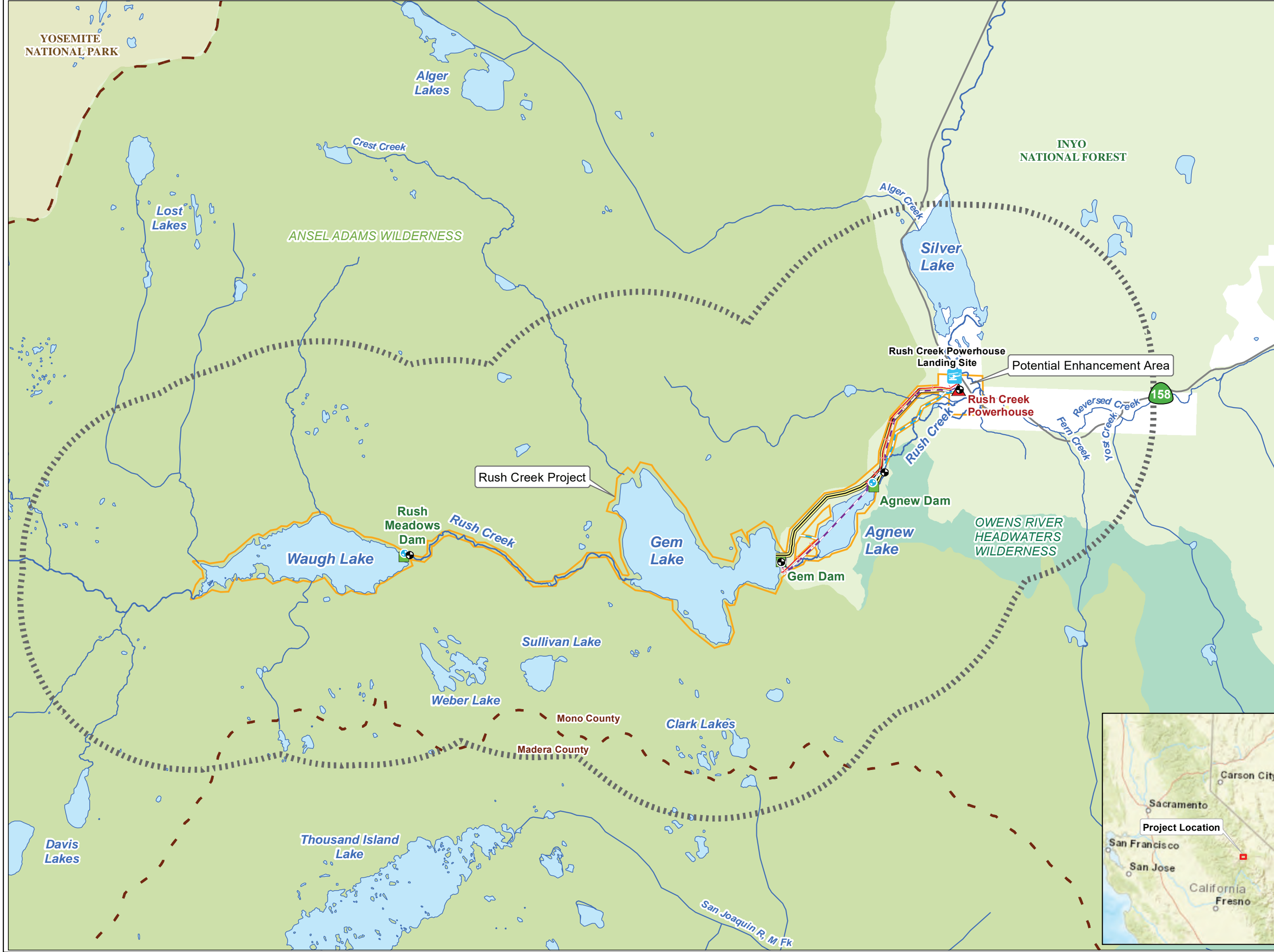
Scientific/Common Name	Blooming Period											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Pedicularis crenulata</i> scalloped-leaved lousewort												
<i>Petrophyton caespitosum</i> ssp. <i>acuminatum</i> marble rockmat												
<i>Phacelia monoensis</i> Mono County phacelia												
<i>Physaria ludoviciana</i> silver bladderpod												
<i>Polyctenium williamsiae</i> Williams' combleaf												
<i>Potamogeton praelongus</i> white-stemmed pondweed												
<i>Potamogeton robbinsii</i> Robbins' pondweed												
<i>Potentilla pulcherrima</i> beautiful cinquefoil												
<i>Ranunculus hydrocharoides</i> frog's-bit buttercup												
<i>Salix brachycarpa</i> var. <i>brachycarpa</i> short-fruited willow												
<i>Sclerocactus polyancistrus</i> redspined fishhook cactus												
<i>Silene oregana</i> Oregon campion												
<i>Sphaeromeria potentilloides</i> var. <i>nitrophila</i> fivefinger chickensage (alkali tansy-sage)												

Scientific/Common Name	Blooming Period											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Tetradymia tetrameres</i> dune horsebrush												
<i>Thelypodium integrifolium</i> ssp. <i>complanatum</i> foxtail thelypodium												
<i>Thelypodium milleflorum</i> many-flowered thelypodium												
<i>Trichophorum pumilum</i> little bulrush												
<i>Trifolium bolanderi</i> Bolander's clover												
<i>Trifolium dedeckerae</i> (= <i>kingie</i> ssp. <i>dedeckerae</i>) Dedecker's clover												
<i>Triglochin palustris</i> marsh arrow-grass												
<i>Viola pinetorum</i> ssp. <i>grisea</i> gray-leaved violet												
<i>Viola purpurea</i> ssp. <i>aurea</i> golden violet												

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MAPS

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- SCE Facilities**
- Dam
 - ▲ Powerhouse
 - ▬▬▬ Flowline / Penstock
 - Stream Gage
 - Reservoir Gage
 - ✈ Helicopter Landing Site
 - Power Line
 - Communication Line
 - + Tramway
 - FERC Boundary


- Other Features**
- Major City/Town
 - Highway
 - River/Stream
 - Lake
 - County Boundary

- Land Jurisdiction and National Wilderness Areas/Parks***
- U.S. Forest Service
 - Ansel Adams Wilderness (U.S. Forest Service)
 - Owens River Headwaters Wilderness (U.S. Forest Service)
 - Yosemite National Park / Yosemite Wilderness (National Park Service)
 - Private (Blank)

*SOURCES: BLM, 2020.
Mono Co., 2019.
Wilderness.net, 2019.

- TERR-1 Study**
- TERR-1 Study Area
 - (1-Mile Buffer of FERC Boundary)






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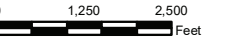
Rush Creek Project (FERC 1389)

TERR 1-1

Study Area



Date: 9/10/2021

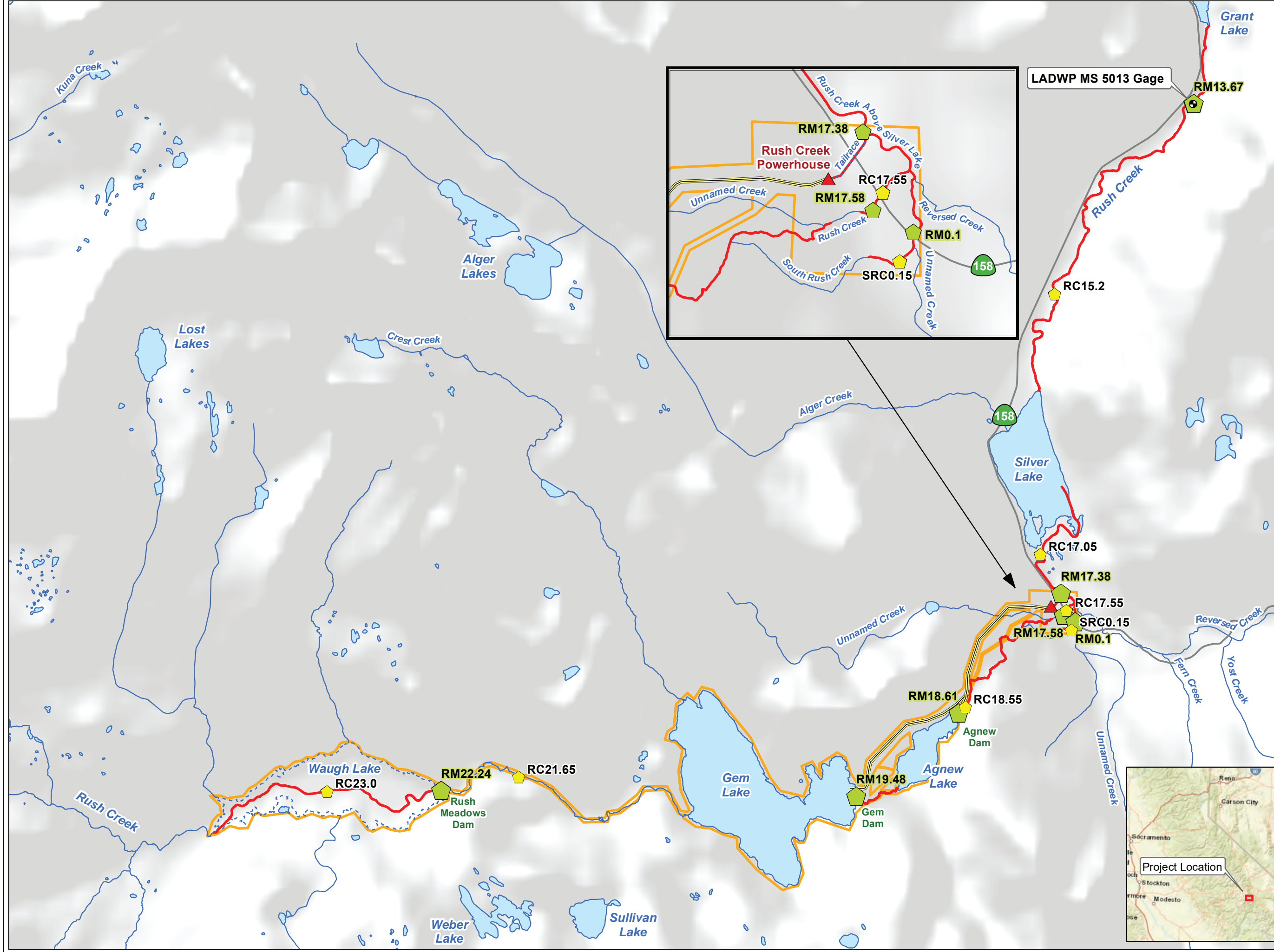


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- SCE Facilities**
- Dam
 - ▲ Powerhouse
 - ▬ Flowline / Penstock
 - ⋯ Tailrace
- Other Features**
- Highway
 - River/Stream
 - ▭ Lake/Reservoir
 - ▭ Dry Lake/Reservoir
 - ▭ FERC Boundary
- Study Sites and Reaches**
- ⬠ Hydrology Analysis Site
 - ⬠ Geomorphology/Riparian Site
 - ⬠ Instream Flow Modeling Reaches




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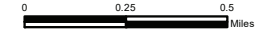
Rush Creek Project (FERC 1389)

Map TERR 1-2

Analysis and Survey Locations



Date: 11/3/2021



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TERR 2 – WILDLIFE RESOURCES TECHNICAL STUDY PLAN

**Rush Creek Hydroelectric Project
FERC Project No. 1389**



September 2022

TERR 2 – Wildlife Resources Technical Study Plan

POTENTIAL RESOURCE ISSUES

- Special-status wildlife species and their habitats.

PROJECT NEXUS

- Direct loss or degradation of wildlife habitats.
- Disturbance or direct loss of special-status wildlife species.

RELEVANT INFORMATION

The following information is available regarding wildlife resources in the vicinity of the Rush Creek Project (refer to Southern California Edison Company's [SCE] Pre-Application Document [PAD] Section 4.6 for a summary of wildlife resource information [SCE 2021]):

- Wildlife habitats and common wildlife species present within 1 mile of the Federal Energy Regulatory Commission (FERC) Project boundary based on a crosswalk from U.S. Forest Service's (Forest Service) Classification and Assessment with Landsat of Visible Ecological Groupings (CALVEG) alliances (Forest Service 2009) to California Department of Fish and Wildlife's (CDFW) California Wildlife Habitat Relationship (CWHR) wildlife habitats (CDFW 2020a).
- Known occurrences of special-status wildlife in the vicinity of the Project based on the CDFW California Natural Diversity Database (CNDDDB) (CDFW 2020b); CDFW list of species considered California Fully Protected under the California Fish and Game Code (CDFW 2020c); CDFW Sierra Nevada Bighorn Sheep Recovery Program Annual Reports (CDFW 2015, 2018); Forest Service Pacific Southwest Region 5 Inyo National Forest (INF) species of conservation concern list (Forest Service 2019); U.S. Fish and Wildlife Service (USFWS) Sierra Nevada Bighorn Sheep Recovery Plan (USFWS 2007).
- Special-status wildlife species potentially occurring within CWHR designations based on *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988).
- Critical Habitat present in the vicinity of the Project for Sierra Nevada Bighorn Sheep (USFWS 2008).
- Location of Project facilities, including transmission lines and power lines.
- Supplemental information (e.g., habitat descriptions and special-status species occurrences) obtained from a review of the following Project-specific sources:
 - FERC's Environmental Assessment, Rush Creek Project (FERC Project No. 1389) (FERC 1992);

- SCE's Survey Report for Phase I and Phase II Projects (SCE 2017, 2018a); and
- SCE's Survey Report for Gem Dam Value Upgrade (SCE 2020).

POTENTIAL INFORMATION GAPS

- Updated information on wildlife habitats within 1 mile of the FERC Project boundary and within 300 feet of proposed helicopter flight paths.
- Updated information on wildlife use within the FERC Project boundary, along helicopter flight paths, and within the potential enhancement area.¹
- Information on Sierra Nevada bighorn sheep distribution and use of the FERC Project boundary and adjacent Critical Habitat areas.
- Data on Project transmission line pole and power line pole configurations to determine if they are consistent with guidelines for avoidance of avian mortalities.
- Information on the location of bat roost in Project facilities.

STUDY OBJECTIVES

- Update CWHR habitats within 1 mile of the FERC Project boundary and within 300 feet of proposed helicopter flight paths based on CALVEG vegetation alliances developed as part of the TERR 1 – Botanical Resources Technical Study Plan (TSP).
- Update information on special-status wildlife species potentially occurring in CWHR habitats within 1 mile of the FERC Project boundary.
- Consult with resource agencies to determine Sierra Nevada bighorn sheep distribution and use of lands within the FERC Project boundary and adjacent Critical Habitat.
- Conduct wildlife reconnaissance survey to characterize wildlife use within the FERC Project boundary² and within the potential enhancement area.
- Consult with resource agencies and other local raptor experts to determine historic and recent raptor nest records present in the FERC Project boundary and along proposed helicopter flight paths and to determine regional nesting chronology.

¹ The potential enhancement area includes portions of the Rush Creek and South Rush Creek channels upstream and downstream of the State Route 158 crossing. The purpose of the potential enhancement is to address local flooding of residences during high-flow events. Refer to Map TERR 2-1 and PAD Map 3-5.

² Wildlife reconnaissance surveys along the Project-affected streams will only be conducted within stream segments defined in Table TERR 1-1 of the TERR 1 TSP.

- Document potential nesting habitat and raptor nests along the proposed helicopter flight paths.
- Determine whether Project transmission line and power line pole configurations are consistent with guidelines for the avoidance of avian mortalities.
- Document the presence of bat roosts at Project facilities.
- Proposed studies (objectives) for special-status amphibians are provided in AQ 7 – Special-Status Amphibians TSP. The Project is outside the range of any special-status reptiles.

EXTENT OF STUDY AREA

- Refer to Map TERR 2-1 for the wildlife resources study area. The study area for:
 - Updating CWHR habitat and special-status wildlife species occurrence includes lands within 1 mile of the FERC Project boundary.
 - Sierra Nevada bighorn sheep distribution and use of lands includes lands within the FERC Project boundary and adjacent Critical Habitat.
 - Wildlife reconnaissance survey includes lands within the FERC Project boundary³ and within the potential enhancement area.
 - Documentation of raptor nests extends 300 feet on either side of the proposed helicopter flight paths.
 - Evaluation of potential avian mortality includes Project transmission lines and power lines.
 - Bat surveys include Project facilities with the potential to support roost sites.
- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain) or on private property for which SCE has not received specific approval from the landowner to enter the property to perform the study.

STUDY APPROACH

For the purposes of this study, a special-status wildlife species is defined as any animal species that is granted status by a federal or state agency. Federally listed species granted status by the USFWS under the Endangered Species Act (ESA) include Federal Threatened (FT), Federal Endangered (FE), Federal Proposed Threatened or Endangered (FPT, FPE), candidates for listing (FC), or proposed for delisting (FPD).

³ Wildlife reconnaissance surveys along the Project-affected streams will only be documented within stream segments as defined in Table TERR 1-1 of the TERR 1 TSP.

Special-status wildlife designated by INF as Forest Species of Conservation Concern (FSCC) are also included.

State of California listed wildlife species which are granted status by CDFW under the California Endangered Species Act (CESA) include threatened (ST), endangered (SE), Fully Protected species (CFP), and California Species of Special Concern (CSC).

The study approach for special-status wildlife surveys, evaluation of Project transmission line tower and power line pole configurations, and special-status bat surveys is provided below.

SPECIAL-STATUS WILDLIFE

- Cross-reference CALVEG vegetation alliances identified as part of the TERR 1 – Botanical Resources TSP with CWHR System wildlife habitats, using the CALVEG–CWHR Crosswalk (Forest Service 2014). This crosswalk was developed by the Forest Service and the CDFW as a way to determine which wildlife habitats are likely to be present based on existing vegetation alliances and forest structural characteristics. Develop an updated CALVEG–CWHR Crosswalk table.
- Develop an updated Geographic Information System (GIS) map of wildlife habitats and overlay information on Project facilities, construction areas, proposed helicopter flight paths, restoration areas, and the potential enhancement area.
- Consult with resource agencies to obtain information on Sierra Nevada bighorn sheep distribution and use of lands within the FERC Project boundary and adjacent Critical Habitat.
- Consult with resource agencies and other local raptor experts to determine historic and recent raptor nest records within the FERC Project boundary and proposed helicopter flight paths and to determine regional nesting chronology.
- Identify/map potential raptor nesting habitat and observation point to support raptor surveys.
 - Conduct a desktop review of CWHR maps and aerial photographs to identify potential raptor nesting habitat along the helicopter flight paths. The focus of the review will be to identify areas that support the following nesting habitat characteristics for raptors potentially occurring in the Study Area:
 - For cliff-nesting species (i.e., golden eagle, peregrine and prairie falcons): Cliffs with prominent escarpments that provide a view of surrounding environment and updrafts (Kochert et al. 2002), with the cliff face usually at least 70 feet in height (Pagel et al. 1991; White et al. 2002). Nests are usually, but not always within the upper half of the cliff face (Kochert et al. 2002; Steenhof 2013).

- For tree-nesting species (i.e., northern goshawk, osprey, and bald eagle): Trees greater than 24 inches dbh (Jackman and Jenkins 2004, Woodbridge and Hargis 2006, Bierregaard et al. 2016). Northern goshawks prefer stands of trees with dense canopy cover (Woodbridge and Hargis 2006), while osprey and bald eagle will nest in more open stands (Jackman and Jenkins 2004, Bierregaard et al. 2016).
- Develop a map of potential raptor nesting habitat along the helicopter flight path.
- Preliminary observation points and approximate viewsheds for the nesting raptor survey are provided on Map TERR 2-2. Following completion of the desktop review, observation points will be refined, as necessary, to maximize survey coverage of suitable nesting habitat.
- Conduct wildlife reconnaissance survey within the study area.
 - Survey methods will include both zigzag and linear transects depending on the survey area and terrain. Zigzag transects cover more ground and work well in larger habitat areas (e.g., mixed conifer forest) while linear transects work well in narrow habitats (e.g., riparian).
 - Species will be recorded as present if they are observed, species-specific vocalizations are heard, or if diagnostic field signs are found (e.g., scat, tracks, pellets).
 - Wildlife taxonomy will be based on the CDFW's Special Animals List and cross-referenced with SCE's Master Species List (CDFW 2021; SCE 2018b).
 - For each special-status species observed, a CNDDDB field survey form will be completed and submitted to CDFW.
 - Provide an electronic database (Excel spreadsheet) of special-status wildlife observed to resource agencies and interested stakeholders.
- Conduct raptor nest surveys during the regional nesting period, as determined through consultation with agencies and local raptor experts.
 - To the extent possible, surveys will be conducted in conjunction with wildlife reconnaissance surveys.
 - Surveys will be conducted twice during the nesting season and spaced at least 30 days apart, per the guidelines specified in Pagel 1991 and Pagel et al. 2010. Surveys will be conducted when the Study Area is safely accessible following snowmelt.
 - Surveys will not be conducted during the incubation period when raptors are more sensitive to disturbance.

- Surveyors will use existing trails and observation points to survey suitable raptor habitat along the helicopter flight paths. Surveys will be conducted by a qualified biologist with experience in conducting raptor nest surveys.
 - While walking existing trails, surveyors will stop at open vantage points and, using binoculars, will thoroughly scan all visible potential nesting habitat.
 - Binoculars and a spotting scope (at least 45x magnification) will be used to view all visible potential nesting habitat from the observation points.
- During raptor nest surveys, the biologist will verify potential raptor nesting habitat mapped during the desktop review and make refinements, as necessary.
- If a nest is identified, the species, nest location, and nest status will be determined. The nest location will be documented with a GPS unit or will be triangulated using a compass bearing and an aerial photograph. To the extent possible, the following information will be collected for each nest observed:
 - Date, start time, and end time of the observation period;
 - Weather conditions;
 - Nest coordinates, nesting substrate, and nest elevation;
 - Photographs of the nest location;
 - Nest status (i.e., occupied, unoccupied); and
 - Age class of any nestlings observed.
- Habitats not visible from observation points will not be surveyed, but any raptor nesting behavior observed in the vicinity will be recorded. For example if an adult is observed making repeated flights to a potential nest location carrying nesting material (e.g., sticks) or prey items, it will be noted on field datasheets and documented on Project maps.
- Surveys will not be conducted during periods of heavy rain, snow, high winds, severe cold weather, severe heat, or heavy wildfire smoke. These conditions can reduce the biologist's ability to detect a nest and also increase risk of exposure to eggs/nestlings if adults flush off the nest.
- Raptor nest survey results will be evaluated and, if data gaps exist, SCE will consult with resource agencies to determine next steps or alternate survey methods.
- Develop a final map showing the location of potential raptor nesting habitat and nests identified within the Study Area.

- Collect and summarize incidental observations of any special-status species during all field surveys completed in support of the relicensing of the Rush Creek Project.
- Develop an updated list of special-status wildlife species potentially occurring in CWHR habitats.

EVALUATION OF PROJECT TRANSMISSION LINE AND POWER LINE POLE CONFIGURATIONS

- Document the configuration of transmission line and power line poles and evaluate their consistency with Avian Power Line Interaction Committee (APLIC) guidelines (APLIC 2012) for any Project poles not previously evaluated as part of SCE's corporate-wide Avian Protection Program.
- Document any past avian electrocutions and mortalities on Project transmission lines and power lines based on SCE and resource agency consultation.
- Provide an electronic database (Excel spreadsheet) of any avian electrocutions and mortalities to resource agencies and interested stakeholders.

SPECIAL-STATUS BATS

Identify Facilities Potentially Supporting Bat Roosts

- Conduct an initial desktop assessment of Project facilities to determine each facility's potential to support bat roosts. Information to be reviewed includes:
 - Existing photographs of Project facilities
 - Descriptions of Project facilities from Section 2.0 of the PAD (SCE 2021)
- Conduct a preliminary visual assessment of Project facilities, during wildlife reconnaissance surveys, to determine the potential to support bat roosts.
- Develop a list of Project facilities potentially supporting bat roosts.

Conduct Roost Survey

Visual Roost Survey

- Conduct a visual roost survey at Project facilities identified as potentially supporting roosting bats. The assessment will be conducted (July–September) during the end of the maternal roosting period when colonies may still be present, but after the critical sensitive period (i.e., parturition and early nursing period).
- Facilities will be closely inspected for bat roost sign (e.g., skeletons, dead young, placentas, guano deposits, urine staining, and culled insect parts) and/or live bats. Special-status bat species potentially occurring in the study area are easily visually identifiable. If live bats are observed, biologists will enter to only photograph the

roost. The species present, roost status (day roost/maternal), and number of adults and/or juveniles will be determined from review of the photograph.

- If live bats are not observed, but bat roost sign is present, spotlights and high-powered flashlights will be used in combination with binoculars for more detailed examination of the potential roost sites.
- To prevent the introduction of *Pseudogymnoascus destructans*, a fungal pathogen causing the emerging white-nose syndrome responsible for widespread mortality in North American bats, methods described in the National White-nose Syndrome Decontamination Protocol (White-nose Syndrome Response Team 2018) will be implemented to decontaminate clothing and equipment prior to entering potential roosts.
- A map and table will be developed documenting the location of bat roosts and species present, if applicable.
- If bat roosts are present but the species cannot be determined visually, then species will be determined using guano DNA sampling (if suitable fresh guano is available). Specific methods for guano DNA sampling are provided below.

Guano DNA Sampling

- DNA samples will be collected at roost sites where fresh guano is available and bat species could not be determined visually during the roost survey.
- The samples will be stored in a stabilizing solution to prevent DNA degradation and submitted to the Genidaqs SM Molecular Biology and Genetics Lab (Cramer Fish Sciences) for DNA sequencing and species identification.
- DNA sequences will be compared to species-specific genetic markers developed by Walker et al. 2016 and further verified by comparison to samples at the National Center for Biotechnology Information DNA sequence database.
- A map and table will be developed identifying the location of guano DNA sampling and species present, if applicable.

REPORTING

- Study methods and results will be documented in a TERR 2 – Wildlife Technical Study Report (TSR). The TSR will include summary tables and maps, as appropriate.
- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

SCHEDULE

Date	Activity
January–April 2023	Consult with resource agencies to obtain information on Sierra Nevada bighorn sheep and the location of historic or recent raptor nests and site-specific raptor nesting chronology
June–September 2023	Conduct wildlife reconnaissance surveys, raptor nest surveys, and transmission line/power line pole evaluation
July–September 2023	Conduct bat surveys
October 2023–January 2024	Analyze data and prepare draft report
February 2024	Distribute draft report to stakeholders
March–May 2024	Stakeholders review and provide comments on draft report (90 days)
June–July 2024	Resolve comments and prepare final report
August 2024	Distribute final report in Draft License Application

REFERENCES

- APLIC (Avian Power Line Interaction Committee). 2012. Reducing Avian Collision with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C.
- Bierregaard, R.O., A.F. Poole, M.S. Martell, P. Pyle, and M.A. Patten. 2016. Osprey (*Pandion haliaetus*), version 2.0. In The Birds of North America (P.G. Rodewald, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA.
- CDFW (California Department of Fish and Wildlife). 2015. Sierra Nevada Bighorn Sheep Recovery Program, 2015-2016 Annual Report.
- . 2018. Sierra Nevada Bighorn Sheep Recovery Program, 2017-2018 Annual Report.
- . 2020a. California Wildlife Habitat Relationship System Database, Version 9.0 (CWHR 2015). Accessed November 20, 2020.
- . 2020b. California Natural Diversity Database. Rarefind, Version 5.0. Online Database. California Department of Fish and Wildlife, Version 5.1.1. Accessed November 20, 2020.
- . 2020c. Fully Protected Species. Available at: https://www.dfg.ca.gov/wildlife/nongame/t_e_spp/fully_pro.html. Accessed November 14, 2020.
- . 2021. Special Animals List. California Department of Fish and Wildlife, Sacramento, California. July.

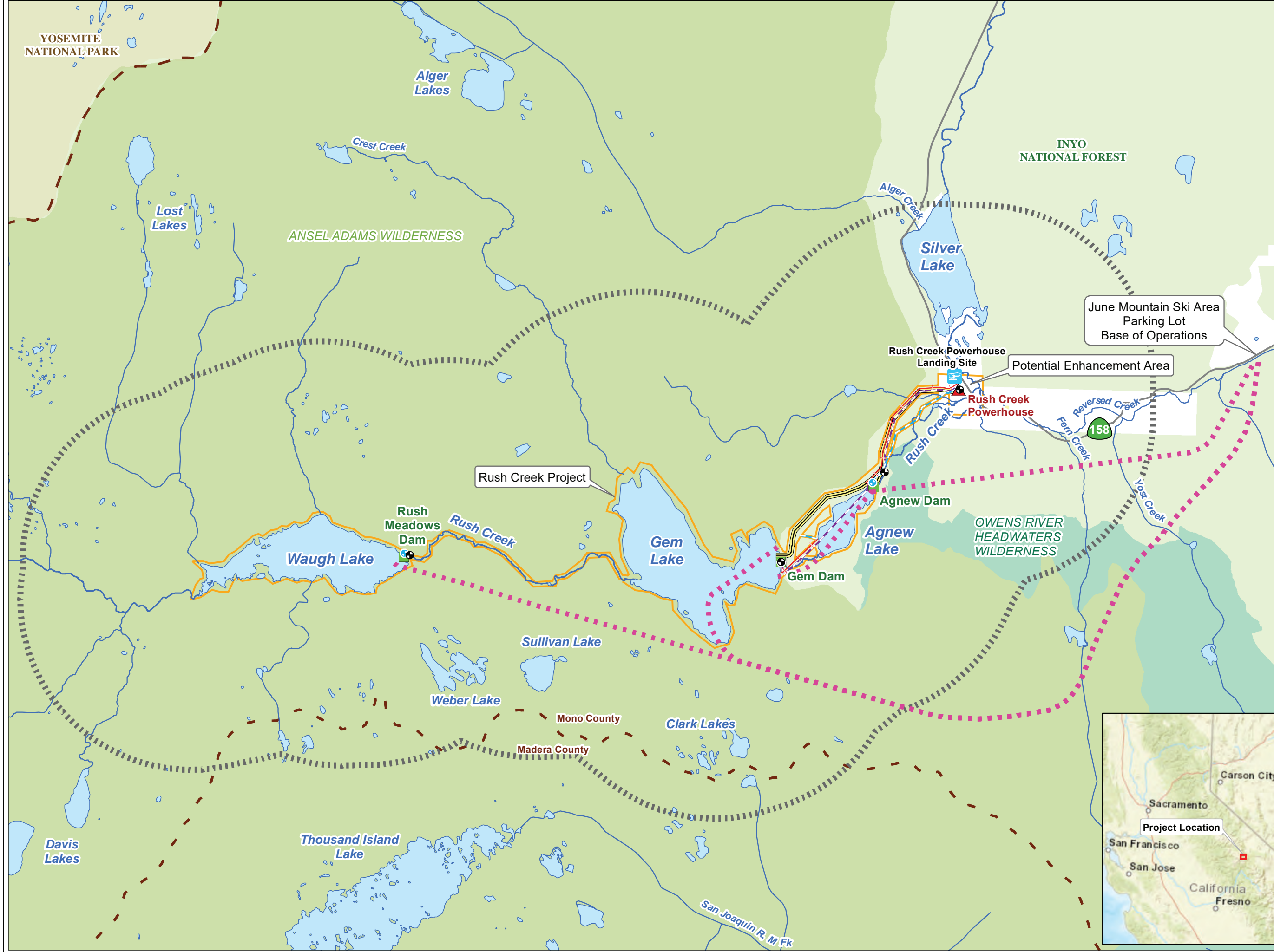
- FERC (Federal Energy Regulatory Commission). 1992. Environmental Assessment for Hydropower License. Rush Creek Project No. 1389. FERC eLibrary No. 19920604-0017.
- Forest Service (United States Forest Service). 2009. CALVEG/CWHR Crosswalk. USDA Forest Service Pacific Southwest Region. March 11, 2009.
- . 2014. CALVEG Geographic Information Systems (GIS) data and vegetation descriptions. South Sierran Ecological Province. Available at: <http://www.fs.usda.gov/detail/r5/landmanagement/resourcemanagement/?cid=stelpbdb5347192>.
- . 2019. Inyo National Forest Species of Conservation Concern. June.
- Jackman, R.E., and J.M. Jenkins. 2004. Protocol for Evaluating Bald Eagle Habitat and Populations in California. U.S. Fish and Wildlife Service, Sacramento, California.
- Kochert, M.N., K. Steenhof, C.L. McIntyre, and E.H. Craig (2002). Golden Eagle (*Aquila chrysaetos*), version 2.0. In the Birds of North America (A.F. Poole and F.B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA.
- Mayer, K.E., and W.F. Laudenslayer. 1988. A Guide to Wildlife Habitats of California. State of California, Department of Fish and Game. Sacramento, California.
- Pagel, J.E. 1991. Protocol for Observing Known and Potential Peregrine Falcon Eyries in the Pacific Northwest. Pp. 83 -96 in Pagel, J.E. (ed). Proceedings, symposium on peregrine falcons in the Pacific Northwest. Rogue River National Forest.
- Pagel, J.E., D.M. Whittington, and G.T. Allen. 2010. Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations. Division of Migratory Bird Management, U.S. Fish and Wildlife Service.
- SCE (Southern California Edison Company). 2017. Pre-release Survey and Assessment Report, Rush Creek Emergency Project (FERC No. 1389). June.
- . 2018a. Pre-Construction Survey Report. Rush Meadows Dam Modification, Rush Creek Hydroelectric System Runoff Management Project. July.
- . 2018b. Master Species List. Excel spreadsheet of standardized species names. 2018.
- . 2020. Biological Resources Technical Report. Gem Lake Dam Arch 8 Valve Replacement Project. April.
- . 2021. Rush Creek Project (FERC Project No. 1389) Pre-Application Document. December.

- Steenhof, K. 2013. Prairie Falcon (*Falco mexicanus*). In the Birds of North America, No. 346 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.
- USFWS (United States Fish and Wildlife Service). 2007. Recovery Plan for the Sierra Nevada Bighorn Sheep. California/Nevada Operations Office, Sacramento, California. September.
- . 2008. Designation of Critical Habitat for the Sierra Nevada Bighorn Sheep (*Ovis canadensis sierrae*) and Taxonomic Revision. (Federal Register, Vol. 73, No. 151, Pages 45534 – 45604).
- . 2020. Information for Planning and Consultation (IPaC). Online Database. Accessed November 2020.
- Walker F.M., C.H.D. Williamson, D.E. Sanchez, C.J. Sobek, and C.L. Chambers. 2016. Species from Feces: Order-Wide Identification of Chiroptera from Guano and Other Non-Invasive Genetic Samples. PLoS ONE 11(9): e0162342. <https://doi.org/10.1371/journal.pone.0162342>.
- White, C.M., N.J. Clum, T.J. Cade, and W.G. Hunt. 2002. Peregrine Falcon (*Falco peregrinus*). In The Birds of North America, No. 660 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.
- White-nose Syndrome Response Team. 2018. United States National White-nose Syndrome Decontamination Protocol. Version September 13, 2018.
- Woodbridge, B., and C.D. Hargis. 2006. Northern goshawk inventory and monitoring technical guide. Gen. Tech. Rep. WO-71. Washington, DC: U.S. Department of Agriculture, Forest Service. 80 pg.

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MAPS

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- SCE Facilities**
- Dam
 - ▲ Powerhouse
 - ▬▬▬ Flowline / Penstock
 - Stream Gage
 - ⊕ Reservoir Gage
 - ✈ Helicopter Landing Site
 - Power Line
 - Communication Line
 - + Tramway
 - FERC Boundary

- Other Features**
- Major City/Town
 - Highway
 - River/Stream
 - Lake
 - County Boundary
 - Approximate Helicopter Flight Path

- Land Jurisdiction and National Wilderness Areas/Parks***
- U.S. Forest Service
 - Ansel Adams Wilderness (U.S. Forest Service)
 - Owens River Headwaters Wilderness (U.S. Forest Service)
 - Yosemite National Park / Yosemite Wilderness (National Park Service)
 - Private (Blank)

*SOURCES: BLM, 2020.
Mono Co., 2019.
Wilderness.net, 2019.


- TERR-2 Study**
- TERR-2 Study Area
 - (1-Mile Buffer of FERC Boundary)

June Mountain Ski Area
Parking Lot
Base of Operations

Potential Enhancement Area

Rush Creek Project






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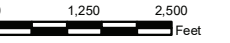
Rush Creek Project (FERC 1389)

TERR 2-1

Study Area



Date: 9/10/2021

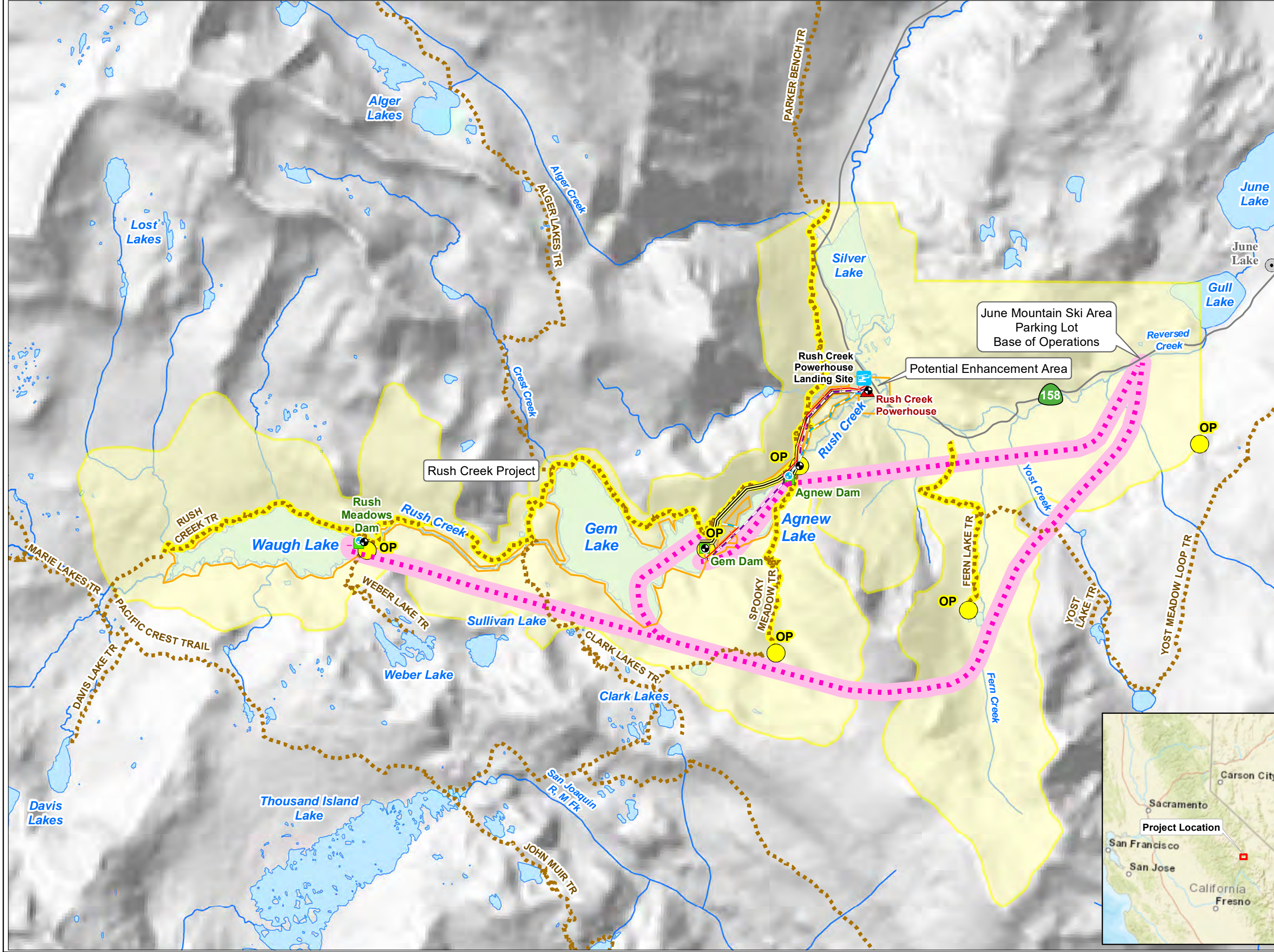


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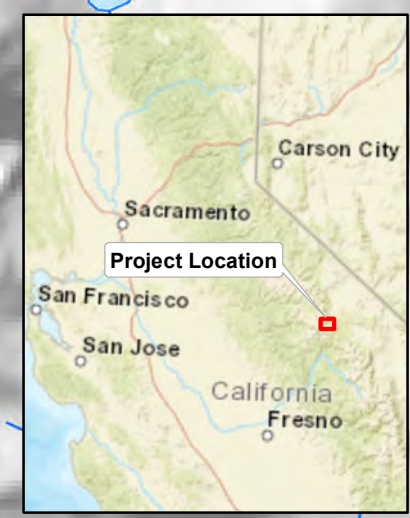
- SCE Facilities**
- Dam
 - ▲ Powerhouse
 - Flowline / Penstock
 - Stream Gage
 - Reservoir Gage
 - ✈ Helicopter Landing Site
 - Power Line
 - Communication Line
 - + Tramway
 - FERC Boundary


- Other Features**
- Major City/Town
 - Highway
 - River/Stream
 - Lake
 - Potential Access Trails

- TERR-2 Raptor Nest Survey**
- Proposed Raptor Observation Points (OPs)
 - Raptor Survey Trails
 - Viewshed from OPs*

*Viewshed from OPs or Trails Limited to 2 Miles (Scope Limits)

- Raptor Study Area**
- Approximate Helicopter Flight Path
 - 300-foot Buffer





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Rush Creek Project (FERC 1389)

TERR 2-2

Raptor Nest Survey Observation Points and Associated Viewsheds

Date: 4/28/2022

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