



Wayne P. Allen
Principal Manager
Regulatory Support Services

Filed Electronically

April 25, 2022

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

Subject: Final Technical Study Plan, FERC Project No. 1388

Dear Secretary Bose:

Southern California Edison (SCE) Company is the Licensee, owner, and operator of the Lee Vining Hydroelectric Project (Project), licensed under the Federal Energy Regulatory Commission (FERC) Project Number 1388. The Project is located on the eastern slope of the Sierra Nevada along the eastern boundary of Yosemite National Park, and approximately 9 miles upstream from Mono Lake and the town of Lee Vining in Mono County, California. The 11.25-megawatt Project is situated on Lee Vining Creek, largely within the Inyo National Forest managed by the U.S. Forest Service; the remaining Project lands are privately owned.

SCE is using the Traditional Licensing Process (TLP) for the Project relicensing. SCE held a Site Visit on September 28, 2021; a virtual Joint Agency Meeting (JAM) with agencies and the public was held on November 16, 2021. Stakeholders were provided 60 days following the JAM to provide (1) comments on the PAD, (2) comments on proposed studies, and (3) suggested additional studies that may be necessary to develop a complete environmental analysis for the Project. Based on those comments received during the comment period, SCE filed a Revised Technical Study Plan (RTSP) on February 18, 2022, for a final round of review and comment. A study plan meeting was held on March 28, 2022, to review the RTSP and proposed additional changes. Following that meeting and after incorporating comments from agencies, SCE has developed this Final Technical Study Plan (Attachment A).

Though not required by the TLP, SCE hereby electronically files its Final Technical Study Plan as a best practice documentation measure.

Sincerely,

DocuSigned by:

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Wayne P. Allen
Principal Manager

Enclosures: Attachment A — Final Technical Study Plan

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FINAL TECHNICAL STUDY PLANS



LEE VINING HYDROELECTRIC PROJECT *FERC PROJECT No. 1388*



April 2022

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	AQ-1 Reservoir Fish Populations
	AQ-2 Stream Fish Populations
	AQ-3 Aquatic Habitat Mapping and Sediment Characterization
	AQ-4 Aquatic Invasive Plants
	AQ-5 Operations Model
	AQ-6 Lower Lee Vining Creek Channel Morphology
	TERR-1 General Botanical Resources Survey
	TERR-2 General Wildlife Resources Survey
	REC-1 Recreation Use Assessment
	REC-2 Existing Recreation Facilities Condition Assessment
	LAND-1 Project Lands and Roads
	LAND-2 Visual Resource Assessment
	CUL-1 Cultural Resource
	TRI-1 Tribal Resource

LIST OF ACRONYMS AND ABBREVIATIONS

°C	degree Celsius
ACHP	Advisory Council on Historic Preservation
AGOL	ArcGIS Online
APE	Area of Potential Effects
ARPA	Archaeological Resources Protect Act
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
CHRIS	California Historical Resources Information System
CHSC	California Health and Safety Code
CNDDB	California Natural Diversity Data Base
COLD	cold freshwater fish
DO	dissolved oxygen
DPR	California Department of Parks and Recreation
EIC	Eastern Information Center
FERC	Federal Energy Regulatory Commission
GIS	geographic information system
GPS	Global Positioning System
HPMP	Historic Properties Management Plan
INF	Inyo National Forest
JAM	Joint Agency and Public Meeting
KOP	Key Observation Point
LADWP	Los Angeles Department of Water and Power
LRWQCB	Lahontan Region Water Quality Control Board
mg/L	milligrams per liter
mm	millimeters
NAHC	Native American Heritage Commission
NDVI	Normalized Difference Vegetation Index
NOI	Notice of Intent
NRHP	National Register of Historic Places
NRM	Natural Resource Manager
NTR	National Toxics Rule

NVUM	National Visitor Use Monitoring Program
O&M	operations and maintenance
OEHHA	California Office of Environmental Health Hazard Assessment
OHP	California Office of Historic Preservation
PA	programmatic agreement
PAD	Pre-Application Document
pH	indicates acidity or alkalinity of a solution
Project	Lee Vining Hydroelectric Project (FERC Project No. 1388)
SCE	Southern California Edison [Company]
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SPAWN	spawning, reproduction and/or early development
TCP	Traditional Cultural Property
TCR	Traditional Cultural Resource
TLP	Traditional Licensing Process
TWG	Technical Working Group
U.S.	United States
USC	United States Code
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator
YOY	young-of-year

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1.0 INTRODUCTION

Southern California Edison (SCE) Company is the licensee, owner, and operator of the Lee Vining Hydroelectric Project (Project), licensed under the Federal Energy Regulatory Commission (FERC) Project Number 1388. The Project is an existing hydroelectric generating facility located on Lee Vining Creek near the town of Lee Vining and in Mono County. The Project has an installed capacity of 11.25 megawatts. SCE is developing the application to relicense the Project. This Final Technical Study Plan document is intended to describe the potential resource issues, nexus to the Project, goals, schedules, and methods of the studies.

2.0 RELICENSING PROCESS TO DATE

SCE filed its Notice of Intent (NOI) and Pre-Application Document (PAD) for the relicensing of the Project on August 12, 2021, pursuant to Section 15 of the Federal Power Act (United States Code, Title 16, Section 808(b)) and the Code of Federal Regulations, Title 18, Section 5.5. Included with that was a request to follow the Traditional Licensing Process (TLP) for the Project relicensing. FERC authorized the use of the TLP on October 8, 2021.

SCE has been conducting early relicensing activities to engage Stakeholders (agencies, Tribes, non-governmental organization, and other interested members of public) in a collaborative process to identify and develop the draft Study Plans that were included in the PAD and will be implemented beginning in Spring 2022.

On September 28, 2021, SCE hosted an in-person Project site visit. The Project's Joint Agency and Public Meeting (JAM) was held on November 16, 2021, which also included a virtual site tour.

Stakeholders are—and have been—participating in the early licensing process for the Project by attending Technical Working Group (TWG) meetings, providing comments on the draft Study Plans, and attending the site visit and JAM. Stakeholders provided comments on the PAD's draft Study Plans on January 18, 2022. Comments that were specific to contents of the PAD and not material to the development of the revised Study Plans are not explicitly addressed in this document but will be retained and incorporated into the appropriate relicensing documents going forward throughout this relicensing process. Revised Technical Study Plans were distributed to the TWGs on February 18, 2022. Comments received on the Study Plans were largely incorporated into the Final Study Plans, this document. Where a plan or comment has not been adopted, SCE has included a rationale in Table 4-1 below.

3.0 POTENTIAL RESOURCE ISSUES WITH INFORMATION GATHERING NEEDS OR STUDIES

This section presents potential resource issues and lists studies and analyses needed to support evaluation of potential effects from continued Project operations and maintenance (O&M) or complete the license application.

Potential resource issues associated with the Project that are listed in subsections herein were identified from the following:

- Review and evaluation of relevant readily available information;
- Discussions with SCE personnel familiar with Project O&M and resources in the Project Vicinity;
- Early engagement meetings held with Stakeholders, including focused TWG meetings;
- Stakeholder interest statements provided as part of the Project Questionnaire and written study requests from interested Stakeholders received as part of the TWG meeting process (these are included as Appendix B to the PAD);
- Stakeholder comments filed in January 2022 on the PAD, NOI, and draft Study Plans; and
- Stakeholder comments filed in February and March 2022 on the Revised Technical Study Plans.

Each Study Plan includes a Consultation Matrix identifying meetings and comments received on that plan to date. SCE reviewed and evaluated the study requests that Stakeholders submitted. From these requests and ongoing discussions in the TWG meetings, SCE has identified a suite of issues that could result from potential Project-induced effects and have a clear nexus to ongoing Project O&M activities.

Note that no potential resource issues or data gaps related to Project effects have been identified for socioeconomic resources.

SCE has identified 15 Study Plan topics related to water resources, aquatic resources, wildlife resources, botanical resources, recreation use, and cultural/tribal resources for which information gathering or studies will occur. Each topic/resource issue was summarized in the PAD. As described below, these studies have been developed in consultation with TWG members. Not all study topics suggested by TWG members have been adopted; where this is the case, SCE has discussed the basis for this approach below.

Revised studies and/or approaches were distributed to Stakeholders for a 30-day comment period. Comments received were discussed with Stakeholders at the Study Plan meeting on March 28, 2022. Comments received and items discussed at the Study Plan meeting are included in these Final Study Plans.

4.0 FINAL STUDY PLANS

SCE prepared 15 draft Study Plans based on the resource issues and data gaps identified with Stakeholders; these Study Plans were files as Appendix C of the PAD in August 2021. Revised Technical Study Plans were distributed to Stakeholders in February 2022

for final review and comment. The Final Study Plans attached to this document (Attachment 1) have been edited to reflect Stakeholders comments received during both the PAD and Revised Technical Study Plan comment periods.

During early relicensing activities, Stakeholders were provided the opportunity to review and comment on the proposed study objectives prior to their inclusion in this document. Comments received during TWG meetings are included as part of the Consultation Matrix included with each plan. SCE reviewed the comments received and incorporated them, as applicable, in the Study Plans. Previous versions of the study plans have included a response to comments in each to provide a rationale for why a suggested objective, rationale, or method has not been adopted and that is continued in this document. SCE now considers the attached study plans final.

SCE will implement select studies starting in Spring 2022 and continue into 2023, as described in each plan. Study results will be provided to Stakeholders after the data is collected, tabulated, summarized, and checked for quality, per the schedules identified in each plan. Stakeholders will be provided an opportunity to review the draft study results, and any comments received will be reviewed and incorporated, as applicable, into final study reports.

4.1. PRELIMINARY RESOURCE TOPICS NOT ADDRESSED BY STUDY PLANS

In reviewing study requests and in discussions with the TWGs, SCE has determined that based on the information provided, some of the issues identified are neither a result of Project-induced effects, nor do they have a nexus to Project O&M activities. SCE previously provided rationale for not incorporating those preliminary resource issues identified by Stakeholders as part of the PAD and is incorporating that by reference.

Where SCE is not proposing specifically to address a request through a study, SCE's rationale is described. To the extent possible and as described below, SCE has identified elements of the request that can be accommodated within planned studies.

Table 4-1. Studies or Study Elements Discussed During PAD Development and Not Adopted

Proposed Study Topic	Entity and Date	Basis for Request	SCE Response
Peak Flow Study	Mono Lake Committee (2/22/2021)	LADWP diverts water below the Project; A 2013 Settlement Agreement between the LADWP and the SWRCB implementing a court ordered restoration effort clarifies the use of the natural hydrograph downstream of the LADWP diversion to restore functional and self-sustaining stream systems with healthy riparian ecosystem components. This study is intended to determine if Project operations and facilities are able to deliver peak flows that may aid in restoration of habitat.	SCE notes that it is not party to the agreement referenced by the Mono Lake Committee; however, the Operations Model that is being developed to look at Project hydrology and operations constraints should provide Stakeholders with information about the potential for the Project to provide peak flows. SCE has not adopted this as a study objective because there is no Project nexus between SCE operations and settlement Parties' ability to meet settlement agreement commitments downstream of the Project.
Information Sharing	Mono Lake Committee (3/15/2021)	Mono Lake Committee desires additional information regarding SCE's reservoir storage information for purposes of coordinating recovery projects related to downstream habitat conditions. Mono Lake Committee proposed a study to understand the constraints SCE has in sharing information with Stakeholders, agencies, and the public. The information of interest includes forecasted operations and real-time reservoir and flow data.	SCE anticipates that procedures and expectations around information sharing and communication models will be part PM&E measures included in a Final License Application; however, a study is not necessary as there are no operational or facility questions associated with this request.
Non-point source contamination of Project waters at road pull-outs	February 25 Recreation TWG Meeting	Potential for non-point source from increased vehicle pull-outs around Project waters, specially from dirt areas around Saddlebag Lake at the Ellery pull-out and north end of Tioga Lake.	The California Department of Transportation owns and manages those pull-outs, which are outside of the FERC Project Boundary. SCE does not see a Project nexus as the bulk of this traffic and use is incidental to vehicles transiting to nearby Yosemite National Park.
Yosemite Toad Population Dynamics	California Department of Fish and Wildlife request	Requesters note designation of critical habitat for Yosemite toad (<i>Anaxyrus canorus</i>) in the FERC Project Boundary and potential sensitivity of Yosemite toad to Project operations given dependence on aquatic systems; increased recreational activities as a result of the creation of the reservoir could have direct impacts (e.g.,	SCE agrees that information on potential Project effects on Yosemite Toad populations should be developed as part of FERCs responsibilities to consult on ESA-listed species; however, the survey methods and scope of the proposed study goes beyond what is necessary to understand Project effects. SCE has consulted with CDFW and USFWS

Proposed Study Topic	Entity and Date	Basis for Request	SCE Response
		crushing) or indirect (e.g., Yosemite toad avoidance of suitable habitat because of human presence/recreational activities) impacts on Yosemite toad populations. To assess potential impacts, CDFW included Visual Encounter Surveys, Epithelia Bd swabs, and Mark and Recapture Surveys.	in developing a terrestrial survey for RTE species, which is summarized in Study <i>TERR-2 General Wildlife</i> .
Riparian Monitoring and Community Health	California Department of Fish and Wildlife request	CDFW suggested that questions about riparian community assemblages might be appropriate and could be similar to those conducted at Bishop Creek.	Sufficient data exists from ongoing Riparian Monitoring Evaluations conducted as part of the existing license—the most recent evaluation is being conducted during the summer of 2021. With regard to Bishop Creek, black cottonwood (<i>Populus trichocarpa</i>) is not present in Lee Vining Canyon and there are no data to suggest any impairment of riparian conditions.
Geomorphology Assessment	California Department of Fish and Wildlife request	During review of comparable Bishop Creek studies, it was suggested that the relicensing team conduct a geomorphology study with comparable objectives do develop a sediment budget for the system.	During subsequent discussions with the TWG, it was discussed that the high-gradient and granitic nature of the Lee Vining Project Area reduces the need for detailed geomorphic characterization and sediment budgets beyond what currently exists. A desire to characterize sediment in Project Area and below Poole Powerhouse has been included in Study AQ-3 <i>Aquatic Habitat Mapping and Sediment Characterization Study Plan</i> , and a channel morphology study for reaches below the Poole Powerhouse is described in Study AQ-6 <i>Lower Lee Vining Creek Channel Morphology Study Plan</i> .

CDFW = California Department of Fish and Wildlife; ESA = Endangered Species Act; FERC = Federal Energy Regulatory Commission; LADWP = Los Angeles Department of Water and Power; PM&E = Protection, Mitigation, and Enhancement; RTE = rare, threatened, and endangered; SCE = Southern California Edison; SWRCB = State Water Resources Control Board; TWG = Technical Working Group; USFWS = U.S. Fish and Wildlife Service

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**ATTACHMENT 1
FINAL TECHNICAL STUDY PLANS**

WQ-1	Stream and Reservoir Water Quality
AQ-1	Reservoir Fish Populations
AQ-2	Stream Fish Populations
AQ-3	Aquatic Habitat Mapping and Sediment Characterization
AQ-4	Aquatic Invasive Plants
AQ-5	Operations Model
AQ-6	Lower Lee Vining Creek Channel Morphology
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WQ-1 STREAM AND RESERVOIR WATER QUALITY TECHNICAL STUDY PLAN

**LEE VINING HYDROELECTRIC PROJECT
*FERC PROJECT No. 1388***



April 2022

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1.0 POTENTIAL RESOURCE ISSUE

Lee Vining Hydroelectric Project (Project) operations have the potential to alter water quality in Project reservoirs and affected stream reaches, which may affect fish or other aquatic species, or exceed Lahontan Regional Water Quality Control Board (LRWQCB) objectives for Project waters.

2.0 PROJECT NEXUS AND HOW THE RESULTS WILL BE USED

Project operations may affect water quality in Saddlebag Lake, Tioga Lake, Ellery Lake, Glacier Creek downstream of Tioga Lake, Lee Vining Creek between Saddlebag Lake and Ellery Lake, and Lee Vining Creek between Ellery Lake and the Los Angeles Department of Water and Power (LADWP) Diversion Dam. Current data are needed to assess water quality in Project waters in relation to LRWQCB objectives.

3.0 STUDY GOALS AND OBJECTIVES

Assess consistency of Project reservoirs and Project-affected stream reaches with water quality objectives in the LRWQCB Basin Plan (Basin Plan) (LRWQCB, 2019).

4.0 EXTENT OF STUDY AREA AND STUDY SITES

The Study Area will include Project reservoirs and selected sites within Project-affected stream reaches. Exact locations of the monitoring stations will be determined in the field based on sampling suitability (i.e., well-mixed and deep enough for representative sampling) and accessibility. Site selection for fish tissue sampling will occur as part of Study AQ-1 Reservoir Fish Population fieldwork. Relicensing participants will be invited to participate in site selection activities and will be provided as much advance notice of such field efforts as possible. Site coordinates of sampling sites will be documented with a hand-held Global Positioning System (GPS) unit, where possible. Established station locations will be re-occupied during subsequent water quality monitoring efforts. Specifically excluded from the Study Area are areas where access is unsafe (very steep terrain or high streamflow). Proposed water quality and fish tissue sampling measurement and sampling locations are listed below.

4.1. RESERVOIR PROFILE AND BACTERIAL SAMPLING SITES

- Saddlebag Lake
- Ellery Lake
- Tioga Lake

4.2. IN SITU WATER QUALITY SAMPLING SITES

- Lee Vining Creek inflow to Saddlebag Lake
- Saddlebag Lake
- Lee Vining Creek between Saddlebag Dam and its confluence with Slate Creek
- Lee Vining Creek between its confluence with Slate Creek and Glacier Creek
- Lee Vining Creek between its confluence with Glacier Creek and Ellery Lake
- Lee Vining Creek inflow to Ellery Lake
- Ellery Lake
- Lee Vining Creek immediately downstream of Poole Powerhouse
- Lee Vining Creek upstream of the LADWP Diversion
- Glacier Creek inflow to Tioga Lake
- Tioga Lake
- Glacier Creek downstream of Tioga Dam

4.3. FISH TISSUE MERCURY SAMPLING SITES

- Saddlebag Lake
- Tioga Lake

4.4. HYDRO-RESOURCE OPTIMIZATION EVENT TURBIDITY MONITORING SITE

- Lee Vining Creek downstream of Poole Powerhouse

5.0 EXISTING INFORMATION

Existing water quality data presented in Section 5.2, *Water Resources*, of the Pre-Application Document (PAD), filed in August 2021, is primarily limited to data obtained through CEDEN (2020) and Cohen (2019). Additional spot measurements of temperature, conductivity, and dissolved oxygen (DO) were obtained during fish monitoring efforts in Lee Vining Creek upstream of Slate Creek. Water quality data collected in the Project reservoirs and Project-affected stream reaches are typically within published limits for water quality objectives in the Basin Plan (LRWQCB, 2019). One exception includes DO in Project reservoirs and Project-affected streams, which fluctuated seasonally and occasionally did not meet Basin Plan objectives, either at the bottom of reservoirs after extended periods of stratification (i.e., late winter and late summer), or in summer when water temperatures were at their maxima. LRWQCB

objectives for DO state that concentration as percent saturation shall not be depressed by more than 10 percent, nor shall the minimum DO concentration be less than 80 percent of saturation. In addition, DO concentrations in waters with the beneficial uses cold freshwater habitat (COLD) and spawning, reproduction and/or early development (SPWN) shall not be less than 9.5 milligrams per liter (mg/L) over a 7-day mean, nor less than 8.0 mg/L in 1 day. The maximum concentration of oxygen that can be dissolved in water varies with temperature, pressure, and conductivity. At high elevations and moderate temperatures, such as those found in the Project Area, this can result in reservoir and stream DO concentrations below Basin Plan objectives but are 100 percent saturated for the ambient atmospheric pressure and water temperature. DO can also vary naturally in lakes and streams in response to seasonally or daily variable rates of net ecosystem oxygen consumption and production (e.g., algal growth and photosynthesis). DO concentrations were measured in Project reservoirs and their outlet streams from 2015 to 2017 (Cohen, 2019), in upper Lee Vining Creek just downstream of Saddlebag Lake as part of fish monitoring efforts (Salamunovich, 2017), and in Lee Vining Creek downstream of Poole Powerhouse on single dates in 2000, 2011, and 2019 (CEDEN, 2020). DO in Lee Vining Creek between Saddlebag Dam and the confluence of Slate Creek, and in Lee Vining Creek downstream of Poole Powerhouse, also did not achieve Basin Plan objectives for COLD and SPWN at all measurement points.

Nutrient (ammonium, nitrate, orthophosphate) and DO concentrations were measured in all Project reservoirs and their outlet streams between 2015 and 2017 (Cohen, 2019). Nutrient concentrations were near or below detection, although hypolimnetic and outlet stream ammonium and orthophosphate were occasionally elevated in late summer and spring, which correlated with prolonged reservoir stratification and reduced DO.

Data were also collected in lower Lee Vining Creek as part of Surface Water Ambient Monitoring Program and Statewide Perennial Streams Assessment stream surveys (CEDEN, 2020). Samples were collected 0.7, 3.5, and 4.8 miles downstream of Poole Powerhouse in 2011, 2000, and 2019, respectively. Nitrate concentrations did not exceed the Basin Plan objective of 10 mg/L for water designated as municipal and domestic water supply (California Code of Regulations Title 22 Section 64431). Based on reported ammonium concentrations, temperature, and typical Sierra lake pH, un-ionized ammonia concentrations did not exceed the Basin Plan objective.

Water temperature was measured in Lee Vining Creek downstream of Poole Powerhouse on single dates in 2000, 2011, and 2019 (CEDEN, 2020), and in upper Lee Vining Creek immediately downstream of Saddlebag Lake as part of fish monitoring efforts (Salamunovich, 2017).

Samples for fecal coliform were collected immediately downstream of Poole Powerhouse from 2012 to 2013, and upstream of the LADWP Diversion from 2011 to 2015 (CEDEN, 2020). All sample measurements were below Basin Plan objectives for coliform counts but were not collected in the method required by the Basin Plan.

Information regarding concentrations of mercury within Project waters is minimal. Fish tissue data collected in 2008 included total mercury in rainbow trout collected from Ellery,

Tioga, and Saddlebag lakes (CEDEN, 2020). Mercury concentrations in fish in all three reservoirs were within the Food and Drug Administration’s “best choices” category for fish consumption (FDA, 2021), and below the lowest California Office of Environmental Health Hazard Assessment (OEHHA) advisory tissue level (70 parts per billion mercury wet weight; Klasing and Brodberg, 2008).

At the time of publication of the PAD, no data were available to determine current reservoir temperature and DO profiles, nor were data available to assess whether Project waters met Basin Plan objectives for most parameters, apart from biostimulatory substances. No water quality data were available to assess downstream effects of hydro-resource optimization events. Current data are needed to assess water quality in Project waters in relation to Basin Plan objectives.

6.0 STUDY APPROACH

6.1. WATER QUALITY SAMPLING

6.1.1. RESERVOIR PROFILES

Profiles of water temperature, DO, pH, specific conductivity, and turbidity will be measured at the three sites described above in Section 4.1. Profiles will be measured during spring, summer, and fall at each site, at 1-meter intervals at each reservoir’s location of maximum depth. A multi-parameter water quality meter (HydroLab, YSI, or similar) will be used to measure profiles, and a GPS unit will be used to record the location of each profile. Pre- and post-sampling calibration checks of the water quality meter, following the manufacturer instructions, will be conducted on-site for each day of sampling or as appropriate for each sensor. Profiles of temperature will be examined in the field to determine if reservoirs are stratified, to inform sampling described below in Section 6.1.2.

Temperature and DO profiles were collected in Project reservoirs in 2015, 2016, and 2017 in spring, summer, fall, and under ice in some cases (Cohen, 2019). These data were not immediately available at the time of PAD publication and represent an array of water year types that will be compared to profiles collected during this study.

6.1.2. RESERVOIR AND STREAM WATER QUALITY SAMPLING

Water quality sampling will be conducted at each of the nine locations described in Section 4.2 above. All parameters listed in Table 6-1 will be measured in spring, summer, and fall simultaneously with reservoir profiling described in Section 6.1.1.

In each reservoir, water samples will be collected at two depths when reservoirs are stratified (see Section 6.1.1): a subsurface grab sample, collected at approximately 0.5-meter depth, and a sample collected from below the thermocline with a Kemmerer bottle or equivalent sampling device. If Project reservoirs are not stratified, a single sample will be collected at approximately 0.5-meter depth.

Stream samples will be collected from just below the water surface as a composite sample from a well-mixed area of each stream site. All parameters in Table 6-1 will be measured in spring, summer, and fall.

Each sample collected will be placed in a laboratory-supplied container. Each sample container will be labeled, preserved, stored, and delivered to a state-certified water quality laboratory, and the laboratory will analyze the contents using the methods listed in Table 6-1. A chain-of-custody record will be maintained for each sample container.

Table 6-1. Parameters for the Reservoir and Stream Water Quality Sampling

Parameter		Method	Target Reporting Limit µg/L (or other)	Hold Time
Basic Water Quality: Field				
Dissolved Oxygen	DO	SM 4500-O	0.1 mg/L	Field
Specific Conductance	-----	SM 2510 A	0.1 µmhos	Field
pH	-----	SM 4500-H	0.1 standard unit	Field
Turbidity	-----	SM 2130 B	0.1 NTU	Field
Basic Water Quality: Laboratory				
Total Dissolved Solids	TDS	EPA 2540 C/SM 2340 C	1 mg/L	7 d
Total Suspended Solids	TSS	EPA 2520 D SM 2340 D	1 mg/L	7 d
Nutrients				
Nitrate-Nitrite	-----	EPA 300.0	2	28 d < pH 2
Total Ammonia as N	-----	EPA 4500-NH3/SM 4500-NH3	0.02	28 d < pH 2
Total Kjeldahl Nitrogen as N	TKN	SM 4500 N	100	28 d < pH 2
Total Phosphorous	TP	SM 4500-P	20	28 d < pH 2
Dissolved Orthophosphate	PO ₄	EPA 365.1/EPA 300.0	0.01	48 h at 4 °C
Bacteria				
Fecal Coliform	----	SM 9221E	1.8 MPN/100 mL	8 h at 4 °C

Method sources: APHA, 2017; USEPA, 2017; Wilde et al., 2014

°C = degrees Celsius; µg/L = micrograms per liter; µmhos = micromhos; d = days; h = hours; mg/L = milligrams per liter; NTU = nephelometric turbidity unit; MPN = most probable number; mL = milliliter

6.1.3. BACTERIAL SAMPLING

Sampling for fecal coliform will occur at all three Project reservoirs as listed in Section 4.1 above. Sampling will occur in the nearshore of each reservoir immediately adjacent to the campsites nearest each reservoir: Saddlebag Campground, Ellery Lake Campground, and Tioga Lake Campground. Samples will be collected on at minimum five separate

dates during the summer within a 30-day period. Samples will be collected in sterilized bottles supplied by the analytical laboratory. Field sampling personnel will fill each sample bottle by direct immersion in the reservoir. Immediately after collection, samples will be placed on ice for transport to the analytical laboratory within the required field hold time (Table 6-1).

6.1.4. HYDRO-RESOURCE OPTIMIZATION TURBIDITY MONITORING

Two continuous turbidity data loggers (e.g., RBRsolo Tu) will be installed at the site identified in Section 4.4 above, in Lee Vining Creek shortly downstream of Poole Powerhouse. Both prior to and after deployment, quality control calibrations will be performed on each unit. The loggers will be installed in the stream channel at a location representative of the entire channel, and the installation location will be recorded using a GPS unit. The loggers will be deployed between spring and fall and will record turbidity at 30-minute intervals. The loggers will be checked monthly to confirm they remain submerged and in good condition, at which time data will be downloaded from each unit.

6.1.5. FISH TISSUE SAMPLING

Fish sample collection will occur by boat using gill netting and electrofishing during Study AQ-1 Reservoir Fish Population fieldwork, at the sites specified in Section 4.3 above. Target species include all expected to be present in Project reservoirs, which include brown trout (*Salmo trutta*), rainbow trout (*Oncorhynchus mykiss*), and brook trout (*Salvelinus fontinalis*). To conform to OEHHA requirements to develop fish consumption advisories (Gassel and Brodberg, 2005), nine individuals of edible size (greater than 200 millimeters total length) will be collected for each species, in each reservoir. Physical characteristics will be recorded for each individual fish, including the following: weight, total length, fork length, and presence of any physical abnormalities. Each fish will be individually tagged, wrapped in aluminum foil, placed in a labeled zipper-closure bag, and stored on dry ice at -20 degrees Celsius (°C) for the duration of the effort. After transmittal to an analytical laboratory, samples will be stored in an ultra-cold freezer at -20 °C until processing.

Fish tissue samples will be analyzed in accordance with OEHHA requirements as composites samples. Tissue samples will be processed by removing skin from an area above the lateral line and then extracting a 9- to 13-gram tissue “plug.” Samples will be weighed for percent moisture analysis and analyzed for total mercury (Table 6-2), as a proxy for methylmercury in fish.

Table 6-2. Parameters for Fish Tissue Mercury Sampling

Parameter	Method	Target Reporting Limit µg/L (or other)	Hold Time
Metal			
Mercury (solids, i.e., fish tissue)	EPA 7473	0.012 mg/kg ww	28 days

µg/L = micrograms per liter; mg/kg ww = milligrams per kilogram wet weight

6.2. ANALYSIS

A report will be prepared that will include results from all samples collected and analyzed. Tables summarizing measured water quality parameters for the various sites will be developed. Any general patterns in measured water quality parameters by season and watershed position (i.e., distance downstream) will be discussed. Fish tissue mercury data will be tabulated by reservoir and compared to OEHHA consumption screening values. Turbidity data will be compared before, during, and after hydro-resource optimization events that occurred during the deployment period. All water quality parameters measured will be compared to Basin Plan water quality objectives and any exceedances will be enumerated and evaluated in terms of any relationship to Project operations. Water quality data collected during this study may also be used by related studies evaluating fish populations.

7.0 SCHEDULE

Sampling within one calendar year is proposed for all study components. A second year of water quality sampling will be conducted in 2023 if the water year type for that year differs from the first year of sampling (2022).

Date	Activity
2022/2023 – Spring/Fall	Conduct water quality fieldwork
2022 – Summer/Fall	Conduct fish tissue mercury fieldwork (<i>AQ-1 Reservoir Fish Population</i>)
2022/2023 – Winter	Analyze data and prepare draft report
2023 – January	Interim Study Report and Meeting
2023 – March	Distribute draft report to Stakeholders
2023 – April/May	Stakeholder review and provide comments on draft report
2023 – Fall	Resolve comments and prepare final report
2024 – September	Distribute final report in Draft License Application

8.0 CONSULTATION SUMMARY

In preparation to file the PAD and Notice of Intent (NOI), Southern California Edison (SCE) hosted Aquatic Resources Technical Working Group (TWG) Meetings on January 25, February 22, March 29, and May 24, 2021, which resulted in study requests from Stakeholders to address questions regarding stream and reservoir water quality. Notes and materials from these meetings are available at www.sce.com/leevining. Stakeholder comments on the outline and relevant study requests received are summarized in the response to comments table below (Table 8-1). SCE filed draft Study Plans with the PAD and NOI on August 12, 2021, to address issues discussed with the TWG. The Stakeholder comment period ended on January 18, 2022, for the Study Plans, PAD, and NOI. SCE reviewed all comments received; drafted Revised Technical Study Plans which were distributed to the TWGs on February 18, 2022, for another 30-day review period. All comments received related to this Study Plan are included in Table 8-1 below and incorporated into this Final Study Plan where appropriate.

Table 8-1. Consultation Summary—Response to Comments

Comment Number	Entity	Date/Forum	Comment	SCE Response
1	MLC	2/25/2021 Recreation and Land Use TWG	Water quality assessments along California State Highway 120 at pull-outs and dispersed camping areas were proposed.	Water quality assessments along State Route 120 at pull-outs and dispersed camping areas were not included in the Study Plan due to lack of nexus; State Route 120 is a California State Highway maintained by CalTrans, thus there is no nexus to Project operations or maintenance. Dispersed camping is not related to or affected by Project operations or maintenance.
2	USFS	1/25/2021 Aquatic TWG	USFS suggested Licensee consider measurements of <i>e.coli</i> rather than fecal coliform if there is a nexus with the Project.	No recreation facilities are included in the Project license; therefore, bacteria monitoring was not included in the Study Plan due to lack of nexus.
3	CDFW	2/22/2021 Aquatic TWG	CDFW is interested in obtaining profiles of temperature and dissolved oxygen from Project reservoirs.	Proposed study methods include seasonal profiles of temperature and dissolved oxygen in each Project reservoir, and comparison to profiles collected in Project reservoirs 2015–2017.
4	SWRCB	2/22/2021 Aquatic TWG	SWRCB is interested in establishing baseline conditions in Project waters and noted that Bishop Creek’s water quality study plan included a recreation component but are not familiar with the recreation levels along Lee Vining Creek.	Proposed study methods include measuring standard water quality parameters to establish baseline conditions in Project reservoirs and Project-affected stream reaches. No Project recreation facilities exist; therefore, water quality monitoring at Inyo National Forest recreation sites was not included in the Study Plan due to lack of nexus.

Comment Number	Entity	Date/Forum	Comment	SCE Response
5	SWRCB	1/14/2021 PAD Comment Period	<p>5. PAD Section 4.6.1, states: “SCE’s delivery of intra-day load to meet demands is referred to as ‘Hydro-Resource Optimization’ and has increased since 2016. These operations are in response to grid demand and pricing. The Plant is usually called into operations during the evening hours. These events have resulted in periodic releases of flow into Lee Vining Creek below Poole Powerhouse. Data is not available to easily describe the frequency and magnitude of these, but they generally last less than 8 hours. Using available data from the downstream [Los Angeles Department of Water and Power] diversion, SCE has estimated that these events are influenced by time of year with higher frequency of events occurring in the winter and spring. SCE is proposing to continue Hydro-Resource Optimization in the new license term, and will be characterizing the frequency, magnitude, and duration of these events for the new license along with reviewing potential Project effects.”</p> <p>State Water Board staff request that SCE provide data collected during past Hydro-Resource Optimization efforts as it relates to flow (including ramping rates) and water quality. State Water Board staff also requests SCE clarify why data is not easily available to quantify the frequency and magnitude of these past events and what changes to flow monitoring would be necessary to accurately characterize future events. Additionally, State Water Board staff request that the proposed WQ-1 Stream and Reservoir Water Quality Technical Study Plan include monitoring of water quality parameters and flow (specifying ramping rates) during Hydro-Resource Optimization events in order to better inform potential impacts to beneficial uses of water.</p>	<p>Study <i>WQ-1 Stream and Reservoir Water Quality</i> has been amended to include continuous monitoring of turbidity downstream of Poole Powerhouse between Spring and Fall. Data will be collected to determine turbidity responses to hydro-resource optimization event flow alterations.</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
6	SWRCB	1/14/2021 PAD Comment Period	<p>7. Below, State Water Board staff are providing comments on SCE's proposed WQ-1 Stream and Reservoir Water Quality Technical Study Plan:</p> <ul style="list-style-type: none"> • State Water Board staff request the inclusion of fecal coliform testing in Project reservoirs and have samples tested at an Environmental Laboratory Accreditation (ELAP) certified lab. Fecal coliform data will inform potential Project effects to recreational beneficial uses. • State Water Board staff request the Stream and Reservoir Water Quality Technical Study Plan include data collection sites at reservoir inflow locations. Inflow water quality will provide background water quality data to assess potential impacts to beneficial uses from reservoir operations and facilities. • State Water Board staff request water column mercury and methylmercury sampling of all project reservoirs be included in the Stream and Reservoir Water Quality Technical Study Plans. <p>According to the PAD section 5.2, there is reduced DO found in the bottom of project reservoirs due to seasonality and prolonged reservoir stratification. Oxygen depletion may lead to increased methylation of mercury due to anoxic conditions. Additionally, there is history of gold, silver, and tungsten mining in the Lee Vining Creek watershed with limited metals and other mining related water quality data available. Given the history of the watershed and minimal existing data on mercury concentrations, additional information is needed to address water quality data gaps for the project, establish baseline conditions, inform fish tissue data (requested below in Attachment B), and inform State Water Board staff's assessment of Project impacts to water quality.</p>	<p>(1) Study <i>WQ-1 Stream and Reservoir Water Quality</i> has been revised to include fecal coliform sampling at Project reservoirs, at minimum five times within a 30-day period.</p> <p>(2) Study <i>WQ-1 Stream and Reservoir Water Quality</i> has been revised to include sampling at reservoir inflow locations.</p> <p>(3) SCE does not see a nexus to include water column mercury or methylmercury sampling because there is no Project-related source of mercury in the system. The Methylmercury Fish Tissue Sampling Study requested by SWRCB has been adopted for Saddlebag and Tioga lakes (see response to comment SWRCB 7). Results of the fish tissue sampling will be used to evaluate the extent to which mercury is a concern in Project reservoirs, as expected concentrations of both parameters may be below laboratory detection limits and measurement may not be informative. As such, water column mercury and methylmercury sampling requested by SWRCB has not been adopted.</p> <p>(4) SCE has revised Study <i>WQ-1 Stream and Reservoir Water Quality</i> to include a second year of study, if the water year type differs from the previous water year.</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
			<p>• The Stream and Reservoir Water Quality Technical Study Plan is proposed for one year, with some comparison to older limited water quality data. State Water Board staff believe one year of data collection is not adequate to evaluate the Project’s potential impacts as its operations could span a 50-year term. One year of data collection may not provide sufficient water quality information for various water years. State Water Board staff request the above study continues data collection for a minimum of two years.</p>	
7	SWRCB	1/14/2021 PAD Comment Period	<p>State Water Resources Control Board (State Water Board) staff requests a Methylmercury Fish Tissue Sampling Study be conducted as part of relicensing Southern California Edison’s (SCE) Lee Vining Hydroelectric Project (Project). SEE STUDY PLAN REQUEST</p>	<p>The SWRCB Study Plan Request included a request for methylmercury fish tissue sampling and referenced comment SWRCB 6, which requests water column mercury and methylmercury sampling of all Project reservoirs to inform beneficial use. SCE interprets SWRCB Study Plan Request to assess Project effects on Commercial and Sportfishing beneficial use (COMM). Methylmercury fish tissue sampling at Saddlebag and Tioga lakes has been added to Study WQ-1 Water Quality. Because Ellery Lake is shallow and existing information presented in the PAD shows dissolved oxygen is generally greater than 80 percent saturated, SCE does not see a potential for methylation to occur or any nexus for including methylmercury fish tissue sampling at Ellery Lake. In response to the request for water column mercury, water column mercury and methylmercury are not strong indicators of fish tissue mercury concentrations and are likely unnecessary to inform beneficial use. Evidence of this has been observed in other Northern Sierra reservoirs where fish tissue concentrations can exceed human health</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
				<p>criterion for methylmercury when water column mercury concentrations in the same reservoirs were generally below the method detection limits. Further, there is no Project-related source of mercury in the system. Therefore, SCE does not see a nexus to include water column mercury or methylmercury sampling. Understanding the effects of methylmercury in the context of the COMM beneficial use is best informed by fish tissue sampling.</p>
8	USFS	1/14/2022 PAD Comment Period	<p>Study should evaluate how much sediment Poole Powerhouse Road contributes to Lee Vining Creek. Use of this road past Big Bend CG is mainly by SCE. There is a clear nexus between use of this road by SCE and potential sediment contribution to Lee Vining Creek.</p>	<p>Poole Powerhouse Road is maintained by Mono County and is not a Project road; therefore, no nexus exists. However, WQ-1 will include continuous turbidity monitoring downstream of Poole Powerhouse.</p>
9	CDFW	1/14/2022 PAD Comment Period	<p>CDFW Comment: The Stream and Reservoir Water Quality Technical Study plan should include nutrient monitoring of the hypolimnion/outlets of Project reservoirs to determine the potential impact on the growth and spread of the nonnative, invasive Didymo (<i>Didymosphenia geminata</i>). Didymo can grow into thick mats that can cover up to 100% of the creek or river bottom and negatively affect stream ecology.</p>	<p>Major nutrient sampling in the hypolimnia of all three Project reservoirs is included in WQ-1, and the findings of WQ-1 can be used to inform the results of the remaining studies, where necessary.</p>
10	CDFW	3/25/2022 Revised Study Plan Comment Period	<p>Mercury sampling should focus on brown trout or brook trout. More than 95% of rainbow trout captured in the Eastern Sierra are planted from CDFW hatcheries</p>	<p>SWRCB has requested that rainbow trout be kept in the Study Plan because the focus of the study is to ensure that the Project is protective of human health and is compliant with water quality standards. SCE intends to keep the rainbow trout in the study.</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
11	CDFW	3/25/2022 Revised Study Plan Comment Period	This could potentially impact the noxious invasive algae Didymo in stream reaches downstream. The impact of reservoir stratification and nutrient concentration on Didymo should be investigated. CDFW suggests monitoring either hypolimnetic nutrients or discharge in reaches above Didymo populations.	Study AQ-4 <i>Aquatic Invasive Plants</i> will document the distribution and percent cover of didymo and other invasive plant species in Project-affected reaches.
12	CDFW	3/25/2022 Revised Study Plan Comment Period	Rainbow trout are hatchery-origin and could potentially be excluded in favor of increased wild fish sampling.	Please see response to comment 10.

CalTrans = California Department of Transportation; CDFW = California Department of Fish and Wildlife; MLC = Mono Lake Committee; PAD = Pre-Application Document; SCE = Southern California Edison; SWRCB = State Water Resources Control Board; TWG = Technical Working Group; USFS = U.S. Forest Service

9.0 REFERENCES

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AQ-1 RESERVOIR FISH POPULATION TECHNICAL STUDY PLAN

**LEE VINING HYDROELECTRIC PROJECT
*FERC PROJECT No. 1388***



April 2022

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1.0 POTENTIAL RESOURCE ISSUE

Lee Vining Hydroelectric Project (Project) operations have the potential to affect the condition of recreational fisheries within Project reservoirs.

2.0 PROJECT NEXUS AND HOW THE RESULTS WILL BE USED

Project operations have the potential to affect environmental conditions within Project reservoirs, including water quality and water surface elevations.

Changes in these environmental conditions can affect the abundance, distribution, and structure of the local fish communities.

The Licensee and resource agencies will use the information obtained from this study in combination with existing information to evaluate effects of Project operations on reservoir fish populations and inform potential Protection, Mitigation, and Enhancement measures.

3.0 STUDY GOALS AND OBJECTIVES

Study goals and objectives were determined during the February 22, 2021, and March 29, 2021, Aquatic Resources Technical Working Group Meetings (TWGs). Stakeholders stated that there is no current information regarding the distribution of fish species in the Project Area. The goal of this study is to assess fish populations within Project reservoirs. The objective of this study is to obtain information on reservoir fish populations where background data are lacking.

4.0 EXTENT OF STUDY AREA AND STUDY SITES

Fish population sampling is proposed at Project reservoirs, specifically:

- Saddlebag Lake
- Ellery Lake
- Tioga Lake

5.0 EXISTING INFORMATION

Fish species found in Project waters include self-sustaining populations of brown and brook trout, and a stocked population of rainbow trout. Brown trout were introduced to the Mono Lake basin in 1919, with plantings continuing until 1942, and eastern brook trout were introduced in 1931. After 1942, brown trout plants were replaced by annual plants of catchable rainbow trout (Salamunovich, 2017). California Department of Fish and Wildlife (CDFW) introduced catchable rainbow trout to Project reservoirs in 1980, and rainbow trout continue to be annually planted (FERC, 1992). Sterile rainbow trout were added to releases in 2011, and since 2013 all planted rainbow trout have been sterile. In 2016, CDFW planted over 18,000 rainbow trout in Saddlebag Lake, 13,375 in Ellery Lake,

and 9,995 in Tioga Lake (Salamunovich, 2017). Life history information for these species is described in Section 5.3, *Fish and Aquatic Resources*, of the Pre-Application Document (PAD), filed in August 2021. There is no recent information on non-planted fish populations within Project reservoirs.

6.0 STUDY APPROACH

6.1. RESERVOIR FISH SURVEYS

Reservoir sampling will be conducted using gill netting and boat electrofishing, dependent on access, to assess fish species composition, relative abundance, and age-distribution within Project reservoirs. Sampling will occur once during summer or fall. To minimize the potential to spread invasive species (e.g., New Zealand mud snail [*Potamopyrgus antipodarum*], quagga/zebra mussel [*Dreissena* spp.]), appropriate decontamination protocols will be followed prior to each aquatic-based field effort or when moving between watersheds. Procedures may include, but not be limited to, freezing or soaking with a commercial 409 cleaner all field gear (including waders, boots, wetsuits) to kill New Zealand mud snail, spraying equipment with a bleach and water solution to prevent spread of quagga/zebra mussel, and inspecting all field equipment (including boats) after each use.

Fish data collected at each site will include species identification, total length (millimeters), fork length (millimeters), weight (grams), and notes on general condition. Any visual abnormalities in fish condition will be documented during the survey. At each sample location, scale samples will be collected from up to 20 fish of each game species (e.g., trout species) across a variety of sizes at a variety of locations to assess age and growth relationships.

General information recorded will include impoundment name, gear type, Global Positioning System (GPS) coordinates of sample location, and water chemistry (i.e., water temperature, dissolved oxygen, pH, and conductivity).

6.1.1. GILL NETS

Project reservoirs will be sampled using variable-mesh gill nets at three locations per reservoir. Variable-mesh gill nets consist of multiple panels of variable mesh sizes so that a gradient of sizes is represented across the net.

One variable-mesh “adult” gill net (1- to 4-inch mesh, 80 to 125 feet long) and one variable-mesh “juvenile” gill net (less than 1-inch mesh, 30 feet long) will be deployed at each of three locations within each reservoir, occupying nearshore and deepwater habitats. The nets will be placed sloping along the gradient of the reservoir bottom. The sampling locations will be distributed along the length of the reservoir with the goal of sampling both deepwater and littoral zone habitat.

The time of deployment, location, minimum and maximum water depths, and net type will be recorded at each gill net station. Water chemistry data will be collected (where feasible) at the approximate net placement depth.

To reduce the potential for mortality and to provide information on fish composition, the gill nets will be set for two 8-hour net-set periods. These will include a 1-day and 1-night period over an approximate 24-hour period to facilitate good coverage and to separate diel periods. Captured and processed fish will be allowed to recover in a live-car and will be released after the sampling is complete or in an area away from the sampling location.

6.1.2. SHORELINE ELECTROFISHING

Nighttime boat electrofishing will be conducted using standard methods (Reynolds, 1996) to sample nearshore habitat on Project reservoirs. Sampling will include two to four sites per reservoir. Electrofishing stations will be approximately 100 meters in length and will target a diversity of nearshore habitats. Sampling stations will be documented using GPS. Electrofisher “time on” will be recorded for each sampling site and a consistent pace and effort will be employed at all sites.

Captured and processed fish will be allowed to recover in a live-car and will be released after the sampling is complete.

6.2. ANALYSIS

Data will be entered into an Excel spreadsheet for reduction, tabulation, and summary. Capture data will be summarized by species composition for the whole lake and all gear types, as well as by gear type and site. Length-frequency histograms will be developed for each trout species observed or captured and used to estimate size and age-class distribution. Breaks and modalities within the histograms will be evaluated and compared to the subsample of aged scales collected at each study site and relevant literature on trout growth to estimate the age-class distribution of each species. Relative abundance will be determined by calculating catch-per-unit-effort (fish per hour) by gear type and site.

7.0 SCHEDULE

Date	Activity
2022 – Spring	Refine study sites
2022 – Summer–Fall	Conduct field surveys
2022/2023 – Winter	Compile study results, conduct analyses, and prepare draft report
2023 – January	Interim Study Report and Meeting
2023 – March	Distribute draft report to Stakeholders
2023 – April/May	Stakeholder review and provide comments on draft report
2023 – Fall	Resolve comments and prepare final report
2024 – September	Distribute final report in Draft License Application

8.0 CONSULTATION SUMMARY

In preparation to file the PAD and Notice of Intent (NOI), Southern California Edison (SCE) hosted Aquatic Resources TWG Meetings on January 25, February 22, March 29, and May 24, 2021, which resulted in study requests from Stakeholders to address questions regarding reservoir fish populations. Notes and materials from these meetings are available at www.sce.com/leevining. Stakeholder comments on the outline and relevant study requests received are summarized in the response to comments table below (Table 8-1). SCE filed draft Study Plans with the PAD and NOI on August 12, 2021, to address issues discussed with the TWG. The stakeholder comment period ended on January 18, 2022, for the Study Plans, PAD, and NOI. Comments received related to this Study Plan are included in Table 8-1 below.

Table 8-1. Consultation Summary—Response to Comments

Comment Number	Entity	Date/Forum	Comment	SCE Response
1	CDFW	2/22/2021	One goal of study should be to determine whether self-sustaining populations of trout exist in Project reservoirs.	Results of this study, including age- and size-class information, will be used to determine whether self-sustaining populations of trout are present in Project reservoirs.
2	CDFW	5/24/2021	CDFW suggests using boat electrofishing and gillnetting instead of beach seining to sample nearshore habitats.	Proposed fish collection methods include boat electrofishing and gillnetting.
3	CDFW	5/24/2021	CDFW asked whether an otolith analysis would be included.	This study includes scale analysis, rather than otoliths, to approximate age of fish collected.
4	CDFW	1/14/2022 PAD Comment Period	CDFW Comment: The nexus rational that CDFW provided should also include an acknowledgement that the hydroelectric Project creates the reservoirs.	Thank you, comment acknowledged.
5	CDFW	1/14/2022 PAD Comment Period	CDFW Comment: Boat electrofishing should occur at night to increase capture efficiency.	Study <i>AQ-1 Reservoir Fish Population</i> has been revised to include nighttime rather than daytime boat electrofishing.
6	CDFW	1/14/2022 PAD Comment Period	Fisheries monitoring should be focused on documenting the need for stocking and evaluating angler use.	Studies AQ-1 and AQ-2 will evaluate densities, age-class distributions, and condition of current fish populations in Project reservoirs and affected stream reaches. Study REC-1 includes a creel survey to evaluate angler use and satisfaction. Additionally, the Licensee releases water that enhances angling opportunities throughout the Project Area.
7	CDFW	3/25/2022 Revised Study Plan Comment Period	CDFW commented: This [decontamination procedure] will be conditioned in your Scientific Collecting Permit	Comment noted.
8	CDFW	3/25/2022 Revised Study Plan	Otoliths should be pulled from gill-netted fish. Scales are not	Scales are the most commonly used calcified structure for aging fish and have been used to evaluate high-elevation fish populations throughout California, including previous

Comment Number	Entity	Date/Forum	Comment	SCE Response
		Comment Period	accurate in high elevation lakes	surveys in Lee Vining Creek (Salamunovich, 2017) and surveys of other streams in the Mono Basin (e.g., Bishop Creek). Additionally, scales do not require sacrificing the fish and allow for sufficient age information to identify potential Project impacts. In the interest of obtaining an estimate of age for the current Lee Vining fish population, maintaining comparability of fish population structure to prior surveys, and having a minimal impact to the population, the Licensee proposes to maintain the use of scales to approximate fish age.
9	CDFW	3/25/2022 Revised Study Plan Comment Period	CDFW recommends the 125-foot gill net.	125-foot nets will be used where they are available.
10	CDFW	3/25/2022 Revised Study Plan Comment Period	CDFW recommends that otoliths instead of scales are used	Please see response to comment 8.

CDFW = California Department of Fish and Wildlife

9.0 REFERENCES

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AQ-2 STREAM FISH POPULATION TECHNICAL STUDY PLAN

**LEE VINING HYDROELECTRIC PROJECT
*FERC PROJECT No. 1388***



April 2022

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1.0 POTENTIAL RESOURCE ISSUE

Lee Vining Hydroelectric Project (Project) operations have the potential to affect recreational fisheries within Project streams.

2.0 PROJECT NEXUS AND HOW THE RESULTS WILL BE USED

Project operations have the potential to affect environmental conditions within streams downstream of Project reservoirs, including water quality and quantity. Changes in these environmental conditions can affect the abundance, distribution, and structure of the local fish communities. The Licensee and resource agencies will use the information obtained from this study, in combination with existing information, to evaluate the effects of Project operations on the local fish communities, and to develop any necessary Protection, Mitigation, and Enhancement measures.

3.0 STUDY GOALS AND OBJECTIVES

Study goals and objectives were determined during the February 22, 2021, and March 29, 2021, Aquatic Resources Technical Working Group (TWG) Meetings. The goal of this study is to supplement the existing available information to assess fish populations in Project-affected stream reaches. The objective of this study is to obtain information on existing fish populations downstream of Project reservoirs.

4.0 EXTENT OF STUDY AREA AND STUDY SITES

The study area includes the Project-affected reaches of Lee Vining Creek and Glacier Creek. Three sites between Saddlebag Dam and Slate Creek were previously established and sampled in 1999 to 2001, 2006, 2011, and 2017 (Salamunovich, 2017); these sites will be re-sampled for comparison to historical data.

Four additional survey sites¹ will be selected during a pre-survey reconnaissance visit:

- Three sites in Lee Vining Creek, including:
 - Between Slate Creek and Glacier Creek
 - Between Glacier Creek and Ellery Lake
 - Between Poole Powerhouse and the pool upstream of the Los Angeles Department of Water and Power Diversion Dam
- One site in Glacier Creek downstream of Tioga Dam

¹ A site between Rhinedollar Dam and Poole Powerhouse was considered but eliminated because this portion of Lee Vining Creek cannot be safely accessed.

5.0 EXISTING INFORMATION

The Licensee has conducted fish sampling in upper Lee Vining Creek between Saddlebag Dam and the confluence of Slate Creek since 1999. These surveys were not specified in the 1997 Federal Energy Regulatory Commission (FERC) license, but were conducted in conjunction with riparian and aquatic habitat monitoring efforts stipulated in Condition 7 of the license. Sample sites included three contiguous 100-meter sections of stream just upstream from the Slate Creek confluence.

Fish surveys were conducted in spring, summer, and fall from 1999 to 2001, and in the fall of every fifth year thereafter, 2006, 2011, and 2016 (Sada, 2007; Sada and Hogle, 2011; Salamunovich, 2017). The surveys documented brown trout, brook trout, and a small number of hatchery-raised rainbow trout in the reach between Saddlebag Dam and the confluence of Slate Creek. Fish population surveys conducted in 2016 documented naturally produced brown and brook trout populations in good physical condition, with multiple age classes present, satisfactory condition factors, an abundance of recently hatched young-of-year (YOY), and actively spawning adults (Salamunovich, 2017). Both brown and brook trout had length-frequency and age-class distributions typical of the species, with the highest number of fish belonging to the YOY age class and lower numbers in each subsequent age class; data suggested the presence of six to seven age classes of brown trout and at least six age classes of brook trout (Salamunovich, 2017). The average abundance, density, and biomass of brook and brown trout within this reach were all significantly greater in 2016 compared to previous survey years (Table 5-1; Salamunovich, 2017). Brown trout were the numerically dominant trout species in the reach in 2016; however, biomass was split more evenly between the two species (Salamunovich, 2017). Brown trout density in 2016 greatly exceeded that of brook trout, which was opposite from previous years of the study. Only one hatchery-reared rainbow trout was captured in 2016 (Salamunovich, 2017).

Table 5-1. Average Abundance, Density, and Biomass Estimates for Naturally Reproducing Trout (Brown and Brook) in Lee Vining Creek Between Saddlebag Dam and the Confluence of Slate Creek, 1999–2016

Survey Year ^a	Abundance (trout/mile)	Density (trout/m ²)	Biomass (g/m ²)
1999	998	0.14	6.8
2000	601	0.12	4.1
2001	735	0.11	4.2
2006	1,159	0.16	8.9
2011	880	0.02	1.1
2016	3,525	0.43	13.4

Sources: Sada, 2007; Sada and Hogle, 2011; Salamunovich, 2017

g/m² = grams per square meter

Note:

^a Fish surveys were conducted in spring, summer, and fall from 1999 to 2001, and in the fall of every fifth year thereafter (2006, 2011, and 2016)

EA Engineering, Science, and Technology (EA) conducted population studies within Lee Vining Creek in 1984, 1986, and 1987 between Saddlebag Dam and Slate Creek, between Slate Creek and Ellery Lake, and below Poole Powerhouse. The studies indicated trout biomass was highest in the reach between Saddlebag Dam and the confluence of Slate Creek (8.3 grams per square meter [g/m²]), followed by the reach between the confluence of Slate Creek and Ellery Lake (7.2 g/m²). Below Poole Powerhouse, trout biomass was estimated to be 6.7 g/m² (FERC, 1992). The EA report was not available prior to the production of the Pre-Application Document (PAD), filed in August 2021, and this Study Plan; therefore, more detailed information from this study is not available.

Lee Vining Creek fish population data gaps include species composition, density, and age-distribution of the existing trout communities in Lee Vining Creek between the confluence of Slate Creek and the confluence of Glacier Creek, in Lee Vining Creek downstream of Poole Powerhouse, and in Glacier Creek downstream of Tioga Dam.

6.0 METHODS

6.1. FIELD SURVEYS

Sampling methods will include electrofishing, provided that environmental conditions allow electrofishing to be performed safely and effectively. Backpack electrofishing (e.g., using a Smith-Root Model LR-24 backpack electrofisher) will be conducted using a multiple-pass depletion method consistent with procedures described by Reynolds (1996).

Prior to sampling, a reconnaissance survey will be conducted to select survey sites in the four sample reaches listed above, which have not been previously surveyed, as well as to locate the boundaries of the previously surveyed sample sites in Lee Vining Creek above the Slate Creek confluence. The upstream and downstream extent of each electrofishing site will be marked using a handheld Global Positioning System (GPS) device.

Sites will be approximately 300 feet long and will be separated into two segments to improve sampling efficiency. Block nets will be used to prevent migration into and out of the sample segment and to facilitate an accurate assessment of the sample population. The electrofishing crew will consist of one to two backpack electrofishers and approximately two netters, depending on the size of the wetted stream channel. Water conductivity of each site will be measured with a meter to help determine the appropriate power output for fish capture. The electrofishing crew will begin sampling at the downstream block net and proceed slowly and deliberately upstream, moving from the center of the channel out to the stream margin, and making simultaneous and parallel passes through the sampling area. As trout are captured (netted), they will be placed in buckets and periodically transferred to a live-car or live-well to be held until the completion

of the pass; aeration will be provided as needed. Upon completion of each pass, the following data will be recorded for each individual captured: species identification, total length (millimeters), weight (grams), and, if applicable, notes on the general condition of the fish, including any parasites that may be present. Any visual abnormalities in fish condition will be documented during the survey. After processing, fish will be placed in an aerated bucket of cool river water. Fish in the recovery bucket will be regularly transferred to a live-car (1/8-inch mesh net) located in the creek outside of the study site. After completion of the survey, all fish will be released back into the area of capture. All trout will be inspected for visual markings and fin erosion, which could suggest hatchery origin. At each sample site, scale samples will be collected from up to 20 fish of each game species (e.g., rainbow trout, brown trout, brook trout) across a variety of sizes and aged for comparison to confirm age/size class determinations.

Habitat characteristics and water quality parameters will be measured at all sites at the time of sampling. The following site information will be recorded at each survey segment: stream name, reach, site name, segment, crew member names, time of day, environmental (weather) conditions (including air temperature), stream length, average stream width, stream habitat characteristics such as cover, substrate, and habitat composition (i.e., riffle, pool, run), streamflow, water quality (water temperature, dissolved oxygen, pH, conductivity, and specific conductivity), GPS coordinates, and electrofishing duration. Additionally, observations of invasive aquatic plants and algae, including Didymo (*Didymosphenia geminata*), will be recorded during stream fish surveys. Photographs will also be taken to document the specific location of the top and bottom block nets and condition of the site.

If environmental conditions (e.g., high flows, deep water, etc.) do not allow for safe or effective electrofishing at a site, then sampling will include direct observation using multi-pass snorkeling methods. Three repeat passes will be made through each site to allow for bounded count population estimates as well as to account for variability between observations. Specifically, divers will enter the creek downstream of the area to be sampled and pause for a brief period to allow the fish to become accustomed to the divers' presence before surveying each site. Field crews will consist of two or more biologists snorkeling across established lanes, depending on stream width. Snorkelers will identify, count, and make visual total length estimates in 25-millimeter size classes while moving at a slow, uniform pace. Prior to sampling, snorkelers will calibrate estimated fish lengths by viewing variably sized objects of known lengths underwater. Fish will be counted as they pass below or to the side of each observer, with surveyors communicating as best as possible to avoid potential double-counting. Each surveyor will record data on dive slates; data will be transcribed to pre-printed data sheets following each pass.

6.2. ANALYSIS

Data collected during the stream fish population study will be entered into an Excel database for data reduction, tabulation, and summary. Data collected in this study will be compared with data collected during previously conducted studies, where possible.

Size distribution will be evaluated at all survey sites. Length-frequency histograms will be developed for each trout species observed or captured and used to estimate size and age-class distribution. Breaks and modalities within the histograms will be evaluated and compared to the subsample of aged scales collected at each study site and relevant literature on trout growth to estimate the age-class distribution of each species.

Trout densities (number per acre), biomass (pounds per acre), and 95 percent confidence intervals will be computed for each electrofished site using the Zippin estimator within the multiple-pass regression analysis software developed by Van Deventer and Platts (1989).

Data collected during snorkel surveys will be used to calculate species densities using the bounded counts estimator (Robson and Whitlock, 1964):

$$\tilde{y}_B = d_{[m]} + (d_{[m]} - d_{[m-1]})$$

where $d_{[m]}$ is the maximum number of fish counted during any of the passes and $d_{[m-1]}$ is the second highest count; counts will be arranged in ascending order as:

$$d_{[1]} \leq d_{[2]} \leq d_{[3]} \leq \dots \leq d_{[m-1]} \leq d_{[m]}.$$

The 95 percent confidence intervals will be calculated based on Robson and Whitlock (1964) and Routledge (1982), as cited in Mohr and Hankin (2005). The lower bound (N_L) will be calculated as:

$$N_L = d_{[m]}$$

The upper bound (N_U) will be calculated as:

$$N_U = d_{[m]} + [(1 - \alpha) / \alpha] \cdot [d_{[m]} - d_{[m-1]}]$$

where α is the level of significance (i.e., $\alpha=0.05$ for calculation of a 95 percent confidence interval) unless $d_{[m]} = d_{[m-1]}$, in which case the upper bound for the confidence interval is equivalent to the abundance estimate, and the coverage probability for the confidence interval tends to be poor (Robson and Whitlock, 1964). In these instances, an adjustment proposed by Routledge (1982) that provides improved coverage probabilities to the confidence intervals will be used, where upper bound is estimated as:

$$N_U = d_{[m]} + (1 - \alpha) / (\alpha f)$$

where f is the number of times that the highest dive count is repeated.

Assumptions underlying the use of the bounded counts estimator include:

- No fish are double-counted on any given pass
- All fish present can be observed
- Diver observation probability is constant over all dives

To assess trout condition, the weight-to-length relationship of individual fish will be assessed as a method of identifying the nutritional state or health of the fish related to size and growth. Fulton’s condition factor (Ricker, 1975), a measure of this nutritional state, will be calculated for each fish. Individual condition factors (k) will be calculated by the following formula:

$$k = \frac{W \times 10^5}{TL^3}$$

where *W* is wet weight (grams) and *TL* is total length (millimeters). Mean fish condition will be calculated from individual condition values for each species.

7.0 SCHEDULE

Date	Activity
2022 – Spring	Refine study sites
2022 – Summer/Fall	Conduct field surveys
2022/2023 – Winter	Compile study results and prepare draft report
2023 – January	Interim Study Report and Meeting
2023 – March	Distribute draft report to Stakeholders
2023 – April/May	Stakeholder review and provide comments on draft report
2023 – Fall	Resolve comments and prepare final report
2024 – September	Distribute final report in Draft License Application

8.0 CONSULTATION SUMMARY

In preparation to file the PAD and Notice of Intent (NOI), Southern California Edison (SCE) hosted Aquatic Resources TWG Meetings on January 25, February 22, March 29, and May 24, 2021, which resulted in study requests from Stakeholders to address questions regarding stream fish populations. Notes and materials from these meetings are available at <http://www.sce.com/leevining>. Stakeholder comments on the outline and relevant study requests received are summarized in the response to comments table below (Table 8-1). SCE filed draft Study Plans with the PAD and NOI on August 12, 2021, to address issues discussed with the TWG. The Stakeholder comment period ended on January 18, 2022, for the Study Plans, PAD, and NOI. SCE reviewed all comments received; drafted Revised Technical Study Plans which were distributed to the TWGs on February 18, 2022, for another 30-day review period. All comments received related to this Study Plan are included in Table 8-1 below and incorporated into this Final Study Plan where appropriate.

Table 8-1. Consultation Summary—Response to Comments

Comment Number	Entity	Date/Forum	Comment	SCE Response
1	CDFW	2/22/2021 Aquatic TWG	Goal of study should be to evaluate stream fish population size, distribution, density, and possibly growth.	Methods proposed in this study will evaluate fish population size, distribution, density, age-class distribution, and condition.
2	CDFW	5/24/2021 Aquatic TWG	CDFW is interested in assessing the effects of hydropeaking on fish stranding downstream of Poole Powerhouse.	Fish stranding can occur when river stage rapidly decreases; however, stranding is dependent on several factors including, but not limited to, channel morphology, substrate characteristics, wetted history, seasonality, and fish life stage. Potential effects of Project operations on aquatic habitat, hydrology, and channel morphology will be evaluated in Study <i>AQ-3 Aquatic Habitat Mapping and Sediment Characterization</i> ; Study <i>AQ-5 Operations Model</i> ; and Study <i>AQ-6 Lower Lee Vining Creek Channel Morphology</i> , which will inform whether fish stranding is an issue below Poole Powerhouse.
3	CDFW	1/14/2022 Comments on Initial Study Requests	Fisheries monitoring should be focused on documenting the need for stocking and evaluating angler use.	Studies AQ-1 and AQ-2 will evaluate densities, age-class distributions, and condition of current fish populations in Project reservoirs and affected stream reaches. Study REC-1 includes a creel survey to evaluate angler use and satisfaction. Additionally, the Licensee releases water that enhances angling opportunities throughout the Project area.
4	CDFW	3/25/2022 Revised Study Plan Comment Period	Brown and brook trout should be separated. There are some notable ecological differences.	The Licensee agrees it is valuable to assess species-specific population trends and will include this information

Comment Number	Entity	Date/Forum	Comment	SCE Response
				in the Draft License Application.

CDFW = California Department of Fish and Wildlife; SCE = Southern California Edison; TWG = Technical Working Group

9.0 REFERENCES

- FERC (Federal Energy Regulatory Commission). 1992. Final Environmental Assessment for Hydropower License. Lee Vining. FERC No. 1388-001. December 30.
- Mohr, M. S., and D. G. Hankin. 2005. Two-phase survey designs for estimation of fish abundance in small streams. Unpublished Manuscript. Preprint from D.G. Hankin, Department of Fisheries Biology, Humboldt State University, Arcata, California.
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- Ricker, W.E. 1975. Computation and interpretation of biological statistics of fish populations. Fisheries Research Board of Canada. Bulletin 191.
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- Salamunovich, T. 2017. Fall 2016 Fish Population Survey, Upper Lee Vining Creek, Mono County, California. Prepared by Normandeau and Associates, Arcata, California. February 13.
- Van Deventer, J.S. 1989. Microcomputer Software System for Generating Population Statistics from Electrofishing Data--User's Guide for MicroFish 3.0. USDA Forest Service, General Technical Report INT-254. 29 p.

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AQ-3 AQUATIC HABITAT MAPPING AND SEDIMENT CHARACTERIZATION TECHNICAL STUDY PLAN

**LEE VINING HYDROELECTRIC PROJECT
*FERC PROJECT No. 1388***



April 2022

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1.0 POTENTIAL RESOURCE ISSUE

Lee Vining Hydroelectric Project (Project) operations have the potential to affect quantity and quality of aquatic habitat for fish populations within Project-affected stream reaches.

2.0 PROJECT NEXUS AND HOW THE RESULTS WILL BE USED

Project operations have the potential to affect environmental conditions (e.g., substrate, cover, water depth, and velocity) within Project-affected stream reaches. Changes in environmental conditions can affect the abundance, distribution, and structure of the local fish communities and their habitats.

3.0 STUDY GOALS AND OBJECTIVES

Specific goals of this study are to determine habitat conditions for fisheries within Project streams, and characterize baseline condition of channel substrate (e.g., fines and coarse sediments). Primary study objectives include: (1) characterizing habitat types, (2) characterizing spawnable gravel patches (i.e., coarse sediment) within Project-affected stream reaches, and (3) determining potential habitat-related limiting factors for the trout population.

4.0 EXTENT OF STUDY AREA AND STUDY SITES

Habitat condition assessments are proposed in the following Project-affected stream reaches:

- Lee Vining Creek between Saddlebag Dam and the confluence of Slate Creek
- Lee Vining Creek between Slate Creek and Ellery Lake
- Glacier Creek between Tioga Lake and the confluence of Lee Vining Creek
- Lee Vining Creek between Poole Powerhouse and the pool upstream of the Los Angeles Department of Water and Power Diversion Dam

Specifically excluded from field study are areas where access may be unsafe.

5.0 EXISTING INFORMATION

An instream flow analysis for brook and brown trout was conducted to inform the 1992 license conditions. The analysis included segments of Lee Vining Creek between Saddlebag Dam and the confluence of Slate Creek, between Slate Creek and Ellery Lake, and downstream of Poole Powerhouse. The instream flow analysis indicated that habitat for adult and juvenile brown and brook trout in Lee Vining Creek between Saddlebag Dam and the confluence of Slate Creek is maximized at flows between 15 and 25 cubic feet per second (cfs), and declines significantly at flows below 10 cfs; between the confluence of Slate Creek and Ellery Lake, habitat for juvenile and adult brown and brook trout is

maximized between 20 and 40 cfs, and declines significantly below 10 cfs; and downstream of Poole Powerhouse, habitat for juvenile, adult, and spawning life stages of brown and brook trout is maximized at flows between 30 and 40 cfs, and declines most significantly for spawning adults at flows below 20 cfs (FERC, 1992).

Aquatic habitat studies were conducted in 1986 on Lee Vining Creek between Saddlebag Dam and Ellery Lake. The studies indicated that Lee Vining Creek between Saddlebag Dam and the confluence of Slate Creek is dominated by moderate-gradient riffles; the reach from the confluence of Slate Creek to the confluence of Glacier Creek is composed of two low-gradient meadow sections separated by a steeper gradient canyon; and the reach between the confluence of Glacier Creek and Ellery Lake is wide and relatively shallow, with a mixture of riffle and run habitat and low-gradient cascades that flow over cobble and gravel (FERC, 1992).

Aquatic habitat monitoring was conducted in 1999, 2001, 2006, 2011, and 2016 on Lee Vining Creek between Saddlebag Dam and the confluence of Slate Creek. These monitoring surveys documented adequate fish cover primarily in the form of overhanging vegetation (e.g., willow bushes and conifers), boulder pockets, turbulence, and occasional but infrequent accumulations of large, woody debris and submerged vegetation. Initial results from 1999 to 2006 indicated that between 13 and 59 percent of the reach was shaded (Sada, 2007; Sada and Rosamond, 2011, as cited in Salamunovich, 2017). Surveys conducted in 2016 identified an increase in canopy cover compared to previous survey years; however, differences are likely attributed to reduced sampling effort in 2016 (Salamunovich, 2017). No aquatic habitat surveys have been conducted in downstream reaches of Lee Vining Creek or in Glacier Creek.

Soils within the Project Vicinity are generally described as coarse-textured, well-drained, and low in organic matter; however, no information exists to describe current sediments within Project-affected stream reaches.

6.0 STUDY APPROACH

6.1. HABITAT MAPPING

Pedestrian surveys to delineate aquatic habitat will be conducted in Project-affected reaches during late summer/fall base flows. A three-tiered habitat mapping classification system developed by Hawkins et al. (1993) will be used to assist in the identification of individual habitat units in the field. Figure 6-1 shows the relationship among the three levels. Level I categorizes habitats as either “fast water” or “slow water.” Level II subdivides “fast water” into two categories: “turbulent” or “non-turbulent”; and “slow water” into two categories: “scour pool” or “dammed pool.” Habitat types classified in Level III are generally modified/adopted from McCain et al. (1990).

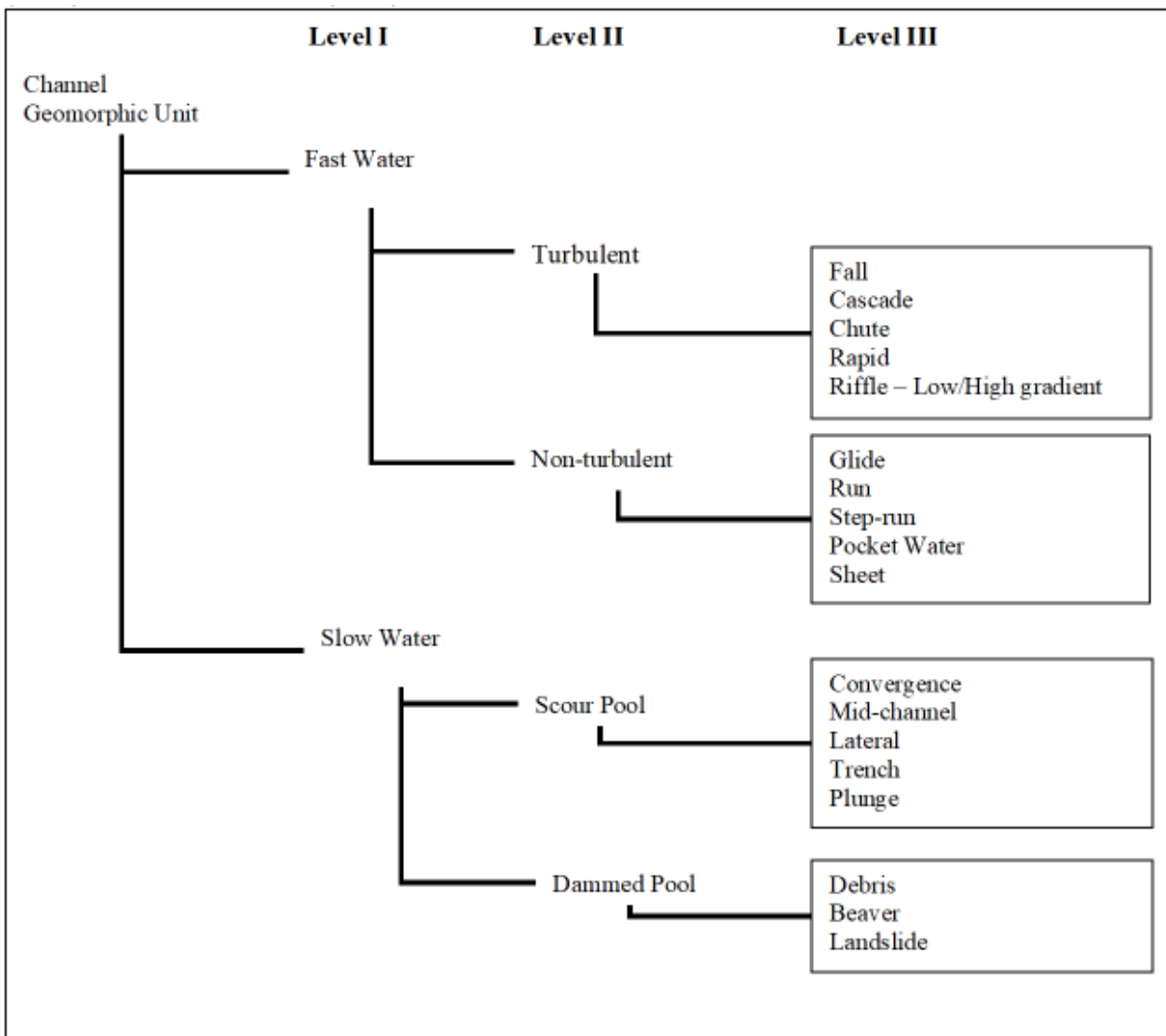


Figure 6-1. Three-tiered habitat mapping classification system adapted from Hawkins et al. (1993) and McCain et al. (1990).

Habitat mapping will be conducted on foot by teams of two individuals where survey teams are able to safely access and hike portions of the stream reaches. Observations of invasive aquatic plants and algae, including Didymo (*Didymosphenia geminata*), will be recorded during habitat mapping efforts. Habitat units will be designated using the habitat type definitions identified in Table 6-1. Units will be separated where unit length is at least equal to one to two times the active channel width (McCain et al., 1990; Flosi et al., 2010) and/or where habitat types are distinctive. The teams will record the length of each habitat unit using a range finder, which is referenced back to a known starting point or landmark. The mapping will be contiguous (i.e., each habitat unit will abut the next unit). Each distinct habitat unit will be numbered consecutively in an upstream direction, beginning at the downstream end of a designated reach. The upstream and downstream extent of each unit will be recorded using a Global Positioning System (GPS) device to

an accuracy of approximately 1 to 10 meters.¹ The habitat attributes defined in Table 6-2 will be quantified and recorded for each unit. In addition, crews will record the presence and location of potential barriers to upstream fish movement using the GPS.

Table 6-1. Habitat Types Adapted from McCain et al. (1990), Armantrout (1998), Payne (1992), McMahon et al. (1996), and Hawkins et al. (1993)

I. Fast Water	Riffles, rapid, shallow stream sections with steep water surface gradient.
A. Turbulent	Channel units having swift current, high channel roughness (large substrate), steep gradient, and non-laminar flow and characterized by surface turbulence.
1. Fall	Steep vertical drop in water surface elevation.
2. Cascade	Series of alternating small falls and shallow pools; substrate usually bedrock and boulders. Gradient high (more than 4%).
3. Chute	Narrow, confined channel with rapid, relatively unobstructed flow and bedrock substrate.
4. Rapid	Deeper stream section with considerable surface agitation and swift current; large boulder and standing waves often present.
5. Riffles	Shallow, lower-gradient channel units with moderate current velocity and some partially exposed substrate (usually cobble). <ul style="list-style-type: none"> • Low gradient – Shallow with swift flowing, turbulent water. Partially exposed substrate dominated by cobble. Gradient moderate (less than 4%) • High gradient – Moderately deep with swift flowing, turbulent water. Partially exposed substrate dominated by boulder. Gradient steep (greater than 4%).
B. Non-turbulent	Channel units having low channel roughness, moderate gradient, laminar flow, and lack of surface turbulence.
1. Sheet	Shallow water flowing over smooth bedrock.
2. Run/Glide	Shallow (glide) to deep (run) water flowing over a variety of different substrates.
3. Step run	A sequence of runs separated by short riffle steps. Substrates are usually cobble and boulder dominated.
4. Pocket water	Swift flowing water with large boulder or bedrock obstructions creating eddies, small backwater, or scour holes. Gradient low to moderate.
II. Slow Water	Pools; slow, deep stream sections with nearly flat-water surface gradient.
A. Scour Pool	Formed by scouring action of current.
1. Trench	Formed by scouring of bedrock.
2. Mid-channel	Formed by channel constriction or downstream hydraulic control.
3. Convergence	Formed where two stream channels meet.
4. Lateral	Formed where flow is deflected by a partial channel obstruction (streambank, rootwad, log, or boulder).

¹ GPS measurements are used for relocation of the habitat unit, and for coarse mapping, but not for measurement of unit length. Thus, the limited accuracy of the units in this narrow canyon is not considered problematic.

5. Plunge	Formed by water dropping vertically over channel obstruction.
B. Dammed Pool	Water impounded by channel blockage.
1. Debris	Formed by rootwads and logs.
2. Beaver	Formed by beaver dam.
3. Landslide	Formed by large boulders.
4. Backwater	Formed by obstructions along banks (Recorded as a comment or note to mapping).
5. Abandoned Channel	Formed along main channel, usually associated with gravel bars (Not part of the main active channel – Recorded as a comment or note to mapping).

Table 6-2. Habitat Unit Attributes

Attribute	Description
Substrate	Dominant streambed and stream bank substrate types include: bedrock, boulder (> 10 inches), cobble (2.5 to 10 inches), gravel (0.12 to 2.5 inches), and silt.
Stream width	Average wetted width of a unit: On-the-ground mapping estimated by eye, periodically checking the estimates with a stadia rod or tape.
Stream depth	The maximum estimated depth of each pool categorized into three groups: 1 to 4 feet deep, 4 to 10 feet deep, and > 10 feet deep. Ground mapping methods also include an average pool depth estimate as well as a measured maximum depth.
Pool depth	Ratio of width of active (wetted) channel to total stream channel (floodplain) width: <ul style="list-style-type: none"> • Confined – shallow = channel width confined and stream shallow (< 4 feet) • Confined – deep = channel width confined and stream deep (> 4 feet) • Moderate confined = total channel width < 2 wetted channel widths • Unconfined = total channel width greater than or equal to 2 wetted channel widths
Channel confinement	Percent in which gravel or larger substrates are vertically embedded in sand or smaller substrates at the downstream end of pool habitat.
Pool tail embeddedness	Estimates the total amount of spawnable gravel for trout submersed in an area of adequate depth and velocity within one unit.
Spawning gravel	Estimates the largest patch of spawnable gravel for trout within one unit.
Spawning gravel patch size	Estimates the patch area of spawnable gravel for trout within one unit.
Cover type	Significant cover types in a unit if cover > 25 percent of the surface area. Cover type categories include: <ul style="list-style-type: none"> • Boulder cover • Vegetation cover • Wood cover

Attribute	Description
Fish migration barrier	Description and location of any potential barrier to upstream or downstream fish migration at approximately bankfull flows, including waterfalls, high velocity chutes or cascades.
Temperature	Grab samples of water temperature.
Tributary inflow	Estimate of the tributary inflow. Tributary locations will be noted during aerial video and photo mapping.
Landmarks	Description and location of any feature that might provide a location reference point.

6.2. SPAWNING GRAVEL MAPPING

Concurrent with habitat mapping, the location, size, quality, and particle distribution of spawnable gravel patches (i.e., coarse sediment) will be recorded. Spawnable gravel for trout species includes a sediment size composition between 0.2 and 3.9 inches (6 to 100 millimeters) located in an area with adequate water depth and velocity (i.e., greater than 9.4 inches [24 centimeters] and 15.7 to 35.8 inches per second [40 to 91 centimeters per second], respectively) during flows with a recurrence interval of up to 1.5 years (Bjornn and Reiser, 1991).

The location of each spawnable gravel patch will be identified with a GPS point and given a quality score based on embeddedness and particle characteristics (e.g., size, shape, angularity) roundness to evaluate overall quality of available spawnable gravel within the reach.

Length and width at each patch will be measured with a survey-grade laser rangefinder, and sediment depth will be measured with a Silvy rod or estimated relative to the depth to bedrock controls or the thalweg elevation. Bankfull width, wetted channel width, water surface slope, and length were measured in each sample reach.

Each patch will be described in geomorphic terms and assigned an activity class (e.g., active, semiactive, nonactive) based on relative position and indicators of sediment residence time. The D50 (median particle size), the D84 (particle size at which 84 percent of the grain size distribution is finer), and the D16 (particle size at which 16 percent of the grain size distribution is finer) will be visually estimated for each patch.

Spawnable gravel patches will be identified as being potentially spawnable under observed (i.e., low-flow) conditions or potentially spawnable under higher flow conditions. The potential for gravel-patch inundation under spill-flow conditions will be assessed using channel bed indicators such as the position/elevation of bankfull stage, which will be estimated using channel bed indicators such as the presence of a floodplain, the elevation of the highest active depositional feature, slope breaks or changes in particle size distributions, evidence of inundation features such as small benches, the staining of rocks, exposed root hairs below and intact soil layer, which would indicate exposure to

erosive flow, and the presence of lichens and certain other mature riparian tree and shrub species.

7.0 ANALYSIS

All habitat data will be entered into a Microsoft Excel spreadsheet and will be reviewed for quality control. The relative abundance of stream habitat types will be calculated, and pertinent stream habitat attribute values noted by stream reach. Habitat type composition will be calculated using the individual unit lengths as well as the number of representative habitat units. The substrate composition for the streambed will be presented along with the average stream width, average pool depths, and stream confinement.

Spawning gravel area and distribution will be evaluated. Calculations will include volume of spawning gravel by quality and total potentially suitable spawning gravel per mile or subreach of stream. Information gathered regarding channel morphology and coarse sediment supply and storage will be assessed in consideration of influences of the Project on hydrology and sediment supply downstream of Project dams.

8.0 SCHEDULE

Date	Activity
2023 – Summer/Fall	Conduct field surveys
2023/2024 – Winter	Compile study results and prepare draft report
2024 – September	Distribute final report in Draft License Application

9.0 CONSULTATION SUMMARY

In preparation to file the Pre-Application Document (PAD), filed in August 2021, and Notice of Intent (NOI), Southern California Edison (SCE) hosted Aquatic Resources Technical Working Group (TWG) Meetings on January 25, February 22, March 29, and May 24, 2021, which resulted in study requests from Stakeholders to address questions regarding aquatic habitat and sediment characteristics. Notes and materials from these meetings are available at www.sce.com/leevining. Stakeholder comments on the outline and relevant study requests received are summarized in the response to comments table below (Table 9-1). SCE filed draft Study Plans with the PAD and NOI on August 12, 2021, to address issues discussed with the TWG. The Stakeholder comment period ended on January 18, 2022, for the Study Plans, PAD, and NOI. SCE reviewed all comments received; drafted Revised Technical Study Plans which were distributed to the TWGs on February 18, 2022, for another 30-day review period. All comments received related to this Study Plan are included in Table 9-1 below and incorporated into this Final Study Plan where appropriate.

Table 9-1. Consultation Summary—Response to Comments

Comment Number	Entity	Date/Forum	Comment	SCE Response
1	CDFW	2/22/2021 Aquatic TWG	Habitat mapping methods need not be heavily quantitative in upper reaches of Lee Vining Creek. Qualitative habitat mapping is more appropriate to evaluate trout habitat. CDFW is most interested in viability and spawning time, so that operations can avoid interrupting spawning with large releases.	A qualitative habitat mapping approach is proposed in this study.
2	CDFW	2/22/2021 Aquatic TWG	CDFW is interested in what sediment is present, the D ₅₀ values for various stream reaches, and whether project operations are resulting in the loss of fines over time.	Methods proposed in this Study Plan will characterize baseline conditions of channel substrate (e.g., fines and coarse sediments) within each habitat unit (e.g., dominate substrate size) as well as spawning gravel distribution and particle size (i.e., D50, D84, and D16) throughout Project-affected stream reaches.
3	MLC	2/22/2021 Aquatic TWG	Mono Lake Committee is interested in determining to what extent fine sediment is trapped in Project reservoirs.	SCE has no indication that fine sediment accumulates in Project reservoirs in substantive quantities. As needed the Operations staff can remove fine sediment from the immediate area around intakes using hand-shovels; however, this need is infrequent. When reservoirs were lowered for geo-membrane installation, only minimal sediment accumulated against the dam was noted.
4	USFS	5/24/2021 Aquatic TWG	USFS expressed interest in using SWAMP protocols for surveying riparian vegetation.	SWAMP methods are designed for transect-based surveys at discrete sites, not longitudinal surveys (e.g., habitat mapping) of the stream. Therefore, this study includes estimates of dominant cover at each habitat unit.
5	CDFW	3/25/2022 Revised	CDFW Comment: To protect wildlife	The request for a new flow study was

Comment Number	Entity	Date/Forum	Comment	SCE Response
		Study Plan Comment Period	<p>resources and inform future licensing conditions, it is necessary to understand the habitat-flow relationship in the FERC Project area; however, AQ-3 does not propose to conduct surveys to document the current flow-habitat relationship within the Project area. AQ-3 is currently designed with the view that the limiting factor for trout is available spawning habitat, but CDFW does not agree with this viewpoint and believes an instream flow study is necessary to inform decision making. Additionally, the determination of available spawning habitat should be supported by a proportional stock distribution analysis.</p> <p>An instream flow analysis for brook and brown trout was conducted in 1992, but these data need to be updated and should not be the sole habitat-flow data utilized to inform license conditions 30 years later. Due to the underlying glacial geology and the steep gradient of the Lee Vining Creek system with the Project area, an Instream Flow Incremental Methodology (IFIM) may not be the best method to use. CDFW recommends using a Habitat Criteria Mapping Method or MesoHABSIM. The Demonstration Flow Analysis method uses direct observation of river habitat conditions at several flows and expert judgement to rank the alternative flows (Railsback et al. 2007[1]). This method has the benefit of being cheaper than a full IFIM or Physical Habitat Simulation System (PHABSIM) type study and it allows Technical Working Group (TWG) members to see the river at multiple flows. The downside is that we can't see the river at every flow. The</p>	<p>submitted 2 months after the FERC comment period, which ended in January, which followed nearly 6 months of TWG meetings in the first half of 2021. In Aquatics TWG meetings held in January, February, March, and May 2021, SCE developed and presented the study plan that has become Study AQ-3 <i>Aquatic Habitat Mapping and Sediment Characterization</i>. This study was developed in consultation with Stakeholders, including the CDFW, who requested a qualitative habitat mapping study; Study AQ-3 addresses this request. Additionally, SCE believes that the current available data and existing studies provide sufficient information to identify potential impacts. SCE is intending to implement Study AQ-6 <i>Lower Lee Vining Creek Channel Morphology</i> and Study AQ-2 <i>Stream Fish Populations</i> in 2022. Should those studies produce unexpected data or identify potential issues not previously identified, SCE will consider in consultation with Stakeholders an alternate flow study or an adaptation of Study AQ-3.</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
			MesoHABSIM is adapted for high-gradient streams and the procedure defines the habitat description, the biological model definition and the development of habitat rating curves and time series analysis (Veza et al. 2014[2]).	
6	CDFW	3/25/2022 Revised Study Plan Comment Period	Spawning limitation can be determined by stock distribution as well. It is unlikely that gravels are limiting.	Characterization of spawning gravel in Project-affected stream reaches was added to this study in response to CDFW's request during the February 2021 TWG meeting. In addition to the habitat assessment, length-frequency distributions for the trout populations in Project-affected stream reaches will be provided by Study AQ-2.
7	CDFW	3/25/2022 Revised Study Plan Comment Period	IFIM is not an appropriate method for high gradient systems. We recommend that the habitat rating curves be revalidated using Habitat Criteria Mapping or mesoHabSIM.	Please see response to comment 5.
8	CDFW	3/25/2022 Revised Study Plan Comment Period	Are these riffles incising? What is the substrate in these riffles?	Study AQ-3 <i>Aquatic Habitat Mapping and Sediment Characterization</i> will collect data to inform channel characteristics (e.g., channel width and depth) and the location size, quality, and approximate particle distribution of spawnable gravel patches in all Project-affected stream reaches, included the reach between Saddlebag Dam and the confluence of Slate Creek.
9	CDFW	3/25/2022 Revised Study Plan Comment Period	This is a good 'stage 0' survey, and should be considered the bare minimum	Thank you for your comment.
10	CDFW	3/25/2022 Revised Study Plan Comment Period	CDFW does not believe that spawning is limiting based on length-frequency distribution.	Thank you for your comment.

CDFW = California Department of Fish and Wildlife; MLC = Mono Lake Committee; SCE = Southern California Edison; SWAMP = Surface Water Ambient Monitoring Program; TWG = Technical Working Group; USFS = U.S. Forest Service

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AQ-4 AQUATIC INVASIVE PLANTS TECHNICAL STUDY PLAN

**LEE VINING HYDROELECTRIC PROJECT
*FERC PROJECT No. 1388***



April 2022

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1.0 POTENTIAL RESOURCE ISSUE

Colonization of stream reaches by invasive aquatic plants and algae, including Didymo (*Didymosphenia geminata*), has the potential to modify aquatic habitat conditions, thereby altering stream communities.

2.0 PROJECT NEXUS AND HOW THE RESULTS WILL BE USED

Lee Vining Hydroelectric Project (Project) operations could affect the extent of invasive aquatic plants and algae including Didymo in reaches downstream of Project reservoirs.

3.0 STUDY GOALS AND OBJECTIVES

Assess the extent and distribution of invasive aquatic plants and algae, with a particular focus on Didymo, in stream reaches downstream of Project reservoirs.

4.0 EXTENT OF STUDY AREA AND STUDY SITES

Surveys for invasive aquatic plants and algae will occur in the following stream reaches:

- Lee Vining Creek:
 - Between Saddlebag Dam and the confluence of Slate Creek (0.6 mile)
 - Between the confluence of Slate Creek and the confluence of Glacier Creek (2.2 miles)
 - Between the confluence of Glacier Creek and Ellery Lake (0.6 mile)
 - Between Poole Powerhouse and the Los Angeles Department of Water and Power diversion pool (5.7 miles)
- Glacier Creek between Tioga Dam and the confluence of Lee Vining Creek (0.7 mile)

5.0 EXISTING INFORMATION

Didymo has been known to occur in Lee Vining Creek since at least 2005, between Saddlebag Dam and the confluence of Slate Creek, and to a lesser extent between Slate Creek and Glacier Creek (Rost and Fritsen, 2014). No additional published material was available to determine the spatial distribution of Didymo or other invasive aquatic plant species in Project reaches.

6.0 STUDY APPROACH

6.1. SURVEY METHODS

Each reach listed above in Section 4.0 will be surveyed to provide a semi-quantitative estimate of spatial extent and percent cover of Didymo and other invasive aquatic plant species (e.g., Uruguay water primrose [*Ludwigia hexapetala*], South American spongeplant [*Limnobium laevigatum*], alligatorweed [*Alternanthera philoxeroides*],

Brazilian waterweed [*Egeria densa*], curlyleaf pondweed [*Potamogeton crispus*], Eurasian watermilfoil [*Myriophyllum spicatum*], coontail [*Ceratophyllum demersum*], and fanwort [*Cabomba caroliniana*]. Surveyors will work in pairs to estimate percent cover of invasive algae and aquatic plants while wading or walking through each site. Using modifications of standard methods for assessing aquatic plant cover (Madsen and Wersal, 2017), sub-sampling of representative transects will be used to visually assess cover, plant types, and dominant species at each site. A sampling design of 15 subsamples per stream reach was selected based upon statistical power analyses by Montana DEQ (2011) in assessing the ecological condition of wadeable streams. Percent coverage will be assessed visually at each site and recorded on standard survey forms, with quadrats used to develop quantitative areal cover estimates. A hoop approximately 30 centimeters in diameter will be randomly placed at 15 locations within each study reaches (see Section 4.0 above), for a total of 75 hoop locations. Percent areal coverage of the stream substrate by plant type will be estimated within each hoop. Submerged aquatic plants will be identified to species, subspecies, or variety, as appropriate, given phenology at the time of sampling. Voucher specimens will be collected to confirm identification of any species not identifiable in the field.

6.2. ANALYSIS

The longitudinal spatial extent of Didymo and other invasive aquatic species in Project reaches will be determined from the presence or absence of each species at each site with summary (reach-based) statistics to assess differences in cover and community composition. A map will be generated to present the estimated longitudinal spatial extent of invasive aquatic species in Project-affected reaches. Percent cover by plant type will be reported for each individual reach, and any longitudinal trends in percent cover throughout the Project streams will be noted. Survey results will be compared to historical data, and data from other studies will be incorporated as appropriate, including but not limited to *WQ-1 Stream and Reservoir Water Quality*, *AQ-2 Stream Fish Populations*, and *AQ-3 Aquatic Habitat Mapping and Sediment Characterization*.

7.0 SCHEDULE

Date	Activity
2023 – Spring	Refine study sites
2023 – Summer/Fall	Conduct field surveys
2024 – September	Distribute final report in Final License Application

8.0 CONSULTATION SUMMARY

In preparation to file the Pre-Application Document (PAD), filed in August 2021, and Notice of Intent (NOI), Southern California Edison (SCE) hosted Aquatic Resources Technical Working Group (TWG) Meetings on January 25, February 22, March 29, and May 24, 2021, which resulted in study requests from Stakeholders to address questions

regarding aquatic invasive plants and algae. Notes and materials from these meetings are available at www.sce.com/leevining. Stakeholder comments on the outline and relevant study requests received are summarized in the response to comments table below (Table 8-1). SCE filed draft Study Plans with the PAD and NOI on August 12, 2021, to address issues discussed with the TWG. The Stakeholder comment period ended on January 18, 2022, for the Study Plans, PAD, and NOI. SCE reviewed all comments received; drafted Revised Technical Study Plans which were distributed to the TWGs on February 18, 2022, for another 30-day review period. All comments received related to this Study Plan are included in Table 8-1 below and incorporated into this Final Study Plan where appropriate.

Table 8-1. Consultation Summary—Response to Comments

Comment Number	Entity	Date/Forum	Comment	SCE Response
1	CDFW	3/25/2022 Revised Study Plan Comment Period	All anecdotal observations of Didymo should be recorded as well. This method is appropriate for a course survey, but in this case a more targeted method is appropriate.	The documentation of incidental observations of Didymo have been added to studies AQ-2 and AQ-3.

9.0 REFERENCES

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AQ-5 OPERATIONS MODEL TECHNICAL STUDY PLAN

**LEE VINING HYDROELECTRIC PROJECT
*FERC PROJECT No. 1388***



April 2022

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1.0 POTENTIAL RESOURCE ISSUE

Lee Vining Hydroelectric Project (Project) operations are currently constrained by the existing Federal Energy Regulatory Commission (FERC) license that specifies minimum flow requirements, which are based on the type of water year and the inflow into each reservoir. Additionally, reservoir lake levels are managed to balance recreation needs (and requirements of existing Federal Power Act, section 4e conditions) and winter drawdown needs to prepare for spring runoff. These constraints have significant impacts on operations and an understanding of how these constraints interact with future desired operations is needed.

Since 2016, current operations have optimized generation during periods of high demand or in response to grid-related events. Stakeholders have been seeking information on how frequently these events lead to increased flows below the Project and whether there are resource impacts from these releases.

2.0 PROJECT NEXUS AND HOW THE RESULTS WILL BE USED

Proposed studies will evaluate the potential impacts of the Project's continued operations on the existing aquatic and riparian environment. A tool is needed to inform these study efforts and to evaluate the feasibility of any proposed operational changes that may be considered a result of those efforts.

3.0 STUDY GOALS AND OBJECTIVES

- Develop a robust Operations Model (Model) to assist Southern California Edison (SCE) and Stakeholders in understanding how Project operations interact with Lee Vining hydrology. This model would be used to make informed decisions regarding the implementation of and results from other relicensing studies. To meet this goal, this Study Plan has the following objectives:
 - Accurately model the systems inflows, outflows, and generation nodes.
 - Align model with needs of other relicensing studies and information needs.
 - Develop procedures to configure model for alternative operational scenarios and document results.
- Determine effective operating limits the Poole Powerhouse to accurately represent installed and dependable capacity for licensing documents.
- Determine the frequency, magnitude, duration, and seasonality of intraday releases from the Poole Powerhouse in response to resource optimization needs.
- Describe the stage/discharge relationship at discreet locations between the Poole Powerhouse and the Los Angeles Department of Water and Power (LADWP) diversion.

4.0 EXTENT OF STUDY AREA AND STUDY SITES

The study would include all Project influenced waters including diverted reaches, bypass reaches, and reservoirs beginning in the Project Area and continuing downstream to the LADWP Diversion Dam.

5.0 STUDY APPROACH

5.1. OPERATIONS MODEL

The Model will combine physical attributes of each component within the system with basin hydrology to calculate potential effects of alternative operational scenarios. Outcomes of the Model will be used in the development of potential environmental measures. Legal constraints will be the prioritized logic for resource allocation within the Model and will include legal and contractual requirements described by the 1933 Sales Agreement between Southern Sierras Power Company and the LADWP. For purposes of the Model, these constraints will be considered constants that must be accommodated in all scenarios.

The platform for the Model will be Microsoft Excel, which will provide a transparent format for Stakeholders. As appropriate, other modeling tools will be incorporated if reservoir data warrant an alternative approach. Components of the Lee Vining hydro system that will be represented within the Model include reservoirs, diversions, tributaries and outlets, penstocks, and hydro stations.

Regulatory scenarios include bypass flow requirements below dams and diversions. A current set of rules describing how these constraints are incorporated for high, low, and mean water years will form the basic architecture for flow routing decisions produced by the Model. A base scenario will be developed to simulate existing operations and historical conditions for calibrating the Model, which will be used for comparing potential impacts associated with potential alternative scenarios.

The general sequence of steps to create and manage the Model are:

1. Create a schematic showing nodes of interaction and the primary interactions between each node.
2. Quantify and incorporate physical, regulatory, and legal constraints for each node.
3. Populate Model with historical flow datasets.
4. Calculate daily mean flows within and between each node based on existing operational procedures.
5. Calibrate against historical flow and generation records.

6. Develop documentation for the Model’s use, specifically variable inputs for alternative scenarios, which will also describe the Model’s configuration. Variable inputs include the following:
 - a. Bins will be a variable input for which year type breakdowns can be adjusted after review of the hydrology and consideration of various bypass release requirements. This will provide flexibility for making various flow recommendations the water year types, including at least four year types (including a critically low year type).
 - b. Different bypass flows durations for different months; each node will have multiple temporal steps to examine variation in bypass flow requirements for each release node.

Because the hydrologic input dataset statistically impacts the outcome of model scenarios, the period of record will be reviewed with Stakeholders based on available period of record, appropriate temporal resolution, and adequate representation of current resource utilization. Historical data will be evaluated using 1-hour time-steps to align with available SCADA information.

5.2. LOWER LEE VINING CREEK HYDROLOGY

Currently, the gage at the Poole Powerhouse is limited to gathering daily flows, consistent with Ordering Paragraph D of the Project license that requires SCE to release (and measure) flows in compliance with Condition 4 of the U.S. Forest Service requirements. Data is not readily available for developing an intraday record of releases. In order to assess the frequency, magnitude, and duration of the releases, a mechanism will be sought to collect data.

Existing data from LADWP’s diversion downstream will also be analyzed and cross-referenced to any data from SCE that can be developed in order to understand the degree of attenuation and travel time between the release at the Poole Powerhouse and the diversion.

6.0 SCHEDULE

The anticipated Study Plan development and implementation schedule is identified below.

Date	Activity
2022 – Spring	Meet with resource agencies and interested Stakeholders regarding period of record for Model
2022 – Spring/Fall	Initial Model
2022/2023 – Winter	Compile study results and prepare draft report
2023 – January	Interim Study Report and Meeting
2023 – June	Distribute draft report to Stakeholders

Date	Activity
2023 – June/July	Stakeholder review and provide comments on draft report
2023 – Fall	Resolve comments and prepare final report
2024 – September	Distribute final report in Draft License Application

7.0 CONSULTATION SUMMARY

In preparation to file the Pre-Application Document (PAD), filed in August 2021, and Notice of Intent (NOI), SCE hosted Aquatic Resources Technical Working Group (TWG) Meetings on January 25, February 22, March 29, and May 24, 2021, which resulted in study requests from Stakeholders to address questions regarding hydrology and operations. Notes and materials from these meetings are available at www.sce.com/leevining. Stakeholder comments on the outline and relevant study requests received are summarized in the response to comments table below (Table 7-1). SCE filed draft Study Plans with the PAD and NOI on August 12, 2021, to address issues discussed with the TWG. The Stakeholder comment period ended on January 18, 2022, for the Study Plans, PAD, and NOI. SCE reviewed all comments received; drafted Revised Technical Study Plans which were distributed to the TWGs on February 18, 2022 for another 30-day review period. All comments received related to this Study Plan are included in Table 7-1 below and incorporated into this Final Study Plan where appropriate.

8.0 REFERENCES

[Appropriate technical references will be identified.]

Table 7-1. Consultation Summary—Response to Comments

Comment Number	Entity	Date/Forum	Comment	SCE Response
1	MLC	Email dated 2/22/2021	LADWP diverts water below the Project; A 2013 Settlement Agreement between the LADWP and the SWCRB implementing a court ordered restoration effort clarifies the use of the natural hydrograph downstream of the LADWP diversion to restore functional and self-sustaining stream systems with healthy riparian ecosystem components. This study is intended to determine if Project operations and facilities are able to deliver peak flows that may aid in restoration of habitat.	<p>SCE agrees that an Operations Model is necessary to address a number of questions related to Lee Vining hydrology and to assess potential measures for the new license.</p> <p>SCE is not party to the agreement referenced by the Mono Lake Committee and has not adopted this as a study objective, because there is no Project nexus between SCE operations and settlement parties' ability to meet settlement agreement commitments downstream of the Project.</p> <p>The Operations Model that is being developed to look at Project hydrology and operations constraints should provide Stakeholders with information about the potential for the Project to provide peak flows.</p>
2	California Sports Fishing Association	TWG Meeting (3/29/2021)	<p>Wondered what type of platform was being considered for the Operations Model and if it will be publicly available.</p> <p>In the western Sierra, there have been good experiences with licensees sharing excel models, which allow relicensing participants to thoughtfully look at operational options and weed out approaches that are not feasible; this saves time for consultants/operators so they do not have to run all the options. CSPA is in favor of frequent communication and review of modeled scenarios.</p>	<p>SCE intends to develop the model as an Excel-based model assuming that rating curves for lake releases are in sufficient details.</p> <p>SCE intends for the model to be fully transparent; however, as a matter of policy is not intending to distribute the completed model for widespread use. SCE's experience is that having the model developer run the model and report results is a best practice that avoids confusion about how to utilize the model and interpret. One approach is to convene this TWG to QA/QC the model and get consensus on the reliability of the outputs,</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
				and then work together to determine which scenarios to run.
3	California Sports Fishing Association	TWG Meeting (3/29/2021)	Have you considered the timestep of the model? CSPA recommends a daily model since that timestep will be important for many of the questions participants are interested in.	A better understanding of management goals will help us understand what timestep is needed. SCE also needs to review existing data to determine the feasibility of providing daily timesteps.
4	California Sports Fishing Association	TWG Meeting (3/29/2021)	Will you put together a hydrology dataset and share it with participants. There should be a description of general operations in the PAD, along with the hydrology dataset. It is important to establish that baseline understanding now.	Yes, that will be a prerequisite for the model. However, the hydrology dataset for the PAD may not be readily available. SCE will work with TWG members to iteratively review data and assess how it fits with model development.
5	USFS	TWG Meeting (3/29/2021)	USFS supports sharing the operations model; it is important for us to be able to run scenarios; the TWG can always review results together to ensure a shared understanding.	Comment noted.
6	California Sports Fishing Association	TWG Meeting (5/24/2021)	Regarding lower Lee Vining Creek hydrology, will daily averages be included in a study plan? Will it include a post-processing or analytical tool that will allow you to look at different operations within a given day? Will it provide a technical means to look at this (as opposed to a narrative description of general practices)? It could also be both. CSPA can share an example of analysis from the Water Board that looked at intraday operations to provide a general window into how operations followed load and market without getting into excessive detail.	The first step is to understand, describe, and talk about the ramifications of the operations. The Team is open to how this study ties to the Operations Model in that the Operations Model is currently focused on what controls releases on a daily basis; more discussion would be needed to understand how to expand it to cover intraday releases. SCE does not plan on factoring power prices and cues into a model as that is outside the scope of relicensing, in that those are largely economic decisions rather than strictly operational ones. SCE will review any examples that CSPA can provide for consideration.

Comment Number	Entity	Date/Forum	Comment	SCE Response
7	USFS	Study Plan Request/PAD Comments (1/18/2022)	<p>Will this study to look at the potential impacts that climate change will have on operations? There is a clear nexus between the potential loss of glaciers and a shift in precipitation from snow dominated to rain dominated and a shorter and earlier runoff season. In addition, impacts from persistent and ongoing drought can be anticipated. See "Inyo National Forest Climate Change Trend Summary 2021"</p> <p>How will operations be modified with the projected loss of water storage in glaciers and a transition from snow to rain dominated precipitation?</p>	<p>While SCE acknowledges that climate and climate change could continue to have an ongoing impact in the Sierra Nevada and may affect year-to-year variability in operations, SCE does not control the input, only the output. Thus it is unclear on what the Project nexus would be for the proposed addition. SCE is not aware of any available climate change model or assessment that would support, with any degree of accuracy and reliability, prediction of water availability at the individual project level; nor do we feel glacial forecasting would provide reliable and actionable information. Therefore, we are not proposing to consider climate research and modeling as part of the environmental report we will prepare for FERC.</p> <p>However, historical data for Project operations and flows can be used to evaluate trends in, and changes to, the hydrology of the Lee Vining drainage over time. This information will be used to establish the baseline for FERC's environmental analysis of aquatic resources, as well as evaluating potential Project effects on those resources. In compiling data for the Operations Model, these trends and changes to hydrology will be described.</p> <p>Reservoir storage, in general, provides a means of attenuating the localized effects of climate change on reaches that would otherwise be subject to extreme variation in flows. SCE anticipates that its operations will continue to emphasize its ability to store water from high precipitation events or</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
				seasons for release throughout the year as required by its sales agreement and minimum instream flow requirements that may be part of the new license.
8	SWRCB	Study Plan Request/PAD Comments (1/14/2022)	State Water Board staff request that SCE provide data collected during past Hydro-Resource Optimization efforts as it relates to flow (including ramping rates) and water quality. State Water Board staff also requests SCE clarify why data is not easily available to quantify the frequency and magnitude of these past events and what changes to flow monitoring would be necessary to accurately characterize future events. Additionally, State Water Board staff request that the proposed WQ-1 Stream and Reservoir Water Quality Technical Study Plan include monitoring of water quality parameters and flow (specifying ramping rates) during Hydro-Resource Optimization events in order to better inform potential impacts to beneficial uses of water.	<p>The past hydro-relicensing study was an internal effort to understand key parameters that would be necessary to implement this mode of operations. SCE will provide the data collected as part of this effort, following an internal review for confidential/ proprietary data. Certain information, including pricing and valuation may need to be redacted or summarized. Water quality data was not collected, but there was some stage-discharge information at a downstream location that was collected.</p> <p>Challenges with providing a complete picture of this mode of operation include a lack of integration of operational and hydrologic data that would enable us to screen noise from true signals; early efforts to apply an algorithm to statistically define an "event" were inconclusive. We are exploring overlaying information from SCE's marketing group that may allow us to better define and separate an event from noise and we hope that this will allow us to describe both past and future events.</p>
9	State Water Resources Control Board	2/28/2022 Revised Study Plan Comment Period	For AQ-5 Operations Model, I understand that there are some challenges and you will be modeling past hydro-optimization data if possible. What will be the time-step of the model?	SCE anticipates looking at historical data using 1-hour time-steps to align with available SCADA information.
10	State Water	3/17/2022 Revised	AQ-5 Operations Model Technical Study Plan:	See response to comment #9 above.

Comment Number	Entity	Date/Forum	Comment	SCE Response
	Resources Control Board	Study Plan Comment Period	Hydro-Resource Optimization Monitoring: SCE is proposing to determine the frequency, magnitude, duration, and seasonality of intraday releases from the Poole Powerhouse in response to resource optimization needs. As optimization operations may be short lived, please provide detail on what model time-step is necessary to provide useful levels of detail to project operations.	
11	CDFW	3/25/2022 Revised Study Plan Comment Period	The operations model should be capable of releasing different bypass flows in different months and different water year types. The February 2022 Revised Study Plan states that: A current set of rules describing how these constraints are incorporated for high, low, and mean water years will form the basic architecture for flow routing decisions produced by the Model. In order to have flexibility for making various flow recommendations that will both benefit the aquatic ecosystems as well as be practical for the Project, we recommend that the water year types bins be a variable input for which year type breakdowns can be adjusted after review of the hydrology and consideration of various bypass release requirements. For example – it may be necessary later to include a critically dry year type instead of just “high, low, and mean.” The model should be built with flexibility to adjust those year type bins as well as including at least four-year types.	SCE appreciates this comment and the potential need for this level of analysis. We will incorporate these requests into our approach.
12	CDFW	3/25/2022 Revised Study Plan Comment Period	The model should additionally be constructed to allow for release of different bypass flows in different months. To prepare the model with as much flexibility as possible, we recommend building the model with at least monthly variation in bypass flow requirements for each release	SCE appreciates this comment and the potential need for this level of analysis. We will incorporate these requests into our approach.

Comment Number	Entity	Date/Forum	Comment	SCE Response
			node.	
13	CDFW	3/25/2022 Revised Study Plan Comment Period	Along with the operations modeling, unimpaired hydrology should be developed at multiple points in the system. Unimpaired hydrology is used when considering the results of other resource studies and aquatic populations in the watershed. Unimpaired hydrology will be used to compare to historic operations as well as proposed operational scenarios when developing resource management measures.	SCE and FERC use the current baseline conditions (existing Project) to identify and analyze any potential effects. SCE does not agree that unimpaired hydrology, or pre-project conditions present a useful basis of comparison and will therefore not develop unimpaired hydrology.
14	CDFW	3/25/2022 Revised Study Plan Comment Period	The operations model should include a module or post processing tool that allows all relicensing participants and FERC to understand clearly the financial impact (both gross generation and revenue) of new bypass requirements, ramping rate changes, pulse flow requirements on project finances. In future discussions of protection, mitigation and enhancement (PM&E) measures, all relicensing participants should have the ability to understand how any proposed PM&E measures are balanced with project generation impacts. Without this tool, SCE can say “yes” or “no” to PM&E measures, but FERC and RPs have no ability to understand why those decisions were made and where there is negotiating space and potential tradeoffs to be made around each of those potential measures.	SCE considers generation and revenue to be internal considerations that should not drive discussions surrounding potential effects. This information will not be developed for any publicly available version of the Operations Model.

CSPA = California Sportsfishing Protection Alliance; FERC = Federal Energy Regulatory Commission; LADWP = Los Angeles Department of Water and Power; MLC = Mono Lake Committee; PAD = Pre-Application Document; QA/QC = quality assurance/quality control; SCE = Southern California Edison; SWRCB = State Water Resources Control Board; TWG = Technical Working Group; USFS = U.S. Forest Service

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**AQ-6 LOWER LEE VINING CREEK CHANNEL
MORPHOLOGY
TECHNICAL STUDY PLAN**

**LEE VINING HYDROELECTRIC PROJECT
*FERC PROJECT No. 1388***



April 2022

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1.0 POTENTIAL RESOURCE ISSUE

Lee Vining Hydroelectric Project (Project) operations have the potential to affect fluvial processes and channel morphology in Lee Vining Creek between Poole Powerhouse and the Los Angeles Department of Water and Power (LADWP) Diversion (lower Lee Vining Creek).

2.0 PROJECT NEXUS AND HOW THE RESULTS WILL BE USED

Project operations (e.g., flow regulation) potentially alter fluvial processes and channel morphology in lower Lee Vining Creek.

3.0 STUDY GOALS AND OBJECTIVES

This study has three primary goals: (1) assess the potential geomorphic effects of reducing sediment supply (e.g., coarse and fine) to and altering sediment transport in lower Lee Vining Creek, (2) provide information required to assess potential ecological effects of any geomorphic changes in lower Lee Vining Creek resulting from Project operation, and (3) provide information for developing Protection, Mitigation, and Enhancement measures aimed at mitigating any sediment imbalance.

The specific objectives of the study are to:

- Classify transport and response reaches in lower Lee Vining Creek using existing geographic information system (GIS) data, maps, and other remote sensing imagery; and
- Characterize channel morphology, fluvial processes, and coarse sediment (greater than 2 millimeters [mm]) transport rates at responsive study sites from Poole Powerhouse to the most downstream responsive study site that will be located upstream of the pool above the LADWP Diversion.

4.0 EXTENT OF STUDY AREA AND STUDY SITES

The Study Area includes Lee Vining Creek from the Poole Powerhouse outlet to the pool upstream of LADWP Diversion Dam. Specifically excluded from field study are areas where access is unsafe (very steep terrain or high streamflow).

5.0 EXISTING INFORMATION

Information is lacking to assess channel morphology or sediment supply and transport in Lee Vining Creek between Poole Powerhouse and LADWP Diversion.

6.0 STUDY APPROACH

6.1. COARSE-LEVEL CHANNEL STRATIFICATION AND SELECTION OF RESPONSIVE STUDY SITES

- The objectives of the coarse-level characterization of channel morphology are to (1) classify and organize stream reaches in the Study Area based on valley and channel morphology and (2) stratify the relative responsiveness (i.e., “sensitivity”) of river reaches to alterations in flow and sediment supply or transport. This task will involve assessing information from previous studies, topographic maps, aerial photographs, and a drone overflight. Based on a coarse-level analysis of the lower Lee Vining Creek channel, responsive study sites will be selected to more closely examine channel morphology and bed composition.
- Coarse-level channel stratification and selection of responsive study sites will involve the following steps: (1) review existing information and assemble aerial photographs, (2) derive terrain characteristics (e.g., channel slope, width, confinement, and longitudinal profile), (3) analyze changes in channel conditions from historical aerial photography, (4) collect existing conditions imagery and topography with an Unmanned Aircraft System, and (5) identify response reaches and select study sites.

6.2. RESPONSIVE STUDY SITE CHARACTERIZATION

The objectives of the responsive study site characterization are to quantitatively describe the channel morphology, bed surface texture, and grain size at selected sites in the Study Area. Each responsive study site will be 10 to 20 bankfull channel widths long, but not less than 0.2 mile long.

Data collected at each of up to three sites will include the following components.

- A minimum of three representative cross sections, noting location coordinates, standard field indicators, and other appropriate geomorphic characteristics (Harrelson et al., 1994).
- A long profile of the channel bed and water surface elevations.
- Mapping of all sediment deposits (e.g., alluvial or colluvial) within the bankfull channel boundaries (mapping may also occur on low-lying floodplains where applicable).
- Mapping sediment facies (bed surface texture by dominant and sub-dominant grain size classes) (Buffington and Montgomery, 1999).
- Selective pebble counts (Wolman, 1954) to verify facies mapping and provide roughness parameters at cross sections used in the bed mobility analysis.
- Bulk sampling of sediment deposits (e.g., alluvial or colluvial) within the bankfull channel boundaries. A minimum of three samples will be collected at each study site.

Samples will be sieved in the field at $1/2 \Phi^1$ class intervals (i.e., 16, 22, 32, 45, 64, 90, 128 mm), down to 11 mm, and the fraction smaller than 11 mm will undergo laboratory particle-size analysis (Bunte and Abt, 2001).

- Notation of other characteristics of the channel bed and banks indicative of channel geomorphic change and/or instability (e.g., bank erosion, aggradation, or degradation).

6.3. CALCULATION OF BED MOBILITY AND SEDIMENT TRANSPORT

The amount of bed material transport and the residence time of bed material in a channel reach strongly influence the potential effects of reducing sediment supply on channel form and aquatic habitat. The objectives of this component of the study are to (1) evaluate critical discharges that mobilize the channel bed and (2) assess how Project operations affect the frequency and magnitude of sediment transport.

Bed mobility will be evaluated using field observation and sediment transport modeling. Field observations will provide results on what bed material grain sizes are mobilized at different discharges, as well as data necessary to calibrate reference Shields stress used in numerical modeling efforts.

Calculation of bed mobility and sediment transport will involve the following steps:

- Analyze hydrologic data (e.g., flow duration and peak flow analysis) for the responsive study sites. A database of unregulated and regulated hydrology will be developed for the Study Area using results of Study *AQ-5 Operations Model*. Where sediment transport sites differ from hydrological stations developed under Study AQ-5, adjustments to the hydrological database will be made by proration or similar approach.
- Perform hydraulic analysis to determine shear stress and Shields stress for the study sites at different flow conditions. A surface-based sediment transport model will be applied to each responsive study site. The model will be used to (1) estimate surface-based dimensionless Shields stress (τ^*_{sg}) and (2) critical discharges (Q_{cr}) that mobilize the channel bed. The model will be applied using channel cross-section data, water surface slope, and roughness observations made during surveys at responsive study sites described above. Reference Shields stress (τ^*_r) will be assigned based on characteristics of the study sites and published values (i.e., Mueller et al., 2005).
- Deploy tracer rocks and monitor movement following high flow events. Tracer rocks with grain size approximately equal to the local surface D50 and D84 will be deployed at each site. Passive integrated transponder (PIT) tags will be inserted into the tracer rocks where feasible to aid in tracer recovery. Biologically significant grain sizes (i.e., spawning size gravel) may be selected as tracer rocks to better evaluate Project effects where D50 (median particle size) and D84 (particle size at which 84 percent of the grain size distribution is finer) are coarser than spawning size gravel. The tracer

¹ Phi (Φ) is a measure of particle size, where $\Phi = -\log_2(d)$ and d is particle diameter in mm.

rocks will be resurveyed following peak flow events and/or high flows released during recreational and instream flow studies. If sustained high flows prohibit safe access to survey tracer rocks, the tracer rocks will be surveyed once the river can be safely accessed in late spring or summer. If no movement is observed during these flows, the discharge threshold for observations will increase. If the marked rocks move and can be recovered nearby, they will be replaced. All tracer rocks will be resurveyed at least once. Results of these observations will be used to calibrate τ^*r at each study site.

- Adjust sediment transport model. The sediment transport equation of Parker (1990) is based on field data from Oak Creek, Oregon, regarded as one of the best sediment transport data sets available for gravel-bedded rivers. The default reference τ^*r in the Parker (1990) equation, which is based on surface geometric mean grain size, is a surrogate for the well-known critical Shields stress. However, Mueller et al. (2005) have shown that τ^*r systematically increases with channel gradient and occurrence of very coarse grain sizes on the bed surface. Using an approach that combines field data (including tracer rock studies) and published relations for τ^*r based on channel geometry and grain size will allow for a reasonable calibration of the sediment transport model to each responsive study site. Results from this approach will be compared to results based on other published bedload transport relations.

6.4. ANALYSIS

Analysis will include an assessment of any potential geomorphic effects of reducing sediment supply (e.g., coarse and fine) to and altering sediment transport in lower Lee Vining Creek downstream of Poole Powerhouse based on observations of channel sediment storage and morphology, as well as bed mobility and sediment transport calculations. Information gathered regarding sediment transport, channel morphology, and sediment supply and storage will be assessed in light of the influences of the Project on hydrology and sediment supply in lower Lee Vining Creek.

A reference conditions conceptual model will be developed for channel and sediment dynamics prior to dam construction, with emphasis on characteristics most likely to be affected by ongoing Project operations. Results from Study AQ-5 will provide information on unimpaired hydrology in lower Lee Vining Creek. Results will provide information on sediment supply and transport at responsive study sites and major tributary confluences in lower Lee Vining Creek under reference conditions. Based on this information, a conceptual model for channel function under reference conditions will be developed.

Current channel and sediment dynamics will be compared with those hypothesized under the reference model to assess the potential ongoing effects of the Project and other land uses.

7.0 SCHEDULE

Date	Activity
2022 – Spring	Historical photograph and data review
2022 – Summer/Fall	Conduct field surveys
2022/2023 – Winter	Compile study results and prepare draft report
2023 – January	Interim Study Report and Meeting
2023 – March	Distribute draft report to Stakeholders
2023 – April/May	Stakeholder review and provide comments on draft report
2023 – Fall	Resolve comments and prepare final report
2024 – September	Distribute final report in Draft License Application

Data will be provided to Stakeholders upon completion of quality assurance/quality control of data.

8.0 CONSULTATION SUMMARY

In preparation to file the Pre-Application Document (PAD), filed in August 2021, and Notice of Intent (NOI), Southern California Edison (SCE) hosted Aquatic Resources Technical Working Group (TWG) Meetings on January 25, February 22, March 29, and May 24, 2021, which resulted in study requests from Stakeholders to address questions regarding aquatic habitat and sediment characteristics. Notes and materials from these meetings are available at www.sce.com/leevining. Stakeholder comments on the outline and relevant study requests received are summarized in the response to comments table below (Table 8-1). SCE filed draft Study Plans with the PAD and NOI on August 12, 2021, to address issues discussed with the TWG. The Stakeholder comment period ended on January 18, 2022, for the Study Plans, PAD, and NOI. SCE reviewed all comments received; drafted Revised Technical Study Plans which were distributed to the TWGs on February 18, 2022, for another 30-day review period. All comments received related to this Study Plan are included in Table 8-1 below and incorporated into this Final Study Plan where appropriate.

Table 8-1. Consultation Summary—Response to Comments

Comment Number	Entity	Date/Forum	Comment	SCE Response
1	CDFW	2/22/2021 Aquatic TWG	CDFW is interested in what sediment is present, the D ₅₀ values for various stream reaches, and whether project operations are resulting in the loss of fines over time.	Methods proposed in this Study Plan will characterize particle-size distributions (i.e., D50, D84, and D16) in lower Lee Vining Creek, as well as potential effects of Project operations on sediment (e.g., fine and coarse) supply. Also, please see Study <i>AQ-3 Aquatic Habitat Mapping and Sediment Characterization</i> .
2	USFS	1/14/2022 PAD Comment Period	This study only looks at the reach between the Poole Powerhouse and LADWP diversion. Variable flow releases below Saddlebag Lake and Tioga Lake can affect sediment supply and channel morphology, similar to variable flow releases below Poole Powerhouse. For that reason, this study should include the reach of Lee Vining Creek below Saddlebag Dam and the reach of Glacier Creek below Tioga Lake.	Releases from Poole Powerhouse do not affect releases from Saddlebag or Tioga lakes due to how operations are managed. Flow settings at these upstream reservoirs are adjusted manually on an as-needed basis but not in response to Poole Powerhouse operations.
3	CDFW	3/25/2022 Revised Study Plan Comment Period	This should also include any colluvial deposits that are in the channel as well. A lot of sediment loading in the Sierra can be episodic.	All mobile sediments (e.g., alluvial and colluvial) within the active stream channel downstream between Poole Powerhouse and LADWP Diversion Dam will be characterized during Study AQ-6.
4	CDFW	3/25/2022 Revised Study Plan Comment Period	Don't just focus on alluvial sediment, colluvial material can be important in these systems as well	Please see response to comment 3.
5	CDFW	3/25/2022 Revised Study Plan Comment Period	CDFW recommends inserting pit tags into the rocks rather than painting them- painted rocks can be buried and lost in large flow events, but PIT tags can be remotely detected.	Study AQ-6 has been revised to clarify that PIT tags will be used where feasible.
6	CDFW	3/25/2022 Revised Study Plan Comment	Consider using an alternative sediment transport model. The proposed model was	The Licensee proposes an approach that combines field data (including tracer rock

Comment Number	Entity	Date/Forum	Comment	SCE Response
		Period	developed on gravel-bedded rivers with different dynamics	studies) and published relations for τ^*r (e.g., Parker, 1990; Mueller et al., 2005) to allow for a reasonable calibration of the sediment transport model to each responsive study site. Several published bedload transport relations may be combined to the extent feasible or appropriate. The Licensee is open to considering bedload transport relations if suggested.

CDFW = California Department of Fish and Wildlife; LADWP = Los Angeles Department of Water and Power; PAD = Pre-Application Document; SCE = Southern California Edison; TWG = Technical Working Group; USFS = U.S. Forest Service

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**TERR-1 GENERAL BOTANICAL RESOURCES
SURVEY
TECHNICAL STUDY PLAN**

**LEE VINING HYDROELECTRIC PROJECT
*FERC PROJECT No. 1388***



April 2022

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1.0 POTENTIAL RESOURCE ISSUE

Special-status botanical resources and U.S. Forest Service (USFS) “Species of Conservation Concern” are either known to or have the potential to occur in the Lee Vining Hydroelectric Project (Project) Area and may be affected by Project operations and maintenance. This includes the following listed species or species proposed for listing:

- Whitebark pine (*Pinus albicaulis*) (Proposed Federally Threatened)

Introduction and/or spread of invasive plant populations may occur due to Project operations and maintenance activities.

2.0 PROJECT NEXUS AND HOW THE RESULTS WILL BE USED

- Project operations and maintenance activities could result in direct and/or indirect effects on sensitive natural communities (including riparian areas) and special-status plants or USFS Species of Conservation Concern.
- Project operations and maintenance activities could result in the spread or introduction of invasive plants.
- If special-status botanical resources or USFS Species of Conservation Concern are found to be present within the study area (as defined in Section 4.0), the data will be examined to determine the effects of Project operations and maintenance activities in the context of the most recent USFS Management Plan, the federal and state Endangered Species Acts, the Native Plant Protection Act, the National Environmental Policy Act, and the California Environmental Quality Act.

3.0 STUDY GOALS AND OBJECTIVES

Obtain additional information to supplement the existing information regarding special-status botanical resources in the study area by:

- Documenting the presence of species listed by the federal and/or state Endangered Species Acts or proposed for listing, e.g., whitebark pine;
- Documenting the presence of other special-status plants including species with a California Rare Plant Rank of 1 or 2 and USFS Species of Conservation Concern;
- Ground-truthing the existing USFS vegetation map (USFS, 2018), including identification of any sensitive natural communities;
- Incorporating results of the riparian monitoring study undertaken as part of the existing license;
- Performing a focused study of two selected riparian habitat areas to assess whether or not there have been changes resulting from hydro-resource optimization; and

- Documenting non-native, invasive plants identified in the Inyo National Forest (INF) Invasive Plant Inventory Database (NRM – TESP/IS, 2018) and on the California Invasive Plant Council Inventory (Cal-IPC, 2017).

4.0 EXTENT OF STUDY AREA AND STUDY SITES

The botanical resources study area will be used to document the presence of special-status plant species and the presence of invasive plant species, and ground-truth the USFS-mapped vegetation communities. The study area is shown on Figure 4-1 and includes all aboveground Project facilities and recreation areas including:

- Saddlebag Dam, spillway, and valve house
- Rhinedollar Dam, tunnel intake, spillway, and valve house
- Tioga Dam, Tioga Auxiliary Dam, and access road
- Tioga Lake Inlets
- Poole Powerhouse
- Penstock Trailhead
- Saddlebag Day Use Picnic/Fishing Site
- Saddlebag Lake Campground
- Saddlebag Lake Group Campground
- Saddlebag Lake Loop trailhead
- Sawmill Walk-in Campground
- Junction Campground
- Ellery Lake Campground
- Tioga Lake Campground

As part of this study, an analysis will be performed to determine the extent of the botanical study area. The effects of proposed license activities would be localized to the FERC boundary. The botanical study area will encompass areas that may be hydrologically influenced by proposed activities or that may be subject to proposed activities related to project operations and maintenance. This analysis will include the stream corridor immediately around and downstream of existing Project facilities with a variable buffer extending outward. The buffer size will take into account surrounding topography and vegetation communities. SCE intends to continue discussions with USFS staff to identify any precise areas of concern for further incorporation into the study area.

The existing riparian monitoring study area is shown on Figure 4-2 and includes three riparian monitoring reaches on Lee Vining Creek between Saddlebag Lake and the confluence of Lee Vining Creek with Slate Creek.

The riparian habitat focused characterization study area is shown on Figure 4-3. The first reach corresponds to the open meadow at Site 3 of the riparian monitoring study required under the existing license area. The second reach corresponds to the open meadow downstream of Aspen Campground, which is below Poole Powerhouse. These areas were selected to document potential changes to the riparian corridor resulting from project operations, specifically hydro-resource optimization.¹ These reaches were selected to clearly show the riparian corridor unobstructed by a conifer canopy. The upstream reach was selected because the vegetation community is known based on the results of the previous license required riparian monitoring studies. The vegetation community at the downstream reach was not ground-truthed; however, the selected area is clearly visible on aerial imagery and street view and appears to support willow scrub where individual shrubs can be identified.

¹ While meeting the LADWP Sales Agreement targets and the required FERC minimum flows, SCE also optimizes plant generation to respond to load requests from the California Independent System Operator (CAISO). SCE's delivery of intra-day load to meet demands is referred to as "Hydro-Resource Optimization" and has increased since 2016. These operations are in response to grid demand and pricing. The Plant is usually called into operations during the evening hours. These events have resulted in periodic releases of flow into Lee Vining Creek below Poole Powerhouse. Data is not available to easily describe the frequency and magnitude of these, but they generally last less than 8 hours. Using available data from the downstream LADWP diversion, SCE has estimated that these events are influenced by time of year with higher frequency of events occurring in the winter and spring. SCE is proposing to continue Hydro-Resource Optimization in the new license term, and will be characterizing the frequency, magnitude, and duration of these events for the new license along with reviewing potential Project effects.

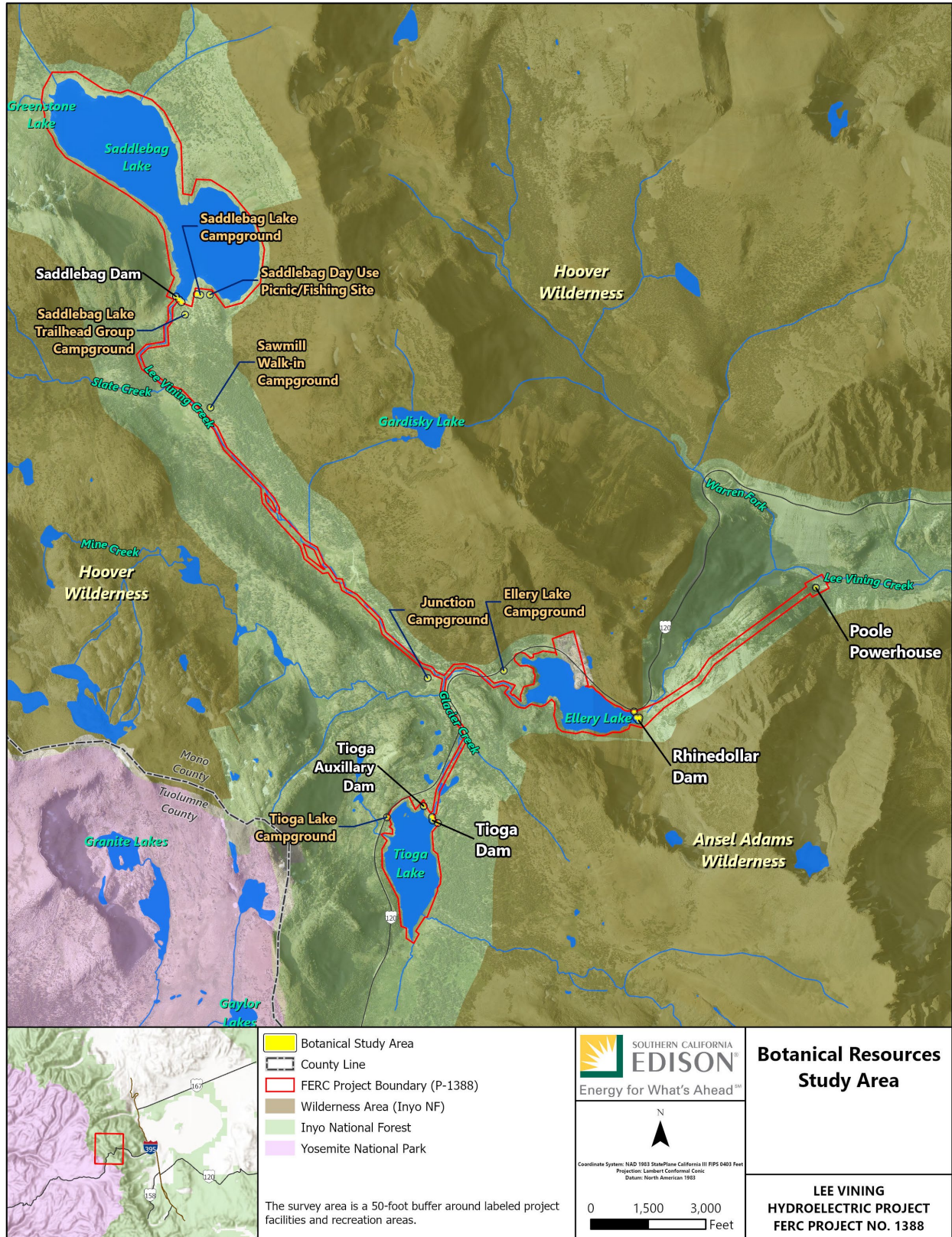


Figure 4-1. Botanical Resources Study Area

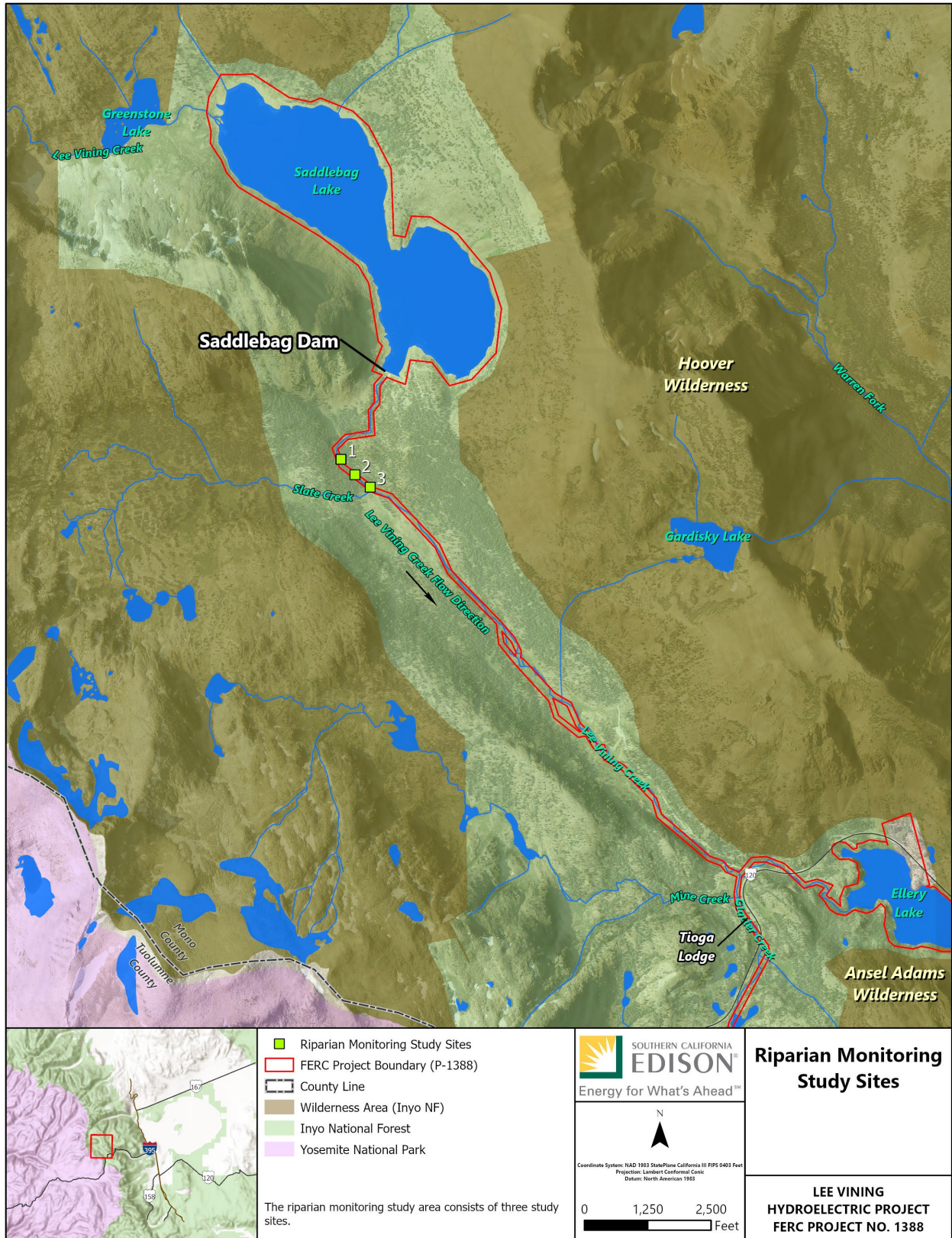


Figure 4-2. Riparian Monitoring Study Sites

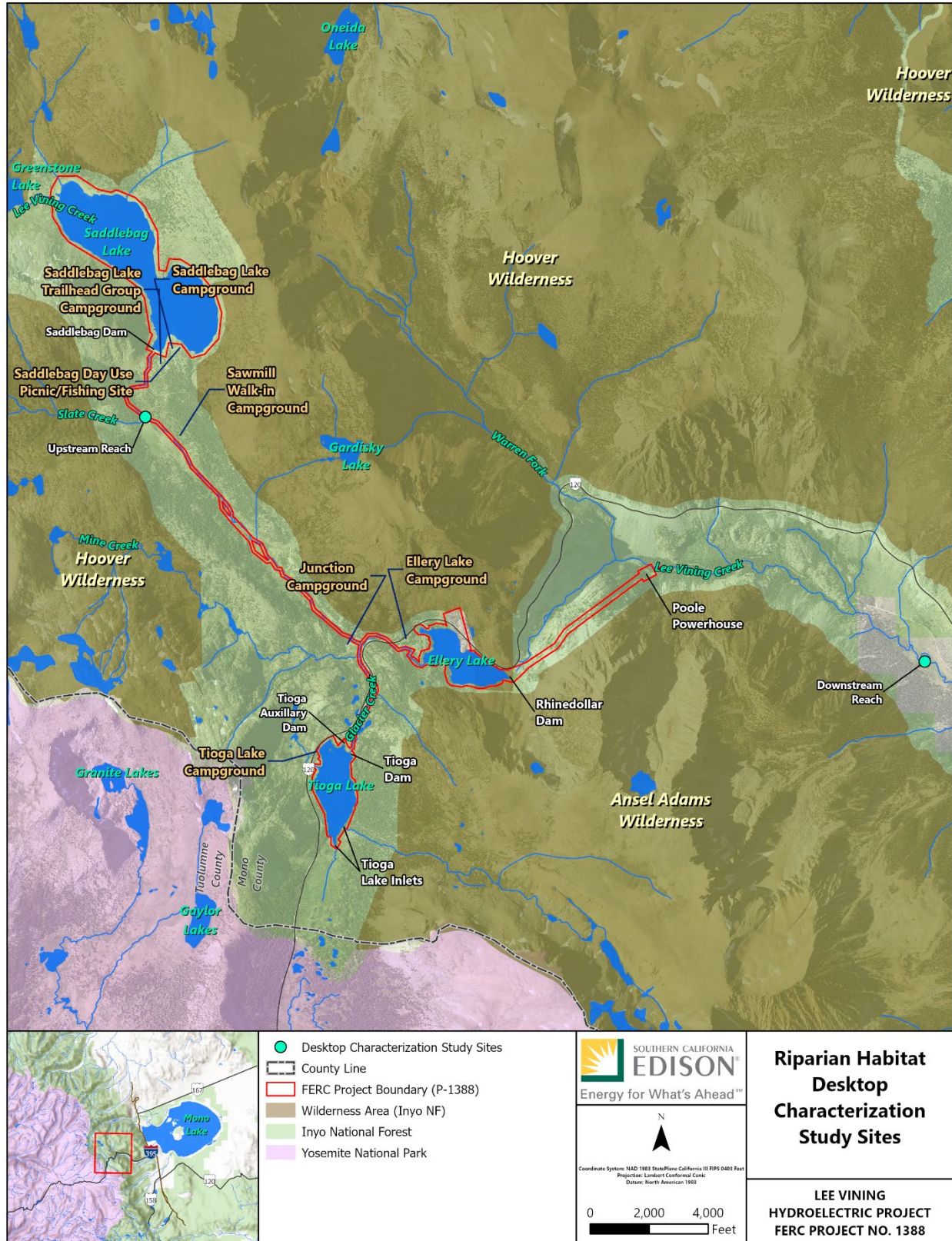


Figure 4-3. Riparian Habitat Desktop Characterization Study Sites

5.0 EXISTING INFORMATION

Information on vegetation communities and plant species, including riparian conditions monitored as part of the current license, is provided by the previously conducted field surveys and license-required monitoring studies (Psomas, 2010, 2013; Read, 2012, 2017, 2022). Keys and descriptions are from the USFS using the Calveg classification system. This is the preferred key by the INF and is used in this document for consistency with the Inyo National Forest Plan (USFS, 2018). In this system, differences between vegetation alliance types (also referred to as communities) are based on canopy cover as determined from aerial photography and satellite imagery.

Special-status plant occurrences within the Project Area have been documented by past studies (Psomas, 2010, 2013), the Environmental Assessment of Potential Cumulative Impacts Associated with Hydropower Development in the Mono Lake Basin, California (FERC Nos. 1388, 1389, 1390, 3259, and 3272; FERC, 1990), USFS records of rare plants (NRM – TESP/IS, 2018), whitebark pine range geospatial data (USFS, 2020), the California Natural Diversity Database (CNDDDB; CDFW, 2020), the Persistence Analysis for Species of Conservation Concern Inyo National Forest (INF, 2019), the California Native Plant Society's Inventory of Rare, Threatened, and Endangered Plants (CNPS, 2020), and the Consortium of California Herbaria (CCH, 2021). Since those studies were undertaken, new occurrences have been recorded to the CNDDDB and new species have been added to the federal and state special-status species lists; and others have been deemed sensitive by various government and non-governmental organizations.

Information on invasive plant occurrences has been provided by the USFS, including mapped infestations and treatment strategy for all currently known invasive plant species in the INF Invasive Plant Inventory Database (NRM – TESP/IS, 2018).

Past riparian monitoring surveys (Read, 2012, 2017, 2022) documented vegetation conditions along established belt transects. Data on herbaceous species was collected in 1-meter square quadrats within each transect. Data on tree and shrub parameters was collected within the belts. False color infrared aerial photography from just upstream of Saddlebag Lake to the SCE powerhouse in Lee Vining was also flown in conjunction with the riparian monitoring study.

6.0 STUDY APPROACH

6.1. DATABASE REVIEW AND SURVEYS

6.1.1. LITERATURE REVIEW

A literature review will be conducted to determine if any additional special-status botanical resources have been identified as having the potential to occur within the Project Area. This literature review will also verify the protective status of any of the previously identified special-status plants and will review any new literature on the ecology and life history of these resources. The literature review will be used to define potentially suitable habitat for special-status plants

6.1.2. HABITAT MAPPING

Habitat mapping will include the following:

- A review of the existing USFS vegetation communities will be conducted to determine if any suitable habitat for special-status botanical resources has been identified within the Project Area. Vegetation alliances will be cross-referenced to defined habitats for special-status plants.
- Areas of potentially suitable habitat for special-status plants will be mapped over the study area.

6.1.3. FOCUSED ASSESSMENT OF HYDRO-OPTIMIZATION EFFECTS

A focused assessment of potential effects of hydro-optimization on riparian and wet meadow communities will be performed on select reaches of the riparian corridor using infrared imagery flown as part of the current license requirement for riparian monitoring in 2016 and 2021. The aerial imagery will be used to map the extent of riparian and wet meadow communities. Riparian conditions before hydro-optimization (2016) and after hydro-optimization (2021) will be compared. The primary tool for this comparison will be the Normalized Difference Vegetation Index (NDVI).

An NDVI quantifies vegetation by measuring the difference between near-infrared (NIR), which vegetation strongly reflects, and red light (R), which vegetation absorbs.

$$NDVI = (NIR - R)/(NIR + R)$$

The NDVI values range from -1 to +1. A high NDVI value indicates “healthy” vegetation because it reflects more near-infrared and green light compared to other wavelengths and absorbs more red and blue light.

An NDVI value will be obtained from the 2016 and 2021 infrared photography at each reach using the NDVI tool in ArcGIS. If differences in NDVI values between 2016 and 2021 are detected, the location(s) within the two study reaches that appear to be the origin of these differences will be ground-truthed as part of botanical surveys conducted in 2022.

6.1.4 Field Surveys

- Surveys for special-status plant species will follow the Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW, 2018). Two years of surveys will be conducted to sample during variations in annual precipitation and air temperature. Surveys will be floristic in nature and performed at appropriate times of the year to maximize the opportunity of observing special-status plants as determined by the literature review and in consultation with the relevant Stakeholders. Two survey visits will be conducted each year to encompass the blooming/fruitletting period for multiple special-status plant species.

- Prior to the start of surveys, aerial photographs of each portion of the study area (at a scale of 1 inch equals 200 feet) will be prepared for field use. The field map will be uploaded onto a tablet or cell phone loaded with a mapping program (e.g., Avenza maps or ArcGIS Collector) in order to facilitate navigation and data collection. The field map will also include:
 - Known occurrences of special-status botanical resources
 - Areas of potentially suitable habitat for special-status botanical resources
- Biologists will perform pedestrian surveys to identify and map existing conditions and document any observed plants. Plant species will be identified in the field or collected for future identification. Plants will be identified to the taxonomic level necessary to determine whether or not they are a special-status or invasive species. Plants will be identified using taxonomic keys, descriptions, and illustrations in the Jepson eflora (Jepson Flora Project, 2020). Nomenclature of plant taxa will conform to the *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW, 2021, as amended) for special-status species and the Jepson eFlora (Jepson Flora Project, 2020) for all other taxa. Field surveys will focus on the following:
 - Natural communities previously mapped by the USFS will be verified or adjusted if conditions on the ground are not consistent with previously identified resources. During the pedestrian surveys, biologists will ground-truth the geographic information system (GIS)-based mapping of potentially suitable habitat as identified by the literature review. The extent of each vegetation community will be adjusted on the field map, if necessary.
 - Observations of special-status plant species identified in the study area will be documented either using a hand-held Global Positioning System (GPS) unit, the tablet/cell phone loaded with the field map, or on a hard-copy map. This will include all federal and state rare, threatened, or endangered species; USFS Species of Conservation Concern; and species with a California Rare Plant Rank of 1 or 2. Data will be collected for each observed population, including the number and phenology of individuals (estimated for large populations), microsite characteristics such as slope, aspect, soil texture, surrounding habitat, and associated species.
 - Select invasive species of concern to the USFS that are identified in the study area will be documented (identified below). This includes all species on the INF Invasive Plant Inventory Database with a treatment strategy of 1 (eradicate) or 2 (control) and select species with a treatment strategy of 3 (contain). Discrete individuals/populations will be documented using a hand-held GPS unit, a tablet/cell phone loaded with the field map, or on a hard-copy map. Widely distributed species dispersed throughout a study site will be documented as present/absent in individual study sites. The number of individuals of each invasive species will be estimated.

Table 6-1. Invasive Species in the Study Area

Scientific Name	Common Name	USFS Treatment Strategy	Cal-IPC Rank
<i>Ailanthus altissima</i>	tree of heaven	1 – Eradicate	Moderate
<i>Bassia hyssopifolia</i>	five-hook bassia	3 – Contain	Limited
<i>Bromus rubens</i>	red brome	3 – Contain	High
<i>Bromus tectorum</i>	cheat grass	3 – Contain	High
<i>Centaurea diffusa</i>	diffuse knapweed	1 – Eradicate	Moderate
<i>Centaurea solstitialis</i>	yellow star-thistle	1 – Eradicate	High
<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	spotted knapweed	1 – Eradicate	High
<i>Cirsium arvense</i>	Canada thistle	1 – Eradicate	Moderate
<i>Cirsium vulgare</i>	bull thistle	3 – Contain	Moderate
<i>Convolvulus arvensis</i>	bindweed	3 – Contain	
<i>Dipsacus fullonum</i>	wild teasel	2 – Control	Moderate
<i>Elaeagnus angustifolia</i>	Russian olive	2 – Control	Moderate
<i>Halogeton glomeratus</i>	saltlover	2 – Control	Moderate
<i>Holcus lanatus</i>	common velvet grass	3 – Contain	Moderate
<i>Lepidium appelianum</i>	white-top	1 – Eradicate	
<i>Lepidium chalepense</i>	lens-podded hoary cress	1 – Eradicate	Moderate
<i>Lepidium draba</i>	heart-podded hoary cress	1 – Eradicate	Moderate
<i>Lepidium latifolium</i>	perennial pepperweed	1 – Eradicate	High
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	dalmatian toadflax	1 – Eradicate	Moderate
<i>Linaria vulgaris</i>	butter-and-eggs	1 – Eradicate	Moderate
<i>Rhaponticum repens</i>	Russian knapweed	1 – Eradicate	Moderate
<i>Robinia pseudoacacia</i>	black locust	3 – Contain	Limited
<i>Rubus armeniacus</i>	Himalayan blackberry	2 – Control	High
<i>Salsola tragus</i>	Russian thistle	3 – Contain	Limited
<i>Saponaria officinalis</i>	bouncingbet	2 – Control	Limited
<i>Spartium junceum</i>	Spanish broom	1 – Eradicate	High
<i>Tamarix ramosissima</i>	saltcedar	2 – Control	High
<i>Tribulus terrestris</i>	puncturevine	2 – Control	Limited
<i>Ulmus pumila</i>	Siberian elm	2 – Control	

Cal-IPC = California Invasive Plant Council; USFS = U.S. Forest Service

6.2. REPORTING

Draft results will be prepared documenting:

- Methods used to perform the surveys and analysis
- Results of the literature review
- Results of the pedestrian surveys, including a plant compendium of observed species, maps of special status and invasive plant locations, and additional information on plant populations (e.g., population size, habitat characteristics, etc.)
- Habitat mapping, including an updated vegetation map
- Results of the NDVI analysis of two selected riparian reaches, comparing 2016 to 2021 (i.e. pre-and post-hydro optimization respectively)
- Other incidental observations made during site visits (e.g., special status wildlife observations)
- Monitoring results conducted under the existing license (i.e., riparian monitoring surveys)

Field maps will be used to create a map of potentially suitable habitat and observations of invasive species and special-status botanical resources, including both special-status plant species and sensitive natural communities.

A California Native Species Field Survey Form will be completed for any special-status botanical resource observed during the pedestrian surveys. Each observation record will be submitted to the CNDDDB.

7.0 SCHEDULE

Date	Activity
2022 - Spring	Select study sites
2022 - Spring	Meeting with resource agencies and interested Stakeholders regarding botanical resources
2022 - Spring	Conduct database review and desktop analyses
2022 - Spring–Fall	Conduct first season of field surveys
2022 - Nov/Dec	Compile study results
2023 - January	Interim Study Report and Meeting
2023 - Spring–Fall	Conduct second season of field surveys
2024 - Feb/March/April	Compile study results and prepare draft report
2024 - May	Distribute draft report to Stakeholders*

Date	Activity
2024 - June	Stakeholder review and provide comments on draft report
2024 – July/August	Resolve comments and prepare final report
2024 – September	Distribute final report in Draft License Application

*Data will be provided to Stakeholders upon completion of QA/QC of data.

8.0 CONSULTATION SUMMARY

In preparation to file the Pre-Application Document (PAD), filed in August 2021, and Notice of Intent (NOI), SCE hosted Terrestrial and Botanical Resources Technical Working Group (TWG) Meetings on January 27, February 24, April 7, and May 26, 2021, which resulted in study requests from Stakeholders to address questions regarding botanical resources. Notes and materials from these meetings are available at www.sce.com/leevining. Stakeholder comments on the outline and relevant study requests received are summarized in the response to comments table below (Table 8-1). SCE filed draft Study Plans with the PAD and NOI on August 12, 2021, to address issues discussed with the TWG. The Stakeholder comment period ended on January 18, 2022, for the Study Plans, PAD, and NOI. SCE reviewed all comments received; drafted Revised Technical Study Plans which were distributed to the TWGs on February 18, 2022, for another 30-day review period. All comments received related to this Study Plan are included in Table 8-1 below and incorporated into this Final Study Plan where appropriate.

Table 8-1. Consultation Summary—Response to Comments

Comment Number	Entity	Date/Forum	Comment	SCE Response
1	MLC, USFS	1-27-21 Terrestrial and Botanical TWG 1 Meeting	Request surveys for aquatic invasive species (e.g., Didymo and Eurasian milfoil)	Aquatic invasive plants and algae will be addressed in the Aquatic Resources TWG instead of Terrestrial Resources TWG.
2	USFS	2-16-21 Memorandum Re: Lee Vining Relicensing Study Titles	Be sure to incorporate whitebark pine as a special status plant target species; it is currently proposed for listing as Threatened under the ESA	Whitebark pine will be included in the botanical surveys.
3	USFS, CDFW	2-24-21 Terrestrial and Botanical TWG 2 Meeting	Why are there no riparian monitoring sites in the lower reaches downstream of Slate Creek?	Below Slate Creek, it is harder to determine natural versus Project-related influence due to additional variables (e.g., accretion flow, glacier and snow-fed springs, seeps). Additional sites were originally reviewed but rejected. The three monitoring sites include a total of 10 transects.
4	CDFW	4-7-21 Terrestrial and Botanical TWG 3 Meeting	If we did the botanical study, found that there are invasive plants, and found that O&M vehicles are causing the spread, would the USFS address this in 4(e) conditions? Is that how it would proceed?	As we go further into developing the studies and make PM&Es, we would identify the appropriate management plans for this to be addressed. The USFS may implement those as a 4(e) condition. However, that particular condition (i.e., cleaning O&M vehicles for seeds) is already a practice that SCE does when moving from site to site.
5	USFS	4-7-21 Terrestrial and Botanical TWG 3 Meeting	Is the aerial imagery flight line taken specifically for riparian vegetation or the project overall?	It was originally specific to riparian vegetation, as part of the program that the USFS set up for SCE to follow; however, there are additional aspects looked at (e.g., stream meander/sinuosity).
6	CDFW	4-7-21 Terrestrial and Botanical TWG 3	Are all of the flights conducted within the same season/months?	Flights occur during August each year.

Comment Number	Entity	Date/Forum	Comment	SCE Response
		Meeting		
7	USFS, CDFW	4-7-21 Terrestrial and Botanical TWG 3 Meeting	Will the riparian aerial imagery flight line data be used to calculate the Normalized Difference Vegetation Index (NDVI)?	SCE is not planning to pursue this analysis for the project as a whole though the flight line data may be made available for agency use. However, as described above, using the infrared band, SCE intendsto look at riparian vegetation and wet meadows at two selected reaches, comparing 2016 and 2021 data.
8	USFS	4-7-21 Terrestrial and Botanical TWG 3 Meeting	If you're comparing the current [flight line] data to past 5-10 years, will you look at the current FERC boundary of the whole set of images all the way to Mono Lake?	We would focus on the FERC boundary. The scope of the analysis would be as appropriate to determine Project effects. The analysis will be the same because these images are part of the current study, which needs to be separated from the relicensing new proposed studies. But we can use this older data as a reference point.
9	USFS	1/14/2022 PAD Comment Period	Herbicides should not be used within Riparian Conservation Areas (RCA). Any herbicide use near waterbodies should be in consultation with FS watershed specialist. Is there a clear plan for when and where herbicide can be used?	Thank you for your comment. SCE maintains several vegetation management plans internally that detail herbicide use at SCE-owned facilities.
10	USFS	1/14/2022 PAD Comment Period	Unvegetated soil is especially a problem for invasive plant species, we propose that this be addressed in project management plans (vegetation management or erosion plans).	Thank you for your comment. This comment will be considered in the evaluation of Project impacts and development of protection, mitigation, and enhancement measures in the license application.
11	USFS	1/14/2022 PAD Comment Period	In the botany study plan the buffer for specifiers surveys are 50 ft. For the Bishop Creek relicensing it is 500 ft. A 50ft buffer	The 500-foot buffer used for Bishop Creek was set for both botanical and wildlife studies. It included a large area that was

Comment Number	Entity	Date/Forum	Comment	SCE Response
			may be inadequate, see botany study request.	not subject to hydrologic influence or operations and maintenance by SCE activities (e.g., upland areas on steep hillsides outside riparian zones, upland areas across paved roads). Consequently, the 500-foot buffer provided no additional useful information in relation to Project effects on special-status plants. We propose to decrease the buffer to a size that would be relevant to areas where Project operations and maintenance would directly have an effect on special-status plant species. We would like to discuss appropriate/relevant buffer sizes with the resource agencies to come to general agreement. This may include the use of different buffers/survey area extent at different study sites.
12	USFS	1/14/2022 PAD Comment Period	TESP/IS(NNIP) are no longer used on the INF. The current terms used in the Inyo National Forest Land Management Plan (LMP) are Species of Conservation Concern (SCC) and Invasive Plant Species (IPS)	Comment noted; the DLA and Study Plans will be globally changed to use the appropriate terms. The reference to "NRM-TESP/IS" in the text referred to the citation for the list of Species of Conservation Concern and Invasive Plant Species, as provided by USFS botanist Blake Engelhardt.
13	USFS	1/14/2022 PAD Comment Period	Contrary to the SCE response, there are black cottonwood in the Lee Vining canyon. How was there a determination of no impairment if you are not monitoring in a location that includes black cottonwood?	SCE acknowledges that Black cottonwood could be present in Lee Vining Canyon. For clarification, black cottonwood have not been documented at the riparian monitoring sites. The proposed botanical surveys will document the presence of all observed plants, including black cottonwoods, occurring within each survey study site. If additional documentation on black cottonwood is required, please

Comment Number	Entity	Date/Forum	Comment	SCE Response
				provide justification for nexus as the species is not considered to be special status or an INF Species of Conservation Concern.
14	USFS	1/14/2022 PAD Comment Period	“Project maintenance activities” should read “Project operations and maintenance activities...” in all three bullets	The Study Plan has been changed to use the appropriate terms.
15	USFS	1/14/2022 PAD Comment Period	The buffer was 500 ft on the Bishop Creek FERC relicensing on the Inyo National Forest, why is this different? We need riparian monitoring below Poole. Operation of the Project effects flows below Poole, we need to understand what is happening to ensure we are meeting the requirements of the LMP.	The 500-foot buffer used for Bishop Creek was set for both botanical and wildlife studies. It included a large area that was not subject to hydrologic influence or operations and maintenance by SCE activities (e.g., upland areas on steep hillsides outside riparian zones, upland areas across paved roads). Consequently, the 500-foot buffer provided no additional useful information in relation to Project effects on special-status plants. We propose to decrease the buffer to a size that would be relevant to areas where Project operations and maintenance would directly have an effect on special-status plant species. We would like to discuss appropriate/relevant buffer sizes with the resource agencies to come to general agreement. This may include the use of different buffers/survey area extent at different study sites. SCE is currently not proposing a separate riparian study. The original riparian monitoring study sites were selected in coordination with USFS staff. At the time, there was discussion of how additional, downstream hydrologic variables would create difficulty in distinguishing project effects from non-project effects due to

Comment Number	Entity	Date/Forum	Comment	SCE Response
				<p>these additional variables. The farther downstream riparian monitoring sites are placed, the more cumulative effects would result from additional hydrologic input variables. Riparian monitoring below Poole Powerhouse would be complicated by multiple additional hydrologic variables (e.g., accretion flows, hydrologic input from creeks and other sources). The National Wetlands Inventory identifies at least six unregulated tributaries that flow directly into Lee Vining or Glacier Creeks, including Slate Creek, Mine Creek, Warren Fork, and unnamed tributaries. These additional hydrologic variables are not under SCE operations control and, therefore, Project effects could not be separated from natural effects. Given the lack of substantial observed effects over the course of the previous riparian monitoring, SCE does not anticipate future changes in the overall riparian condition. However, SCE acknowledges stakeholder concerns with regards to hydro-resource optimization's effects on downstream reaches. Therefore, SCE is proposing a desktop characterization as described in Section 6.1.</p>
16	USFS	1/14/2022 PAD Comment Period	<p>Analyses and reports will examine impacts to individual riparian species as directed by LMP. All reports need to be accompanied by the raw data in a spreadsheet and the spatial data in either a google earth format or an Arc GIS format.</p>	<p>The discussion of riparian monitoring survey results will include a summary of trends in percent cover of vegetation layers (i.e., herbaceous, shrubs, and trees) as well as results for individual species. Raw data will be made available to stakeholders once it has been reviewed and quality checked. Georeferenced spatial data (e.g., lat/long coordinates for individual species)</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
				was not collected as part of the existing riparian monitoring program. Instead, the relative location of species was documented along the transect line.
17	USFS	1/14/2022 PAD Comment Period	The number of riparian monitoring sites should be increased. The study should include riparian monitoring sites downstream from the Poole Powerhouse and above Ellery lake. Operations impact flows below Poole, and we need to understand what is happening to ensure we are meeting the requirements of the LMP. The report titled "Lee Vining Creek (FERC No. 1388) Riparian Monitoring Phase 2 Year 3 (2016) Compared to Previous Years" shows a reduction in the riparian herbaceous species richness of 50% at site 1 over 2011 & 2016, a 50% decrease at site 2 for 2016, and a 60% decrease at site 3 for 2016. Riparian shrub data supplied by Klienschmidt shows at site 1 a 63.22% reduction in the number of willows since 2006, an 81.82% reduction at site 2 and an 83.57% reduction at site 3.	SCE acknowledges stakeholder concerns with regards to hydro-resource optimization's effects on downstream reaches and is therefore proposing a desktop characterization study as discussed in Section 6.1. The results of the riparian monitoring studies performed under the current license will be summarized as part of this relicensing effort. The original riparian monitoring study sites were selected in coordination with USFS staff. At the time, there was discussion of how additional, downstream hydrologic variables would create difficulty in distinguishing project effects from effects due to these additional variables. The farther downstream riparian monitoring sites are placed, the more cumulative effects would result from additional hydrologic input variables. Riparian monitoring below Poole Powerhouse and above Ellery Lake would be complicated by additional hydrologic variables (e.g., accretion flows, multiple tributaries entering Lee Vining Creek and Glacier Creek) that cannot be separated from Project effects. The National Wetlands Inventory identifies at least six unregulated tributaries that flow directly into Lee Vining or Glacier Creeks, including Slate Creek, Mine Creek, Warren

Comment Number	Entity	Date/Forum	Comment	SCE Response
				<p>Fork, and unnamed tributaries.</p> <p>The on-going riparian monitoring effort focused on cover of shrub species, including willows. Numbers of individuals were not counted as the species is clonal and distinguishing "individuals" was not always feasible. Tree/shrub cover did not decrease over the monitoring period. While herbaceous riparian species richness did decrease, cover increased at Sites 1 and 3. This likely indicates that a few species came to dominate the sites. Herbaceous cover includes annual species that are more likely to be affected by outside influences (e.g., variation in precipitation, ambient temperature, snowmelt, length of growing season, etc.) on germination, growth, and seed production. The consistency of shrub cover indicates that large-scale changes to the riparian corridor have not occurred over the current license period. Once the recent monitoring data has been reviewed and is ready for distribution, SCE is happy to discuss the overall findings and methods associated with the monitoring program with the USFS.</p>
18	USFS	1/14/2022 PAD Comment Period	STUDY PLAN REQUEST Lee Vining Creek Riparian Study SEE STUDY PLAN REQUEST	See SCE Responses to comments 14 and 16, above. Riparian corridors will be included in the general botanical surveys. Additionally, SCE is proposing a desktop characterization study to document general riparian conditions downstream of Poole Powerhouse.

Comment Number	Entity	Date/Forum	Comment	SCE Response
19	CDFW	1/14/2022 PAD Comment Period	<p>On page 6-12 of the PAD SCE provides a rationale for not adopting CDFW’s proposed Riparian Monitoring and Community Health Study. SCE states that “sufficient data exists from ongoing Riparian Monitoring Evaluations conducted as part of the existing license—the most recent evaluation is being conducted during the summer of 2021. With regard to Bishop Creek, black cottonwood (<i>Populus trichocarpa</i>) is not present in Lee Vining Canyon and there are no data to suggest any impairment of riparian conditions”. However, the analyses and conclusions drawn from the ongoing Riparian Monitoring Evaluations data and provided in the Monitoring Reports currently available to CDFW (e.g., Read, E. 2017, Read, E. 2012) are insufficient and do not allow for determination of Project effects. CDFW requests that all Riparian Monitoring Reports and associated raw data, including infrared aerial photographs, are provided to CDFW to facilitate further statistical analysis (e.g., impacts of stream flow on riparian recruitment) to determine Project impacts on the riparian community of Lee Vining Creek.</p>	<p>The 2021 riparian monitoring data is currently being processed. Once that is completed and reviewed, the raw data will be provided to the TWG. Recent infrared aerial photographs have been stored digitally and may be available to CDFW. However, early data was not digital and cannot be distributed to the CDFW or other TWG participants. We are concerned that the lower resolution of scanned early aerial photography would inhibit further analysis.</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
20	CDFW	1/14/2022 PAD Comment Period	CDFW requests information (e.g., location [latitude, longitude], type, status) on the riparian monitoring infrastructure (e.g., stream flow discharge gauges, precipitation measurement stations, stream gauge and soil moisture electronic sensors).	Flow gauge and precipitation measurement station locations have been provided in the riparian monitoring reports. Site-specific sensors at the monitoring sites have provided stream stage, groundwater level, water temperature, and air temperature data over the course of the monitoring period since 1999. The approximate lat/long locations of these sensors will be provided in the report for the 2021 season.
21	CDFW	1/14/2022 PAD Comment Period	It is CDFW's understanding that SCE has been gathering infrared aerial photographs that extend from Saddlebag Lake to the junction of U.S. Route 395 and State Route 120. However, SCE has limited their riparian habitat analysis to the monitored stream reach above the confluence of Lee Vining and Slate Creeks, as reported in the Riparian Monitoring Reports. Additionally, the analysis reported on in the Monitoring Reports (Read, E. 2017, Read, E. 2012) of the infrared aerial photographs appears to only be a visual comparison between years. In the Read, E. 2012 Monitoring Report, it is noted that Geographic Information Systems (GIS) and digital imagery software was used to compare the infrared aerial photographs, but no quantitative data is provided. CDFW does not consider this a scientific comparison and therefore cannot agree with SCE's determination that there has been no data showing impairment of riparian conditions. GIS can be used to scientifically analyze infrared data and determine changes in the riparian community. Please	Riparian vegetation condition was assessed primarily with belt transect data collection. This included a quantification of vegetative cover and species richness over the previous license period. There are limitations to using the infrared aerial photographs to quantitatively assess riparian condition. Please see the response below (Study Plan Request).

Comment Number	Entity	Date/Forum	Comment	SCE Response
			see Attachment 1 for CDFW's Study Request to use GIS to quantitatively analyze the existing infrared data to determine changes in the riparian community in the Lee Vining Creek Project impact area.	
22	CDFW	1/14/2022 PAD Comment Period	In the Study Goals and Objectives, SCE should include the objective of documenting the maintenance activities (i.e., location, activity, maintenance schedule, equipment used, potential impacts) that could impact special-status plants.	SCE agrees that documenting and characterizing maintenance activities that could impact special status plants is necessary. This inventory of activities is typically described in the Draft License Application which is intended to describe potential effects from the proposed action. This botanical study plan will ensure that data is collected consistent with the requirements of an effects analysis.
23	CDFW	1/14/2022 PAD Comment Period	CDFW request that the raw data from all the past required Riparian Monitoring Surveys is provided to the Technical Working Group members.	The riparian monitoring data is currently being processed. Once that is completed, the raw data will be provided. <i>April 2022 update: this data has been provided to the agencies.</i>
24	CDFW	1/14/2022 PAD Comment Period	CDFW recommends that the General Botanical Resource Surveys for special-status native plants follow the guidelines provided in the State of California, California Natural Resource Agency and Department of Fish and Wildlife's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. This includes conducting multiple visits to the Project area (e.g., in early, mid and late-season) to adequately capture the floristic diversity at a level necessary to determine if special-	The Study Plan has been revised to explicitly state that surveys will follow the specified CDFW protocol.

Comment Number	Entity	Date/Forum	Comment	SCE Response
			status plants are present in the Project area. The protocol also describes that additional focused surveys may be needed that are limited to habitats known to support special-status plants. CDFW recommends that SCE identify habitats that may support specific special-status plants and may require focuses surveys.	
25	CDFW	1/14/2022 PAD Comment Period	CDFW recommends that the prevalence (estimated total numbers, percent cover, density, etc.) of the special-status plants and sensitive natural communities is documented during survey efforts. This data is useful to assess the significance of a particular plant population or natural community.	The Study Plan has been revised to provide additional details on special-status plant survey methodology. Data will be collected in compliance with the CDFW survey protocol.
26	CDFW	1/14/2022 PAD Comment Period	STUDY PLAN REQUEST Botanical Resource Surveys (Riparian Community) SEE STUDY PLAN REQUEST	SCE did not propose an NDVI study due to multiple confounding variables that may complicate any analysis. NDVI was originally developed to study changes in agricultural crop health. This vegetation is generally homogeneous and does not show the community diversity of a natural system. Early aerial imagery flown for this Project lacks the resolution of the later aerals and would confound comparisons. In addition, to determine what vegetation community corresponds to a particular infrared radiation (IR) wavelength in the aerial photograph, ground-truthing at the time the data was collected would have been necessary. Also, the presence of a conifer canopy over much of the Project Area inhibits accurate demarcation of the riparian understory. An appropriate site for NDVI would have to be located outside a

Comment Number	Entity	Date/Forum	Comment	SCE Response
				<p>conifer-dominated vegetation community. The location of a suitable site for NDVI analysis is also complicated by challenge of selecting a site under SCE influence that does not have additional variables (e.g., accretion flows, seeps, tributaries). The current riparian monitoring sites were selected to minimize those additional variables. However, the upstream sites have a conifer canopy that would make NDVI analysis infeasible. And the downstream site is located very close to Slate Creek, which is a confounding variable. SCE is proposing a characterization study of riparian areas downstream of Poole Powerhouse.</p>
27	USFS	3/3/2022 Comments on Revised Technical Study Plan	<p>Page 4/15 of the Botany study plan, 4.0 EXTENT OF STUDY AREA AND STUDY SITES</p> <p>Should include subsurface facilities if there is a recreational use or an ongoing ecological impact (e.g. change in vegetation, erosion, landform, hydrologic process).</p> <p>There are 52 climbs accessed from the Rhinedollar penstock and Pinus albicaulis/whitebark pine a INF species on conservation concern occur along the penstock, this needs to be surveyed for special status and invasive plants.</p>	<p>The botanical survey area has been extended to include portions of the penstock trail (see revised Figure 4-1). This study site will extend along the trail as it follows the contour of the slope. The area surveyed (i.e., buffer) will be assessed during the field visit with regards to hazards and safety.</p>
28	CDFW	3/25/2022 Comments on Revised Technical Study Plan	<p>Loss or degradation of riparian vegetation is also a potential resource issue.</p>	<p>Acknowledged, that is why the current riparian monitoring program was established. However, data collected to date do not show loss or degradation of riparian vegetation attributable to the Project.</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
29	CDFW	3/25/2022 Comments on Revised Technical Study Plan	The riparian community data should be analyzed in greater detail. At the least this should include a list of all species, guild-specific diversity, species evenness and a similarity analysis (e.g., perMANOVA or ANOSIM) to test for differences over the course of the license. An indicator species analysis should be performed on any reaches where a significant shift occurred.	The intent of the data analysis (as part of the current monitoring) is to show trends up or down over time compared to data collected during baseline (i.e., 1999, 2000, 2001). It is unclear how statistical analyses would add value to the trends that are already presented in the reports. For example, differences over time that appear not to be statistically significant at a 95% confidence level may obscure trends that are biologically or ecologically significant. The Riparian Monitoring Reports prepared under the current license demonstrate a healthy riparian system with no observable impacts from the Project. Performing post-hoc statistical analyses on data collected without the test assumptions built into the data collection makes any results of doubtful validity.
30	CDFW	3/25/2022 Comments on Revised Technical Study Plan	All botanical reports for the Lee Vining Creek FERC Project should be made available for download on the relicensing website.	Past Riparian Monitoring Reports from 2012, 2017, and 2021 have been made available to agencies via Sharefile. All past botanical related reports are also available on the FERC e-library. Future reports will be made available once comments on Draft reports have been addressed or incorporated into Final reports for submittal to FERC.
31	CDFW	3/25/2022 Comments on Revised Technical Study Plan	CDFW recommends including the development of a GIS map that includes the vegetation alliances overlaid with information on Project facilities, Project-affected stream reaches and Project reservoirs.	This is included in the existing study plan for project facilities and recreation areas.
32	CDFW	3/25/2022 Comments	CDFW recommends that an overview of the	It is possible to describe the life histories of

Comment Number	Entity	Date/Forum	Comment	SCE Response
		on Revised Technical Study Plan	life history requirements of the dominant woody riparian species and associated riparian vegetation processes along stream corridors similar to Lee Vining Creek is included. This includes 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).	the dominant woody riparian plant species for the Project Area. It is unclear what "stream corridors similar to Lee Vining Creek" are referenced here. Also, reproduction via seeds for woody riparian species (specifically willows) is episodic and rare under the best of conditions. The Project cannot be expected to be managed for these rare events.
33	CDFW	3/25/2022 Comments on Revised Technical Study Plan	We need to be able to characterize the relationship between the riparian vegetation and flow conditions. We need to understand how frequently the riparian species across the floodplain are becoming inundated in the current flow regime, and what the depth and the width of inundation is. The CDFW proposed instream flow study (see AQ-3 comments) should be associated with riparian vegetation surveys to understand the stage-discharge relationship.	The riparian reports provide data and graphs of geomorphology, hydrologic conditions, and vegetation over time. The hydrologic data include soil moisture measured at various distances from the stream at the monitoring sites located between Saddlebag Lake and Slate Creek, as well as stream stage. Collectively the relationships between geomorphology, hydrology, and vegetation can be elucidated further as part of finalizing the draft report for the 2021 season, which includes graphs and data from that year and previous years.
34	CDFW	3/25/2022 Comments on Revised Technical Study Plan	Historical, existing, proposed and unimpaired hydrology should be used to analyze recession rates in spring/early summer when riparian seeds are releasing and germinating. We also need to be able to assess how the flood recurrence intervals and timing impact riparian vegetation during the different hydrologic situations.	SCE and FERC use the current baseline conditions (existing Project) to identify and analyze any potential effects. SCE does not agree that unimpaired hydrology, or pre-project conditions, present a useful basis of comparison and will therefore not develop unimpaired hydrology.
35	CDFW	3/25/2022 Comments	How will these portions of the riparian	The Study Plan has been revised to

Comment Number	Entity	Date/Forum	Comment	SCE Response
		on Revised Technical Study Plan	corridor be selected? To the extent possible they should incorporate areas where instream flow and or habitat mapping occurs.	include the study area for desktop characterization. The riparian desktop characterization study areas were selected based on the ability to identify riparian vegetation using ground-truthing and existing aerial imagery. This consists of willow (<i>Salix</i> spp.) cover that is outside the conifer canopy. Riparian areas below the conifer canopy are obscured by the upper canopy and are not considered suitable for this analysis. Two areas have been identified: (1) the meadow downstream of Riparian Monitoring Site 3 and (2) the meadow downstream of Aspen campground. The former is known to support a willow corridor based on direct field observations. The latter shows a willow cover based on Google Earth street view images and Google Earth aerial imagery shows well-defined riparian boundaries.
36	CDFW	3/25/2022 Comments on Revised Technical Study Plan	The methods for conducting the NDVI analysis need to be specified here. SCE should ensure that the images they plan to use for this analysis have the correct bands to perform the analysis.	The Study Plan has been revised to include additional details on the NDVI analysis. Please also see response related to NDVI above for comment 26.
37	CDFW	3/25/2022 Comments on Revised Technical Study Plan	Please clarify hydro-resource optimization	The Study Plan has been revised to include additional details. A footnote has been added to Section 4.0 above, which describes hydro-resource optimization.
38	CDFW	3/25/2022 Comments on Revised Technical Study Plan	Has SCE looked into acquiring infrared imagery from other sources? There are several free sources where satellite Imagery can be downloaded from but the resolution may not be sufficient (e.g., USGS Earth	SCE considers the existing imagery to be sufficient as it covers the time periods just before and after hydro-resource optimization.

Comment Number	Entity	Date/Forum	Comment	SCE Response
			Explorer, Sentinel Open Access Hub, NASA Earthdata Search, NOAA Data Access Viewer).	
39	CDFW	3/25/2022 Comments on Revised Technical Study Plan	What will this entail? At the least this should include a list of all species, guild-specific diversity, species evenness and a similarity analysis (e.g. perMANOVA or ANOSIM) to test for differences over the course of the license. An indicator species analysis should be performed on any reaches where a significant shift occurred.	The Study Plan text has been revised to provide additional details on what will be included in the documentation.
40	USFS	3/31/2022 Comments on Revised Technical Study Plan	In the RTSP, 6.1.3 (page 99/260) it states that only 2016 and 2021 will be analyzed. This seems problematic because 2016 had about average precipitation, but followed four years of below average precip and 2021 was below average (see image below). How will "healthy" vegetation be indicated if the only data is from these years and consists of only two data points? Please do your best to use the data from 1999-2001, 2006, 2011, 2016 and 2021. If that isn't possible, I'm not sure how useful this will be and we might need to explore other options.	As we intend to focus the desktop characterization analysis on pre and post hydro-resource optimization, SCE considers the existing 2016 and 2021 imagery to be sufficient since it covers the time periods just before and after hydro-resource optimization. The use of earlier imagery would be complicated by resolution issues. One of the study sites corresponds to the long-term riparian monitoring Site 3. The monitoring data from that site can be used to provide information on riparian health.
41	USFS	3/31/2022 Comments on Revised Technical Study Plan	How will the riparian communities be delineated in these images? Will you ground truth the remote sensing data to ensure it is the correct vegetation type? In the monitoring report for the current license, this technique is used where there are existing vegetation transects.	The riparian desktop characterization study areas will use aerial imagery to delineate the boundaries of willow riparian communities. The sites to be used in this analysis were selected based on the ability to identify riparian vegetation using ground-truthing and existing aerial imagery. This consists of willow (<i>Salix</i> spp.) cover that is outside the conifer canopy. Two areas have been identified: (1) the meadow downstream of Riparian

Comment Number	Entity	Date/Forum	Comment	SCE Response
				Monitoring Site 3 and (2) the meadow downstream of Aspen campground. The former is known to support a willow corridor based on direct field observations. The latter shows a willow cover based on Google Earth street view images and Google Earth aerial imagery shows well-defined riparian boundaries.

CDFW = California Department of Fish and Wildlife; DLA = Draft License Application; FERC = Federal Energy Regulatory Commission; LMP = Inyo National Forest Land Management Plan; O&M = operations and maintenance; MLC = Mono Lake Committee; PAD = Pre-Application Document; SCE = Southern California Edison; TWG = Technical Working Group; USFS = U.S. Forest Service

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TERR-2 GENERAL WILDLIFE RESOURCES SURVEY TECHNICAL STUDY PLAN

**LEE VINING HYDROELECTRIC PROJECT
*FERC PROJECT No. 1388***



April 2022

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1.0 POTENTIAL RESOURCE ISSUE

Special-status wildlife species that could be affected by Lee Vining Hydroelectric Project (Project) Operation and Maintenance (O&M) activities include:

- Yosemite toad (*Anaxyrus canorus*)
- Riparian bird species habitat
- U.S. Forest Service At-Risk Species and Species of Conservation Concern (INF, 2020)
- Other special-status wildlife species

2.0 PROJECT NEXUS AND HOW THE RESULTS WILL BE USED

Data on the wildlife species present or with a high potential to be present within areas subject to routine Project O&M activities in the Federal Energy Regulatory Commission (FERC) Project Boundary are needed to appropriately determine the existing conditions associated with terrestrial biological resources. If U.S. Forest Service At-Risk Species, Species of Conservation Concern, or other special-status wildlife species are present, the data will be examined to determine the potential effects of the Project on wildlife in the context of the most recent *Land Management Plan for the Inyo National Forest* (USFS, 2019), the federal and state Endangered Species Acts, and the National Environmental Policy Act.

3.0 STUDY GOALS AND OBJECTIVES

The goal of this study is to develop the additional information necessary to supplement the existing information to address the above identified issues. The study objectives are:

- Build a compendium of common, U.S. Forest Service At-Risk Species and Species of Conservation Concern, and other special-status wildlife species occurring within Project areas that may be affected by routine O&M activities.
- Identify rare, threatened, and endangered riparian birds in the area during general wildlife surveys.
- Determine persistence of known Yosemite toad populations within the Project Area and identify active breeding locations in areas subject to potential affects by the Project's routine O&M.
- Determine interactions between dispersed recreational use and breeding habitat for Yosemite toad.
- Develop sufficient data for informal and formal consultation needs for U.S. Fish and Wildlife Service (USFWS) with respect to the Yosemite toad.

- Assess willow flycatcher (*Empidonax traillii*) nesting habitat downstream of the Project between Poole Powerhouse and the reservoir at the Los Angeles Department of Water and Power (LADWP) Diversion Dam using vegetation classification as the primary tool, to include review of aerial photography and ground-truthing.

4.0 EXTENT OF STUDY AREA AND STUDY SITES

The terrestrial wildlife study area is shown on Figure 4-1. It is comprised of the following Southern California Edison (SCE) O&M areas, including a 200-foot buffer:

- Saddlebag Dam and associated infrastructure
- Tioga Dam and SCE access road to Tioga Dam
- Rhinedollar Dam
- Poole Powerhouse and associated facilities, including garages, storage building, and tail race

The Yosemite toad study area consists of Yosemite toad locations known in the Project Area and potentially suitable breeding habitat areas (Figure 4-2), specifically:

- The wet meadow southeast of Saddlebag Lake
- The California Natural Diversity Database (CNDDDB)-identified area at the northwest end of Saddlebag Lake
- The inlets at Tioga Lake
- The areas downstream of Tioga Dam along access roads
- Additional areas of potentially suitable wet meadow habitat along Lee Vining Creek as determined through updated literature reviews and reviews of aerial photographs and recent aerial and infrared imagery collected for the 2021 vegetation surveys

Prior to finalizing the study area boundaries, a desktop review will be conducted to identify areas that may contain suitable habitat for special-status wildlife and may be either hydrologically influenced by proposed license activities or subject to proposed license-related O&M activities. SCE will also continue discussions with agency staff (U.S. Forest Service and California Department of Fish and Wildlife) to identify any precise areas of concern for further incorporation into the study areas. The Yosemite toad study area may be further amended for the second year of surveys based on the results of the first year's survey results and other related licensing efforts.

The willow flycatcher habitat assessment area consists of the portion of Lee Vining Creek downstream of Poole Powerhouse to the reservoir at the LADWP Diversion Dam (Figure 4-1).

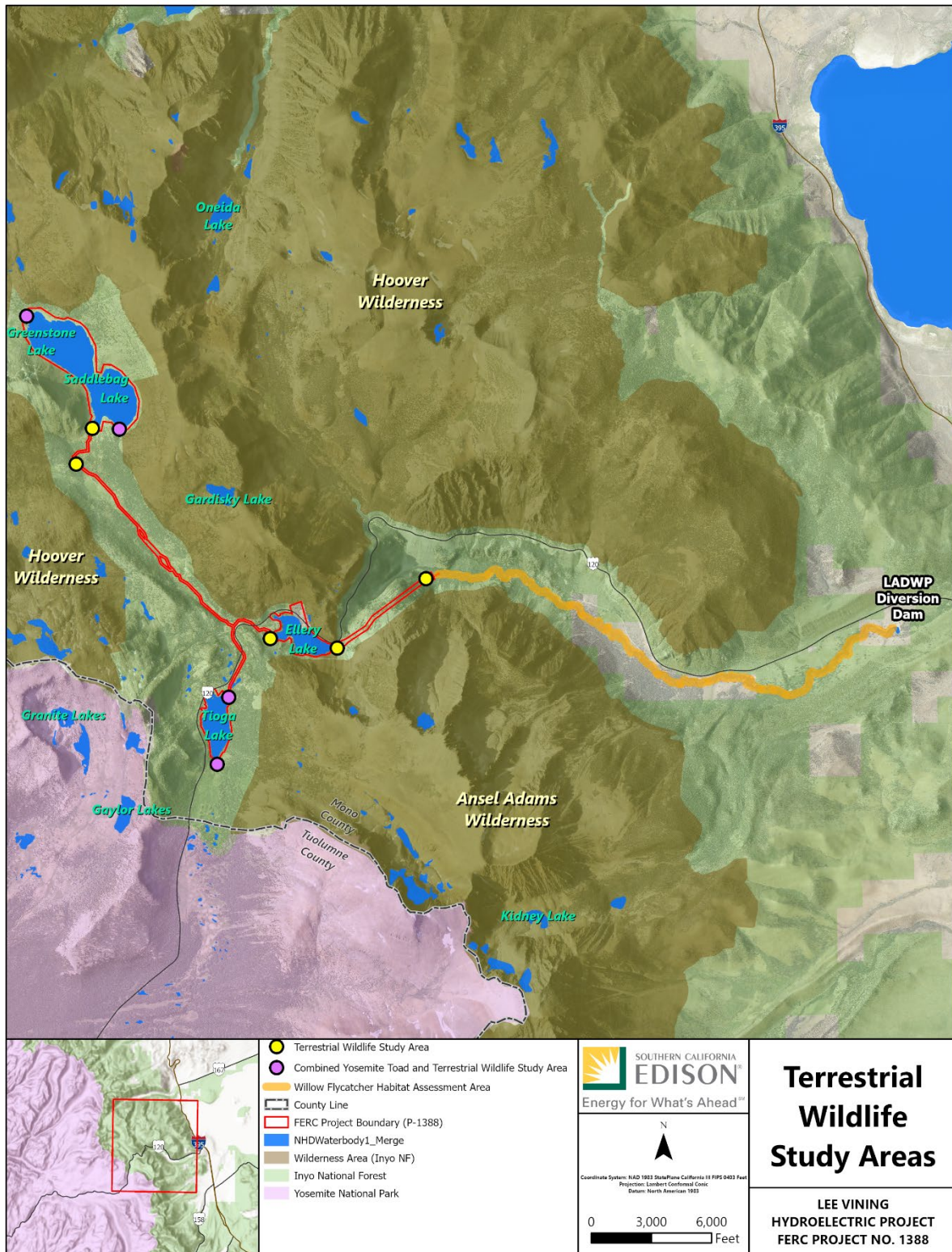


Figure 4-1. Project Location Map

5.0 EXISTING INFORMATION

Wildlife occurrences within the Project Vicinity have been documented in the CNDDDB (CDFW, 2020), USFWS Information for Planning and Consultation System (USFWS, 2020), the unpublished *At-Risk Aquatic and Terrestrial Species on Inyo National Forest* (INF, 2020), the *Final Environmental Assessment for Lee Vining Hydropower License* (FERC, 1992), and by past studies in the area (Psomas, 2006, 2010, 2013, 2014, 2018). Since the previous license application was completed, new species have been added to the federal and state Endangered Species Act lists, and others have been deemed special-status by various government agencies.

6.0 STUDY APPROACH

6.1. GENERAL WILDLIFE SURVEYS

6.1.1. PEDESTRIAN SURVEYS

- Surveys will be performed at appropriate times of the year (e.g., nesting season) to maximize the opportunity to observe special-status wildlife species as determined by the literature review.
- Prior to the start of the surveys, aerial photographs of each facility at a 1-inch to 200-foot scale will be prepared for field use and will include any known wildlife occurrences and areas of potentially suitable habitat for special-status wildlife.
- Biologists will perform pedestrian surveys within the terrestrial wildlife study area to (1) ground-truth the potentially suitable habitat maps developed during the literature review and (2) document any wildlife observations. Pedestrian surveys will be performed with binoculars to directly observe wildlife.
- Active searches for reptiles and amphibians will be conducted. Methods will include lifting, overturning, and carefully replacing objects such as rocks, boards, and debris.
- Mammals will be identified by visual recognition or evidence of diagnostic sign, including scat, footprints, scratch-outs, dust bowls, burrows, and trails.
- All Project facilities will be inspected for evidence of bat roosting.
- Observations of active or abandoned raptor nests will be recorded using a hand-held Global Positioning System (GPS) unit and mapped onto the field map.
- All wildlife species observed will be recorded in field notes to species (if possible) and location on field maps.

6.1.2. TRAIL CAMERA SURVEYS

- Biologists will install up to four trail cameras at locations most likely to capture wildlife—such as Sierra Nevada red fox and fisher—that may not be observable during

pedestrian surveys. Exact locations of cameras will be determined in consultation with the relevant Stakeholders, including the Wildlife Branch of the California Department of Fish and Wildlife and the Inyo National Forest.

- Cameras will be left set-up for a minimum of 1 year. Memory cards will be replaced approximately every 6 months to download photos and document wildlife captured on camera. Camera placement will be reassessed after reviewing the second round of data.

6.2. YOSEMITE TOAD SURVEYS

Prior to conducting the field survey, the following sources will be reviewed to identify potential expansions of the Yosemite toad study area, per a comparison of attributes of known Yosemite toad breeding locations to potential O&M-affected portions of the Project Area:

- Aerial and infrared imagery collected in 2021 for vegetation surveys conducted for existing license requirements;
- Occurrence data provided by CDFW and USFWS;
- Designation of Critical Habitat for the Sierra Nevada Yellow-Legged Frog, the Northern DPS [distinct population segment] of the Mountain Yellow-Legged Frog, and the Yosemite Toad (USFWS, 2016);
- Decline, Movement and Habitat Utilization of the Yosemite Toad (*Bufo canorus*): An Endangered Anuran Endemic to the Sierra Nevada of California (Martin, 2008); and
- Yosemite Toad Conservation Assessment (Brown et al., 2015).

Focused Visual Encounter Surveys for the Yosemite toad will be conducted to determine the locations of the species in the Yosemite toad study area. Two years of surveys will be conducted because the species may not consistently occur at previously documented locations. Three survey visits will be conducted each year during the Yosemite toad breeding season, with each visit spaced at least 2 weeks apart. The first visit will be conducted soon after snow melt to search for egg masses and tadpoles, which are signs of breeding and breeding habitat. To monitor the exposed ground as the snow melts, SCE's hydroelectric operations staff will visit the inlet at Tioga Lake and will document and communicate the snowpack conditions and site accessibility information weekly. The snowpack information collected will include a photograph of the inlet at Tioga Lake and this information will be shared with the wildlife resource agencies. The first survey date will be scheduled based on the snow melt at the inlet of Tioga Lake and the opening of potential breeding habitat. An additional (fourth) survey visit may also be conducted pending weather conditions and observations from the preceding three visits. The surveys will include diurnal searches to determine the presence of eggs, tadpoles, and adults. Lake elevation during each of the surveys will be provided by SCE hydroelectric operations staff and included in the reporting to ensure consistency. During the surveys, areas of previously identified breeding habitat will be examined for the presence of all life-

stages (eggs, tadpoles, sub-adults, and adults). The Biologist will visually scan lake shorelines, stream banks, and relevant habitats for potentially suitable breeding habitat and sign of breeding activities (including egg masses, larval toads, and adult advertisement calls). Potentially suitable habitat will be assessed using the primary constituent elements for habitat as defined by the USFWS (USFWS, 2016). Areas matching these criteria will be mapped as potentially suitable habitat. Where toads are found, the location of each population will be mapped, including collecting GPS coordinates, taking photographs of the site and associated habitat, and, where possible, taking photographs of specimen's life stage. Surveys will take place during suitable weather conditions (i.e., air temperatures at least 50 degrees Fahrenheit, wind speeds not to exceed 15 miles per hour, clear or partly clear skies, and not under overcast conditions, dense fog or during heavy rain). The Biologist will use the CDFW High Mountain Lakes – Amphibian and Reptile Visual Encounter Sheet (CDFW, 2022) or a similar datasheet with relevant data columns. All incidental sightings of Yosemite toad observed during the implementation of other wildlife studies will also be reported.

Mapped topographic contours of Tioga Lake and seasonal reservoir elevation levels will be reviewed to determine if and when suitable breeding habitat at the lake inlets are typically inundated by Project operations. During the first year of surveys, locations determined to have potentially suitable breeding habitat along Lee Vining Creek (e.g., upstream of the Sawmill Campground) per the remote desktop analysis will be visited to visually assess habitat suitability. These areas will be evaluated as suitable habitat based on the presence of USFWS-defined primary constituent elements (USFWS, 2016).

During the surveys at Saddlebag Lake and Tioga Lake, the surveying Biologists will record recreational pedestrian and bicycle traffic observed in areas within and adjacent to the occupied Yosemite toad habitat. The Biologist will coordinate with the Project's Recreation Use Assessment Study team to verify data are collected documenting recreational trail use associated with Project facilities at Yosemite toad occupied sites, such as inlet crossings along Tioga Lake and Saddlebag Lake. Data to be collected include timing of trail use (with respect to Yosemite toad breeding activities) and method of trail use, specifically pedestrian or bicycle.

6.3. WILLOW FLYCATCHER HABITAT ASSESSMENT

The portion of Lee Vining Creek downstream of Poole Powerhouse and upstream of the reservoir at the LADWP Diversion Dam will be assessed for the presence of potentially suitable nesting habitat for willow flycatcher and relevant subspecies (i.e., southwestern willow flycatcher [*E.t. extimus*]). The assessment will be conducted by reviewing aerial photography for potential habitat areas, then ground-truthing the areas likely to support potential nesting habitat. Potentially suitable willow flycatcher habitat will be assessed using habitat parameters described in Sogge, et al., 2010.

7.0 SCHEDULE

Date	Activity
2022 – Spring	Select study sites
2022 – Spring	Meeting with resource agencies and interested Stakeholders
2022 – Spring	Conduct desktop analysis
2022 – Spring–Fall	Conduct first season of field surveys
2022 – Nov/Dec	Compile study results
2023 – January	Interim Study Report and Meeting
2023 – Spring–Fall	Conduct second season of field surveys
2024 – Feb/March/April	Compile study results and prepare draft report
2024 – May	Distribute draft report to Stakeholders
2024 – June	Stakeholder review and provide comments on draft report
2024 – July/August	Resolve comments and prepare final report
2024 – September	Distribute final report in Draft License Application

8.0 CONSULTATION SUMMARY

In preparation to file the Pre-Application Document (PAD), filed in August 2021, and Notice of Intent (NOI), SCE hosted Terrestrial and Botanical Resources Technical Working Group (TWG) Meetings on January 27, February 24, April 7, and May 26, 2021, which resulted in study requests from Stakeholders to address questions regarding wildlife resources. Notes and materials from these meetings are available at www.sce.com/leevining. Stakeholder comments on the outline and relevant study requests received are summarized in the response to comments table below (Table 8-1). SCE filed draft Study Plans with the PAD and NOI on August 12, 2021, to address issues discussed with the TWG. The Stakeholder comment period ended on January 18, 2022, for the Study Plans, PAD, and NOI. SCE reviewed all comments received; drafted Revised Technical Study Plans which were distributed to the TWGs on February 18, 2022, for another 30-day review period. All comments received related to this Study Plan are included in Table 8-1 below and incorporated into this Final Study Plan where appropriate.

Table 8-1. Consultation Summary—Response to Comments

Comment Number	Entity	Date/Forum	Comment	SCE Response
1	CDFW	April 7, 2021 / Terrestrial and Botanical Resources TWG Meeting	Request to add focused point-count surveys for riparian birds to Study Plan.	<p>Lack of Nexus: The baseline environmental conditions would stay the same as no new activities are proposed. Detailed population studies or determining species' absence is not relevant.</p> <p>Level of Effort: Not commensurate with resource question given no change in operations.</p> <p>Methods: Focal point counts do not inform questions around Project impacts and would require multiple years of study for non-Project-related purposes.</p>
2	CDFW	April 7, 2021 / Terrestrial and Botanical Resources TWG Meeting	Request to add Yosemite toad mark/ recapture and <i>Batrachochytrium dendrobatidis</i> (Bd) studies to Study Plan.	<p>Lack of Nexus: The baseline environmental conditions would stay the same as no new activities are proposed. Detailed population studies or population health studies are not relevant.</p> <p>Level of Effort: Not commensurate with resource question given no change in operations.</p> <p>Methods: Mark/recapture and Bd surveys do not inform questions around Project impacts and would require multiple years of study for non-Project-related purposes.</p>
3	USFS	November 16, 2021 / Joint Agency Meeting	Can stocked trout introduce chytrid into the area?	<p>Published scientific literature currently suggests that aquatic chytrid fungus (<i>Batrachochytrium dendrobatidis</i>; Bd) is not transmitted into lakes or streams via fish (stocked or naturally migrating) as fish are not currently shown to be hosts of Bd. A study of rainbow trout (<i>Oncorhynchus mykiss</i>) and fathead minnow (<i>Pimephales promelas</i>) in sentinel cages fish in Bd- infected systems</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
				<p>suggests Bd zoospores do not persist on either organism (Wixson and Rogers, 2009). Further, a study exposing live mosquitofish (<i>Gambusia holbrooki</i>) to Bd determined neither the fish's exterior nor its gastrointestinal tract to be a suitable host media (McMahon, et al., 2013). However, fish-stocking activities may transfer Bd. One study identified the presence of Bd-infected amphibians occupying warm-water fish-rearing ponds in hatcheries in the southeastern United States (Green and Dodd, 2007). This study suggests that Bd may be transferred to other aquatic systems by inadvertent transfer of infected amphibian larvae or by contaminated water. Bd has been determined to stay viable in the water column for up to 7 weeks without living hosts (such as amphibians or crayfish) (Johnson and Speare, 2003). The CDFW does not test for Bd in routine hatchery pathology screening (CDFW, 2021b).</p> <p>Fish stocking of lakes in the FERC boundary have been ongoing since approval of the previous license and no new fish-stocking locations are proposed as part of the Project. The amphibian populations currently present within and adjacent to the FERC boundary have persisted throughout the life of the previous license despite ongoing fish-stocking activities. Currently, the occurrence of Bd in the Project Area is unknown.</p>
4	USFS	January 17, 2022 Comments on PAD	"Table 5.7-1. Potential for Rare, Threatened, or Endangered Wildlife Species to Occur Fisher- Fish and Wildlife Service (FWS) has proposed critical habitat for Fisher. It should be	This information will be added to the forthcoming Project documents as appropriate. Regarding Footnote b: see response to Comment Number 7 below.

Comment Number	Entity	Date/Forum	Comment	SCE Response
			<p>noted that proposed critical habitat is not located within project boundary.</p> <p>Sierra Nevada bighorn sheep- The project area is located between Mt. Gibbs and Mt. Warren herd units. Species occurrence is documented as recently as 2007.</p> <p>Footnote b. "The species is known to be absent from the Lee Vining FERC Project Boundary and connected tributaries; however, plans to reintroduce the species into features upstream from the Project Boundary are anticipated in 2022. (CDFW, 2021)".</p> <p>Comment: This is important to note. This species could very well establish a population within the project boundary."</p>	
5	USFS	January 17, 2022 Comments on PAD	<p>"5.7.6 CRITICAL HABITAT Paragraph 2: Fish and Wildlife Service (FWS) has proposed critical habitat for Fisher. It should be noted that proposed critical habitat is not located within project boundary."</p>	<p>This information will be added to the forthcoming Project documents as appropriate.</p>
6	USFS	January 17, 2022 Comments on PAD	<p>Noise pollution from O&M should be analyzed. No information is contained in the PAD on how loud the regular operation of these facilities are. Possible direct and indirect effects to species could occur.</p>	<p>No new activities would occur under the proposed license and the noise emitted would be consistent with the baseline conditions. Regardless, a study buffer of 200 feet around relevant activity areas is included in the Study Plan, which would identify sensitive wildlife resources with potential to be indirectly affected Project-related noise. The Relicensing Team will coordinate with the USFS to clarify concerns.</p>
7	USFS	January 17, 2022 Comments on PAD	<p>The potential for Rana sierrae to eventually disperse into the project area should be analyzed. California Department of Fish and Wildlife (CDFW) reintroductions are planned in the future.</p>	<p>Discussion of species reintroduction into the Project Vicinity will be included in the forthcoming Project documents (DLA) as appropriate, and SCE will continue coordinating with the resource agencies</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
				<p>concerning reintroduction efforts. The closest proposed reintroduction location is at Maul Lake (CDFW, 2021a), approximately 0.75 mile southwest of the FERC boundary and approximately 500 feet higher in elevation than the closest portion of the FERC boundary. The Project has no hydrologic influence on the proposed reintroduction location and the proposed license activities would not conflict with the reintroduction efforts. Further, any habitat within the FERC boundary is not expected to be suitable for the species due to the presumed presence of non-native fish. For these reasons, the proposed reintroduction efforts of the Sierra Nevada yellow-legged frog (<i>Rana sierrae</i>) do not have any nexus with the proposed license activities.</p>
8	USFS	January 17, 2022 Comments on PAD	<p>What is the justification for only surveying within a 200ft buffer? Many stream dependent species have a dispersal rate far greater than 200 ft. The section on "Movement" in the Yosemite Toad Conservation Assessment does a great job at highlighting dispersal ranges for this species. "Martin (2008) reported a maximum dispersal distance of 657meters (2214 feet) from breeding pools to upslope habitat." Page 19.</p>	<p>The area beyond the FERC boundary subject to potential direct and indirect effects by licensed activities is limited and SCE maintains a 200-foot study buffer is sufficient to identify potentially affected wildlife and their habitat. Although some stream-dependent species have movements greater than 200 feet, the effects of the proposed license activities would be localized to the FERC boundary. A study buffer greater than 200 feet would include areas not affected proposed license-related O&M activities. Prior to finalizing the study area boundaries, a desktop review will be conducted to identify areas that may contain suitable habitat for special-status wildlife and may be either hydrologically influenced by proposed license activities or subject to proposed license-related O&M activities. SCE will also continue</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
				discussions with USFS staff to identify any precise areas of concern for further incorporation into the study area.
9	USFS	January 17, 2022 Comments on PAD	“Exact locations of cameras will be determined in consultation with the relevant stakeholders.”: Camera locations are to capture any avoidance behavior, occupancy, and habitat connectivity zones/corridors/migratory routes within and through the project area.	SCE looks forward to coordinating directly with agency staff to determine the ultimate camera locations.
10	CDFW	January 14, 2022 Comments on PAD and Study Requests	Suitable nesting habitat for state listed as threatened willow flycatcher (<i>Empidonax traillii</i>) should be defined.	Suitable nesting habitat for willow flycatcher will be defined in the final habitat assessment report.
11	CDFW	January 14, 2022 Comments on PAD and Study Requests	CDFW would like to provide input from our Wildlife Branch on trail camera locations and placement prior to implementation.	SCE looks forward to coordinating directly with agency staff to determine the ultimate camera locations.
12	CDFW	January 14, 2022 Comments on PAD and Study Requests	CDFW will remain closely involved in the planning and implementation of the Yosemite toad (<i>Anaxyrus canorus</i>) surveys. Yosemite toad is a California species of special concern.	SCE looks forward to coordinating directly with agency staff regarding the planning and implementation of the Yosemite toad surveys.
13	CDFW	3/25/2022 Comments on Revised Technical Study Plan	What protocol will be used for this [willow flycatcher habitat assessment] survey?	Visual surveys will be conducted in areas identified as having potential nesting habitat for willow flycatcher in the desktop review. The size and structure of the habitat will be assessed using parameters describing suitable nesting habitat in the 2010 document by Sogge, et al.
14	CDFW	3/18/2022 Comments on Revised Technical Study Plan and subsequent 3/24/2022 and 3/30/2022	Discussions of Yosemite toad survey protocols and survey timing.	The Study Plan has been updated based on the follow-up discussions with CDFW.

Comment Number	Entity	Date/Forum	Comment	SCE Response
		Conference calls between Licensee and CDFW		

Bd = *Batrachochytrium dendrobatidis*; CDFW = California Department of Fish and Wildlife; FERC = Federal Energy Regulatory Commission; O&M = operations and maintenance; PAD = Pre-Application Document; SCE = Southern California Edison; TWG = Technical Working Group; USFS = U.S. Forest Service

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REC-1 RECREATION USE ASSESSMENT TECHNICAL STUDY PLAN

**LEE VINING HYDROELECTRIC PROJECT
*FERC PROJECT No. 1388***



April 2022

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1.0 POTENTIAL RESOURCE ISSUE

This study would characterize existing recreation use and access associated with Lee Vining Hydroelectric Project (Project) resources and assess future recreation needs associated with the Project.

2.0 PROJECT NEXUS AND HOW THE RESULTS WILL BE USED

Under Title 18 Code of Federal Regulations Section 2.7, licensees whose projects include land and water resources with outdoor recreational potential have a responsibility to develop those resources in accordance with area needs. Existing Project facilities and operations have the potential to promote incremental use of the Project Area for recreation purposes.

All recreation facilities in the upper Lee Vining Canyon are currently owned and operated by the Inyo National Forest (INF). However, many of these sites are either partially within or directly adjacent to the existing Federal Energy Regulatory Commission (FERC) Project Boundary. INF has Federal Power Act Section 4(e) conditioning authority to prescribe conditions that may mitigate the impact of hydropower projects on INF system lands and thus could require mitigation for recreation induced by the presence of the Project. The initial phase (first study season) of the REC-1 study will evaluate which INF recreation facilities or activities have a potential connection to the Project and thus would warrant inclusion in the broader studies proposed in the second study season.

3.0 STUDY GOALS AND OBJECTIVES

- Determine which INF recreation facilities or activities have a potential connection to the Project and thus would warrant inclusion in the broader studies proposed in the second study season.
- For the study sites and activities identified:
 - Characterize existing recreation opportunities and visitation.
 - Characterize existing recreation visitor characteristics, needs, and preferences.
 - Estimate current recreational fishing effort in Project creeks and reservoirs.
 - Estimate future recreational demand and needs, including the need for additional recreation facility and access enhancements or enforcement actions.
 - Assess consistency of current recreation opportunities with the Desired Conditions, Goals, Standards, and Guidelines described in the *Land Management Plan for the Inyo National Forest* (USFS, 2019).

4.0 EXTENT OF STUDY AREA AND STUDY SITES

The recreation use assessment study area and specific study sites based on activity are listed in Table 4-1 and shown on Figure 4-1 below.

Table 4-1. Study Sites

Site ID	Site Name	User Surveys (2022)	User Surveys (2023)	Creel Surveys	Spot Counts	Counters
1	Saddlebag Lake Campground	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	TBD ^a
2	Saddlebag Lake DUA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	TBD
3	Saddlebag Lake Trailhead	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	No	<input checked="" type="checkbox"/>	TBD
4	Sawmill Walk-In Campground	<input checked="" type="checkbox"/>	TBD	<input checked="" type="checkbox"/>	TBD	TBD
5	Carnegie Station Trailhead	<input checked="" type="checkbox"/>	TBD	No	TBD	TBD
6	Gardisky Lake Trailhead	<input checked="" type="checkbox"/>	TBD	No	TBD	TBD
7	Junction Campground	<input checked="" type="checkbox"/>	TBD	<input checked="" type="checkbox"/>	TBD	TBD
8	Bennettville Trailhead	<input checked="" type="checkbox"/>	TBD	No	TBD	TBD
9	Tioga Lake Overlook Info Site	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	No	<input checked="" type="checkbox"/>	TBD
10	Glacier Canyon Trailhead	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	No	<input checked="" type="checkbox"/>	TBD
11	Nunatak-Tioga Tarns Trailhead	<input checked="" type="checkbox"/>	TBD	No	TBD	TBD
12	Tioga Lake Campground	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	TBD
13	Nunatak Nature Trail	<input checked="" type="checkbox"/>	TBD	No	TBD	TBD
14	Ellery Lake Campground	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	TBD
15	Warren Fork Trailhead	<input checked="" type="checkbox"/>	TBD	No	TBD	TBD
16	Big Bend Campground	<input checked="" type="checkbox"/>	TBD	No	TBD	TBD
17	Aspen Grove Campground	<input checked="" type="checkbox"/>	TBD	No	TBD	TBD

Site ID	Site Name	User Surveys (2022)	User Surveys (2023)	Creel Surveys	Spot Counts	Counters
18	Boulder Day Use Area	<input checked="" type="checkbox"/>	TBD	No	TBD	TBD
19	Moraine Campground	<input checked="" type="checkbox"/>	TBD	No	TBD	TBD
20	Lower Lee Vining Campground	<input checked="" type="checkbox"/>	TBD	No	TBD	TBD
21	Cattleguard Campground	<input checked="" type="checkbox"/>	TBD	No	TBD	TBD

DUA = Day Use Area; TBD = to be determined

^a To be determined following 2022 user surveys and Technical Working Group consultation

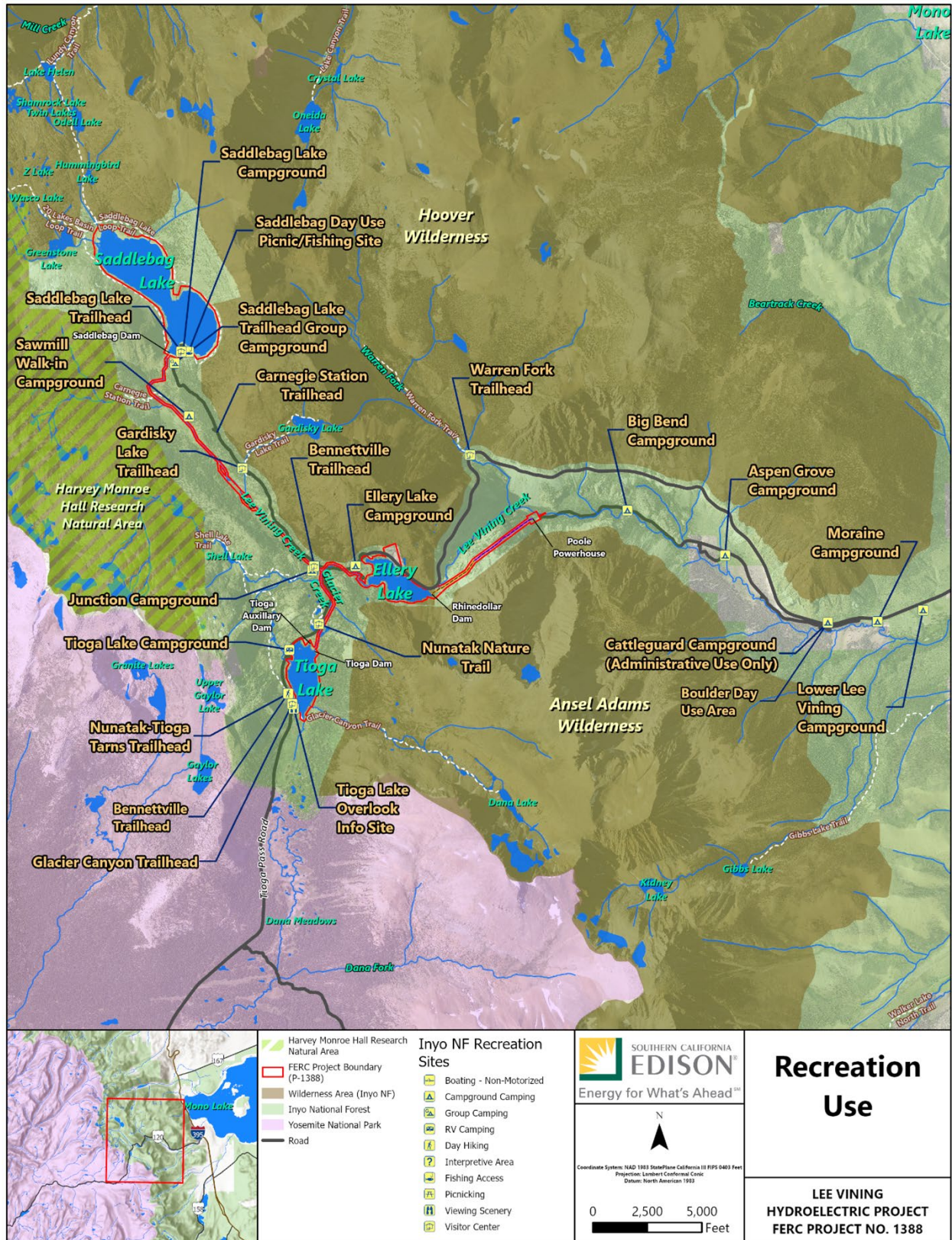


Figure 4-1. Survey and Data Collection Sites

5.0 EXISTING INFORMATION

- *2015 Licensed Hydropower Development Recreation Report*, FERC Form No. 80 (SCE, 2015)
- *2014 SCE Recreation Use Study Report for Eastern Hydro Division* (SCE, 2015)
- *California's 2021–2025 Statewide Comprehensive Outdoor Recreation Plan* (SCORP) (CDPR, 2020)
- National Visitor Use Monitoring (NVUM) Reports for INF (USFS 2006, 2011, 2018)¹
- INF Special Use Permits and Concessionaire Data
- *Inyo National Forest Alternative Transportation System Study* (USDA, 2013)
- California Department of Fish and Wildlife (CDFW) Stocking and Historical Creel Survey Data
- *Strategic Plan for Trout Management* (CDFG, 2003)
- *Fisheries Techniques, Third Addition* (Zale et al., 2013)

The study will also analyze relevant management plans for the area, including the *Inyo County General Plan* (IC, 2001) and the *Land Management Plan for the Inyo National Forest* (USFS, 2019).

¹ 2021 NVUM data is currently being collected by the USFS and will also be analyzed once available.

6.0 STUDY APPROACH

To accomplish the goals and objectives of this study, Southern California Edison (SCE) is proposing a variety of data collection techniques to compile both historical and current recreation use and needs patterns for the Project. Historical use patterns will be determined by analyzing the studies, reports, and management plans described in Section 5.0 of this Study Plan. Current use and needs information will be collected through user surveys, creel surveys, spot counts, and traffic and trail counters. A description of each collection technique is provided below.

6.1. USER SURVEYS (2022–2023)

6.1.1. FIELD SEASON ONE (2022)

During the first study season (2022), user surveys will be conducted on-site using a survey form (available in both English and Spanish) at the sites identified in Table 4-1 above. These initial surveys are intended to collect the primary reason for each recreator's visit to determine which INF recreation sites or areas may have a potential connection to the Project and thus would warrant inclusion in the broader studies proposed in the second study season (2023). SCE will work with the Recreation and Land Use Technical Working Group (TWG) to develop parameters for determining nexus and final survey forms prior to the 2022 to 2023 field seasons.

SCE proposes to conduct visitor surveys 2 days per month (1 weekday and 1 weekend day) from May to September 2022, and 1 day of one holiday weekend for a total of 11 days throughout the study period. For the purposes of this study, the holidays include the 3 days of the holiday weekends Memorial Day: May 28 to 30, 2022; Fourth of July: July 2 to 4, 2022; Labor Day: September 3 to 5, 2022. One visitor survey circuit includes conducting visitor surveys at each of the sites identified in Table 4-1. There will be three 4-hour shifts: Shift 1 (7 a.m. to 11 a.m.), Shift 2 (11 a.m. to 3 p.m.), and Shift 3 (3 p.m. to 7 p.m.). On each of the 11 days, two visitor survey circuits will be completed within a 4-hour shift. SCE anticipates each circuit will take approximately 2 hours. Within each shift, once the first circuit is completed, the second circuit will commence. The visitor surveys will be conducted following a bus route method (e.g., Pollack et al., 1994); the shift, the starting recreation site for each circuit, and the direction of travel (i.e., clockwise or counterclockwise) will be selected randomly on the days the surveys are conducted.

6.1.2. FIELD SEASON TWO (2023)

For the sites identified as having a Project nexus from Field Season 1 (2022) surveys, additional visitor surveys will be conducted in the second study season using a survey form (available in both English and Spanish) to collect recreation user characteristics and demographics (e.g., origin, gender, age, and group size); satisfaction; type of activities; length of stay; and perception of crowdedness, site conditions, fees, and site needs. The data collected will be used to provide a general pattern of recreation use (e.g., type, volume, and daily) and assist in the development of recreation use estimates for the Project. The data will provide recreation user inputs on "crowdedness" and potential

facility needs. Survey instruments, methods, and locations for winter surveys will likely be different from those for summer. SCE will work with the Recreation and Land Use TWG to develop final survey forms, methods, and study locations prior to the 2022 to 2023 field seasons.

Similar to Field Season 1, SCE proposes to conduct visitor surveys 2 days per month (1 weekday and 1 weekend day) from May to September 2022, and 1 day of one holiday weekend for a total of 11 days throughout the study period. For the purposes of this study, the holidays include the 3 days of the holiday weekend Memorial Day: May 28 to 30, 2022; Fourth of July: July 2 to 4, 2022; Labor Day: September 3 to 5, 2022. One visitor survey circuit includes conducting visitor surveys at each of the sites identified in Table 4-1. There will be three 4-hour shifts: Shift 1 (7 a.m. to 11 a.m.), Shift 2 (11 a.m. to 3 p.m.), and Shift 3 (3 p.m. to 7 p.m.). On each of the 11 days, two visitor survey circuits will be completed within a 4-hour shift. SCE anticipates each circuit will take approximately 2 hours. Within each shift, once the first circuit is completed, the second circuit will commence. The visitor surveys will be conducted following a bus route method (e.g., Pollack et al., 1994); the shift, the starting recreation site for each circuit, and the direction of travel (i.e., clockwise or counterclockwise) will be selected randomly on the days the surveys are conducted.

All survey clerks for both the general recreation surveys and creel surveys discussed below will be trained thoroughly as a means of quality control. Survey clerks will be provided with detailed information on the study schedule, appropriate materials to aid in data collection, and direction on appropriate interviewing techniques and attire.

6.2. CREEL SURVEYS (2023)

Creel sampling will be conducted according to the standard protocols published in *Fisheries Techniques, Third Addition* (Zale et al., 2013). Surveys will utilize a field data sheet at each of the sites identified in Table 4-1 above to collect angler characteristics (e.g., origin, gender, age, and group size); determine current angler timing, effort, harvest, composition, and success; and estimate catch-per-unit effort by species. Creel surveys will be conducted during peak fishing season (between Memorial Day and Labor Day 2023), which equates to a period of 98 days.

SCE proposes to conduct creel surveys for approximately 30 percent of the creel survey period, including one representative day from each of the three major holiday weekends (Memorial Day, Independence Day, and Labor Day weekends) and the remainder of survey days split between weekdays and non-peak weekend days. The specific survey schedule will be randomly generated according to that criteria. One creel survey circuit will be completed each sampling day and includes conducting creel surveys at each of the sites identified in Table 4-1. There will be two 4-hour blocks (morning and afternoon/evening) on each sampling day. The creel surveys will be conducted following a bus route method (e.g., Pollack et al., 1994); the shift, the starting recreation site for each circuit, and the direction of travel (i.e., clockwise or counterclockwise) will be selected randomly on the days the surveys are conducted.

All survey clerks for both the general recreation surveys and creel surveys will be trained thoroughly as a means of quality control. Survey clerks will be provided with detailed information on the study schedule, appropriate materials to aid in data collection, and direction on appropriate interviewing techniques and attire.

6.3. SPOT COUNTS (2023)

Spot counts will be conducted at each recreation site identified in Table 4-1 in conjunction with user surveys outlined in Section 6.1.2. Spot counts will allow for documentation of the number of vehicles and trailers at each parking area as a means of estimating the number of users currently at the site along with weather, time, and license plate data.

SCE proposes to conduct spot counts 2 days per month (1 weekday and 1 weekend day) from May to September 2022, and 1 day of one holiday weekend for a total of 11 days throughout the study period. For the purposes of this study, the holidays include the 3 days of the holiday weekend Memorial Day: May 28 to 30, 2022; Fourth of July: July 2 to 4, 2022; Labor Day: September 3 to 5, 2022). One spot count circuit includes performing a spot count at each of the sites identified in Table 4-1. There will be three 4-hour shifts: Shift 1 (7 a.m. to 11 a.m.), Shift 2 (11 a.m. to 3 p.m.), and Shift 3 (3 p.m. to 7 p.m.). On each of the 11 days, two spot count circuits will be completed within a 4-hour shift. SCE anticipates each circuit will take approximately 2 hours. Within each shift, once the first circuit is completed, the second circuit will commence. The spot counts will be conducted following a bus route method (e.g., Pollack et al., 1994); the shift, the starting recreation site for each spot count circuit, and the direction of travel (i.e., clockwise or counterclockwise) will be selected randomly on the days the counts are conducted.

SCE will work with the Recreation and Land Use TWG to finalize the spot count schedule prior to the 2023 field season.

6.4. TRAFFIC COUNTERS (2023)

The number and location of traffic counters will be determined in consultation with the Recreation and Land Use TWG prior to the 2023 field season.

6.5. TRAIL COUNTERS (2023)

The number and location of trail counters will be determined in consultation with the Recreation and Land Use TWG prior to the 2023 field season.

6.6. ANALYSIS AND REPORTING

The following sections provide a description of the approach to estimating existing and future recreational use, recreation site capacity and use density percentages, and recreation needs. A report will be prepared documenting the analysis results. The report will include a summary of all collected information and discussion of the analyses described below. The report will address all applicable Desired Conditions, Goals, Standards, and Guidelines of the *Land Management Plan for the Inyo National Forest* (USFS, 2019).

6.6.1. CURRENT RECREATION USE AND DENSITY ESTIMATES

Average recreation use will be calculated utilizing spot counts, traffic and trail counters, and user survey data. For vehicle estimates, it will be assumed, on average, a total party size per vehicle of 2.5 people, as estimated in the INF's most recent NVUM report (USFS, 2018). Estimates will be categorized by site; site type; and activity based on weekday, weekend, holiday, morning, afternoon or evening use, as well as by monthly total use. For the purposes of this study, the carrying capacity for a recreation site is defined as the number of vehicles and boat trailers that can be parked at a recreation site at one time, based on the number of available parking spaces associated with the particular site. For paved parking lots, this will be achieved by counting the number of designated parking spaces available at the recreation site. For unmarked parking, maximum vehicle space will be estimated. Peak and average use density at each site will be estimated based on the average number of vehicles observed divided by the parking capacity of that site.

6.6.2. FUTURE RECREATION USE ESTIMATES

Estimated projections of future recreation use will be developed using the average annual increase in population growth over the past 10 years, as reported by the U.S. Census Bureau. These estimates will be augmented with discussion of trends reported in the 2021 SCORP (CDPR, 2020); 2006, 2011, 2016, and 2021 (when available) NVUM reports for INF (USFS, 2006, 2011, 2018), and the *Land Management Plan for the Inyo National Forest* (USFS, 2019). Estimated projections will be provided in 5-year intervals for the anticipated term of the license up to 50 years into the future.

While it is acknowledged that future changes in the supply of recreation resources, either in their quantity, accessibility, and/or quality, may influence future demand and use, the demand analysis undertaken for this study does not attempt to predict future changes or how they might specifically affect levels of use at Project facilities. Therefore, the demand analysis results should be viewed as a general guide of potential future recreation pressure developed for planning purposes only.

6.6.3. RECREATION NEEDS ASSESSMENT

Estimates of future Project-related recreational demand and needs will rely on the results provided by the recreation use assessment and visitor surveys for user preferences and opinions on needs and crowding.

The need for new recreation opportunities, new site development, or modification of existing recreation resources will be assessed based on the results of facility condition assessments, site capacity estimates, and user surveys that provide user preferences and opinions on needs and crowding at each site and the Project as a whole. Based on these results, recommendations will be proposed to address future Project facilities and operations, consistent with the Desired Conditions, Goals, Standards, and Guidelines described in the *Land Management Plan for the Inyo National Forest* (USFS, 2019), to then be discussed with the Recreation TWG.

7.0 SCHEDULE

Date	Activity
2022 – Spring/Summer	Conduct initial user surveys to determine primary reason for visit
2022 – Nov/Dec	Analyze initial findings from Field Season 1
2023 – January	Interim Study Report and Meeting
2023 – February	Consult with TWG to determine study sites and methods for 2023 field season
2023 – Spring/Summer/Winter	Conduct season two studies
2024 – Feb/March/April	Compile study results and prepare draft report
2024 – May	Distribute draft report to TWG
2024 – June	TWG review and comments
2024 – July/August	Resolve comments and prepare final report
2024 – September	Distribute final report in Draft License Application

TWG = Technical Working Group

8.0 CONSULTATION SUMMARY

In preparation to file the Preliminary Application Document (PAD), filed in August 2021, and Notice of Intent (NOI), SCE hosted Recreation and Land Use Resources TWG Meetings on January 28, February 25, April 1, and May 27, 2021, resulting in study requests from Stakeholders to address questions regarding recreation use and needs. Notes and materials from these meetings are available at <http://www.sce.com/leevining>. Stakeholder comments on the outline and relevant study requests received are summarized in the response to comments table below (Table 8-1). SCE filed draft Study Plans with the PAD and NOI on August 12, 2021, to address issues discussed with the TWG. The Stakeholder comment period ended on January 18, 2022, for the Study Plans, PAD, and NOI. SCE reviewed all comments received; drafted Revised Technical Study Plans which were distributed to the TWGs on February 18, 2022, for another 30-day review period. All comments received related to this Study Plan are included in Table 8-1 below and incorporated into this Final Study Plan where appropriate.

Table 8-1. Consultation Summary—Response to Comments

Comment Number	Entity	Date/Forum	Comment	SCE Response
1	Nick Buckmaster CDFW	1/28/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> The Project creates reservoirs, and our department needs to stock those to maintain the value of them to fishermen. Our stocking plan is based on use data, so we will be asking for a study to quantify fishing pressure on reservoirs to inform mitigation measures for stocking. Currently, we have no idea how many fishermen are using the lakes other than a qualitative guess. To capture the target species, catch rates would be the intent. The study would mainly focus on the reservoirs, though we will want to look at creeks as well.	SCE received your formal study request on 2/8/2021 and incorporated it into Study <i>REC-1 Recreation Use Assessment</i> .
2	Katie Goodwin Access Fund	1/28/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> There is a substantial amount of ice climbing that happens below Ellery Lake. Where are the flows coming from and will they change? What fact finding do I need to do to figure out what’s happening there? Travel to the climbing site would be over snow, not on trails, resulting in less impacts on vegetation and soil. I would be happy to provide this information. It’s a unique area for ice climbing.	SCE is not aware that Project operations contribute to the ice climbing environment below Ellery Lake. The integrity of flowlines is inspected regularly as part of the dam safety program. SCE would welcome any information that may inform future inspections. SCE is proposing to characterize winter use as part of its <i>REC-1 Recreation Use Assessment</i> and will work with the TWG to determine method and sites for analysis.
3	Sheila Irons USFS	1/28/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> In the past, there have been conflicts at Saddlebag Lake between the resort’s water taxi service and lake levels. Since there are no lake level requirements on Saddlebag Lake, the resort sometimes has issues with lake levels being too low to operate.	SCE reviews instream flows and resulting lake levels at Saddlebag Lake annually in April and August with the USFS. SCE will characterize use at the resort, including its water taxi service as it relates to lake levels, as part of its REC-1 study using SCE lake level data and USFS concessionaire data.
4	Bartshe Miller MLC	1/28/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> I’m interested in the pullouts at Ellery and Tioga Lakes. Are those in the Project area? Are there opportunities to organize/clarify traffic there, manage people, and include	Pullouts on State Route 120 alongside Ellery and Tioga Lakes are ultimately the responsibility of the California Department of Transportation. However, the formal pullout at Ellery Lake will be included in user surveys

Comment Number	Entity	Date/Forum	Comment	SCE Response
			interpretive displays since the pullouts attract people to observe the scenery? What about adding restrooms?	and spot counts conducted under REC-1 efforts in the 2023 field season. Informal pullouts surrounding the Project reservoirs (Saddlebag, Ellery, and Tioga Lakes) will be included in the 2022 dispersed use assessment. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season.
5	Nick Buckmaster CDFW	2/8/2021 Formal Study Request (Emailed Document)	[Formal request for creel survey]	SCE received your formal study request incorporated it into the Study <i>REC-1 Recreation Use Assessment</i> . Creel sampling will follow the standard protocols published in <i>Fisheries Techniques, Third Addition</i> (Zale et al., 2013), and analysis will include review of CDFW's <i>Strategic Trout Management Plan</i> . Methods will include surveys and spot counts at both the Project reservoirs and campgrounds located on creeks within the FERC Project Boundary (Sawmill Walk-in and Junction Campgrounds).
6	Nick Buckmaster CDFW	2/25/2021 TWG Meeting	<p><i>Paraphrase of comment in meeting:</i> To summarize the Creel Census study request, we don't have a good estimate of fishing pressure at the Project. The reservoirs/resources are essentially created by the Project. We want to determine what the users would like to see, what fish they want to catch, etc. We want to use professional standards for a good robust creel survey, the industry standard.</p> <p>We also want to include areas around campgrounds, but in general we are more concerned with the lakes. Consider doing a "roving creel" or "car creel" to estimate differential pressure between lakes and streams. The</p>	SCE received your formal study request incorporated it into the Study <i>REC-1 Recreation Use Assessment</i> . Creel sampling will follow the standard protocols published in <i>Fisheries Techniques, Third Addition</i> (Zale et al., 2013), and analysis will include review of CDFW's <i>Strategic Trout Management Plan</i> (CDFG, 2003). Methods will include surveys and spot counts at both the Project reservoirs and campgrounds located on creeks within the FERC Project Boundary (Sawmill Walk-in and Junction Campgrounds).

Comment Number	Entity	Date/Forum	Comment	SCE Response
			assumption is that fishermen using campground areas and creeks are also fishing in the lakes. We could get a rough count of creek fishers while doing the lake assessment.	
7	Katie Goodwin Access Fund	2/25/2021 TWG Meeting	<p><i>Paraphrase of comment in meeting:</i> It is already well known, but this year especially this added camping pressure is a product of needing to have permits to enter Yosemite. There is a lot of dispersed camping anywhere you can fit a vehicle. The permit requirement was were reinstated for 2021, it was implemented as a response to Covid-19.</p>	Pullouts on State Route 120 alongside Ellery and Tioga Lakes are ultimately the responsibility of the California Department of Transportation. However, the formal pullout at Ellery Lake will be included in user surveys and spot counts conducted under REC-1 efforts in the 2023 field season. Informal pullouts surrounding the Project reservoirs (Saddlebag, Ellery, and Tioga Lakes) will be included in the 2022 dispersed use assessment. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season.
8	Bartshe Miller MLC	2/25/2021 TWG Meeting	<p><i>Paraphrase of comment in meeting:</i> We are putting together our study requests still. Possibility of focused recreation use studies at Saddlebag, Ellery pull out, and at north end of Tioga Lake in regards to vehicle density on dirt areas. There is the possibility of non-point source pollution and run off (dumping of coolers, pet waste, etc.) at these pullouts increasing due to recreation/vehicle use at these pull outs.</p> <p>Pulling off in these areas is due to the scenic views at the reservoirs, so they seem related to the Project. Camping right at the shoreline of Saddlebag and Tioga Lakes is increasing, with no buffer between vehicles. This isn't happening at Ellery Lake because there is no direct driving access to the shoreline.</p>	Pullouts on State Route 120 alongside Ellery and Tioga Lakes are ultimately the responsibility of the California Department of Transportation. However, the formal pullout at Ellery Lake will be included in user surveys and spot counts conducted under REC-1 efforts in the 2023 field season. Informal pullouts surrounding the Project reservoirs (Saddlebag, Ellery, and Tioga Lakes) will be included in the 2022 dispersed use assessment. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season.

Comment Number	Entity	Date/Forum	Comment	SCE Response
				The nexus between water quality impacts from non-Project pullouts is discussed in Study <i>WQ-1 Stream and Reservoir Water Quality</i> .
9	Katie Goodwin Access Fund	2/25/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> Regarding recreation use at Saddlebag Lake, I use that trail a lot. I noticed last year that there is a ferry across Saddlebag Lake that cuts out about two miles of easy walking. There are impacts from people offloading from the ferry on Saddlebag Lake and scattering across the tundra grass there. There is degradation of trails and vegetation there from picnicking and offloading. There is less camping, more backpacking, fishing, and picnicking happening. Wondering if it's worth looking at since there are a lot of people using the area.	A dispersed use assessment will be conducted in 2022 around each of the Project reservoirs (Saddlebag, Ellery, and Tioga Lakes), including the use at the back end of Saddlebag Lake. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season. The REC-1 study will also characterize water taxi use at the lake using USFS concessionaire data.
10	Monique Sanchez USFS	4/1/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> Are recreation studies only proposed in the spring/summer? We may not be capturing all of the Project-induced recreation if we only focus on one time of year.	SCE will work with the TWG to develop an appropriate schedule for REC-1 studies that will capture relevant recreation use throughout the recreation season(s), understanding that the type of use changes depending on time of year (spring/summer compared to winter).
11	Adam Barnett USFS	4/1/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> We are working on additional details for those three studies using your form. There are other things we'd like you to capture. Some of the use is outside of the currently defined Project boundary but has a strong nexus. We want to make sure those things aren't overlooked in analysis, such as Poole Powerhouse access road and access areas to recreation areas along the road. Also include an assessment of use of Project area when people come up from the campgrounds farther downstream on Lee Vining Creek; we would like a better understanding of whether people using these	SCE proposes to utilize the first field season (2022) for on-site user surveys at each developed INF recreation site mentioned in INF's proposed study requests. These initial surveys are intended to collect the primary reason for each recreator's visit to determine which INF recreation sites or areas may have a potential connection to the Project. The collected information will be used in discussions with the TWG to determine which sites warrant broader studies (Recreation Use Assessment, Facilities Condition

Comment Number	Entity	Date/Forum	Comment	SCE Response
			downstream campgrounds are using the Project area for recreation. We are putting these questions/concerns into a format for the relicensing team to use.	Assessment) in a second field season (2023) but would not imply that they are ultimately related to Project operations.
12	Bartshe Miller MLC	4/1/2021 TWG Meeting	<p><i>Paraphrase of comment in meeting:</i> Considering road pullouts, whoever is responsible for them, they do cross between both CalTrans and SCE. The pullouts affect the Project area, viewshed and recreation experience, bathrooms, etc. The recreation use study will probably cover it, but existing facilities clearly don't meet the needs of visitors (especially bathrooms). Point source pollution is still an issue. Dispersed camping and overnight parking are also being invited in these areas. The conditions/facilities of pullouts around the Project area are promoting incremental use. I'm thinking specifically of the Ellery and Saddlebag pullout locations.</p> <p>SCE isn't responsible for the increase in travelers, but SCE is the custodian for this part of the forest where their Project is located. The Project encourages visitors to stop along the way. People can't reasonably enjoy the area as they have in the past given the lacking existing facilities.</p> <p>People stop where there are pullouts, or any spaces off the road to park, those are invitations to recreate for dog walking, launching a kayak, taking photos, etc.</p>	Pullouts on State Route 120 alongside Ellery and Tioga Lakes are ultimately the responsibility of the California Department of Transportation. However, the formal pullout at Ellery Lake will be included in user surveys and spot counts conducted under REC-1 efforts in the 2023 field season. Informal pullouts surrounding the Project reservoirs (Saddlebag, Ellery, and Tioga Lakes) will be included in the 2022 dispersed use assessment. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season.
13	Monique Sanchez USFS	4/1/2021 TWG Meeting	<p><i>Paraphrase of comment in meeting:</i> It seems like we are assuming a lot, that people are there not for the Project or are using the pullouts as an invitation. There are a lot of unknowns. We need to think about how to ask these questions. Unless there is a study that defends it, we need to take a deeper look. We can also come up with a recreation plan where we come back together at look at these needs every so often.</p>	SCE proposes to utilize the first field season (2022) for on-site user surveys at each developed INF recreation site mentioned in INF's proposed study requests. These initial surveys are intended to collect the primary reason for each recreator's visit to determine which INF recreation sites or areas may have a potential connection to the Project. The collected information will be used in

Comment Number	Entity	Date/Forum	Comment	SCE Response
				discussions with the TWG to determine which sites warrant broader studies (<i>REC-1 Recreation Use Assessment, REC-2 Existing Recreation Facilities Condition Assessment</i>) in a second field season (2023) but would not imply that they are ultimately related to Project operations.
14	USFS	4/22/2021 Formal Study Request (Emailed Document)	<p>Evaluate recreation use of lower Lee Vining canyon campgrounds (Big Bend, Aspen, Moraine, Lower Lee Vining, Cattleguard) to determine dependence of users on project stream flows and project reservoirs.</p> <p>Evaluate public use of recreation facilities, trails, and dispersed camping surrounding Saddlebag Lake and along the Saddlebag Lake access road including backpacking and camping use at the north end of the lake.</p>	<p>SCE proposes to utilize the first field season (2022) for on-site user surveys at each developed INF recreation site mentioned in INF's proposed study requests. These initial surveys are intended to collect the primary reason for each recreator's visit to determine which INF recreation sites or areas may have a potential connection to the Project. The collected information will be used in discussions with the TWG to determine which sites warrant broader studies (Recreation Use Assessment, Facilities Condition Assessment) in a second field season (2023) but would not imply that they are ultimately related to Project operations.</p> <p>A dispersed use assessment will be conducted in 2022 around each of the Project reservoirs (Saddlebag, Ellery, and Tioga Lakes), including the use at the back end of Saddlebag Lake. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season. The REC-1 study will also characterize water taxi use at the lake using USFS concessionaire data.</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
15	USFS	4/22/2021 Formal Study Request (Emailed Document)	Evaluate public education needs for areas closed to dispersed camping.	Information collected for dispersed use at the Project reservoirs will be used in post-field season TWG discussions to determine whether public education or management efforts are needed.
16	USFS	4/22/2021 Formal Study Request (Emailed Document)	Include use of Saddlebag Lake water taxi service in study analysis.	SCE reviews instream flows and resulting lake levels at Saddlebag Lake annually in April and August with the USFS. SCE will characterize use at the resort, including its water taxi service as it relates to lake levels, as part of its REC-1 study using SCE lake level data and USFS concessionaire data.
17	USFS	4/22/2021 Formal Study Request (Emailed Document)	Include the following site-specific recreation activities in the study design: Ellery Lake access to Ellery Bowl for backcountry skiing and climbing...	SCE will work with the TWG to incorporate Ellery Bowl into winter data collection efforts during REC-1 study efforts in the 2023 field season.
18	USFS	4/22/2021 Formal Study Request (Emailed Document)	Include the following site-specific recreation activities in the study design: ... Kayaking at all lakes and the need for put-in development...	REC-1 surveys conducted during the 2023 field season will be designed to collect information regarding current kayaking use or desired use at the Project reservoirs.
19	USFS	4/22/2021 Formal Study Request (Emailed Document)	Include the following site-specific recreation activities in the study design: ... Dispersed camping around Ellery outlet and waterfall...	A dispersed use assessment will be conducted in 2022 around each of the Project reservoirs (Saddlebag, Ellery, and Tioga Lakes), including use below Rhinedollar Dam/Outlet. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season.
20	USFS	4/22/2021 Formal Study	Include the following site-specific recreation activities in the study design: ... Ice climbing use on Poole	See response to comment number 2 above.

Comment Number	Entity	Date/Forum	Comment	SCE Response
		Request (Emailed Document)	Powerplant Rd which is plowed during winter for plant access.	
21	USFS	4/22/2021 Formal Study Request (Emailed Document)	Include assessment of winter recreation activities.	SCE will work with the TWG to develop an appropriate schedule for REC-1 studies that will capture relevant recreation use throughout the recreation season(s), understanding that the type of use changes depending on time of year (spring/summer compared to winter).
22	USFS	4/22/2021 Formal Study Request (Emailed Document)	<p>The proposed project includes the Poole Power Plant Road which was likely built as part of the creation of the Lee Vining hydropower project. The new road provided additional access to Lee Vining creek and opened a new area of the Inyo NF to recreation development including Big Bend, Aspen, and Moraine campgrounds.</p> <p>The Lower Lee Vining and Cattleguard campgrounds may also have a nexus to the proposed project if this study finds that a significant portion of campground users stay here in order to recreate in the project vicinity, such as fishing at Tioga, Ellery, or Saddlebag Lakes.</p> <p>In addition, there is likely a nexus to recreation facilities on the Saddlebag Lake road which provides easy access to Saddlebag group camp, campground, trailheads, picnic area, boat ramp, Sawmill campground, and Gardisky Lake trailhead. Many of these facilities depend directly on the existing lake and the other facilities depend on the presence of the road.</p> <p>There is also a nexus to recreation facilities in the vicinity of Tioga and Ellery lakes including Ellery Lake Campground, Tioga Lake Campground, and Tioga Lake overlook/Glacier Canyon trailhead. These facilities were built after the proposed project and located in</p>	<p>SCE proposes to utilize the first field season (2022) for on-site user surveys at each developed INF recreation site mentioned in INF's proposed study requests. These initial surveys are intended to collect the primary reason for each recreator's visit to determine which INF recreation sites or areas may have a potential connection to the Project. The collected information will be used in discussions with the TWG to determine which sites warrant broader studies (Recreation Use Assessment, Facilities Condition Assessment) in a second field season (2023) but would not imply that they are ultimately related to Project operations.</p> <p>The Study <i>LAND-1 Project Lands and Roads</i> will include consultation with USFS staff to identify roads or access trails that may be used predominantly for Project purposes, such as for operation and maintenance of Project facilities or access to Project-related recreation opportunities.</p> <p>A dispersed use assessment will be conducted in 2022 around each of the Project</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
			<p>relationship to the project reservoirs in order to provide for their use by the public.</p> <p>The study area should include all campgrounds, day use sites, trailheads, FS system trails, user-created trails, roads, and dispersed campsites adjacent to or in the vicinity of: Lee Vining Creek, Glacier Creek, Ellery Lake, Tioga Lake, or Saddlebag Lake.</p> <p>Rec sites: Include all developed recreation sites in Lee Vining Canyon, along Saddlebag Road, and around Saddlebag Lake. NFS trails: Saddlebag Lk trail, Glacier Canyon trail User-created trails: trails around project lakes and along creeks</p>	<p>reservoirs (Saddlebag, Ellery, and Tioga Lakes) but not along the creeks. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season.</p>
23	USFS	4/22/2021 Formal Study Request (Emailed Document)	<p>The study area should include all campgrounds, day use sites, trailheads, FS system trails, user-created trails, roads, and dispersed campsites adjacent to or in the vicinity of: Lee Vining Creek, Glacier Creek, Ellery Lake, Tioga Lake, or Saddlebag Lake.</p> <p>Rec sites: Include all developed recreation sites in Lee Vining Canyon, along Saddlebag Road, and around Saddlebag Lake. NFS trails: Saddlebag Lk trail, Glacier Canyon trail User-created trails: trails around project lakes and along creeks</p>	<p>SCE will include all developed USFS sites listed in this request as part of its Season 1 user surveys to determine the primary reason for user visits and whether there is a nexus to the Project itself.</p> <p>SCE will include an assessment of Saddlebag Lake Trail in Season 2 use and needs studies but does not propose including Glacier Canyon Trail in any detailed assessments. The trailhead facilities for Glacier Canyon Trail and any informal spurs leading around Tioga Lake will be studied as part of Season 2 activities, but no assessment of the trail or trail use itself is being proposed as the draw is the wilderness and not Tioga Lake.</p> <p>SCE proposes to conduct a dispersed use assessment around Ellery, Saddlebag, and Tioga Lakes. This will include the dispersed camping and pullout areas previously</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
				identified in TWG discussions. This will not include an inventory of use along the creeks.
24	USFS	4/22/2021 Formal Study Request (Emailed Document)	Provide historic context for recreation facility development and hydropower facility development including an analysis of the timeline and location of recreation facilities in relationship to project reservoirs. For example, the construction of Big Bend, Aspen, and Moraine campgrounds after the construction of the Poole Power Plant road.	SCE does not understand how this context would inform discussions of Project nexus since the current baseline is the existing Project facilities. The REC-1 phased approach will assist in determining nexus through user survey implementation.
25	Monique Sanchez USFS	5/27/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> Usually landscape architects work with the visual study team to figure out how the visual quality impacts visitors' experience. We have done this in other projects.	SCE understands that there is usually a crossover between recreation user surveys and visual surveys and an opportunity to efficiently combine efforts. Visual surveys will be considered in the selection of REC-1 survey and data collection methods and locations for the 2023 field season.
26	Monique Sanchez USFS	5/27/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> What are the proposed study seasons, how will you determine if you'll do a second season for each Study? Since we had such an abnormal amount of use in 2020 because of COVID-19, I'd like to hear back from our recreation specialists, maybe the first season would have odd results. It could be a high or low use year in 2021/2022. Having both seasons of data would help us get a better understanding of what is going on.	No data will be collected in 2021; study seasons will begin in 2022. SCE understands that we are currently in a unique environment and that atypical recreation use and/or unexpected events that would affect the proposed studies are highly likely in the coming years. SCE will continue to coordinate with the TWG and rely on USFS staff for guidance on whether studies should be altered or re-scheduled as we move through the study season.
27	Bartshe Miller MLC	5/27/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> Expressed concerns about a large number of vehicles driving and parking in Saddlebag Lake bottom when water levels are low. The access point observed is near the concessionaire water taxi. Where is this being addressed, is the concessionaire involved, and how does it affect SCE's operations?	Vehicle intrusion at Ellery and Saddlebag Lakes will be generally assessed as part of the REC-2 dispersed use assessment, though there may be crossover during LAND-1 discussions regarding Project roads and road condition. USFS concessionaire data, operations, and special use permits will also

Comment Number	Entity	Date/Forum	Comment	SCE Response
				be reviewed and characterized as part of REC-1 and REC-2 studies. The nexus between water quality impacts from non-Project pullouts is discussed in Study <i>WQ-1 Stream and Reservoir Water Quality</i> .
28	Bartshe Miller MLC	5/27/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> Mono County is pursuing a grant to improve the road and infrastructure up to Saddlebag Lake. This could be a problem if not done with inter-agency collaboration and SCE to help manage some of the issues we are studying here. The road is beyond repair, so they are considering paving it.	SCE will continue to monitor the proposed construction to determine whether improvements contemplated in TWG discussions or following field data collection may be incorporated into the effort. The proposed construction will also be monitored in case construction schedules conflict with proposed user surveys, as construction may result in temporary closure of certain INF sites to the public.
29	USFS	1/14/2022 Comments on Initial Study Requests	4.5.8 Project Recreation Sites Recreational use of the penstock below Ellery Lake, needs to be included in the study. 52 climbing routes are accessed from the penstock - https://www.mountainproject.com/map/109223681/lee-vining-canyon-tioga-road	Informal recreational use around Ellery Lake and Rhinedollar Dam facilities will be assessed as part of Study <i>REC-2 Existing Recreation Facilities Condition Assessment</i> . This use has been noted, and SCE will continue to consult with the Recreation and Land TWG to determine whether data (surveys or trail data) warrants collection under Study <i>REC-1 Recreation Use Assessment</i> or whether a general characterization of the use is sufficient for later discussions.
30	USFS	1/14/2022 Comments on Initial Study Requests	5.8.5.5. Climbing Recreational use of the penstock below Ellery Lake, needs to be included in the study. 52 climbing routes accessed from the penstock - https://www.mountainproject.com/map/105798288/sierra-eastside	See response to Comment 29 above.

Comment Number	Entity	Date/Forum	Comment	SCE Response
31	USFS	1/14/2022 Comments on Initial Study Requests	Table 6.1-1. Resource Issues, Data Gaps, and Potential Studies/Recreation Use The recreational use of the Penstock below Rhinedollar dam should be evaluated.	See response to Comment 29 above.
32	CDFW	1/14/2022 Comments on Initial Study Requests	CDFW Comment: CDFW is supportive of the recreation creel survey as described. CDFW would like to review the proposed survey dates/schedule prior to implementation.	SCE will continue to consult with the Recreation and Land TWG on proposed survey dates and schedule prior to implementation.
33	CDFW	1/14/2022 Comments on Initial Study Requests	Fisheries monitoring should be focused on documenting the need for stocking and evaluating angler use.	Studies AQ-1 and AQ-2 will evaluate densities, age-class distributions, and condition of current fish populations in Project reservoirs and affected stream reaches. Study REC-1 includes a creel survey to evaluate angler use and satisfaction. Additionally, the Licensee releases water that enhances angling opportunities throughout the Project Area.
34	CDFW	1/14/2022 Comments on Initial Study Requests	Fisheries monitoring should be focused on documenting the need for stocking and evaluating angler use.	Studies AQ-1 and AQ-2 will evaluate densities, age-class distributions, and condition of current fish populations in Project reservoirs and affected stream reaches. Study REC-1 includes a creel survey to evaluate angler use and satisfaction. Additionally, the Licensee releases water that enhances angling opportunities throughout the Project Area.
35	CDFW	3/25/2022 Comments on Revised Study Proposal	Ellery and Tioga day use area should be included as Creel locations.	The Licensee intends to perform creel surveys at all day use areas associated with both Ellery Lake and Tioga Lake campgrounds. The USFS does not have any formal day use areas on the shoreline of either lake outside of these campgrounds.

Comment Number	Entity	Date/Forum	Comment	SCE Response
36	CDFW	3/25/2022 Comments on Revised Study Proposal	Random sampling dates should be stratified into weekend/weekday/holiday blocks. The current proposed sampling effort is too low. A minimum of 10 days/month should be sampled, although this varies based on use.	SCE proposes to conduct creel surveys for approximately 30 percent of the creel survey period (98 days from Memorial Day through Labor Day weekend), which will essentially meet the request of at least 10 survey days per month. Survey days will be randomly generated but will include one representative day from each of the three major holiday weekends (Memorial Day, Independence Day, and Labor Day weekends) and the remainder of survey days will be split between weekdays and non-peak weekend days.

CDFW = California Department of Fish and Wildlife; INF = Inyo National Forest; MLC = Mono Lake Committee; SCE = Southern California Edison; TWG = Technical Working Group; USFS = U.S. Forest Service

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REC-2 EXISTING RECREATION FACILITIES CONDITION ASSESSMENT TECHNICAL STUDY PLAN

**LEE VINING HYDROELECTRIC PROJECT
*FERC PROJECT No. 1388***



April 2022

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1.0 POTENTIAL RESOURCE ISSUE

This study would evaluate the condition of and public accessibility to existing recreation facilities, as specified in Section 4.0.

2.0 PROJECT NEXUS AND HOW THE RESULTS WILL BE USED

Under Title 18 Code of Federal Regulations Section 2.7, licensees whose projects include land and water resources with outdoor recreational potential have a responsibility to develop those resources in accordance with area needs. This includes the provision for adequate public access to such Project facilities and waters and consideration of the needs of persons with disabilities in the design and construction of such facilities and access.

All recreation facilities in the upper Lee Vining Canyon are currently owned and operated by the Inyo National Forest (INF). However, many of these sites are either partially within or directly adjacent to the existing Federal Energy Regulatory Commission (FERC) Lee Vining Hydroelectric Project (Project) Boundary. INF has Federal Power Act Section 4(e) conditioning authority to prescribe conditions that may mitigate the impact of hydropower projects on INF system lands and thus could require mitigation for recreation induced by the presence of the Project. The initial phase (first study season) of the REC-1 study will evaluate which INF recreation facilities have a potential connection to the Project and thus would warrant inclusion in the broader studies proposed in the second study season.

3.0 STUDY GOALS AND OBJECTIVES

- Conduct a facility inventory and condition assessment at existing recreation facilities and associated parking areas, including an evaluation of signage and public safety features.
- Assess the carrying capacity and potential need for expansion, or alteration of existing recreation facilities.
- Assess the condition and potential for universal accessibility, where feasible.
- Identify existing dispersed or informal use areas, including documentation of existing conditions.
- Assess the consistency of current facilities with the Desired Conditions, Goals, Standards, and Guidelines described in the *Land Management Plan for the Inyo National Forest* (USFS, 2019).

4.0 EXTENT OF STUDY AREA AND STUDY SITES

The existing recreation facilities condition assessment study area and specific study sites based on activity are listed in Table 4-1 and shown on Figure 4-1 below. As part of the REC-1 Recreation Use Assessment, the first field season (2022) will be utilized for on-site user surveys at each developed INF recreation site mentioned in INF's proposed study requests. These initial surveys are intended to collect the primary reason for each recreator's visit to determine which INF recreation sites or areas may have a potential connection to the Project. The collected information will be used in discussions with the Technical Working Group (TWG) to determine which sites may warrant broader studies (Recreation Use Assessment, Facilities Condition Assessment) in a second field season (2023) but would not imply that they are ultimately related to Project operations. Table 4-1 below denotes which sites have already been agreed upon for facilities condition assessments in 2023 and which are to be determined based on the 2022 user surveys.

Table 4-1. Study Sites

Site ID	Site Name	Facilities Condition Assessment (2023)	Dispersed Use Assessment (2022) ^a
1	Saddlebag Lake Campground	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Saddlebag Lake DUA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Saddlebag Lake Trailhead	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Sawmill Walk-In Campground	TBD ^b	No
5	Carnegie Station Trailhead	TBD	No
6	Gardisky Lake Trailhead	TBD	No
7	Junction Campground	TBD	No
8	Bennettville Trailhead	TBD	No
9	Tioga Lake Overlook Info Site	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10	Glacier Canyon Trailhead	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11	Nunatak-Tioga Tarns Trailhead	TBD	No
12	Tioga Lake Campground	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
13	Nunatak Nature Trail	TBD	No
14	Ellery Lake Campground	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
15	Warren Fork Trailhead	TBD	No
16	Big Bend Campground	TBD	No
17	Aspen Grove Campground	TBD	No
18	Boulder Day Use Area	TBD	No
19	Moraine Campground	TBD	No
20	Lower Lee Vining Campground	TBD	No
21	Cattleguard Campground	TBD	No

DUA = Day Use Area; TBD = to be determined

^a Dispersed use assessments will be generally conducted around each of the Project reservoirs (Saddlebag, Ellery, and Tioga). Specific developed INF recreation sites to be included are noted in this table.

^b To be determined following 2022 user surveys and Technical Working Group consultation.

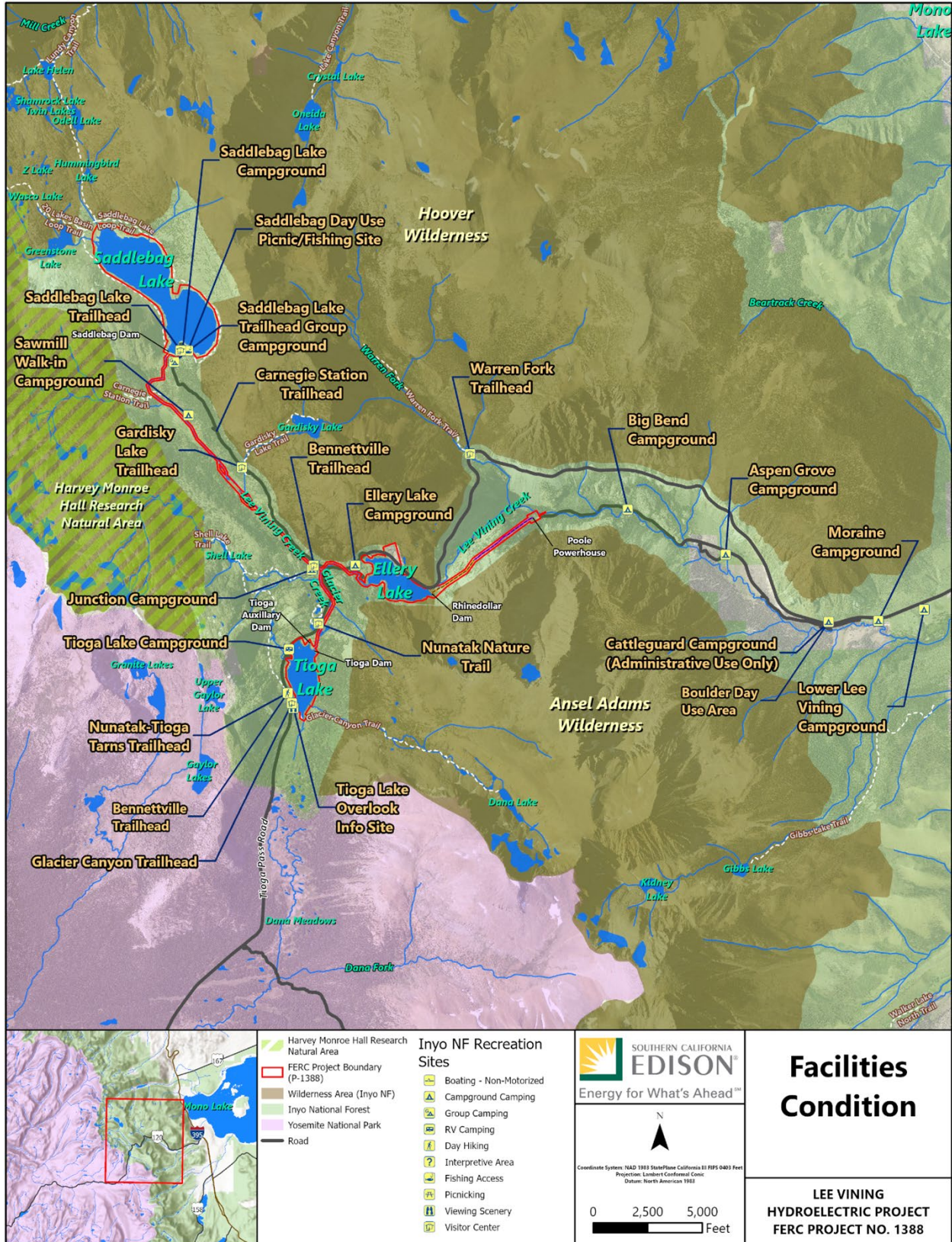


Figure 4-1. Survey and Data Collection Sites

5.0 EXISTING INFORMATION

- *2015 Licensed Hydropower Development Recreation Report*, FERC Form No. 80 (SCE, 2015)
- *2014 SCE Recreation Use Study Report for Eastern Hydro Division* (SCE, 2015)
- *California's 2021–2025 Statewide Comprehensive Outdoor Recreation Plan* (SCORP) (CDPR, 2020)
- National Visitor Use Monitoring Reports for INF (USFS, 2006, 2011, 2018)¹
- INF Special Use Permits and Concessionaire Data
- *Inyo National Forest Alternative Transportation System Study* (USDA, 2013)

The study will also analyze relevant management plans for the area, including the *Inyo County General Plan* (IC, 2001) and the *Land Management Plan for the Inyo National Forest* (USFS, 2019).

¹ 2021 National Visitor Use Monitoring data is currently being collected by the USFS and will also be analyzed once available.

6.0 STUDY APPROACH

6.1. DISPERSED USE ASSESSMENT (2022)

A dispersed use assessment will be conducted within and adjacent to the FERC Project Boundary at each of the Project reservoirs (Saddlebag, Ellery, and Tioga) and the developed sites indicated in Table 4-1 above. This study will consist of an initial desktop exercise to scan aerial imagery for evidence of dispersed use or informal access areas such as social trails, brown out areas, or impromptu parking around the perimeter of each study area. These observations will be digitized and attributed within a geographic information system (GIS) database to be used in a later field assessment to ground truth those potential dispersed uses and to further assess for signs of user-created roads, trails, and/or campsites. Dispersed use will be documented with photographs and integrated into a GIS database with relevant attributes (e.g., spatial location, number of fire rings, or length of roads or trails) to facilitate future analysis and ongoing assessment. Additional qualitative information will be collected, including potential issues or possible accommodations or future recreation opportunities at the sites. Findings will be used to inform potential locations for additional user interviews, spot counts, or traffic/trail counters in REC-1 activities to be performed during subsequent field seasons.

A report will be prepared documenting the findings of this study. The report will include the collected information, summarized in a narrative to include all observations and a visual representation of the observed dispersed use. The report will discuss findings in relation to the Desired Conditions, Goals, Standards, and Guidelines of the *Land Management Plan for the Inyo National Forest* (USFS, 2019), as applicable.

6.2. FACILITY CONDITION ASSESSMENT AND INVENTORY (2023)

A facility inventory and condition assessment will be performed on the recreation sites as indicated in Table 4-1 above. Southern California Edison (SCE) will work with the INF to develop appropriate methods and forms for the field assessment. Generally, the study will include an inventory and cursory condition assessment of the following within the study area:

- General assessment of the condition of facilities;
- Universal accessibility of facilities;
- Public safety measures;
- Signage and wayfinding; and
- Site-specific circulation roads, campsite spurs, and parking areas.

The survey will document any items in need of correction, repair, replacement, or similar action, noting facility condition according to Table 6-1. All inventories will be documented with photographs and integrated into a GIS database with relevant attributes to facilitate future analysis and ongoing assessments.

Table 6-1. Facility Condition Rating Table

ID	Category	Description
N	Needs replacement	Facility is non-functional or has broken or missing components
R	Needs repair	Facility has structural damage or is in an obvious state of disrepair
M	Needs maintenance	Facility needs maintenance, such as cleaning or painting
G	Good condition	Facility is functional and well maintained

A report will be prepared documenting the findings of this study. The report will include an inventory and assessment of the selected site facilities (see Table 4-1) and appurtenant features, including applicable maps and illustrations. The report will discuss findings in relation to the Desired Conditions, Goals, Standards, and Guidelines of the *Land Management Plan for the Inyo National Forest* (USFS, 2019), as applicable.

7.0 SCHEDULE

Date	Activity
2022 – Spring/Summer	Conduct initial user surveys under REC-1 to determine primary reason for visit; Conduct dispersed use assessment
2022 – Winter	Consult with TWG to determine study sites and methods for 2023 field season
2023 – Spring/Summer	Conduct facility condition assessment
2024 – February/March/April	Compile study results and prepare draft report
2024 – May	Distribute draft report to TWG
2024 – June/July	TWG review and comments
2024 – August	Resolve comments and prepare final report
2024 – September	Distribute final report in Draft License Application

TWG = Technical Working Group

8.0 CONSULTATION SUMMARY

In preparation to file the Pre-Application Document (PAD), filed in August 2021, and Notice of Intent (NOI), SCE hosted Recreation and Land Use Resources TWG Meetings on January 28, February 25, April 1, and May 27, 2021, which resulted in study requests from Stakeholders to address questions regarding existing recreation facilities. Notes and materials from these meetings are available at www.sce.com/leevining. Stakeholder comments on the outline and relevant study requests received are summarized in the response to comments table below (Table 8-1). SCE filed draft Study Plans with the PAD and NOI on August 12, 2021, to address issues discussed with the TWG. The Stakeholder comment period ended on January 18, 2022, for the Study Plans, PAD, and NOI. SCE reviewed all comments received; drafted Revised Technical Study Plans which were distributed to the TWGs on February 18, 2022, for another 30-day review period. All comments received related to this Study Plan are included in Table 8-1 below and incorporated into this Final Study Plan where appropriate.

Table 8-1. Consultation Summary—Response to Comments

Comment Number	Entity	Date/Forum	Comment	SCE Response
1	Bartshe Miller MLC	1/28/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> I'm interested in the pullouts at Ellery and Tioga Lakes. Are those in the Project area? Are there opportunities to organize/clarify traffic there, manage people, and include interpretive displays since the pullouts attract people to observe the scenery? What about adding restrooms?	Pullouts on State Route 120 alongside Ellery and Tioga lakes are ultimately the responsibility of the California Department of Transportation. However, the formal pullout at Ellery Lake will be included in user surveys and spot counts conducted under REC-1 efforts in the 2023 field season. Informal pullouts surrounding the Project reservoirs (Saddlebag, Ellery, and Tioga lakes) will be included in the 2022 dispersed use assessment. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season.
2	Katie Goodwin Access Fund	1/28/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> There is a substantial amount of ice climbing that happens below Ellery Lake. Where are the flows coming from and will they change? What fact finding do I need to do to figure out what's happening there? Travel to the climbing site would be over snow, not on trails, resulting in less impacts on vegetation and soil. I would be happy to provide this information. It's a unique area for ice climbing.	SCE is not aware that Project operations contribute to the ice climbing environment below Ellery Lake. The integrity of flowlines is inspected regularly as part of the dam safety program. SCE would welcome any information that may inform future inspections. SCE is proposing to characterize winter use as part of its <i>REC-1 Recreation Use Assessment</i> and dispersed use around Rhinedollar Dam as part of its <i>REC-2 Existing Recreation Facilities Condition Assessment</i> and will work with the TWG to determine method and sites for analysis.
3	Katie Goodwin Access Fund	2/25/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> Regarding recreation use at Saddlebag Lake, I use that trail a lot. I noticed last year that there is a ferry across Saddlebag Lake that cuts out about two miles of easy walking. There are impacts from people offloading from the ferry on Saddlebag Lake and scattering across the tundra grass there. There is degradation of trails and vegetation there from picnicking and offloading. There is	A dispersed use assessment will be conducted in 2022 around each of the Project reservoirs (Saddlebag, Ellery, and Tioga lakes), including the use at the back end of Saddlebag Lake. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field

Comment Number	Entity	Date/Forum	Comment	SCE Response
			less camping, more backpacking, fishing, and picnicking happening. Wondering if it's worth looking at since there are a lot of people using the area.	season. The REC-1 study will also characterize water taxi use at the lake using USFS concessionaire data.
4	Katie Goodwin Access Fund	2/25/2021 TWG Meeting	<p><i>Paraphrase of comment in meeting:</i> It is already well known, but this year especially this added camping pressure is a product of needing to have permits to enter Yosemite. There is a lot of dispersed camping anywhere you can fit a vehicle. The permit requirement was were reinstated for 2021, it was implemented as a response to Covid-19.</p>	<p>Pullouts on State Route 120 alongside Ellery and Tioga lakes are ultimately the responsibility of the California Department of Transportation. However, the formal pullout at Ellery Lake will be included in user surveys and spot counts conducted under REC-1 efforts in the 2023 field season. Informal pullouts surrounding the Project reservoirs (Saddlebag, Ellery, and Tioga lakes) will be included in the 2022 dispersed use assessment as part of REC-2. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season.</p>
5	Bartshe Miller MLC	2/25/2021 TWG Meeting	<p><i>Paraphrase of comment in meeting:</i> We are putting together our study requests still. Possibility of focused recreation use studies at Saddlebag, Ellery pull out, and at north end of Tioga Lake in regards to vehicle density on dirt areas. There is the possibility of non-point source pollution and run off (dumping of coolers, pet waste, etc.) at these pullouts increasing due to recreation/vehicle use at these pull outs.</p> <p>Pulling off in these areas is due to the scenic views at the reservoirs, so they seem related to the Project. Camping right at the shoreline of Saddlebag and Tioga Lakes is increasing, with no buffer between vehicles. This isn't happening at Ellery Lake because there is no direct driving access to the shoreline.</p>	<p>Pullouts on State Route 120 alongside Ellery and Tioga lakes are ultimately the responsibility of the California Department of Transportation. However, the formal pullout at Ellery Lake will be included in user surveys and spot counts conducted under REC-1 efforts in the 2023 field season. Informal pullouts surrounding the Project reservoirs (Saddlebag, Ellery, and Tioga lakes) will be included in the 2022 dispersed use assessment under REC-2 efforts. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season.</p> <p>The nexus between water quality impacts from non-Project pullouts is discussed in Study <i>WQ-1 Stream and Reservoir Water Quality</i>.</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
6	Adam Barnett USFS	4/1/2021 TWG Meeting	<p><i>Paraphrase of comment in meeting:</i> We are working on additional details for those three studies using your form. There are other things we'd like you to capture. Some of the use is outside of the currently defined Project boundary but has a strong nexus. We want to make sure those things aren't overlooked in analysis, such as Poole Powerhouse access road and access areas to recreation areas along the road. Also include an assessment of use of Project area when people come up from the campgrounds farther downstream on Lee Vining Creek; we would like a better understanding of whether people using these downstream campgrounds are using the Project area for recreation. We are putting these questions/concerns into a format for the relicensing team to use.</p>	<p>SCE proposes to utilize the first field season (2022) for on-site user surveys at each developed INF recreation site mentioned in INF's proposed study requests. These initial surveys are intended to collect the primary reason for each recreator's visit to determine which INF recreation sites or areas may have a potential connection to the Project. The collected information will be used in discussions with the TWG to determine which sites warrant broader studies (Recreation Use Assessment, Facilities Condition Assessment) in a second field season (2023) but would not imply that they are ultimately related to Project operations.</p>
7	Bartshe Miller MLC	4/1/2021 TWG Meeting	<p><i>Paraphrase of comment in meeting:</i> Considering road pullouts, whoever is responsible for them, they do cross between both CalTrans and SCE. The pullouts affect the Project area, viewshed and recreation experience, bathrooms, etc. The recreation use study will probably cover it, but existing facilities clearly don't meet the needs of visitors (especially bathrooms). Point source pollution is still an issue. Dispersed camping and overnight parking are also being invited in these areas. The conditions/facilities of pullouts around the Project area are promoting incremental use. I'm thinking specifically of the Ellery and Saddlebag pullout locations.</p> <p>SCE isn't responsible for the increase in travelers, but SCE is the custodian for this part of the forest where their Project is located. The Project encourages visitors to stop along the way. People can't reasonably enjoy the area as they have in the past given the lacking existing facilities.</p>	<p>Pullouts on State Route 120 alongside Ellery and Tioga lakes are ultimately the responsibility of the California Department of Transportation. However, the formal pullout at Ellery Lake will be included in user surveys and spot counts conducted under REC-1 efforts in the 2023 field season. Informal pullouts surrounding the Project reservoirs (Saddlebag, Ellery, and Tioga lakes) will be included in the 2022 dispersed use assessment. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season.</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
			People stop where there are pullouts, or any spaces off the road to park, those are invitations to recreate for dog walking, launching a kayak, taking photos, etc.	
8	Monique Sanchez USFS	4/1/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> It seems like we are assuming a lot, that people are there not for the Project or are using the pullouts as an invitation. There are a lot of unknowns. We need to think about how to ask these questions. Unless there is a study that defends it, we need to take a deeper look. We can also come up with a recreation plan where we come back together at look at these needs every so often.	SCE proposes to utilize the first field season (2022) for on-site user surveys at each developed INF recreation site mentioned in INF's proposed study requests. These initial surveys are intended to collect the primary reason for each recreator's visit to determine which INF recreation sites or areas may have a potential connection to the Project. The collected information will be used in discussions with the TWG to determine which sites warrant broader studies (Recreation Use Assessment, Facilities Condition Assessment) in a second field season (2023) but would not imply that they are ultimately related to Project operations.
9	USFS	4/22/2021 Formal Study Request (Emailed Document)	Evaluate public use of recreation facilities, trails, and dispersed camping surrounding Saddlebag Lake and along the Saddlebag Lake access road including backpacking and camping use at the north end of the lake.	As part of REC-2, a dispersed use assessment will be conducted in 2022 around each of the Project reservoirs (Saddlebag, Ellery, and Tioga lakes), including the use at the back end of Saddlebag Lake. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season. The REC-1 study will also characterize water taxi use at the lake using USFS concessionaire data.
10	USFS	4/22/2021 Formal Study Request (Emailed Document)	Evaluate public education needs for areas closed to dispersed camping.	Information collected for dispersed use at the Project reservoirs as part of REC-2 will be used in post-field season TWG discussions to determine whether public education or management efforts are needed.

Comment Number	Entity	Date/Forum	Comment	SCE Response
	USFS	4/22/2021 Formal Study Request (Emailed Document)	Include the following site-specific recreation activities in the study design: ... Dispersed camping around Ellery outlet and waterfall...	As part of REC-2, a dispersed use assessment will be conducted in 2022 around each of the Project reservoirs (Saddlebag, Ellery, and Tioga lakes), including use below Rhinedollar Dam/Outlet. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season.
11	USFS	4/22/2021 Formal Study Request (Emailed Document)	Include assessment of: condition of gates on access roads, need for control of public vehicle access to Saddlebag lakebed ... need for paving of Saddlebag Rd, road drainage improvements, road pullout improvements ... vehicle intrusion near Ellery Lake, need for paving Ellery Lake parking lot ...	The Study <i>LAND-1 Project Lands and Roads</i> will include consultation with USFS staff to identify roads or access trails that may be used predominantly for Project purposes, such as for operation and maintenance of Project facilities or access to Project-related recreation opportunities. Vehicle intrusion at Ellery and Saddlebag Lakes will be generally assessed as part of the REC-2 dispersed use assessment, though there may be crossover during LAND-1 discussions regarding Project roads and road condition.
12	USFS	4/22/2021 Formal Study Request (Emailed Document)	Include assessment of: ... need for paving Poole Powerhouse Rd to reduce sediment runoff to Lee Vining Creek ...	SCE acknowledges that this could be a concern. Options for maintaining this portion of the Poole Powerhouse Road will be evaluated as part of the Study <i>AQ-3 Aquatic Habitat Mapping and Sediment Characterization</i> .
13	USFS	4/22/2021 Formal Study Request (Emailed Document)	The proposed project includes the Poole Power Plant Road which was likely built as part of the creation of the Lee Vining hydropower project. The new road provided additional access to Lee Vining creek and opened a new area of the Inyo NF to recreation development including Big Bend, Aspen, and Moraine campgrounds. The Lower Lee Vining and Cattleguard campgrounds may also have a nexus to the proposed project if this study finds that a significant portion of campground users	SCE proposes to utilize the first field season (2022) for on-site user surveys at each developed INF recreation site mentioned in INF's proposed study requests. These initial surveys are intended to collect the primary reason for each recreator's visit to determine which INF recreation sites or areas may have a potential connection to the Project. The collected information will be used in discussions with the TWG to determine which sites warrant broader studies (Recreation Use Assessment,

Comment Number	Entity	Date/Forum	Comment	SCE Response
			<p>stay here in order to recreate in the project vicinity, such as fishing at Tioga, Ellery, or Saddlebag Lakes.</p> <p>In addition, there is likely a nexus to recreation facilities on the Saddlebag Lake road which provides easy access to Saddlebag group camp, campground, trailheads, picnic area, boat ramp, Sawmill campground, and Gardisky Lake trailhead. Many of these facilities depend directly on the existing lake and the other facilities depend on the presence of the road.</p> <p>There is also a nexus to recreation facilities in the vicinity of Tioga and Ellery lakes including Ellery Lake Campground, Tioga Lake Campground, and Tioga Lake overlook/Glacier Canyon trailhead. These facilities were built after the proposed project and located in relationship to the project reservoirs in order to provide for their use by the public.</p> <p>The study area should include all campgrounds, day use sites, trailheads, FS system trails, user-created trails, roads, and dispersed campsites adjacent to or in the vicinity of: Lee Vining Creek, Glacier Creek, Ellery Lake, Tioga Lake, or Saddlebag Lake.</p> <p>Rec sites: Include all developed recreation sites in Lee Vining Canyon, along Saddlebag Road, and around Saddlebag Lake. NFS trails: Saddlebag Lk trail, Glacier Canyon trail User-created trails: trails around project lakes and along creeks</p>	<p>Facilities Condition Assessment) in a second field season (2023) but would not imply that they are ultimately related to Project operations.</p> <p>The Study <i>LAND-1 Project Lands and Roads</i> will include consultation with USFS staff to identify roads or access trails that may be used predominantly for Project purposes, such as for operation and maintenance of Project facilities or access to Project-related recreation opportunities.</p> <p>A dispersed use assessment will be conducted in 2022 around each of the Project reservoirs (Saddlebag, Ellery, and Tioga lakes) but not along the creeks. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season.</p>
14	USFS	4/22/2021 Formal Study Request (Emailed Document)	<p>The study area should include all campgrounds, day use sites, trailheads, FS system trails, user-created trails, roads, and dispersed campsites adjacent to or in the vicinity of: Lee Vining Creek, Glacier Creek, Ellery Lake, Tioga Lake, or Saddlebag Lake.</p>	<p>SCE will include all developed USFS sites listed in this request as part of its Season 1 user surveys to determine the primary reason for user visits and whether there is a nexus to the Project itself.</p> <p>SCE will include an assessment of Saddlebag Lake</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
			Rec sites: Include all developed recreation sites in Lee Vining Canyon, along Saddlebag Road, and around Saddlebag Lake. NFS trails: Saddlebag Lk trail, Glacier Canyon trail User-created trails: trails around project lakes and along creeks	Trail in Season 2 use and needs studies but does not propose including Glacier Canyon Trail in any detailed assessments. The trailhead facilities for Glacier Canyon Trail and any informal spurs leading around Tioga Lake will be studied as part of Season 2 activities, but no assessment of the trail or trail use itself is being proposed, as the draw is the wilderness and not Tioga Lake. SCE proposes to conduct a dispersed use assessment around Ellery, Saddlebag, and Tioga lakes. This will include the dispersed camping and pullout areas previously identified in TWG discussions. This will not include an inventory of use along the creeks.
15	USFS	4/22/2021 Formal Study Request (Emailed Document)	Provide historic context for recreation facility development and hydropower facility development including an analysis of the timeline and location of recreation facilities in relationship to project reservoirs. For example, the construction of Big Bend, Aspen, and Moraine campgrounds after the construction of the Poole Power Plant road.	SCE does not understand how this context would inform discussions of Project nexus since the current baseline is the existing Project facilities. The REC-1 phased approach will assist in determining nexus through user survey implementation.
16	USFS	4/22/2021 Formal Study Request (Emailed Document)	Develop recreation facility operations, maintenance, and accessibility needs for the same sites identified in REC1 above.	Operations, maintenance, and accessibility needs will be discussed with the TWG following the field seasons and based on the collected data.
17	USFS	4/22/2021 Formal Study Request (Emailed Document)	Include assessment of: ... campground water systems condition and adequacy ...	For the developed INF recreation sites identified in the REC-1 initial surveys as having a Project nexus, SCE will continue to consult with the TWG to develop methods and scope for facility condition assessments prior to the 2023 field season.
18	USFS	4/22/2021 Formal Study Request	Include assessment of: ... sign inventory, need for interpretive signage ... fishing line disposal stations, litter	REC-2 facilities condition assessments conducted during the 2023 field season will include a sign inventory and assessment of disposal stations at

Comment Number	Entity	Date/Forum	Comment	SCE Response
		(Emailed Document)	disposal need ... opportunity for expansion of campgrounds.	each site identified for inclusion in those studies. Information from those assessments will be used for discussions following fieldwork to determine whether there is a need for interpretive signage or expansion of campgrounds.
19	USFS	4/22/2021 Formal Study Request (Emailed Document)	Evaluate the relationship between flood damage to campgrounds in lower Lee Vining Canyon and project operations.	SCE's understanding is that the flooding below Poole Powerhouse typically occurs as a result of spring runoff, the magnitude of which is mitigated by the Project. SCE would welcome additional information that would tie campground flooding to Project operations. A hydrology and operations model is being proposed that will help develop information regarding Project operations below Poole Powerhouse.
20	Monique Sanchez USFS	5/27/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> What are the proposed study seasons, how will you determine if you'll do a second season for each Study? Since we had such an abnormal amount of use in 2020 because of COVID-19, I'd like to hear back from our recreation specialists, maybe the first season would have odd results. It could be a high or low use year in 2021/2022. Having both seasons of data would help us get a better understanding of what is going on.	No data will be collected in 2021; study seasons will begin in 2022. SCE understands that we are currently in a unique environment and that atypical recreation use and/or unexpected events that would affect the proposed studies are highly likely in the coming years. SCE will continue to coordinate with the TWG and rely on USFS staff for guidance on whether studies should be altered or re-scheduled as we move through the study season.
21	Bartshe Miller MLC	5/27/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> Expressed concerns about a large number of vehicles driving and parking in Saddlebag Lake bottom when water levels are low. The access point observed is near the concessionaire water taxi. Where is this being addressed, is the concessionaire involved, and how does it affect SCE's operations?	Vehicle intrusion at Ellery and Saddlebag Lakes will be generally assessed as part of the REC-2 dispersed use assessment, though there may be crossover during LAND-1 discussions regarding Project roads and road condition. USFS concessionaire data, operations, and special use permits will also be reviewed and characterized as part of REC-1 and REC-2 studies. The nexus between water quality impacts from non-Project activities is discussed in Study <i>WQ-1 Stream and Reservoir Water Quality</i> .

Comment Number	Entity	Date/Forum	Comment	SCE Response
22	Bartshe Miller MLC	5/27/2021 TWG Meeting	<p><i>Paraphrase of comment in meeting:</i> Mono County is pursuing a grant to improve the road and infrastructure up to Saddlebag Lake. This could be a problem if not done with inter-agency collaboration and SCE to help manage some of the issues we are studying here. The road is beyond repair, so they are considering paving it.</p>	<p>SCE will continue to monitor the proposed construction to determine whether improvements contemplated in TWG discussions or following field data collection may be incorporated into the effort. The proposed construction will also be monitored in case construction schedules conflict with proposed user surveys, as construction may result in temporary closure of certain INF sites to the public.</p>
23	USFS	1/14/2022 Comments on Initial Study Requests	<p>4.5.8 Project Recreation Sites Recreational use of the penstock below Ellery Lake, needs to be included in the study. 52 climbing routes are accessed from the penstock - https://www.mountainproject.com/map/109223681/lee-vining-canyon-tioga-road</p>	<p>Informal recreational use around Ellery Lake and Rhinedollar Dam facilities will be assessed as part of the <i>REC-2 Existing Recreation Facilities Condition Assessment</i>. This use has been noted, and SCE will continue to consult with the Recreation and Land TWG to determine whether data (surveys or trail data) warrants collection under the <i>REC-1 Recreation Use Assessment</i> or whether a general characterization of the use is sufficient for later discussions.</p> <p>We agree that this use is in the study area and will be characterized as part of the proposed studies; however, it should be noted that just because informal use is noted in the study area, that does not necessarily mean it has a nexus to the Project.</p>
24	USFS	1/14/2022 Comments on Initial Study Requests	<p>5.8.5.5. Climbing Recreational use of the penstock below Ellery Lake, needs to be included in the study. 52 climbing routes accessed from the penstock - https://www.mountainproject.com/map/105798288/sierra-eastside</p>	<p>See response to Comment 23 above.</p>
25	USFS	1/14/2022 Comments on Initial	<p>Table 6.1-1. Resource Issues, Data Gaps, and Potential Studies/Recreation Use</p>	<p>See response to Comment 23 above.</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
		Study Requests	The recreational use of the Penstock below Rhinedollar dam should be evaluated.	

INF = Inyo National Forest; MLC = Mono Lake Committee; SCE = Southern California Edison; TWG = Technical Working Group; USFS = U.S. Forest Service

9.0 REFERENCES

- BLM (Bureau of Land Management). 1993. *Bishop Resource Management Plan Record of Decision*. Bakersfield District, Bishop, CA.
- CDPR (California Department of Parks and Recreation). 2020. *California's 2021–2025 Statewide Comprehensive Outdoor Recreation Plan*. California Department of Parks and Recreation, Sacramento, CA.
- IC (Inyo County). 2001. *Inyo County General Plan*. Inyo County Planning Department, Bishop, CA.
- SCE (Southern California Edison). 2015. Form 80 and Recreation Report Filing: 2014 Recreation Use Study Report for Eastern Hydro Division.
- USDA (United States Department of Agriculture). 2013. *Inyo National Forest Alternative Transportation System Study*. United States Department of Agriculture.
- USFS (U.S. Forest Service). 2006. Visitor Use Report, Inyo NF, USDA Forest Service, Region 5, National Visitor Use Monitoring Data collected FY 2006. United States Department of Agriculture.
- _____. 2011. Visitor Use Report, Inyo NF, USDA Forest Service, Region 5, National Visitor Use Monitoring Data collected FY 2011. United States Department of Agriculture.
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- _____. 2019. *Land Management Plan for the Inyo National Forest. Fresno, Inyo, Madera, Mono and Tulare Counties, California; Esmeralda and Mineral Counties, Nevada*. R5-MB-323a. Pacific Southwest Region. September. Accessed: August 24, 2020. Available online: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd664404.pdf.

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LAND-1 PROJECT LANDS AND ROADS TECHNICAL STUDY PLAN

**LEE VINING HYDROELECTRIC PROJECT
*FERC PROJECT No. 1388***



April 2022

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1.0 POTENTIAL RESOURCE ISSUE

This study would evaluate the necessity for potential modifications to the existing Lee Vining Hydroelectric Project (Project) Boundary, lands, and roads.

2.0 PROJECT NEXUS AND HOW THE RESULTS WILL BE USED

Under Title 18 Code of Federal Regulations (CFR) Section 4.41, the Federal Energy Regulatory Commission (FERC) requires that the FERC Project Boundary encompass all lands, roads, and trails necessary for project purposes, including the operations and maintenance (O&M) over the term of the license. FERC further requires (18 CFR § 11.2) that a licensee recompense the United States for the use, occupancy, and enjoyment of its lands or its property. The annual charge for such use of government lands is calculated, in part, based on the amount of federal acreage within the project boundary, and therefore a distinction must be made between federal and non-federal lands when filing a project boundary and associated data. Therefore, this study will compile the necessary information regarding current Project facilities and O&M activities to inform an accurate representation of Project lands to be proposed in a Final License Application.

3.0 STUDY GOALS AND OBJECTIVES

- Identify whether additional Project lands may be needed for operation of the Project, including laydown and spoil areas, or whether current Project lands or facilities are no longer needed for Project operation.
- Confirm existing land ownership and federal lands within the existing FERC Project Boundary are accurately represented.
- Identify which roads or access trails are used for access to and maintenance of the Project, and identify existing agreements related to maintenance of those roads and access trails.
- Inventory and assess the condition of those identified Project-related roads and access trails, including the potential need for improvements.
- Identify for purposes of describing in the License Application all Project facilities and structures used for hydroelectric generation (e.g., buildings, roads, and spillways).

4.0 EXTENT OF STUDY AREA AND STUDY SITES

The proposed study area for the initial Project nexus assessment will include lands within the existing FERC Project Boundary, as well as additional lands identified by Southern California Edison (SCE) staff or through consultation with the Recreation and Land Use Technical Working Group (TWG) as having the potential for nexus to the Project (i.e., access, O&M activities). The study area for the inventory and assessment of conditions will include those roads and access trails identified as having a Project nexus.

5.0 EXISTING INFORMATION

The following existing information and data sources will guide the analysis:

- Approved FERC Project Boundary geographic information system (GIS) data
- Approved Project exhibit drawings
- Mono County tax parcel GIS data
- Federal land ownership GIS data
- Aerial imagery
- *Land Management Plan for the Inyo National Forest* (USFS, 2019).

6.0 STUDY APPROACH

- Assess the existing FERC Project Boundary for accuracy.
 - Analyze the existing FERC Project Boundary within GIS software to determine whether mapping errors or omissions are present in the representation of Project lands needed for operation under the current license.
- Assess existing Project lands ownership and lease agreements information.
 - Gather accurate land ownership and lease agreement data for existing Project lands to confirm ownership boundaries and representation of federal lands used for Project purposes.
- Consult with SCE O&M staff to determine whether the existing FERC Project Boundary adequately encompasses all lands needed for current operations or any proposed changes to facilities or operations.
- Consult with SCE and U.S. Forest Service (USFS) staff to identify roads or access trails that may be used for Project purposes, such as for O&M of Project facilities or access to Project-related recreation opportunities.
- Assess the condition of roads or access trails identified for Project purposes.

7.0 SCHEDULE

Date	Activity
2022 – Spring/Summer	Conduct desktop analysis and interview SCE staff
2022 – Winter	Prepare initial findings for consultation
2023	Consult with appropriate agencies and determine need for site assessments
2023 – Feb/March/April	Potential field season for site assessments
2023 – May	Compile study results and prepare draft report
2023 – June	Distribute draft report to TWG
2023 – June/July	TWG review and comments
2023 – Nov/Dec	Resolve comments and prepare final report
2024 – September	Distribute final report in Draft License Application

SCE = Southern California Edison; TWG = Technical Working Group

8.0 CONSULTATION SUMMARY

In preparation to file the Pre-Application Document (PAD), filed in August 2021, and Notice of Intent (NOI), SCE hosted Recreation and Land Use Resources TWG Meetings on January 28, February 25, April 1, and May 27, 2021, which resulted in study requests from Stakeholders to address questions regarding the FERC Project Boundary, lands, and roads. Notes and materials from these meetings are available at www.sce.com/leevining. Stakeholder comments on the outline and relevant study requests received are summarized in the response to comments table below (Table 8-1). SCE filed draft Study Plans with the PAD and NOI on August 12, 2021, to address issues discussed with the TWG. The Stakeholder comment period ended on January 18, 2022, for the Study Plans, PAD, and NOI. SCE reviewed all comments received; drafted Revised Technical Study Plans which were distributed to the TWGs on February 18, 2022, for another 30-day review period. All comments received related to this Study Plan are included in Table 8-1 below and incorporated into this Final Study Plan where appropriate.

Table 8-1. Consultation Summary—Response to Comments

Comment Number	Entity	Date/Forum	Comment	SCE Response
1	Sheila Irons USFS	2/25/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> Poole Powerhouse Road is a native (dirt) surface road and is only plowed because SCE needs to get access into the plant. Since the road is adjacent to Lee Vining Creek, there are issues with sedimentation.	SCE acknowledges that this could be a concern. Options for maintaining this portion of the Poole Powerhouse Road will be evaluated as part of Study <i>AQ-3 Aquatic Habitat Mapping and Sediment Characterization</i> .
2	Bartshe Miller Mono Lake Committee	2/25/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> We are putting together our study requests still. Possibility of focused recreation use studies at Saddlebag, Ellery pull out, and at north end of Tioga Lake in regards to vehicle density on dirt areas. There is the possibility of non-point source pollution and run off (dumping of coolers, pet waste, etc.) at these pullouts increasing due to recreation/vehicle use at these pull outs. Pulling off in these areas is due to the scenic views at the reservoirs, so they seem related to the Project. Camping right at the shoreline of Saddlebag and Tioga Lakes is increasing, with no buffer between vehicles. This isn't happening at Ellery Lake because there is no direct driving access to the shoreline.	Pull-outs on State Route 120 alongside Ellery and Tioga lakes are ultimately the responsibility of the California Department of Transportation. However, the formal pullout at Ellery Lake will be included in user surveys and spot counts conducted under REC-1 efforts in the 2023 field season. Informal pull-outs surrounding the Project reservoirs (Saddlebag, Ellery, and Tioga lakes) will be included in the 2022 dispersed use assessment. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season. SCE notes the related concern about potential water quality impacts. See comment response in Study <i>WQ-1 Stream and Reservoir Water Quality</i> .
3	USFS	4/22/2021 Formal Study Request (Emailed Document)	Determine project-dependent recreation facilities including access roads such as Poole Power Plant road and Saddlebag Lake road.	SCE proposes to utilize the first field season (2022) for on-site user surveys at each developed Inyo National Forest recreation site mentioned in Inyo National Forest's proposed study requests. These initial surveys are intended to collect the primary reason for each recreator visit to determine which Inyo National Forest recreation sites or areas may have a potential connection to the Project. The collected

Comment Number	Entity	Date/Forum	Comment	SCE Response
				<p>information will be used in discussions with the TWG to determine which sites warrant broader studies (<i>REC-1 Recreation Use Assessment, REC-2 Existing Recreation Facilities Condition Assessment</i>) in a second field season (2023) but would not imply that they are ultimately related to Project operations.</p> <p>Study <i>LAND-1 Project Lands and Roads</i> will include consultation with USFS staff to identify roads or access trails that may be used for Project purposes, such as for O&M of Project facilities or access to Project-related recreation opportunities.</p>
4	USFS	4/22/2021 Formal Study Request (Emailed Document)	Assess needs and location options for staging areas, materials storage sites, and use of borrow pits.	Study <i>LAND-1 Project Lands and Roads</i> will include consultation with SCE O&M and USFS staff to determine whether the existing FERC Project Boundary adequately encompasses all lands needed for current operations or any proposed changes to facilities or operations, including staging areas, material storage sites, and borrow pits.
5	USFS	4/22/2021 Formal Study Request (Emailed Document)	Revise project overview map to correct Hoover Wilderness boundary on E side of Ellery Lk, Label Tioga Campground on map.	The Project map that was hosted on SCE's relicensing website was an older version that has since been replaced with the USFS' updated wilderness boundaries since corrections were made. This is the data used in all current PAD documents and that will be used moving forward.
6	USFS	4/22/2021 Formal Study Request (Emailed Document)	Include assessment of: condition of gates on access roads, need for control of public vehicle access to Saddlebag lakebed ... need for paving of Saddlebag Rd, road drainage improvements, road pullout improvements ... vehicle intrusion near Ellery Lake, need for paving Ellery Lake parking lot ... need for	Study <i>LAND-1 Project Lands and Roads</i> will include consultation with USFS staff to identify roads or access trails that may be used for Project purposes, such as for O&M of Project facilities or access to Project-related recreation opportunities. Vehicle intrusion at Ellery and Saddlebag lakes will be generally assessed as

Comment Number	Entity	Date/Forum	Comment	SCE Response
			<p>paving Poole Powerhouse Rd to reduce sediment runoff to Lee Vining Creek ...</p>	<p>part of the REC-2 dispersed use assessment, though there may be cross-over during LAND-1 discussions regarding Project roads and road condition.</p>
7	USFS	4/22/2021 Formal Study Request (Emailed Document)	<p>Include assessment of: ... need for paving Poole Powerhouse Rd to reduce sediment runoff to Lee Vining Creek ...</p>	<p>Options for maintaining this portion of the Poole Powerhouse Road will be evaluated as part of Study AQ-3 <i>Aquatic Habitat Mapping and Sediment Characterization</i>.</p>
8	USFS	4/22/2021 Formal Study Request (Emailed Document)	<p>The proposed project includes the Poole Power Plant Road which was likely built as part of the creation of the Lee Vining hydropower project. The new road provided additional access to Lee Vining creek and opened a new area of the Inyo NF to recreation development including Big Bend, Aspen, and Moraine campgrounds.</p> <p>The Lower Lee Vining and Cattleguard campgrounds may also have a nexus to the proposed project if this study finds that a significant portion of campground users stay here in order to recreate in the project vicinity, such as fishing at Tioga, Ellery, or Saddlebag Lakes.</p> <p>In addition, there is likely a nexus to recreation facilities on the Saddlebag Lake road which provides easy access to Saddlebag group camp, campground, trailheads, picnic area, boat ramp, Sawmill campground, and Gardisky Lake trailhead. Many of these facilities depend directly on the existing lake and the other facilities depend on the presence of the road.</p> <p>There is also a nexus to recreation facilities in the vicinity of Tioga and Ellery lakes including Ellery Lake Campground, Tioga Lake Campground, and</p>	<p>SCE proposes to utilize the first field season (2022) for on-site user surveys at each developed Inyo National Forest recreation site mentioned in Inyo National Forest's proposed study requests. These initial surveys are intended to collect the primary reason for each recreator visit to determine which Inyo National Forest recreation sites or areas may have a potential connection to the Project. The collected information will be used in discussions with the TWG to determine which sites warrant broader studies (<i>REC-1 Recreation Use Assessment, REC-2 Existing Recreation Facilities Condition Assessment</i>) in a second field season (2023) but would not imply that they are ultimately related to Project operations.</p> <p>Study <i>LAND-1 Project Lands and Roads</i> will include consultation with USFS staff to identify roads or access trails that may be used for Project purposes, such as for O&M of Project facilities or access to Project-related recreation opportunities.</p> <p>A dispersed use assessment will be conducted in 2022 around each of the Project reservoirs (Saddlebag, Ellery, and Tioga lakes) but not</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
			<p>Tioga Lake overlook/Glacier Canyon trailhead. These facilities were built after the proposed project and located in relationship to the project reservoirs in order to provide for their use by the public.</p> <p>The study area should include all campgrounds, day use sites, trailheads, FS system trails, user-created trails, roads, and dispersed campsites adjacent to or in the vicinity of: Lee Vining Creek, Glacier Creek, Ellery Lake, Tioga Lake, or Saddlebag Lake.</p> <p>Rec sites: Include all developed recreation sites in Lee Vining Canyon, along Saddlebag Road, and around Saddlebag Lake. NFS trails: Saddlebag Lk trail, Glacier Canyon trail User-created trails: trails around project lakes and along creeks</p>	<p>along the creeks. Based on the information collected from that assessment, SCE will discuss with the TWG whether additional surveys, spot counts, or traffic/trail counters may be needed during REC-1 efforts in the 2023 field season.</p>
9	USFS	4/22/2021 Formal Study Request (Emailed Document)	<p>The study area should include all campgrounds, day use sites, trailheads, FS system trails, user-created trails, roads, and dispersed campsites adjacent to or in the vicinity of: Lee Vining Creek, Glacier Creek, Ellery Lake, Tioga Lake, or Saddlebag Lake.</p> <p>Rec sites: Include all developed recreation sites in Lee Vining Canyon, along Saddlebag Road, and around Saddlebag Lake. NFS trails: Saddlebag Lk trail, Glacier Canyon trail User-created trails: trails around project lakes and along creeks</p>	<p>SCE will include all developed USFS sites listed in this request as part of its Season 1 user surveys to determine the primary reason for user visits and whether there is a nexus to the Project itself.</p> <p>SCE will include an assessment of Saddlebag Lake Trail in Season 2 use and needs studies but does not propose including Glacier Canyon Trail in any detailed assessments. The trailhead facilities for Glacier Canyon Trail and any informal spurs leading around Tioga Lake will be studied as part of Season 2 activities, but no assessment of the trail or trail use itself is being proposed as the draw is the wilderness and not Tioga Lake.</p> <p>SCE proposes to conduct a dispersed use assessment around Ellery, Saddlebag, and Tioga lakes. This will include the dispersed camping</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
				and pullout areas previously identified in TWG discussions. This will not include an inventory of use along the creeks.
10	USFS	4/22/2021 Formal Study Request (Emailed Document)	Provide historic context for recreation facility development and hydropower facility development including an analysis of the timeline and location of recreation facilities in relationship to project reservoirs. For example, the construction of Big Bend, Aspen, and Moraine campgrounds after the construction of the Poole Power Plant road.	SCE does not understand how this context would inform discussions of Project nexus because the current baseline is the existing Project facilities. The REC-1 phased approach will assist in determining nexus through user survey implementation.
11	Bartshe Miller Mono Lake Committee	5/27/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> Expressed concerns about a large number of vehicles driving and parking in Saddlebag Lake bottom when water levels are low. The access point observed is near the concessionaire water taxi. Where is this being addressed, is the concessionaire involved, and how does it affect SCE's operations?	Vehicle intrusion at Ellery and Saddlebag lakes will be generally assessed as part of the REC-2 dispersed use assessment, though there may be cross-over during LAND-1 discussions regarding Project roads and road condition. USFS Concessionaire data, operations, and special use permits will also be reviewed and characterized as part of REC-1 and REC-2 studies. The nexus between water quality impacts from non-Project activities is discussed in Study <i>WQ-1 Stream and Reservoir Water Quality</i> .
12	Bartshe Miller Mono Lake Committee	5/27/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> Mono County is pursuing a grant to improve the road and infrastructure up to Saddlebag Lake. This could be a problem if not done with inter-agency collaboration and SCE to help manage some of the issues we are studying here. The road is beyond repair, so they are considering paving it.	SCE will continue to monitor the proposed construction to determine whether improvements contemplated in TWG discussions or following field data collection may be incorporated into the effort. The proposed construction will also be monitored in case construction schedules conflict with proposed user surveys, as construction may result in temporary closure of certain Inyo National Forest sites to the public.
13	USFS	1/14/2022 Comments on Initial Study Requests	4.5.6 Access Roads and Trails Is there a reason why Poole Powerhouse Road is not included in the project boundary? It appears that this road was constructed for access to the Powerhouse	The LAND 1-Project Lands and Roads study will include consultation with USFS staff to identify roads or access trails that may be used predominantly for Project purposes, such as for

Comment Number	Entity	Date/Forum	Comment	SCE Response
			<p>well before it was used for access to the campgrounds. The road is also as source of sediment due to the proximity to Lee Vining Creek. The project boundary should at least include the section beyond Big Bend Campground. The primary use of the road past the campgrounds is for accessing Poole Powerhouse. The road exists for that purpose. The road segment after Big Bend Campground is not suitable for recreational development and would not have been built other than for access to the powerhouse. Mono County holds a Forest Roads and Trails (FRTA) Easement and plows the road in winter to maintain access to the powerhouse. Plowing is another potential source of sediment input to Lee Vining Creek. There are issues for FERC boundary and incomplete list of facilities. See included maps.</p>	<p>O&M of Project facilities or access to Project-related recreation opportunities. It is reasonable to include Poole Powerhouse Road in this analysis, especially the segment from the powerhouse to Big Bend Campground.</p> <p>Additional information is needed regarding issues with the FERC Project Boundary and list of facilities. Study <i>LAND-1 Project Lands and Roads</i> will assess the current FERC Project Boundary in relation to SCE operations, maintenance, and facilities to ensure that all Project features are adequately encompassed in a future FERC Project Boundary and represented in the license.</p> <p>We agree that these locations are in the study area; however, it should be noted that lands included in the FERC Project Boundary are only those necessary for O&M of the Project; it is not based on Project effects.</p>
14	USFS	1/14/2022 Comments on Initial Study Requests	<p>The current FERC project boundary does not include the stream reach below Poole Powerhouse. Studies have been developed to look at the impacts operations will have on this reach of Lee Vining Creek. The bypass reach should be included in the FERC project boundary in the new license. There are roads near Saddlebag dam that access dam infrastructure that are not included in the FERC project boundary. Since the roads are used to access the dam infrastructure these roads should be included in the FERC project boundary in the new license.</p>	<p>Study <i>LAND-1 Project Lands and Roads</i> will include consultation with USFS staff to identify roads or access trails that may be used predominantly for Project purposes, such as for O&M of Project facilities or access to Project-related recreation opportunities. It is reasonable to include Poole Powerhouse Road in this analysis, especially the segment from the powerhouse to Big Bend Campground.</p> <p>Study <i>LAND-1 Project Lands and Roads</i> will also assess the current FERC Project Boundary in relation to SCE operations, maintenance, and facilities to ensure that all Project features are adequately encompassed in a future FERC</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
				<p>Project Boundary and represented in the license. These features have been noted and will be included in part of that analysis.</p> <p>We agree that these locations are in the study area; however, it should be noted that lands included in the FERC Project Boundary are only those necessary for O&M of the Project; it is not based on Project effects.</p>
15	USFS	1/14/2022 Comments on Initial Study Requests	3.0 STUDY GOALS AND OBJECTIVES: An accurate list of all facilities needs to be provided. It should include all buildings, roads, and structures spillways, dams, penstock, gauging stations and any other constructed or modified items or entities that is used by hydroelectric generation), the list of facilities needs to be accurate and complete. See included maps.	This is one of the main purposes of the LAND-1 study. We have added an explicit goal to the plan stating: "Identify for purposes of describing in the License Application all Project facilities and structures used for hydroelectric generation (e.g., buildings, roads, and spillways)."

O&M = operations and maintenance; PAD = Pre-Application Document; PM&E = Protection, Mitigation, and Enhancement; SCE = Southern California Edison; TWG = Technical Working Group; USFS = U.S. Forest Service

9.0 REFERENCES

USFS (U.S. Forest Service). 2019. *Land Management Plan for the Inyo National Forest. Fresno, Inyo, Madera, Mono and Tulare Counties, California; Esmeralda and Mineral Counties, Nevada*. R5-MB-323a. Pacific Southwest Region. September. Accessed: August 24, 2020. Available online: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd664404.pdf.

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LAND-2 VISUAL RESOURCE ASSESSMENT TECHNICAL STUDY PLAN

**LEE VINING HYDROELECTRIC PROJECT
*FERC PROJECT No. 1388***



April 2022

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1.0 POTENTIAL RESOURCE ISSUE

This study will characterize the potential effects of Lee Vining Hydroelectric Project (Project) operations, maintenance, and construction activities on the existing visual quality of key viewing areas of Project lands.

2.0 PROJECT NEXUS AND HOW THE RESULTS WILL BE USED

Operation, maintenance, and construction activities associated with the Project may affect scenic resources associated with Project lands. The Visual Resource Assessment will characterize existing visual resources within the existing Federal Energy Regulatory Commission (FERC) Project Boundary.

3.0 STUDY GOALS AND OBJECTIVES

The goal of this study is to characterize the existing visual resources of Project lands, document the associated visual quality and management objectives identified in the *Land Management Plan for the Inyo National Forest* (USFS, 2019), and document the existing visual character of Project facilities and features from affected viewsheds and representative Key Observation Points (KOPs).

4.0 EXTENT OF STUDY AREA AND STUDY SITES

The study area includes key viewsheds and representative KOPs from which the Project facilities and features are visible. Southern California Edison (SCE) will consult with the U.S. Forest Service (USFS) to identify viewsheds and representative views (KOPs) for assessment that may be influenced by future Project operations, maintenance, or construction activities. Potential KOPs include representative viewing locations along key access roadways, such as the State Route 120 National Forest Scenic Byway, and representative recreation and overlook areas that provide views of Project facilities and features such as Project reservoirs, dams, and facilities.

5.0 EXISTING INFORMATION

The *Land Management Plan for the Inyo National Forest* (USFS, 2019) identifies desired conditions for scenic character and scenic integrity objectives (desired conditions) for the management and preservation of scenic character within the Inyo National Forest. The designated scenic integrity objectives in the Project Vicinity are defined by the USFS as “High” (landscapes where the valued scenic character appears unaltered; deviations may be present but must repeat the form, line, color, texture, and pattern common to the scenic character so completely and at such scale that they are not evident) and “Very High” (landscapes where the valued scenic character “is” intact with only minute, if any, deviations; the existing scenic character and sense of place is expressed at the highest possible level). Additional information is needed to characterize the existing visual resources and potential effects of Project operations, maintenance, and construction activities.

6.0 STUDY APPROACH

The visual resource assessment will include the following components:

- Inventory, map, and describe existing Project infrastructure, operation, maintenance and construction activities that may have the potential to affect visual resources of the Project Area.
- Document existing Protection, Mitigation, and Enhancement measures, including the existing Visual Resource Protection Plan (Section 4(e) Condition 11) implemented under the existing license.
- Obtain (from the USFS), map (via geographic information system [GIS]), and characterize existing visual resource inventories and management objectives associated with the Project lands as developed under the *Land Management Plan for the Inyo National Forest* (USFS, 2019). Summarize any available information pertaining to variety classes, sensitivity levels, distance zones, and Recreation Opportunity Spectrum (ROS) classifications.
- Conduct a viewshed analysis (via GIS) and determine what portion and acreages of the Project lands and associated landscape are potentially visually affected by Project-related activities based on the inventory conducted under Task 1.
- In consultation with the USFS, identify KOPs from representative locations such as Project-related travel corridors and recreation sites within the identified viewshed areas for additional analysis. The number and location of KOPs will be determined in continued consultation with the Recreation and Land Use Technical Working Group (TWG) prior to the 2023 field season.
- Map and assess the KOP locations to include documentation of the existing scenic character and potential use of the selected KOPs. Where applicable, incorporate KOP locations into 2023 user surveys associated with the *REC-1 Recreation Use Assessment* to determine frequency and duration of visits at the KOP locations.
- Prepare a study report that documents the study findings and characterizes the existing visual conditions as they relate to Project facilities and Project-related activities.

7.0 SCHEDULE

Date	Activity
2022 – Summer/Fall	Conduct field surveys
2023 – February	Consult with TWG on KOP locations and 2023 REC-1 field work
2023	Compile study results and prepare draft report
2024 – May	Distribute draft report to TWG
2024 – June	TWG review and comments
2024 – July/Aug	Resolve comments and prepare final report
2024 – September	Distribute final report in Draft License Application

KOP = Key Observation Point; TWG = Technical Working Group

8.0 CONSULTATION SUMMARY

In preparation to file the Pre-Application Document (PAD), filed in August 2021, and Notice of Intent (NOI), SCE hosted Recreation and Land Use Resources TWG Meetings on January 28, February 25, April 1, and May 27, 2021, which resulted in study requests from Stakeholders to address questions regarding visual quality. Notes and materials from these meetings are available at www.sce.com/leevining. Stakeholder comments on the outline and relevant study requests received are summarized in the response to comments table below (Table 8-1). SCE filed draft Study Plans with the PAD and NOI on August 12, 2021, to address issues discussed with the TWG. The Stakeholder comment period ended on January 18, 2022, for the Study Plans, PAD, and NOI. SCE reviewed all comments received; drafted Revised Technical Study Plans which were distributed to the TWGs on February 18, 2022, for another 30-day review period. All comments received related to this Study Plan are included in Table 8-1 below and incorporated into this Final Study Plan where appropriate.

Table 8-1. Consultation Summary—Response to Comments

Comment Number	Entity	Date/Forum	Comment	SCE Response
1	USFS	4/22/2021 Formal Study Request (Emailed Document)	<i>[Formal request for visual resource assessment]</i>	In response to USFS request, SCE is proposing a Visual Resource Assessment study as described in this Study Plan.
2	Adam Barnett USFS	5/27/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> The visual resources study request was targeted at SCE facilities, but visual quality observations would likely also capture some USFS facilities, to some extent. It would be good to be clear about who is responsible for what.	While USFS facilities would have no nexus to the Project in this scenario, SCE understands that there may be efficiencies during the process of conducting the visual resources assessment on SCE facilities to also include certain USFS facilities in the area. SCE will continue to consult with the USFS on detailed methods and delineation of responsibilities.
3	Monique Sanchez USFS	5/27/2021 TWG Meeting	<i>Paraphrase of comment in meeting:</i> Usually landscape architects work with the visual study team to figure out how the visual quality impacts visitors' experience. We have done this in other projects.	SCE understands that there is usually a cross-over between recreation use and visual assessment and an opportunity to efficiently combine efforts. Opportunities to obtain visual quality assessment data will be considered in the selection of REC-1 survey and data collection methods and locations for the 2023 field season.

SCE = Southern California Edison; TWG = Technical Working Group; USFS = U.S. Forest Service

9.0 REFERENCES

USFS (U.S. Forest Service). 2019. *Land Management Plan for the Inyo National Forest. Fresno, Inyo, Madera, Mono and Tulare Counties, California; Esmeralda and Mineral Counties, Nevada*. R5-MB-323a. Pacific Southwest Region. September. Accessed: August 24, 2020. Available online: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd664404.pdf.

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CUL-1 CULTURAL RESOURCE TECHNICAL STUDY PLAN

**LEE VINING HYDROELECTRIC PROJECT
*FERC PROJECT No. 1388***



April 2022

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1.0 POTENTIAL RESOURCE ISSUE

Southern California Edison (SCE), along with a Technical Working Group (TWG) of Stakeholders including the federal land-managing agency and Indian Tribes, identified the need to conduct cultural resource studies including archaeological, built environment, and Traditional Cultural Properties (TCPs), as well as Tribal and non-American Indian Traditional Cultural Resource (TCR).¹ This Study Plan details the study objectives, study area, methods, and schedule for the archaeological and built-environment resources, as well as non-American Indian TCPs and TCRs, resource studies. American Indian TCPs and TCRs will be considered within the *TRI-1 Tribal Resource Technical Study Plan*.

Several terms used throughout this Study Plan warrant definition at the outset.

- **Historic Property(ies)**, as defined in the Code of Federal Regulations, Title 36, Section 800.16(l)(1) (36 CFR § 800.16(l)(1)), are prehistoric or historic archaeological sites, buildings, structures, objects, or districts included in or eligible for inclusion in the National Register of Historic Places (NRHP). Historic properties are identified through a process of evaluation against specific NRHP criteria in 36 CFR § 60.4.
- **A District** is a geographic area containing a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan and physical development. Examples of districts include (but are not limited to) prehistoric archaeological site complexes, hydroelectric projects, residential areas, commercial zones, mining complexes, transportation networks, rural villages, canal systems, irrigation systems, or large ranches (NPS, 1997).
- **Cultural Resource(s)**, for the purpose of this document, is used to discuss any prehistoric or historic-period district, site, building, structure, object, landscape, TCP, or TCR, regardless of its National Register eligibility.

There may be any number of cultural resources in the Project Vicinity. Some of these resources may be eligible for the NRHP (i.e., historic properties).

2.0 PROJECT NEXUS AND HOW THE RESULTS WILL BE USED

The Federal Energy Regulatory Commission (FERC) decision to issue a new license is considered an “undertaking” pursuant to 36 CFR 800.16(y). The National Historic Preservation Act (NHPA) requires federal agencies to take into account the effect of undertakings on historic properties and allow the Advisory Council on Historic Preservation (ACHP) an opportunity to comment.

Continued Project Operation and Maintenance and other activities, including public recreation activities, may have an adverse effect on historic properties. The effect may be direct (e.g., result of ground-disturbing activities), indirect (e.g., public access to

¹ A TRC is a resource that may not meet the NRHP criteria but has significant value to a Tribal or non-American Indian community or group.

Project areas), or cumulative (e.g., caused by a Project activity or public access in combination with other past, present, and reasonably foreseeable future projects). This study focuses on these potential Project effects to historic properties.

For historic properties, appropriate study areas are defined by regulations under 36 CFR § 800 as the Area of Potential Effects (APE). The APE for the Project is further defined in Section 4.0, *Extent of Proposed Study Area and Study Sites*, of this Study Plan. The following will be assessed during the archaeological and built environment surveys:

- Are the impacts due to the presence of the Project? Impacts to NRHP-eligible resources or resources with associated Tribal values may include but are not limited to ground disturbance due to driving or excavation; erosion from higher flows; changes to a landscape viewshed; changes to a built environment feature.
- Are the impacts direct, indirect, and/or cumulative?
- If impacts are a result of the presence of the Project, how will they be addressed?

Data collected during this study will inform the following:

- Cultural Resource Technical Reports (CUL-1) for archaeological and built-environment resources.
- Cultural Resource Evaluation Reports for archaeological and built-environment resources.
- Historic Properties Management Plan (HPMP) for archaeological and built-environment resources as well as resources with associated Tribal values.

3.0 STUDY GOALS AND OBJECTIVES

The cultural resource study goals and objectives include the following:

- Meet FERC compliance requirements under in its regulations (18 CFR Part 5) and Section 106 of the NHPA, as amended, by determining if Project-related activities and public access will have an adverse effect on historic properties.
- Identify all archaeological resources, built-environment resources, and TCRs within the APE, determine which are historic properties, and develop the HPMP based on those results.
- Ensure that future Project facilities and operations are consistent with the Desired Conditions described in the *Land Management Plan for the Inyo National Forest* (USFS, 2019) for Social and Economic Sustainability and Multiple Uses.

4.0 EXTENT OF PROPOSED STUDY AREA AND STUDY SITES

The cultural resource studies will focus upon the FERC Project Boundary, the proposed APE, and a larger Study Area proposed to be a 0.5-mile radius around the proposed APE (Figure 4-1).

5.0 EXISTING INFORMATION

5.1. SUMMARY OF RECORD SEARCHES ARCHIVAL RESEARCH

The cultural resource section of the Pre-Application Document (PAD), filed in August 2021, was developed using information obtained from the SCE archives, the Inyo National Forest, and the California Historical Resources Information System (CHRIS) Eastern Information Center (EIC) at the University of California Riverside.

A records search was conducted utilizing the ArcGIS Online (AGOL) database, which is maintained by SCE and includes a heritage search of all U.S. Forest Service (USFS) Heritage Programs in Region 5 within the SCE service territory as well as records searches from CHRIS.

The USFS Region 5 has developed and maintains corporate databases that include information about heritage resources and heritage resource investigations (Natural Resource Manager [NRM] Heritage Database) and geospatial data (GIS) in accordance with Section 112(2) of the NHPA and Forest Service Manual 2360. Region 5 Forests have shared with SCE all NRM and GIS data that intersect utility facilities (e.g., transmission and distribution facilities, roads) on all USFS lands. Detailed information is presented in Section 5.11.8, *Previously Identified Archaeological Sites*, and Section 5.11.9, *Lee Vining Hydroelectric Project*, of the PAD and is summarized here.

5.1.1. PREVIOUS CULTURAL RESOURCE STUDIES

Thirty-two previous cultural resource investigations were identified within the proposed Study Area (Table 5-1 below). Of these, 19 have been conducted within the proposed APE or overlap the proposed APE and Study Area. Among them are the preparation of a Historic and Archaeological Preservation Plan (HAPP [White, 1983]); four studies conducted during the last relicensing (Diamond and Hicks, 1988; White, 1985a, 1985b; and York, 1990); and the preparation of an HPMP (White, 1990). Maps of the previous studies are located in Appendix H (Confidential) of the PAD.

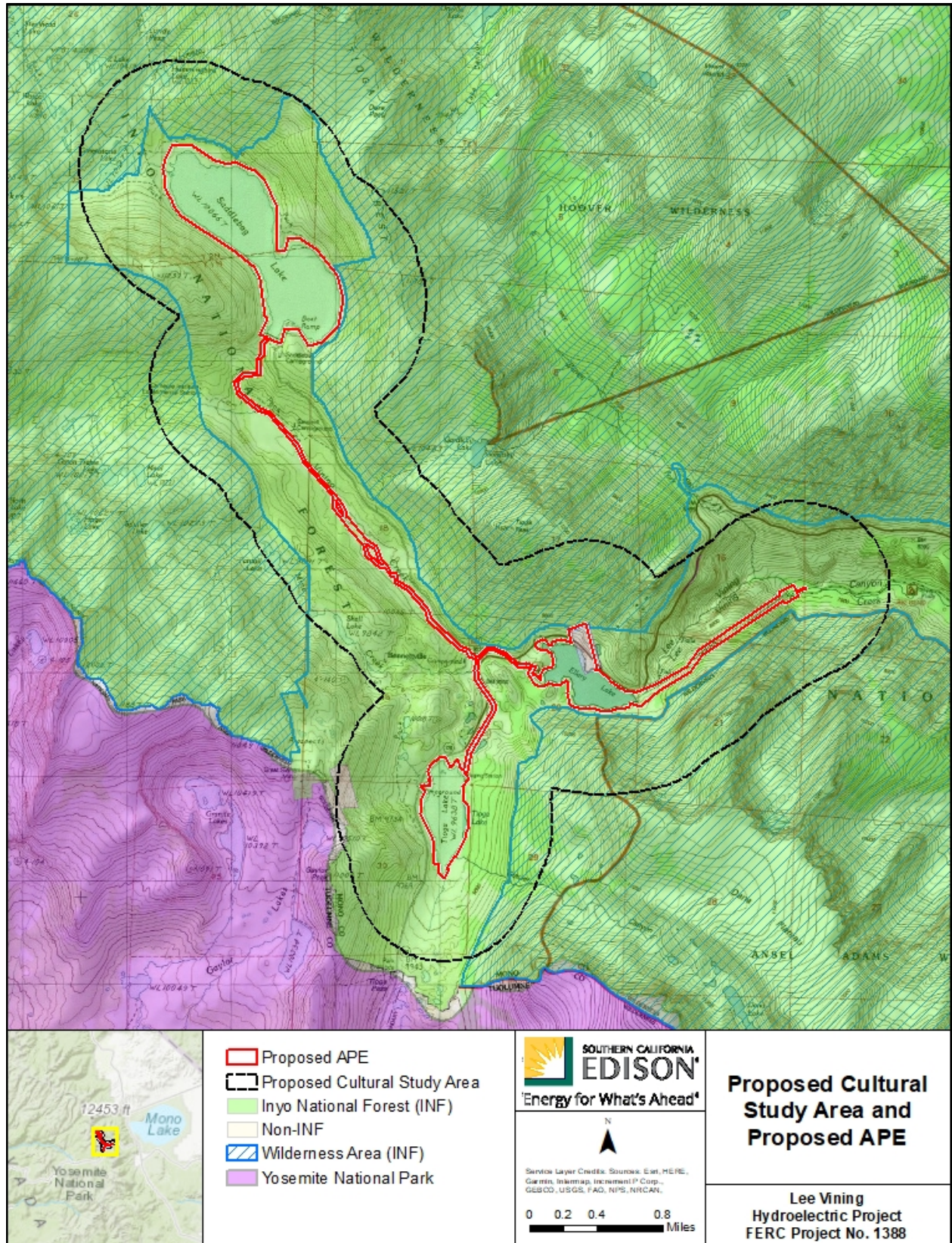


Figure 5-1. Proposed APE and Study Area.

Table 5-1. Previous Cultural Resource Studies Located Within the Proposed Study Area and APE

IC Number	SCE Document ID	USFS Number	Author(s)	Year	Report Title
MN-00153	--	--	Bodie, C.D.	1980	<i>Archaeological Reconnaissance Report- Saddlebag Lake Campground Reconstruction</i>
MN-00120	--	R1981050400201	Burton, J.	1980	<i>Archaeological Reconnaissance Report-Junction Campgrounds Rehabilitation</i>
MN-00107	--	--	Faust, N. A.	1980	<i>Archaeological Reconnaissance Report- Sawmill Campground Rehabilitation Project</i>
MN-00217	--	ARR #05-04-0270	Crist, M. K.	1982	<i>A Cultural Resources Reconnaissance of the Leggett Hydroelectric Project Mono County, California</i>
--	1160002	--	White, D.R.M	1983	<i>Historic and Archaeological Preservation Plan for Eastern Sierra Hydroelectric Projects in Mono and Inyo Counties, California: Lundy (FERC 1390), Lee Vining Creek (FERC 1388), Rush Creek (FERC 1389), and Bishop Creek (FERC 1394)</i>
MN-00802	1160170	R1987050400441	White, D.R.M	1985a	<i>Results of the 1984 Field Season, Cultural Resources Survey, for the Historic and Archaeological Preservation Plan for Eastern Sierra Hydroelectric Projects, In Mono and Inyo Counties, California: Lundy (FERC Project 1390), Lee Vining Creek (FERC Project 1388), Rush Creek (FERC Project 1389), and Bishop Creek (FERC Project 1394)</i>
--	1160187	--	White, D.R.M	1985b	<i>Results of the 1985 Field Season, Cultural Resources Survey, for the Historic and Archaeological Preservation Plan for Eastern Sierra Hydroelectric Projects, In Mono and Inyo Counties, California: Lee Vining Creek (FERC Project 1388) and Rush Creek (FERC Project 1389)</i>
MN-00424	1160218	--	Clay, V. L., and M.C. Hall	1988	<i>Results of The 1987 Field Season Cultural Resources Survey for The Historic and Archaeological Preservation Plan for The Lee Vining Creek Hydroelectric Project (FERC #1388) And The Rush Creek Hydroelectric Project (FERC #1389)</i>
MN-00417	1160198	--	Diamond and Hicks	1988	<i>Historic Overview of the Rush Creek and Lee Vining Creek Hydroelectric Projects</i>

IC Number	SCE Document ID	USFS Number	Author(s)	Year	Report Title
--	1160241	--	White	1988	<i>Guide to Areas Surveyed for the Historic and Archaeological Preservation Plan for Eastern Sierra Hydroelectric Projects in Mono and Inyo Counties, California: Lundy (FERC Project 1390), Lee Vining Creek (FERC Project 1388), Rush Creek (FERC Project 1389), and Bishop Creek (FERC Project 1394)</i>
--	1160283	--	Lehmann et al.	1989	<i>Summary Report for the Historical Investigation of Water Rights for Rush Creek and Lee Vining Creek</i>
MN-00418	1160279	--	Williams and Hicks	1989	<i>Evaluation of the Historic Resources of the Lee Vining Creek (FERC Project 1388) and Rush Creek (FERC Project 1389) Hydro Electric Systems, Mono County, California</i>
MN-00515	--	ARR #05-04-0467	Balint, T and W. Woolfenden	1990	<i>Archaeological Reconnaissance Report- Ellery Lake Pipe</i>
--	1160298	--	White, D.R.M	1990	<i>Management Plan for Historic and Archaeological Resources Associated with the Lee Vining Creek Hydroelectric Project (FERC Project No. 1388), Mono County, California</i>
--	1160288	--	York, A.	1990	<i>An Evaluation of Twenty-One Archaeological Sites on the Lee Vining Creek, Rush Creek, and Lundy Hydroelectric Projects, Mono and Inyo Counties, California</i>
--	1161328	--	Taylor, T.T.	1996	<i>Historic American Engineering Record Lee Vining Creek Hydroelectric System, Triple Cottage Building No. 102 HAER No. CA-180-A</i>
--	--	R1996050400707	Unknown	1996	<i>Lee Vining Canyon Bighorn Sheep Enhancement Project</i>
--	--	R1997050400720	Unknown	1997	<i>Tioga Pass Resort Evaluation</i>
--	1160470	--	Taylor, T.T.	1998	<i>Archaeological Survey and Assessment Report Eastside Hydro Gaging Station Automation Project Rush Creek and Lee Vining Creek Hydroelectric System Mono Basin, Mono County, California</i>
--	--	R2004050401073	Unknown	2004	<i>OHV Routes Inventory and Designation Survey</i>

IC Number	SCE Document ID	USFS Number	Author(s)	Year	Report Title
MN-00984	--	R2004050401073c	Penelope A. Spears	2006	<i>Heritage Resources Report (Off-Highway Vehicle (OHV) Route Designation Strategy)</i>
MN-00925	--	R2007050401250	West, Crystal	2007	<i>Heritage Resources Report (Saddlebag Lake Wedding)</i>
--	1164552	--	Parr, R.E.	2010	<i>Cultural Resources Assessment for the Southern Californian Edison Company Saddlebag Dam Geomembrane Liner Installation Project, Inyo National Forest, Mono County, California</i>
MN-01079	1163528	R2010050401456	Switalski, H and S. Hutmacher	2010	<i>Heritage Resource Inventory Report for the Southern California Edison Co.'s Replacement of Two Deteriorated Pole Structures on the Control-Morgan-Plant 2 55kV Transmission Line (4770-0355) and Two H-Frame Structures on the Lee Vining-Poole 115kV Transmission Line (4750-1597)</i>
MN-01053	--	R2009050401346	Leach-Palm, L., P. Brandy, J. King, P. Mikkelsen, L. Seil, L. Hartman, J. Bradeen, B. Larson, and J. Freeman	2010	<i>Cultural Resources Inventory of Caltrans District 9 Rural Conventional Highways in Inyo, Eastern Kern, Mono and Northern San Bernardino Counties, Summary of Methods and Findings</i>
MN-01054	1164522	R2010050401539	Parr, R.E.	2010	<i>Cultural Resource Assessment for The Southern California Edison Company Saddle Bag Dam Geomembrane Liner Installation Project, Inyo National Forest, Mono County, California</i>
MN-01107	1163657	R2010050401458	Hubert Switalski and Andrea Bardsley	2011	<i>Archaeological Survey Report and Historical Resource Evaluation for the Proposed Rhinedollar (overhead) 12kv Distribution Circuit Rebuild Project (6085-4800, 8-4816), Lee Vining Creek Hydroelectric System, Inyo National Forest, Mono County, California</i>
MN-01104	--	--	Willis W.	2011	<i>Tioga Road Survey</i>

IC Number	SCE Document ID	USFS Number	Author(s)	Year	Report Title
MN-01125	1163028	--	Hoffman and Dietler, J	2012	<i>Letter Report: Cultural Resources Letter Report for IO 322880, Cultural Resources Monitoring for Southern California Edison Emergency Repairs, Rhinedollar</i>
--	--	R2012050401734	--	2012	<i>Travel Management Road Closures, North Zone, CA</i>
--	1163000	R2014050401857	Switalski, H.	2014	<i>Heritage Resources Inventory Report for the Southern California Edison Company's Rebuild of an Underground Conduit Along State Route 120 (6485-4815, 8-4805), Ellery Lake, Inyo National Forest, Mono County, California.</i>
--	1164638	--	Nixon and Pacheco	2018	<i>Cultural Resource Inventory Report for TRR GO 131-D Evaluation Project Along the Lee Vining-Poole 115kV Transmission Line, Inyo National Forest, Mono County, California (USFS ARPA Permit# LVD18031)</i>

ARPA = Archaeological Resource Protection Act; FERC = Federal Energy Regulatory Commission; IC = Information Center; kV = kilovolt; NADB = National Archaeological Database; SCE = Southern California Edison; USFS = U.S. Forest Service

5.2. PREVIOUSLY RECORDED CULTURAL RESOURCES

5.2.1. PREVIOUSLY RECORDED ARCHAEOLOGICAL SITES

Archival research conducted to date indicates that there are seven pre-contact, zero multi-component (pre-contact and historic-period), and nine historic-period archaeological sites previously recorded within the proposed Study Area. Of these, two pre-contact and four historic-period archaeological sites are located within the proposed APE. The types of sites and their NRHP eligibility status are listed in Table 5-2. Pre-contact sites primarily include bedrock milling stations, lithic scatters, and ground stone. Historic-period sites include historic debris and the remains of buildings or structures. The archaeological remains at the Tioga Pass Resort (P-26-003308) may be related to Native American employees that worked there. Two of the archaeological sites within the proposed APE (CA-MNO-2437 and P-26-006236) have been evaluated for their eligibility for listing in the NRHP and were determined not eligible (Gualtieri, 1990). The locations of these sites are depicted on maps located in the Appendix H (Confidential) of the PAD.

Table 5-2. Previously Recorded Archaeological Sites Located Within the Proposed Study Area and APE

Primary Number	Trinomial	USFS Number	Site Type	Composition of Site	NRHP Eligibility	In APE	In Study Area	Property Owner
P-26-000016	CA-MNO-16	05045101165	Prehistoric	Lithic Scatter	No Data	Yes*	No*	USFS
P-26-000203	CA-MNO-203	05045100342	Prehistoric	Lithic Scatter	No Data	No	Yes	USFS
P-26-000354	CA-MNO-354	05045201165	Prehistoric	Lithic Scatter	No Data	No	Yes	USFS
P-26-000537	CA-MNO-537	--	Prehistoric	Lithic Scatter	No Data	No	Yes	USFS
P-26-001679	CA-MNO-1679	05045100400	Historic	Bennettville Mine	No Data	No	Yes	USFS
P-26-001926	CA-MNO-1926	--	Prehistoric	Lithic Scatter	No Data	Yes	No	N/A
P-26-002417	CA-MNO-2417	05045100702	Prehistoric	Lithic Scatter	Not Eligible 09/22/88 FERC821004D	No	Yes	USFS
P-26-002437	CA-MNO-2437	05045101163	Historic	Structures; Historic Debris	Not Eligible 02/06/90 FERC821004D	Yes	Yes	SCE
P-26-003231	CA-MNO-3171	--	Historic	Historic Debris	No Data	No	Yes	USFS
P-26-003308	--	05045101259	Historic	Tioga Pass Resort	Historic District 07/29/1997, USFS970709A	Yes	Yes	USFS
--	--	05045101427	Historic	Historic Debris	No Data	Yes	No	USFS
--	--	05045101749	Historic	1880 Steam Engine	No Data	No	Yes	USFS
--	CA-MNO-5391	05045101750	Historic	Old Road Segment	No Data	No	Yes	USFS
--	CA-MNO-5392	05045101751	Historic	Historic Camp	No Data	No	Yes	USFS
P-26-005847	--	--	Historic	Historic Road	No Data	No	Yes	N/A
P-26-006236	--	05045101683	Historic	Rhinedollar 12kV Circuit	Not Eligible 06/06/2011, USFS110413A	Yes	No	USFS

APE = Area of Potential Effects; kV = kilovolt; N/A = data not available; NRHP = National Register of Historic Properties; SCE = Southern California Edison; USFS = U.S. Forest Service; * = Site Record Very Old, Location is Uncertain

5.2.2. PREVIOUSLY RECORDED BUILT-ENVIRONMENT RESOURCES

The Project location offers geographical advantages for high-head hydroelectric generation due to the steep topography and annual snowpack. The Lee Vining Creek Hydroelectric System is composed of three dams and reservoirs, an auxiliary dam, a conduit, a powerhouse and related structures, and a substation and related structures. Built between 1917 and 1924, original plans called for a second powerhouse, which ceased to operate in 1940, and the construction of a third powerhouse that was never undertaken (Williams and Hicks, 1989). The Project was evaluated for the NRHP by James C. Williams and Robert A. Hicks in 1988. The only element of the system that was determined eligible was the triplex cottage, under Criterion C, located at Lee Vining Powerhouse No. 1 (i.e., Poole Powerhouse).

The period of significance for the cottage is between 1920 and 1930. It is a French Eclectic triplex designed by G. Stanley Wilson, an architect based in Riverside, California. “His work was of very high quality, and he was a leading practitioner of the Spanish-Colonial revival during the 1920s” (Williams and Hicks, 1989:26). The building is considered eligible for the NRHP under Criterion C, distinctive architectural characteristics that represent the work of a master.

The rest of the system was determined not eligible because the engineering techniques used in constructing the Lee Vining Hydroelectric Project and its components were commonplace for hydroelectric systems built during the 1920s. Good examples of commonplace components are the rock-filled dams at Saddlebag, Ellery, and Tioga Lakes (Williams and Hicks, 1989). Additionally, background research and fieldwork conducted when the Project was evaluated revealed that one of the related cottages had been removed, one was greatly altered, and other buildings had been removed or were substantially altered. Major additions had also been made in the form of switchcracks, transformers, fencing, and grading. Williams and Hicks also assessed that decommissioning of Powerhouse No. 3 had greatly compromised the Project's overall integrity (Williams and Hicks, 1989). Project elements that were recorded and evaluated are listed in Table 5-3.

Table 5-3. Lee Vining Hydroelectric Project Elements

Primary Number	HAER Number	Description	Date of Construction	NRHP Eligibility
--	--	Poole Powerhouse; Building No. 101	1924	Not Eligible
--	CA-180-A	Lee Vining Creek Hydroelectric System Triplex Cottage; Building No. 102	1924	Eligible
--	--	Woodshed; Building No. 103	1925	Not Eligible
--	--	Storage Shed; Building No. 104	1927	Not Eligible
--	--	Radio Room; Building No. 105	1925	Not Eligible
--	--	2-Car Garage; Building No. 107	1927	Not Eligible

Primary Number	HAER Number	Description	Date of Construction	NRHP Eligibility
--	--	Pumphouse; Building No. 109	1925	Not Eligible
--	--	Water Tank	1925	Not Eligible
--	--	Transformer Bank	Unknown ^a	Not Eligible
--	--	Switch Yard	Unknown ^a	Not Eligible
--	--	Flowline, Tunnel, Penstock	1920-1927	Not Eligible
--	--	Rhinedollar Dam (Ellery Lake)	1927	Not Eligible
--	--	Rhinedollar Flume	1952	Not Eligible
--	--	Flume House	1956	Not Eligible
--	--	Valve House	Unknown ^a	Not Eligible
--	--	Patrolman's Cabin/Vacation House	1942	Not Eligible
--	--	Tioga Dam	1928	Not Eligible
--	--	Auxiliary Dam (Tioga Lake)	1928	Not Eligible
--	--	Instrument Building (Tioga Lake)	ca. 1950s	Not Eligible
--	--	Saddlebag Dam	1920	Not Eligible
--	--	Fire House	1955	Not Eligible
--	--	Venturi Flume	1949	Not Eligible
--	--	Valve House	Unknown ^a	Not Eligible
--	--	Flow Line (Lee Vining Creek)	1950	Not Eligible
--	--	Instrument Building (Lee Vining Creek)	Unknown ^a	Not Eligible

Source: Williams and Hicks, 1989

HAER = Historic American Engineering Record; NRHP = National Register of Historic Places

Note:

^a Dates of construction were not in SCE's records (Williams and Hicks, 1989).

The only other built-environment resources known to be located within the proposed Study Area is the Rhinedollar Circuit (P-26-006236), the Tioga Pass Resort (P-26-003308), and segments of the old Tioga Road.

5.2.3. PREVIOUSLY RECORDED NON-AMERICAN INDIAN TRADITIONAL CULTURAL PROPERTIES

No non-American Indian traditional resources have been identified within the APE.

6.0 STUDY APPROACH

6.1. GENERAL CONCEPTS

- Personal safety is an important consideration of each fieldwork team. If SCE determines the information cannot be collected in a safe manner, SCE will notify FERC and relicensing participants as soon as possible via email to discuss alternative approaches to perform the study.
- SCE shall obtain permission to access private property where needed well in advance of performance of the study. If access is not granted or if it is not feasible or safe, SCE will notify FERC and relicensing participants as soon as possible via email to discuss alternative approaches to perform the study.
- Field crews may make minor modifications to the study proposal in the field to accommodate actual field conditions and unforeseen problems. When modifications are made, the SCE field crew will follow the protocols in this Study Plan. If minor modifications are made, SCE will notify FERC and relicensing participants as soon as possible via email to discuss alternative approaches to perform the study.
- SCE shall treat all information regarding the locations of archaeological sites or other sensitive cultural resource information as confidential and will not disclose to the public, per the following regulations:
 - NHPA, United States Code, Title 54, Section 307103 (54 United States Code [USC] § 307103), which provides limited authority for withholding disclosure of information about the "location, character and ownership" of resources from the public;
 - Archaeological Resources Protect Act (ARPA), 16 USC § 470hh, which provides authority to limit information on the "nature and location" of archaeology on federal land;
 - Cultural and Heritage Cooperation Authority, 25 USC § 3056, which provides specific authority to the USFS to protect Tribal information from release under the Freedom of Information Act; and
 - California Government Code § 6254(r), which exempts from disclosure public records of Native American graves, cemeteries, and sacred places maintained by the Native American Heritage Commission.

6.2. STUDY METHODS

The methods proposed to meet the study goals and objectives are discussed in the following sections.

6.2.1. ARCHIVAL RESEARCH

As needed during implementation of the studies, archival research will be conducted at most of the repositories listed below to obtain additional information specific to the prehistory, ethnography, and history of the Project Area, the hydroelectric Project in whole, and its individual features. This may include contacting SCE employees, as appropriate, to gather feature-specific information. The results of the archival research will serve as the basis for preparing the prehistoric and historic contexts against which archaeological and built-environment resources may be evaluated. Historical photographs located during the archival research will be inserted into and cited in the text. Previous NRHP evaluations of Project features will be used as much as possible (although, if previous studies are dated or lacking in necessary detail, additional, site-specific research may be required on an as-needed basis during the studies). Places to be contacted or visited include:

- Autry Museum of the American West, Los Angeles
- California State Archive, Sacramento
- California State Library, California History Room, Sacramento
- EIC, University of California Riverside
- Huntington Library, SCE Collection: Records, Documents, and Photos
- Native American Heritage Commission
- Paiute-Shoshone Cultural Center, Bishop
- Southern California Edison, Rosemead Office
- Tuolumne County Carlo M. De Ferrari Archive, Sonora
- USFS, Inyo National Forest
- University of California, Berkeley, Bancroft Library
- University of Nevada, Reno, Special Collections
- Yosemite National Park Research Library
- Yosemite National Park Archive, El Portal
- Other online repositories as applicable

6.2.2. ARCHAEOLOGICAL INVENTORY

Based on the existing data described above, FERC is required to make a reasonable and good-faith effort to identify historic properties that may be affected by the Project. As

described in 36 CFR § 800.4(b)(1), this may be accomplished through sample field investigations and/or field surveys that are implemented in accordance with the Secretary of the Interior's Standards and Guidelines for Identification (NPS, 1983). FERC is required to consider any other applicable professional standards and Tribal, state, or local laws or procedures to complete the identification of historic properties.

To assist FERC in meeting its compliance obligations, and to develop appropriate management measures for historic properties identified within the APE, an archaeological inventory will be performed 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.

Areas within the APE that cannot be accessed in a safe manner (e.g., locations with dense vegetation or unsafe slopes) will not be included within the survey or recording of archaeological resources; these areas will be identified in the resulting survey report and an explanation for survey exclusion will be provided.

The field survey will be supervised by one or more qualified, professional archaeologists (i.e., individuals who meet the Secretary of the Interior's Professional Qualifications Standards for Archaeology [NPS, 2021]) who will participate in all field work. During the survey, archaeologists will walk parallel transects spaced at no more than 20-meters as vegetation and terrain allow. The purpose of the field survey is to: 1) examine lands which have not been previously surveyed; 2) examine lands previously surveyed but where the field strategy is unknown; and 3) examine lands previously surveyed but for which the field strategy does not meet current professional standards, as defined in the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* (NPS, 1983) and the California Office of Historic Preservation (OHP). If conditions allow, lands typically inundated by Project reservoirs will be examined if they become accessible during the survey season.

Locations of previously recorded archaeological sites will be verified, 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. The archaeologists will determine if sketch maps for previously documented sites require revision to describe current site conditions more accurately. Newly discovered archaeological resources, including isolated finds, will be fully 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 cultural 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 Inyo National Forest 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 Inyo National Forest lands will require valid Organic Act permits. Any ground-disturbing testing that occurs on Inyo National Forest lands will require valid ARPA permits. SCE or their consultants will obtain all required permits prior to beginning field work and will notify the Inyo National Forest 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.

6.2.2.1. Discovery and Treatment of Human Remains

FEDERALLY MANAGED LANDS

Should human skeletal materials, burials, and/or associated funerary objects be identified during the survey or other Project phases or prior to license issuance on USFS Inyo National Forest land, all work in the immediate area will cease and the location of the find will be secured at the moment of discovery. Personnel responsible for the discovery will notify the SCE Cultural Resources Specialist who in-turn will notify the appropriate federal land management agency's archaeologist and law enforcement officer. The remains will be treated in accordance with protocols of the appropriate land management agency.

If the human skeletal remains are Native American and are located on federal land, FERC and SCE's Cultural Resources Specialist shall coordinate with the USFS Inyo National Forest to comply with their Native American Graves Protection and Repatriation Act protocols pursuant to 25 USC 3001 et seq.

PRIVATE OR STATE LAND

Should human skeletal materials, burials, and/or associated funerary objects be identified during the survey or other phases of the Project or prior to license issuance, they will be treated in accordance with California Health and Safety Code (CHSC) Section 7050.5(b). At the moment of discovery, all work in the immediate area will cease and the location of the find will be secured. Personnel responsible for the discovery will notify the SCE Cultural Resources Specialist who in-turn, given that the skeletal materials are verified as human, will contact the Mono County Coroner and a qualified archaeologist will be secured to evaluate the find to determine, in consultation with the coroner, if the remains are or are not Native American. The skeletal remains will be treated following CHSC Section 7050.5.

6.2.3. BUILT ENVIRONMENT INVENTORY

Field inspection, documentation and subsequent NRHP evaluation of the entire Project Area (APE) will be undertaken by individuals meeting the Secretary of the Interior's Professional Qualifications Standards for Architectural History (NPS, 2021). The architectural historian will record or re-record (as appropriate, to meet current OHP and California Department of Parks and Recreation standards) each individual building or structure within the APE, including those that do not yet meet the age requirement for evaluation for the relicensing effort (which, in consultation with the USFS Inyo National Forest, is any building or structure that will attain 45 years of age by 2027). In addition to

the hydroelectric-related resources, the architectural historian will be specifically looking for buildings, structures, and objects associated with mining, road construction, grazing, and recreation as well as any additional resources found during survey.

Fieldwork will include digital color photography of all resources and the production of sketch maps of individual features, which show the relationship of buildings and structures within each complex that may be associated with them (e.g., an operational hydroelectric facility or a campground within the APE). When possible, GPS points will be taken of each resource that will then be plotted onto maps to create a comprehensive inventory of built-environment resources within the APE.

6.2.4. NON-AMERICAN INDIAN TRADITIONAL RESOURCES

As described above, FERC is required to make a reasonable and good-faith effort to identify historic properties that may be affected by the Project. As described in 36 CFR § 800.4(b)(1), this may be accomplished through sample field investigations and/or field surveys that are implemented in accordance with the Secretary of the Interior's Standards and Guidelines for Identification (NPS, 1983). FERC is required to consider any other applicable professional standards and Tribal, state, or local laws or procedures to complete the identification of historic properties. To assist FERC in meeting its compliance obligations, and to develop appropriate management measures for historic properties identified within the APE, a non-American Indian traditional resources inventory will be performed to identify their presence.

The inventory will be coordinated among the archaeological, built environment, and Native American Traditional Resource studies. Supervision will be a joint effort by one or more qualified professionals who meet the Secretary of the Interior's Professional Qualifications Standards (NPS, 2021) and who will participate in research, public outreach, and field work.

If a potential resource is identified during research, public outreach, and/or field work, oral interviews and/or field verification will be conducted as appropriate. Resource locations will be verified and fully documented following NRHP Bulletin No. 38, *Guidelines for Evaluating and Documenting Identification of Traditional Cultural Properties* (Parker and King, 1990, 1998). The locations of all non-American Indian TCRs identified during the survey will be entered into a GPS receiver to document the location, which will be plotted onto the appropriate USGS 7.5-minute topographic quadrangle using the UTM coordinate system. GPS data collection will adhere to the Inyo National Forest specifications for accuracy and site-specific procedures where applicable.

6.2.5. NATIONAL REGISTER OF HISTORIC PLACES EVALUATION

SCE shall utilize the results of the inventories to prepare, in collaboration with the Inyo National Forest, Tribes, and other relicensing participants, an Evaluation Plan that will be executed to evaluate the eligibility of potential historic properties (in this case, archaeological sites, built-environment resources, and non-American Indian TCRs) for the NRHP. The Evaluation Plan will include an assessment of past, present, and

reasonably foreseeable Project effects on potential historic properties and detail the methods of evaluation to be implemented. The Evaluation Plan will be provided to the Inyo National Forest, Tribes, and other relicensing participants as appropriate for review 30 days prior to submitting to the OHP.

NATIONAL REGISTER CRITERIA FOR EVALUATION

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

- Are associated with events that have made a significant contribution to the broad pattern of American history; or
- Are associated with the lives of persons significant in America's past; or
- Embody the distinctive characteristics of a type, period, or method of construction; or
- Represent the work of a master; or
- Possess high artistic values; or
- Represent a significant and distinguishable entity whose components may lack individual distinction; or
- Have yielded, or may be likely to yield, information important to prehistory or history (NPS, 1997).

6.3. REPORTING AND HISTORIC PROPERTIES MANAGEMENT PLAN

The results of the Study Plan implementation will be reported in Exhibit E of the License Application, which will include a summary of the information and findings of the technical studies. Figures and other pertinent data supporting the summary in Exhibit E will be appended to the License Application. The archaeological records and other 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.

SCE anticipates FERC will enter into a programmatic agreement with the ACHP, OHP, and any other agencies or entities FERC elects to include. One of the programmatic agreement stipulations will be the completion and implementation of a HPMP to be included with the License Application.

The HPMP will consider direct and indirect effects of continued Project Operation and Maintenance on NRHP-listed or eligible archaeological and built-environment resources and will require avoidance and protection of specified resources, whenever possible. Processes and procedures will be developed for general and site-specific treatment measures, including minimization and mitigation measures to be taken should license implementation create unavoidable adverse effects to historic properties.

6.4. COORDINATION WITH OTHER STUDIES

To the extent feasible, SCE will coordinate archaeological and built-environment resources field studies with other Project-related environmental studies (e.g., Tribal resources and habitat surveys) and conduct them in a manner that does not affect other sensitive natural resources. When conducting archaeological and built-environment or other investigations, Project sponsors and/or their contractors should not violate other federal or state laws or regulations protecting natural resources including but not limited to the Endangered Species Act and Clean Water Act. Project sponsors should consider that Tribes may utilize natural resources for subsistence or specific ceremonial uses and should avoid affecting those uses or events while conducting studies.

6.5. CONSISTENCY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICE

The proposed study methods discussed in this document are consistent with the study methods followed in several recent relicensing projects including the Bishop Creek Hydroelectric Project Relicensing, which is under way. These methods have been accepted by the participating Indian Tribes, agencies, and other interested parties associated with those projects. The methods presented in this Study Plan are consistent with ACHP guidelines for compliance with the requirements of Section 106 of the NHPA found in 36 CFR 800.

7.0 SCHEDULE

The anticipated Study Plan development and implementation schedule is identified below.

Date	Activity
2022 ongoing – Summer	Conduct background research online and at the appropriate repositories
2022 – Spring	Select study sites
2022 – Spring	Meet with resource agencies and interested Stakeholders regarding cultural resource studies
2022 – Spring/Fall	Conduct cultural resource surveys, including built-environment evaluations
2022/2023 – Winter	Compile cultural resource survey results and prepare draft reports
2023 – January	Interim Study Report and Meeting
2023 – Feb/March	Stakeholder review and provide comments on draft report
2023 – April/May	Resolve comments and prepare draft final report
2023 – Spring/Fall	Conduct archaeological site evaluations
2023/2024 – Winter	Prepare archaeological site evaluation report
2024 – Spring	Distribute draft report to Stakeholders
2024 – Spring	Stakeholder review and provide comments on draft report
2024 – Spring/Summer	Resolve comments and prepare draft final report
2024 – Spring/Summer	Prepare draft HPMP

Date	Activity
2024	Stakeholder review and provide comments on draft HPMP
2024	Resolve comments and prepare final HPMP
2024 – November	Distribute final reports and HPMP in Final License Application

HPMP = Historic Properties Management Plan

8.0 CONSULTATION SUMMARY

In preparation to file the PAD and Notice of Intent (NOI), SCE hosted Cultural and Tribal Resource TWG Meetings on January 27, February 24, March 31, and May 26, 2021, which resulted in study requests from Stakeholders to address questions regarding cultural resources. Notes and materials from these meetings are available at www.sce.com/leevining. Stakeholder comments on the outline and relevant study requests received are summarized in the response to comments table below (Table 8-1). SCE filed draft Study Plans with the PAD and NOI on August 12, 2021, to address issues discussed with the TWG. The Stakeholder comment period ended on January 18, 2022, for the Study Plans, PAD, and NOI. SCE reviewed all comments received; drafted Revised Technical Study Plans which were distributed to the TWGs on February 18, 2022, for another 30-day review period. SCE reviewed all comments received; drafted Revised Technical Study Plans which were distributed to the TWGs on February 18, 2022, for another 30-day review period. All comments received related to this Study Plan are included in Table 8-1 below and incorporated into this Final Study Plan where appropriate.

Table 8-1. Consultation Summary—Response to Comments

Comment Number	Entity	Date/Forum	Comment	SCE Response
1	Mono Lake Kutzadikaa Tribe	January 27, 2021/TWG	<p>Tribal people can provide and have interest in cultural resources, but are often limited in the cultural arena. Tribes are mostly interested in natural resources (e.g., plants, animals, water). In the past have been boxed into cultural issues and have been lumped into the general public for other natural resources. Public interest does often satisfy the Tribal interest, because often there is more. We do not want to repeat consultation efforts where Tribal has been boxed into other categories. Have there been previous studies / previous NEPA consultation done on this project? Was Tribal consultation done for previous NEPA? It seems that this will be the first opportunity for Tribes to consult on this project. I do not think they were previously engaged or involved in the project as it exists. Tribal input has not been taken into account yet.</p> <p>I agree that synthesis from other groups is important. We want to get this off on the right foot and we do not have time to attend all of those other meetings</p>	<p>This is exactly why FERC has two separate areas: cultural and Tribal. Analysis is needed to communicate your interests and concerns. You will have an opportunity all the way through the relicensing process to provide your comments and interests.</p> <p>Not much consultation happened on this Project the first time around in the late 1980s. SCE will gather the previous consultation letters to confirm if there was any consultation in the past.</p> <p>From a process standpoint, interconnectedness of all of the work groups (TWG) is important. We encourage participants to join more than one TWG if you have time. We need to make sure there is cross-referencing between the groups so we all know what is important to each other. As far as previous NEPA goes, we can put the previous EA on the Project website. A brief review of what information is currently provided on the website was presented. We will remember to check in with Cultural and Tribal TWG to inform about what the other TWGs are looking at.</p> <p>Several folks present here are in the other TWGs as well. You are welcome to join in several or all. We can report back to this group on progress of other TWGs. We do not have past relicensing documents up on our website, but we do have a lot of information that we have compiled so far</p>

Comment Number	Entity	Date/Forum	Comment	SCE Response
				(PAD references, draft tables and figures, etc.).
2	All Tribal groups	February 24, 2021/TWG	Expressed concern about combining Lee Vining and Bishop Creek projects	SCE communicated that the two projects are entirely separate and in separate watersheds. Studies will not be combined.
3	Ron Goode, Tribal Chair, North Fork Mono Tribe	February 24, 2021/TWG	What is your actual FERC boundary buffer distance – 50 feet, 150 feet?	The buffer around Project features and creeks varies from 50 to 100 feet. The proposed APE is the FERC Project Boundary. If in the studies we find an effect happening outside of the FERC Project Boundary because of Project operations, the proposed APE boundary can be modified. The Study Area is a 0.5-mile radius for cultural. There was a survey 30 years ago during the last relicensing, but we are unsure about the thoroughness of the survey. The NHPA existed at the time of the last relicensing. We have only found reference to Tribal outreach from the previous relicensing, but no specific records. The APE will be resurveyed.
4	Ron Goode, North Fork Mono Tribe	February 24, 2021/TWG	What is the archaeological date on artifacts in this area? Wondering specifically about the arrowheads photo in the presentation.	There are lithic scatters recorded, but we do not know if there were diagnostic artifacts. The arrowheads photo is just a general picture not specific to this Project. We are still going through EIC data; if we find this information, we will let you know.
5	Tuolumne Band of Me-Wuk Indians/Tribal Chairwoman Reich	February 24, 2021/TWG	The Tribe, having participated in many hydroelectric relicensings are aware that the Tribal and Cultural resources portion of the PAD has likely been prepared and they would like to see a copy before it goes out to the general public. Why hasn't this been shared	We should be able to do that as time allows. We will develop a timeline on how to do that.

Comment Number	Entity	Date/Forum	Comment	SCE Response
			since the Tribal document is supposed to discuss what the Tribes think? They would like to know what work has been done, and what is being discussed now.	
6	Raymond Andrews, Mono Lake Kutzadikaa Indian Community Cultural Preservation Association	May 31, 2021/TWG	Concerned with public having information on cultural and gathering site locations. There has been a lot of desecration of gathering and other cultural sites. Concerned about the public receiving the PAD.	The publicly available PAD documents do not include maps of resource locations. Those are included in a confidential appendix of the PAD so the general public cannot access it. We also try and make the locations described in the PAD vague so they are hard(er) for the public to find. Please review the PAD ahead of time and give us feedback if a description is too specific. The locations of important plant species will hopefully be identified in the study, but the locations will not be described in detail in the PAD; they will be in confidential portions of the study report.
7	Raymond Andrews, Mono Lake Kutzadika Indian Community Cultural Preservation Association	March 31, 2021/TWG	I am wondering about archaeological surveys and permitting. Sometimes we do not make agreements with agencies for gathering sites; for example, we didn't want to do one with NPS because they wanted sensitive info that we didn't think they needed. I am not interested in gathering permits. We sometimes do not want to divulge the information to the agencies because of the way they use the data. Is there going to be a Tribal monitor on this project during construction? For example, if there was a flood then there would be construction to fix any damage, and you would use a Tribal monitor.	Since this Project is already built there would be no construction, so no Tribal monitor would be needed. If there is a requirement in the HPMP, then yes. For surveys, we would use Tribal participation.

Comment Number	Entity	Date/Forum	Comment	SCE Response
8	Bill Tucker, Southern Sierra Miwuk Nation	March 31, 2021/TWG	Have you checked into mine shafts area at top of Tioga Pass? There are several mine shafts that drain back into Lee Vining Creek that are 60-80 feet deep. There is ranger station right above it.	Mining operations and resulting water flow in the vicinity would typically be included in the PAD discussion.
9	Ron Goode, Tribal Chair, North Fork Mono Tribe	May 26, 2021/TWG	Emphasized the difference between cultural resources the way the team is using it and cultural resources the way the Tribes use it. Cultural resources to the Tribes are all things—water, rocks, air, birds, plants, etc. He wants us to be clear on what we are meaning. Tribal resources are more than archaeological sites that might be eligible for listing in the National Register. Wanted clarity on how cultural resources and Tribal values will be analyzed separately. Is glad that the ethnographic study area extends 5 miles around the Project.	Cultural and Tribal resources are different; not all Tribal resources are eligible for the NRHP (e.g., an elderberry harvest location related to an individual gatherer might not be eligible). We are asking the Tribes to help us understand what is significant to them, and we will include those resources in our <i>TRI-1 Tribal Resource Technical Study Plan</i> implementation. We work closely with HRA who has a great understanding of what those more recent resources might be.
10	Ron Goode/Tribal Chair, North Fork Mono Tribe	May 26, 2021/TWG	We do not want to get lost in the two verbiages (cultural and Tribal). For example, on another project we made them a vegetation species list and it was not included/assessed in the Botanical study report. We felt like we were not listened to.	The ethnobotanical lists you have developed in the 70s and the more recent one were included in the Tribal resources report for that project, and the biological team had access to that list. We will conduct a similar survey for this Project. We understand that the resources are connected and we will assess them where we need to. Sometimes archaeological sites or buildings may not meet the criteria for the NRHP but still have Tribal values, and that is part of the goal here to recognize those resources. HRA, a Tribal representative, and Shelly Davis-King go into the field together and discuss potential ethnographic areas. We

Comment Number	Entity	Date/Forum	Comment	SCE Response
				identify as best as we can what those values are.
11	Ron Goode/Tribal Chair, North Fork Mono Tribe	May 26, 2021/TWG	We (Ron, Raymond, and Monty) have been assessing trails on our side of the Sierra recently. It would be beneficial to look at trails on the east side and those that go over to the west side to see where the trading was.	SCE will conduct a trail analysis and has included some information and mapping in the PAD about work done for a previous study.
12	Raymond Andrews, Mono Lake Kutzadikaa Indian Community Cultural Preservation Association	May 26, 2021/TWG	Will there be Tribal monitors?	Tribal monitors will be invited to the cultural resources field survey.

APE = Area of Potential Effects; EA = Environmental Assessment; EIC = Eastern Information Center; FERC = Federal Energy Regulatory Commission; HPMP = Historic Properties Management Plan; HRA = Historical Research Associates, Inc.; LADWP = Los Angeles Department of Water and Power; NEPA = National Environmental Policy Act; NPS = National Park Service; PAD = Pre-Application Document; SCE = Southern California Edison; TWG = Technical Working Group

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TRI-1 TRIBAL RESOURCE TECHNICAL STUDY PLAN

LEE VINING HYDROELECTRIC PROJECT
FERC PROJECT No. 1388



April 2022

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1.0 POTENTIAL RESOURCE ISSUE

Southern California Edison (SCE), along with a Technical Working Group (TWG) of Stakeholders including the federal land-managing agency and Indian Tribes, identified the need to conduct a Tribal resource ethnographic and ethnohistoric research study. Technical professionals of the relicensing team have further acknowledged that there has been minimal investigation to date of (1) the Lee Vining Hydroelectric Project (Project) Area American Indian ethnography, (2) the potential for American Indian Traditional Cultural Properties (TCPs), or (3) the potential for other American Indian resources, some of which may be eligible for listing in the National Register of Historic Places (NRHP). This Study Plan is presented to address the need to conduct the aforementioned baseline research. Potential resource areas include TCPs; Tribal economic ventures; resources of traditional, cultural, or religious importance; and environmental considerations of importance to the American Indian community.

Research has indicated there are no American Indian federal trust lands/allotments in the proposed Area of Potential Effects (APE). Some Indian allotments are found in the region, but they are not proximate to the Project. The Tribe with the greatest affiliation to the project, the Mono Lake Indian Community (also known as the Mono Lake Kutzadikaa), has not yet been recognized by the federal government. The next closest Tribe with affiliation is the American Indian Council of Mariposa County (also known as the Southern Sierra Miwuk Nation); they also are not yet recognized by the federal government. The closest federally recognized Tribe to the Project is the Bridgeport Indian Colony, about 22 miles north. People with Kutzadikaa ancestry are also members of the Bishop Paiute Tribe (55 miles southeast), the Tuolumne Band of Me-Wuk Indians (about 52 miles due east), and perhaps others.

Each of these Tribes may have resources of value in the Project Area. There may be Tribal gathering, fishing, or hunting areas in the Project Vicinity, as the local American Indian community continues to access medicine plants, food plants, materials for tools, and many other items as part of their ongoing traditional cultural lifeways. The communities also have a connection with certain biological species, such as bighorn sheep, which may not be currently present in the area but nonetheless have value to heritage, stories, and traditional ecological knowledge. Some of these places may be TCPs or other properties eligible for inclusion in the NRHP based on associations with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions. Some of the resources may not be TCPs because they are not associated with the ongoing values by a community but may have other ethnographic or Tribal values and may also be eligible for NRHP listing. There is potential for both American Indian TCPs and other historic properties to be located in the Project. Potentially other Tribal resources may be located in the region that have values other than those traditionally investigated in historic property surveys. The Federal Energy Regulatory Commission (FERC) recognizes these values. The National Historic Preservation Act (NHPA) implementing regulations in the Code of Federal Regulations, Title 36, Part 800 (36 CFR 800) confirm Section 101(d)(6)(B) of NHPA by stating that when properties of religious and cultural significance to Indian Tribes may be affected by an undertaking, consultation with the Tribes is

required, and that the Indian Tribe shall be a consulting party. To date, neither new research nor interviews have been conducted to identify or discuss such places of religious or cultural significance specific to this Project.

2.0 PROJECT NEXUS AND HOW THE RESULTS WILL BE USED

FERC's decision to issue a new license is considered a federal undertaking pursuant to 36 CFR 800.16(y). The NHPA requires federal agencies to take into account the effect of its undertakings on historic properties and allow the Advisory Council on Historic Preservation (ACHP) an opportunity to comment.

Continued Project Operations and Maintenance (O&M) and other activities, including public recreation activities, may have an adverse effect on Tribal resources, which may include historic properties. The effect may be direct (e.g., result of ground-disturbing activities), indirect (e.g., public access to Project areas), or cumulative (e.g., caused by a Project activity or public access in combination with other past, present, and reasonably foreseeable future projects). The Tribal resource study will focus on identifying Tribal resources and if present, what effects are occurring.

FERC's requirements for involving American Indian Tribes outline the need to:

- Describe Indian Tribes, Tribal lands, and Tribal interests that may be affected by the Project.
- Include analysis of existing Project O&M that may impact Tribal cultural or economic interests.
- Identify impacts on Indian Tribes from existing Project O&M that may affect Tribal interests (e.g., Tribal fishing practices or agreements between the Indian Tribe and other entities) not necessarily associated with archaeological resources or other historic properties.

The Tribal resource study proposes to identify:

- Tribal matters that may exist because of the Project;
- Project effects that may be direct, indirect, and/or cumulative;
- Potential license conditions that may be necessary to address the Tribal matters;
- Existing agreements Tribes may have with other entities, such as the Inyo National Forest (U.S. Forest Service [USFS]) regarding access to Tribal resources, including but not limited to gathering (and gathering protocols), fishing, hunting, camping, ceremony, or other special uses; and
- Resource management goals of the USFS and take them into account when assessing effects.

Data collected during this study will inform the following:

- *Tribal Resource Technical Study Report (TRI-1)*;
- *Tribal Resource Evaluation Report*, as needed (may be included in the *TRI-1 Tribal Resource Technical Study Report*);
- Technical assistance to the cultural resource team, as needed; and
- Tribal resource content for the Historic Properties Management Plan (HPMP), with the goal of managing NRHP-eligible Tribal resources and other resources with identified Native values.

3.0 STUDY GOALS AND OBJECTIVES

The principal goal of the Tribal Resource Study Plan implementation is to assist FERC in meeting compliance requirements identified in 18 CFR Part 5 along with those requirements subject to NHPA Section 106 (as amended), among other federal laws and regulations, by determining if licensing of the Project would have an adverse effect upon Tribal resources, which may also include historic properties. FERC desires to know to what extent the existing Project construction and operation may have affected Tribal, cultural, or economic interests; may in future affect Tribal cultural sites; and may have connected interests with other technical group studies. In addition to historic properties, which may be a type of Tribal resource, there are other Tribal resources that may be identified through archival research, oral interviews, field inspections, and government-to-government consultation. The study intends to ensure such places are described from a Tribal perspective and identify options for potential O&M effects.

Research conducted to date suggests that an ethnographic overview/background of the Project Area is minimal, and that for the previous license, there appears to have been no Tribal outreach. Additional goals of the Study Plan implementation are to ensure that Tribal values and resources are identified and acknowledged from a Tribal perspective, and that an adequate baseline ethnohistory is developed. Similarly, ensuring that the land-managing agencies and any other Stakeholder agencies have their program needs met with respect to the proposed Project APE is a goal of the work. Finally, it is anticipated that management issues will be identified to be described and developed in subsequent planning efforts for the life of the license.

- Identify and document Tribal resources identified within or immediately adjacent to the proposed APE.
- Conduct a thorough American Indian ethnographic/ethnohistoric survey of the proposed APE and Study Area.
- Conduct outreach and contact with Tribal governments and their representatives.

4.0 STUDY AREA AND STUDY SITES

The Tribal resource study will focus upon the FERC Project Boundary, currently coincident with the proposed APE, and a larger Study Area proposed to be a 5-mile radius from the APE (Figure 5-1). This Study Area is a guide for archival research, development of the historic context and background statements, and general Tribal informant interviews.

5.0 EXISTING INFORMATION

Section 5.12, *Tribal Resources*, of the Pre-Application Document (PAD), filed in August 2021, describes existing information, partially summarized in the bullets below.

- Native American Heritage Commission (NAHC) Sacred Lands File and Native American Consultation List (NAHC, 2020) identified six Tribal groups with affiliation to the Project Area.
- Six cultural affiliations/heritage associations have been identified by extracting data from mid-late 20th century ethnographic work in the vicinity and from statements by Tribal representatives.
- Available ethnographic literature includes Emma Lou Davis (1965), Fowler and Liljeblad (1986), Frederick Hulse (n.d.), Liljeblad and Fowler (1986), 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.
- Data on trails and other nearby resources conducted by Davis-King and Snyder (2010).
- Synthetic data on Mono County American Indians in Davis-King (2007, 2010).
- Named places in the Study Area have been identified to include villages, gathering locales, sacred areas, burial grounds, fishing locales, hunting grounds, and more.

These background data are applicable to a broader territory than the proposed Project APE. Previous ethnographies have focused on nearby Tribal groups.

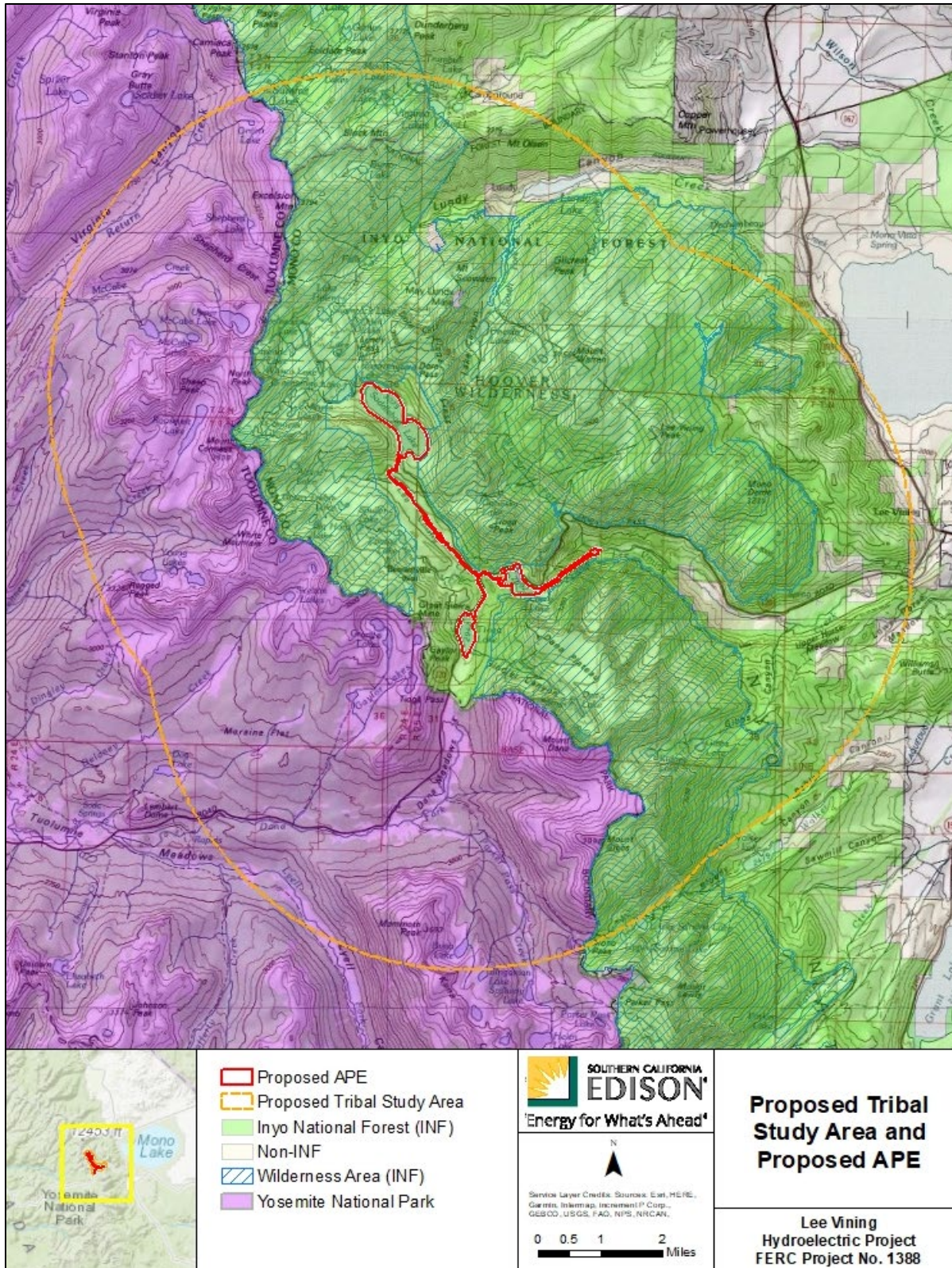


Figure 5-1. Proposed Tribal Resources APE and Study Area

6.0 STUDY APPROACH

6.1. GENERAL CONCEPTS

- Personal safety is an important consideration of each fieldwork team. If SCE determines the information cannot be collected in a safe manner, SCE will notify FERC and relicensing participants via email to discuss alternative approaches to perform the study.
- SCE shall obtain permission to access private property where needed in advance of the study. If access is not granted or if it is not feasible or safe, SCE will notify FERC and relicensing participants via email to discuss alternative approaches to perform the study.
- SCE shall treat all information regarding the locations of archaeological sites or other sensitive cultural resource information as confidential, and will not disclose to the public, per the following regulations:
 - NHPA, United States Code, Title 54, Section 307103 (54 USC § 307103), which provides limited authority for withholding disclosure of information about the "location, character and ownership" of resources from the public;
 - Archaeological Resources Protect Act (ARPA), 16 USC § 470hh, which provides authority to limit information on the "nature and location" of archaeology on federal land;
 - Cultural and Heritage Cooperation Authority, 25 USC § 3056, which provides specific authority to the USFS to protect Tribal information from release under the Freedom of Information Act; and
 - California Government Code § 6254(r), which exempts from disclosure public records of Native American graves, cemeteries, and sacred places maintained by the NAHC.
- SCE shall treat information gathered during Study Plan implementation regarding specific locations of Tribal resources as confidential if the Tribes so request.

6.2. STUDY METHODS

The methods proposed to meet study goals are listed below.

6.2.1. ARCHIVAL RESEARCH

As needed during the implementation of the studies, archival research will be conducted at most of the repositories listed below to obtain additional information specific to the prehistory, ethnography, and history of the Project Area. The results of the archival research will (1) provide primary data to create a background American Indian

ethnohistory of the proposed Study Area; and (2) inform the Tribal resources historic context against which such resources may be evaluated for the NRHP.

The Tribal resources expert will conduct background archival research of the Study Area. This will involve visits to many repositories, which may include the following:

- Autry Museum of the American West, Los Angeles
- California State Archive, Sacramento
- California State Library, California History Room, Sacramento
- Emma Lou Davis Archive, Bishop
- Hulse and Essene (Bancroft Library, Berkeley and elsewhere)
- Huntington Library, San Marino
- Inyo USFS, Bishop
- Merriam (C. Hart) and Harrington (J.P.) notes (available online?)
- Mono Basin Historical Society, Lee Vining
- Mono County Official Records, Bridgeport
- National Archive and Records Administration, San Bruno
- Tuolumne County Carlo M. De Ferrari Archive, Sonora
- University of California Bancroft Library, Berkeley
- University of California Jepson Fieldnotes, Berkeley
- University of California, C. Hart Merriam Collection, Davis
- University of Nevada Special Collections, Reno
- Yosemite National Park Research Library, El Portal

Background research will be conducted as needed throughout the life of the Project.

6.2.2. ASSIST OTHER RESOURCE SPECIALISTS

Other resource areas may have a connection to Tribal resources. This includes biological areas, water, trails, and recreation, among other areas. As needed, the Tribal resource expert will work to assist other resource experts in identifying Tribal resources with connections to their technical study. Assistance to the cultural resource team is anticipated to aid field identification and documentation of historic American Indian

resources, potential gathering areas, and other places that may have value to Indian Tribes.

6.2.3. MEETINGS WITH TRIBAL GOVERNMENTS

Meetings with Tribal governments or administrators and/or attendance at Tribal Council meetings is proposed to provide Project data to Tribal groups, elicit areas of interest, identify appropriate Tribal informants, and establish protocols for conveying information. To date, 12 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)
- Antelope Valley Indian Community, Coleville Paiute Tribe
- Big Pine Paiute Tribe of Owens Valley
- Bishop Paiute Tribe
- Bridgeport Indian Colony
- Mono Lake Indian Community (Mono Lake Kukzadikaa Tribe)
- North Fork Mono Tribe
- North Fork Rancheria of Mono Indians
- Tuolumne Band of Me-Wuk Indians
- Utu Utu Gwaitu Tribe of the Benton Reservation
- Walker River Reservation
- Washoe Tribe of Nevada and California

Seven of these Tribes have participated in TWG meetings and are expected to participate further in this study. One other Tribe has expressed an interest in field visits. The other Tribes may or may not participate. All Tribal groups will be contacted via telephone or email at a minimum to elicit their interest. At least five Tribal government meetings are anticipated.

6.2.4. INTERVIEWS

Interviews are critical for identification, description of significance, and evaluation of potential effects to Tribal resources. Twenty interviews are proposed with Tribal experts to gain understanding about what is important to them and why. Knowledgeable individuals from each of the participating Tribes will be interviewed. The methods and nature of the interviews are expected to vary from person to person: some may be held

in the field Project Area, others held in private homes, and still others held via telephone or teleconference. Interview records are similarly likely to be variable regarding confidentiality protocols and the Tribal expert's willingness to share. Recording methods (handwritten notes, video, audio tape, etc.) will be determined by consulting with the informant.

6.2.5. DOCUMENTATION AND EVALUATION

Three main categories of Tribal resources are anticipated. These are: (1) Tribal Places; (2) TCPs; and (3) Tribal Government Matters. Each is documented in a different manner. Tribal places may be potential historic properties, places 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 Study. TCPs will be documented on DPR 523 forms, with Tribal community permission, and Tribal government resources may be documented in the TRI-1 Study or may be larger or different resource types (e.g., documentation of Indian allotments in the Study Area). All resources 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, boundaries, jurisdiction or land ownership, Tribal significance, integrity from a Tribal perspective, and contributing characteristics. Evaluation of other resource types may occur at the managerial or agency level.

6.2.6. REPORTING AND HISTORIC PROPERTIES MANAGEMENT PLAN

The results of the Study Plan implementation will be reported in Exhibit E of the License Application, which will include a summary of the information and findings of the technical studies. Figures and other pertinent data supporting the summary in Exhibit E will be appended to the License Application. Tribal resource documentation and other sensitive information may be included in a confidential appendix withheld from public disclosure, in accordance with Section 304 (16 USC 4702-3) of the NHPA. 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, including, but not limited to, the location, description, and use of the Tribal cultural resources.

A detailed technical report will be prepared to include (1) regulatory, environmental, and cultural contextual statements; (2) discussion of research methods; (3) discussion of Tribal resources that are not also cultural resources; (4) description and evaluation of resources that are assessed as potential historic properties; and (5) conclusions to include management considerations. Appendices are anticipated to include ethnobiological tables, chronological contact logs, specific historical reference materials, and more. The TRI-1 Study intends to identify all potential and actual Project effects from a Tribal perspective, provide Tribal suggestions for mitigation or modification of impacts,

and provide a structural basis for FERC to conduct their National Environmental Policy Act analysis for this technical resource area.

SCE anticipates FERC will enter into a programmatic agreement (PA) with the ACHP, California Office of Historic Preservation, and any other agencies or entities FERC elects to include. One of the PA stipulations will be the completion and implementation of a HPMP to be included with the license or License Application.

The HPMP will consider direct and indirect effects of continued Project O&M on NRHP-listed or Tribal resources and will require avoidance and protection of specified resources, whenever possible. Processes and procedures will be developed for general and resource-specific treatment measures, including mitigation measures to be taken should license implementation create unavoidable adverse effects to historic properties.

7.0 COORDINATION WITH OTHER STUDIES / WORK WITH OTHER TECHNICAL LEADS TO INTEGRATE TRIBAL CONSIDERATIONS

To the extent feasible, SCE will coordinate Tribal resource studies with other Project-related environmental studies (e.g., cultural resources and habitat surveys) and conduct them in a manner that does not affect other sensitive natural resources. When conducting Tribal resource investigations, Project sponsors and/or their contractors should not violate other federal or state laws or regulations protecting cultural or natural resources including but not limited to ARPA, the Endangered Species Act, and the Clean Water Act. Project sponsors should consider that Tribes may utilize natural resources for subsistence, medicine, tools, ceremonial uses, and other activities, and should avoid affecting those uses or events while conducting studies.

8.0 CONSISTENCY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICE

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.

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*.

Potential TCP documentation, consultation, and any necessary fieldwork will be implemented in accordance with Section 106 of the NHPA, as amended, and shall take into consideration National Register Bulletin (NRB) No. 38, *Guidelines for Evaluating and Documenting Identification of Traditional Cultural Properties* (Parker and King, 1990, 1998).

Tribal resources documentation will be implemented in accordance with FERC regulations and with Section 106 of the NHPA, as amended, if such resources are potential historic properties, and shall take into consideration NRB No. 38 (Parker and King, 1998) among other NRBs.

NRHP evaluations will be conducted in adherence with NRB No. 15, *How to Apply the National Register Criteria for Evaluation* (NPS, 1995), and other NRBs as appropriate.

9.0 RELATIONSHIP TO OTHER STUDIES

Tribal resources are connected to each other and include animals, plants, the air, the sky, water, archaeological sites, gathering areas, hunting locales, places in stories, and many more categories. Thus, from a Tribal perspective, all of the relicensing studies are investigating some sort of Tribal resource. This will be considered in the study analysis, with several specific aspects listed below.

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

10.0 SCHEDULE

Date	Activity
2022 – Spring	Consult with appropriate agencies/Stakeholders regarding Tribal resource studies
2022 – Spring-ongoing	Conduct archival research*
2022 – Summer/Fall	Conduct Tribal site visits and assist with cultural resource surveys
2022/2023 – Winter	Compile results of data gathered and prepare draft report
2023 – January	Interim Study Report and Meeting
2023 – Feb/March	Tribal review and comment on draft TRI-1 Study Report
2023 – Spring/Fall	Continue identification and begin evaluation of Tribal resources
2023/2024 – Winter	Prepare draft final TRI-1 Study Report
2024 – Spring	Stakeholder review and comment on draft final TRI-1 Study Report
2024	Prepare draft Tribal resource HPMP
2024	Stakeholder review and comment on draft HPMP
2024	Resolve comments and prepare final HPMP
2024 – November	Distribute final reports and HPMP in Final License Application

HPMP = Historic Properties Management Plan; *Pending availability of repositories

11.0 CONSULTATION SUMMARY

In preparation to file the PAD and Notice of Intent (NOI), SCE hosted Cultural and Tribal Resources TWG Meetings on January 27, February 24, March 31, and May 26, 2021, which resulted in study requests from Stakeholders to address questions regarding Tribal resources. Notes and materials from these meetings are available at <http://www.sce.com/leevining>. Stakeholder comments on the outline and relevant study requests received are summarized in the response to comments table below (Table 11-1). SCE filed draft Study Plans with the PAD and NOI on August 12, 2021, to address issues discussed with the TWG. The Stakeholder comment period ended on January 18, 2022, for the Study Plans, PAD, and NOI. SCE reviewed all comments received; drafted Revised Technical Study Plans which were distributed to the TWGs on February 18, 2022, for another 30-day review period. All comments received related to this Study Plan are included in Table 11-1 below and incorporated into this Final Study Plan where appropriate.

Table 11-1. Consultation Summary—Response to Comments ^a

Comment Number	Entity	Date/Forum	Comment	SCE Response
1	Dean Tonenna/ Mono Lake Kutzadikaa Tribe	January 27, 2021/TWG	Tribal people can provide and have interest in cultural resources, but these studies are often limited in the cultural arena. Tribes are mostly interested in natural resources (e.g., plants, animals, water). In the past issues have been boxed into cultural issues and have been lumped into the general public for other natural resources. Public interest does often satisfy the Tribal interest, because often there is more.	SCE intends to integrate the interests of the Tribes in other technical studies (e.g., botany, recreation, and wildlife). SCE welcomes Tribal participation in all the TWGs and studies.
2	Sean Scruggs/THPO Fort Independence Indian Community of Paiute Indians	February 24, 2021/TWG	Tribal input/information is needed, especially since there were not previous studies.	SCE intends to have a Tribal Resource Study, which will include ethnographic background information and interviews as well as documentation of any places in the area.
3	Ron Goode, Tribal Chair, North Fork Mono Tribe	February 24, 2021/TWG	Are there plant gathering areas for Tribes in this area? These are not typically included in a botanical study.	Acknowledged gathering locations would be included in the <i>TRI-1 Tribal Resource Technical Study Report</i> if shared by the gatherer, and that an ethnobotanical investigation will be included. SCE will also communicate these areas to the biological team to ensure there are no inadvertent impacts.
4	Tuolumne Band of Me- Wuk Indians/Tribal Chairwoman Reich	February 24, 2021/TWG	The Tribe is unaware of any ethnography that has been prepared for the immediate area and believes this should be in the Study Plan.	SCE assured the Tribe that an ethnohistory would be prepared and ethnographic interviews conducted.
5	Tuolumne Band of Me- Wuk Indians/Tribal Chairwoman Reich	February 24, 2021/TWG	The Tribe is aware of the Emma Lou Davis field notes, and requests that they be investigated and documented when the field work begins.	SCE will investigate the availability of these notes during Study Plan implementation.

Comment Number	Entity	Date/Forum	Comment	SCE Response
6	Raymond Andrews, Mono Lake Kutzadikaa Indian Community Cultural Preservation Association	March 31, 2021/TWG	Concerned with public having information on cultural and gathering site locations. There has been a lot of desecration of gathering and other cultural sites.	Locational and other sensitive data related to Tribal and cultural resources will not be shared with the public. FERC has established procedures for ensuring confidentiality, which SCE will follow.
7	Bill Tucker, Southern Sierra Miwuk Nation	March 31, 2021/TWG	Have you looked at species like bighorn sheep and reptiles?	We have plans to discuss all biological entities of value to the Tribes. There are also terrestrial studies that will occur, and the Tribe is welcome to participate in those.
8	Raymond Andrews, Mono Lake Kutzadikaa Indian Community Cultural Preservation Association	March 31, 2021/TWG	This project includes “the blood of mother earth”. There is a lot of water coming from surrounding area into this project. Our gathering is affected when water levels are low.	Effects to resources will be analyzed in the study implementation.
9	Raymond Andrews, Mono Lake Kutzadikaa Indian Community Cultural Preservation Association	March 31, 2021/TWG	Are you going to have individual consultation too?	SCE will conduct individual and Tribal group consultation as requested for study implementation.
10	Ron Goode/Tribal Chair, North Fork Mono Tribe	May 26, 2021/TWG	A lot of discussion on terminology about cultural resources. Outsiders are generally looking at just the archaeological data. Big huge difference between Tribal values and cultural resources. Cultural resources for us are everything– plants, animals, rocks, water, etc. that are used, these are all cultural resources that go beyond just that other definition. The 5-mile buffer is excellent and has better clarity for our issues.	SCE noted they understand the difference between the cultural and Tribal studies and not all Tribal resources are appropriate for NRHP evaluation. We are asking the Tribes to help us understand what is significant.

Comment Number	Entity	Date/Forum	Comment	SCE Response
11	Ron Goode/Tribal Chair, North Fork Mono Tribe	May 26, 2021/TWG	We (Ron, Raymond, and Monty) have been assessing trails on our side of the Sierra recently. It would be beneficial to look at trails on the east side and those that go over to the west side to see where the trading was.	SCE will conduct a trail analysis and has included some information and mapping in the PAD about work done for a previous study.
12	Ron Goode/Tribal Chair, North Fork Mono Tribe	May 26, 2021/TWG	Expressed concerns about shrimp [kutsavi] gathering areas and how hydro projects can affect them. You need to assess the whole stream and ecological connections between species to understand the system.	Kutsavi are acknowledged and recognized as a cultural resource to the Tribes and will be discussed in the Tribal Resource Study.

FERC = Federal Energy Regulatory Commission; HPMP = Historic Properties Management Plan; LADWP = Los Angeles Department of Water and Power; PAD = Pre-Application Document; SCE = Southern California Edison; TWG = Technical Working Group

Notes:

^a Comments addressed here are directly related to development of methods and approach to studies.

12.0 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.”)
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