APPENDIX C

Draft Technical Study Plans

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INTRODUCTION

Southern California Edison Company (SCE) developed 13 Technical Study Plans to address data gaps in existing information such that sufficient information is available to evaluate potential Project impacts and collaborate on the Proposed Project included in the License Application.

The Draft Technical Study Plans are organized into five major resource areas – Aquatic, Cultural and Tribal, Land, Recreation, and Terrestrial. The plans are identified below and are provided in their entirety herein.

Aquatic Resources
AQ 1 – Hydrology AQ 2 – Water Quality / Water Temperature AQ 3 – Fish Population
Cultural and Tribal Resources
CUL 1 – Built Environment CUL 2 – Archaeology TRI 1 – Tribal
Land Resources
LAND 1 – Road and Trail Condition Assessment LAND 2 – Erosion and Sedimentation
Recreation Resources
REC 1 – Recreation Facility Condition Assessment REC 2 – Recreation Facility Use Assessment REC 3 – Whitewater Boating
Terrestrial Resources
TERR 1 – Botanical TERR 2 – Wildlife

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DRAFT
AQ 1 – HYDROLOGY
TECHNICAL STUDY PLAN

Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

May 2023

TECHNICAL STUDY PLAN
AQ 1 – Hydrology

POTENTIAL RESOURCE ISSUES

- Modification of Kern River hydrology.

PROJECT NEXUS

- Project operations modify the hydrology in the bypass reach[1].

RELEVANT INFORMATION

The following information is available to characterize hydrology in the vicinity of the Kern River No. 1 Project. See Pre-Application Document (PAD) Section 3.3, Water Use and Hydrology for a summary of water use and hydrology information.

- California Regional Water Quality Control Board (CRWQCB), Central Valley Region, Water Quality Control Plan for the Tulare Lake Basin (CRWQCB 2018)
- FERC's Order Issuing New License, Kern River No. 1 Hydroelectric Project (FERC 1998)
- United States Army Corps of Engineers (USACE) Isabella Situation Report (USACE 2022)
- United States Geological Survey (USGS) Surface-Water Data for the Nation (USGS 2022)

POTENTIAL INFORMATION GAPS

- Model of the Project operations under different flow regimes.
- Hydrologic alteration analyses of the flow regime with and without the Project.

STUDY OBJECTIVES

- Develop a model of the Project operations with and without the Project diversion and refine (as needed) the analysis of hydrology presented in the PAD Section 3.3, Water Use and Hydrology.
- Perform a hydrologic alteration analysis of flows with and without Project diversions.

[1] A bypass reach is a segment of a river downstream of a diversion facility where Project operations result in the diversion of a portion of the water from the river.

EXTENT OF STUDY AREA

The study area includes the bypass reach on the Kern River from Democrat Dam to the Kern River No. 1 Powerhouse Tailrace.

STUDY APPROACH

The following describes the study approach for developing the Project Operations Model, conducting a hydrologic alteration analysis, and reporting.

HYDROLOGY DEVELOPMENT

- Conduct stakeholder hydrological modeling meetings to review and help guide the hydrological modeling approach.
- Use the 1998–2021 period of record (POR) for hydrological modeling based on data availability (historical gage data).
- Develop and use a spreadsheet operations model to characterize the with and without Project operations daily average flow hydrology for the POR.

HYDROLOGIC ALTERATION ANALYSIS

- Analyze and compare hydrology with and without the Project using the following data and approaches (e.g., Richter et al. 1996):
  - Monthly flow exceedance plots / tables for the POR.
  - Time-series plots for the POR.
  - January to December (annual) plots / tables showing mean daily and 95%, 90%, 75%, 50% (median), 25%, 10%, and 5% exceedance flows.
  - Tables and summary analysis showing differences in the following:
    - Monthly timing and magnitude of mean and median flow conditions (e.g., high and low flows).
    - Magnitude, duration, and timing of annual high flow and low flow conditions (1-day, 3-day, 7-day, monthly, etc.), including the presence of pulse flow events.
    - Rate, timing, and frequency of hydrograph changes (e.g., rate and timing of the declining limb of the spring high flow hydrograph).

REPORTING

- The study methods and results will be documented in an AQ 1 – Hydrology Technical Study Report (TSR). The TSR will include summary tables and maps, as appropriate. Stakeholder review and comment period for the TSR is identified below in the schedule.

- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

SCHEDULE

This is a one-year study to be conducted during the first year of the study period with the study results reported in the Initial Study Report (ISR).

Date	Activity
April 2024–August 2024	Collaborate with stakeholder on the approach for refining the hydrology, as appropriate, and developing the Project Operations Model.
July 2024–October 2024	Refine the Project hydrology and associated operations model
October 2024–December 2024	Complete the hydrologic alteration analysis
July 2024–January 2025	Prepare draft technical memo
January 2025	Distribute draft technical memo to stakeholders
February 2025–April 2025	Stakeholders review and provide comments on draft technical memo (90 days)
May 2025–July 2025	Resolve comments and prepare final technical memo
December 2025	Distribute final technical memo in the Draft License Application

REFERENCES

CRWQCB (California Regional Water Quality Control Board). 2018. Water Quality Control Plan for the Tulare Lake Basin. Central Valley Region. Third Edition. Revised May 2018.

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Richter, B.D., J.V. Baumgartner, J. Powell, and D.P. Braun. 1996. A method for assessing hydrologic alteration within ecosystems. Conservation Biology 10:1163-1174.

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AQ 2 – WATER QUALITY / TEMPERATURE TECHNICAL STUDY PLAN

Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

May 2023

TECHNICAL STUDY PLAN
AQ 2 – Water Quality / Temperature

POTENTIAL RESOURCE ISSUES

- Water quality and water temperature compliance with regulatory requirements.

PROJECT NEXUS

- Project operations and maintenance activities could affect water quality and water temperature in the Democrat Dam Impoundment and bypass reach.

RELEVANT INFORMATION

The following information is available to characterize water quality and temperature in the impoundment and bypass reach[1]. See Pre-Application Document Section 3.4, Water Quality for a summary of water quality information.

- Water quality criteria
  - Water Quality Control Plan for the Tulare Lake Basin (CRWQCB 2018)
  - California Toxics Rule (CTR) Water Quality Standards: Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California (Federal Register, 65 FR 31682, United States Environmental Protection Agency [USEPA] 2000)
  - National Toxics Rule (NTR) Water Quality Standards: Establishment of Numeric Criteria for Priority Toxic Pollutants" (Federal Register, 57 FR 60848, USEPA 1992)
- Published study reports and data
  - Application for New License for the Kern River No. 1 Hydroelectric Project (SCE 1994)
  - FERC (Federal Energy Regulatory Commission). 1998. Final Environmental Assessment for Hydropower License, Kern River No. 1 Hydroelectric Project, FERC Project No. 1930-014. California. June 17.
  - Kern River No. 1 Hydroelectric Project (FERC No. 1930) Temperature Monitoring Summary Report (SCE 2008)
  - USGS (United States Geological Survey) National Water Information System Online Database. Available at: https://waterdata.usgs.gov/nwis

[1] A bypass reach is a segment of a river downstream of a diversion facility where Project operations result in the diversion of a portion of the water from the river.

- US EPA (United States Environmental Protection Agency) Water Quality Data 2023. https://www.epa.gov/waterdata/water-quality-data
- Water Board (California State Water Board) California Environmental Data Exchange Network. http://www.ceden.org/
- NWQMC (National Water Quality Monitoring Council) Water Quality Portal. https://www.waterqualitydata.us/

POTENTIAL INFORMATION GAPS

- Recent water quality and water temperature conditions in the impoundment and bypass reach.

STUDY OBJECTIVES

- Collect seasonal water quality (physical, chemical, and bacterial) and water temperature in the impoundment and bypass reach.
- Compare water quality and water temperature conditions to the objectives/criteria of the Basin Plan (CRWQCB 2019) and other water quality standards.

EXTENT OF STUDY AREA

- The study area for the water quality and water temperature assessment includes the Democrat Dam Impoundment and bypass reach Table AQ 2-1 and Map AQ 2-1.
- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain).

STUDY APPROACH

- The following describes the water quality and water temperature sampling including seasonal *in-situ* water quality measurements; seasonal water quality grab sampling; bacterial sampling, water temperature loggers, laboratory analysis, and reporting.

WATER QUALITY SAMPLING LOCATIONS

- Water quality and water temperature sampling locations are identified in Table AQ 2-1 and depicted on Map AQ 2-1.
- Exact sampling locations will be determined in the field based on sampling suitability (i.e., well-mixed and deep enough for representative sampling) and accessibility.
- Sampling locations will be documented using hand-held global positioning system (GPS) units.

SEASONAL *IN-SITU* FIELD MEASUREMENTS

- Collect *in-situ* water quality measurements, dissolved oxygen (DO) (mg/L and % saturation), pH, specific conductance (µS/cm), salinity (ppt), alkalinity (mg/L), turbidity (NTU), and water temperature (°C) in the impoundment and bypass reach.
    - Samples will be collected once during the spring runoff (June, access permitting), and once during the late summer/early fall base-flow period (e.g., August to October).
    - At stream sampling locations, measurements will be made approximately 0.1 meter (m) beneath the surface in flowing, well-mixed riffle or run areas.
    - Samples will be collected using a multi-parameter water quality meter (HydroLab, YSI, or similar DataSonde) and field kit (e.g., alkalinity).
    - Pre- and post-sampling calibration of in-situ instrumentation will be conducted following the manufacturer's instructions.

SEASONAL WATER QUALITY GRAB SAMPLES

- Collect water quality grab samples at the impoundment and in the bypass reach.
    - Samples will be collected twice, once during the spring runoff and once during the late summer/early fall base-flow period in coordination with the in-situ water quality measurements to screen for potential water quality issues.
    - At stream sampling locations, grab samples will be collected approximately 0.1 m beneath the surface in flowing, well-mixed riffle or run areas.
    - At the impoundment location, grab samples will be collected from near the surface (1 m deep) and at mid-depth.
- Collect samples consistent with EPA protocols for each analyte (see Laboratory Analysis below) and consistent with general water quality sampling methods (National Field Manual for the Collection of Water-Quality Data; https://www.usgs.gov/mission-areas/water-resources/science/national-field-manual-collection-water-quality-data-nfm?qt-science_center_objects=0#qt-science_center_objects).
    - The sampling team shall employ a strict quality assurance/quality control (QA/QC) program, including the collection of equipment blanks, field blanks, and field replicates.
    - Water quality samples will be decanted into laboratory-supplied sample containers and analyzed at a State-certified water quality laboratory.
    - The sample containers will be labeled with the date and time that the sample is collected and the sampling site or identification label.

- The sample container will be preserved (as appropriate), stored, and delivered to a State-certified water quality laboratory for analyses in accordance with maximum holding periods.

- A chain-of-custody record will be maintained with the samples at all times.

BACTERIAL SAMPLING

- Collect surface water bacteria samples for total and fecal coliform downstream of day-use recreation areas (Table AQ 2-1). Sample five relatively evenly spaced times in the month of July 2024.

- Avoid collecting surface "scum" by plunging the open bottle (sterilized) mouth quickly downward below the water surface. Avoid contact with or disturbance of the streambed. Allow the bottle to fill with the opening pointed slightly upward into the current. Remove the bottle with the opening pointed upward toward the water surface and tightly cap it, allowing about 2.5 to 5 centimeters (cm) of headspace for proper mixing.

WATER TEMPERATURE

- Collect existing water temperature and nearby meteorological conditions for the locations identified in Table AQ 2-1 from May 15 to October 15, 2024.

  - Install and maintain redundant water temperature probes at six locations including upstream of the impoundment and in the bypass reach.

  - Obtain meteorological station data (relative humidity, wind speed, solar radiation, air temperature) from a nearby existing weather station.

  - Download data bi-monthly from the water temperature probes.

  - Summarize temperature and meteorological data, including depiction of seasonal patterns and daily averages, minimums, and maximums as a function of time and location in study area and aquatic species requirements (e.g., Moyle 2002).

LABORATORY ANALYSIS

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

- The parameters to be analyzed by the analytical laboratory are provided in Table AQ 2-2.

- The laboratory will report each parameter analyzed with the laboratory method detection limit, reporting limit, and practical quantification limit. The laboratory will attempt to attain reporting detection limits that are at or below the applicable regulatory criteria.

- Compare results from the water quality sampling with the water quality objectives/criteria identified in the Tulare Lake Basin Plan (CRWQCB 2018) and with other relevant water quality standards.

REPORTING

- Study methods and results will be documented in an AQ 2 – Water Quality / Temperature Technical Study Report (TSR). The TSR will include summary tables and maps, as appropriate. Stakeholder review and comment period for the TSR is identified below in the schedule.

- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

SCHEDULE

This is a one-year study to be conducted during the first year of the study period with the study results reported in the Initial Study Report (ISR).

Date	Activity
May–June 2024	Install water temperature probes and conduct spring water quality *in-situ* and grab sampling
May–October 2024	Maintain water temperature probes
July 2024	Conduct bacteria sampling at the four day-use recreation areas
September 2024	Conduct summer/fall water quality *in-situ* and grab sampling
October 2024–February 2025	Analyze data and prepare draft technical memo
March 2025	Distribute draft technical memo to stakeholders
April–June 2025	Stakeholders review and provide comments on draft technical memo (90 days)
June–July 2025	Resolve comments and prepare final technical memo
December 2025	Distribute final technical memo in Draft License Application

REFERENCES

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USGS (United States Geological Survey). 2023 National Water Information System Online Database. Available at: https://waterdata.usgs.gov/nwis

Water Board (California State Water Board). 2022. California Environmental Data Exchange Network. Available at: http://www.ceden.org/

TABLES

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Table AQ 2-1. Water Quality Sampling Locations

Site Name	Sampling Location River Mile (RM)	In-situ Field Measurement	Water Quality Grab Sample	Fecal Coliform
KR 55.6 (Kern River above Democrat Dam)	RM 55.6	X	X	--
KR 55.2 (Kern River below rafting take-out)	RM 55.2	X	--	X
KRC 54.2 (Kern River No. 1 Conduit near USGS gage 1192500)	RM 54.2	X	X	--
KR 50.84(Kern River near USGS gage 1192500; below Democrat Dam)	RM 53.84	X	X	--
KR 50.3 (Kern River near Lucas Creek)	RM 50.3	X	X	--
KR 48.7 (Kern River below Upper Richbar Day Use Area)	RM 48.7	X	--	X
KR 48.4 (Kern River below Lower Richbar Day Use Area)	RM 48.4	X	--	X
KR 47.78 (Kern River below Live Oak Day Use Area)	RM 47.78	X	--	X
KRTR 43.94 (Kern River No. 1 Powerhouse Tailrace)	RM 43.94	X	X	--
KR 44.0 (Kern River upstream of Kern River No. 1 Powerhouse)	RM 44.0	X	X	--

Notes: RM = River Mile

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

Parameter	Analysis Method	Sample Holding Times
Water Quality Monitoring Parameter		
***In-Situ* Measurements**		
Dissolved Oxygen (DO)	Water Quality Meter	Not Applicable
PH	Water Quality Meter	Not Applicable
Water Temperature	Water Quality Meter	Not Applicable
Specific Conductance	Water Quality Meter	Not Applicable
Laboratory Analysis Parameter		
General Parameters (Grab Samples)		
Nitrate/Nitrite	EPA – 353.2	48 hours
Ammonia as N	EPA – 350.1	28 days
Total Kjeldahl Nitrogen	EPA – 351.2	28 days
Total Phosphorus	EPA – 365.2	28 days
Ortho-phosphate	EPA – 365.1	48 hours
Total Dissolved Solids	EPA – 160.1	7 days
Total Suspended Solids	EPA – 160.2	7 days
Total Alkalinity	EPA – 310.1	14 days
Bacteria		
Total Coliform	EPA – SM9222B	24 hours
Fecal Coliform	EPA – SM9222B	24 hours

MAPS

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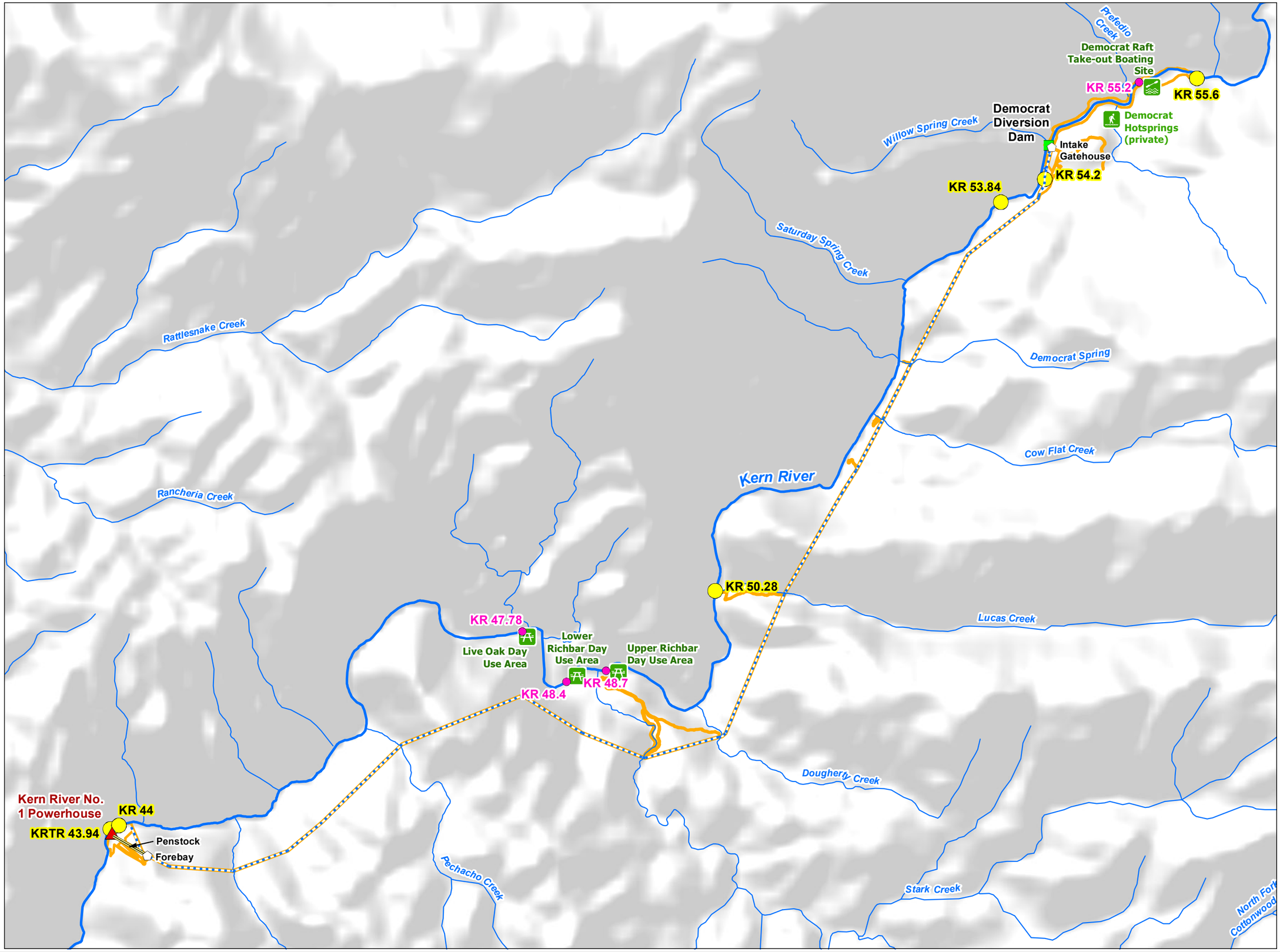


Facilities

- Dam
- Powerhouse
- Water Conveyence Feature
- Flowline
- Penstock
- FERC Boundary

Other Features

- Watercourse

Water Quality Measurement Sites

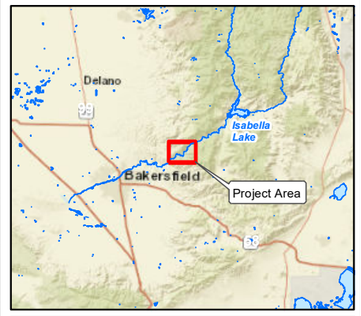
- In-situ Field Measurement and Recreational Site Fecal Coliform
- In-situ Field Measurement and Water Quality Grab Sample

Forest Service Recreation Sites

- Raft Takeout
- Day Use Area

Private Recreation Sites

- Democrat Hotsprings



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An EDISON INTERNATIONAL® Company

Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map AQ2-1

Water Quality Measurement Sites

0 0.25 0.5 Miles

Projection: UTM Zone 11
Datum: NAD 83

Date: 3/29/2023

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DRAFT
AQ 3 – FISH POPULATION
TECHNICAL STUDY PLAN

Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

May 2023

TECHNICAL STUDY PLAN
AQ 3 – Fish Population

POTENTIAL RESOURCE ISSUE

- Fish species composition, distribution, and abundance.

PROJECT NEXUS

- Project operations modify the flow regime and fish habitat in the impoundment and bypass reach[1].

RELEVANT INFORMATION

The following information is available to characterize the fish population in the Democrat Dam Impoundment and bypass reach. See Pre-Application Document Section 3.5, Fish and Aquatic Resources for a summary of fish population and passage information.

- California Fish Website, Fish Species by Watersheds: Isabella Lake-Kern River-180300010607 (CalFish 2020).
- FERC's Final Environmental Assessment for Hydropower License, Kern River No. 1 Hydroelectric Project, FERC Project No. 1930-014 (FERC 1998)
- SCE's Application for New License for the Kern River No. 1 Hydroelectric Project (SCE 1994)
- SCE's Borel Fish Population Monitoring Report 2020 (SCE 2021).
- Fishes of the Sacramento-San Joaquin Estuary and Adjacent Waters, California: A Guide to the Early Life Histories (Wang 1986)
- SCE's Final Report Kern River No. 1 Hydroelectric Project Smallmouth Bass Study (SCE 2009)
- California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) (CNDDB 2022)
- Nonindigenous Aquatic Species Database (USGS 2020)
- Natural Resource Information System (NRIS) (U.S. Forest Service [Forest Service] 2022)

POTENTIAL INFORMATION GAPS

- Recent information on fish composition, distribution, and abundance.

[1] A bypass reach is a segment of a river downstream of a diversion facility where Project operations result in the diversion of a portion of the water from the river.

STUDY OBJECTIVES

- Document fish species composition, distribution, and abundance in the impoundment and bypass reach.

- Characterize fish size, condition factor, and approximate population age structure in the impoundment and bypass reach.

EXTENT OF STUDY AREA

The study area includes the Democrat Dam Impoundment and bypass reach in the Kern River from Democrat Dam to the Kern River No. 1 Powerhouse Tailrace.

STUDY APPROACH

STUDY SITES

- The locations of study sites for developing fish species composition and abundance estimates are shown in Table AQ 3-1, Figure 3-1, and Map AQ 3-1. Sampling will be conducted during the late summer/early fall base flow period. The river sampling sites (electrofishing) will approximately 100 m long inclusive of the historical sampling sites (ENTRIX 2009). The Democrat Dam Impoundment sampling site will include a minimum of 300 meters of shoreline habitat.

- The specific locations of the sampling sites will be determined in the field and will approximate the historical sampling locations. Mesohabitat characterization will be based on aerial image mapping and will be used to identify representative reach sampling sites with mesohabitat types in approximately similar proportion to the larger geomorphic river segments. Table AQ 3-1 shows the specific location, length, and sampling methods.

IMPOUNDMENT SAMPLING

- The impoundment sampling methods will be electrofishing and trammel netting (Table AQ 3-1) (poor water clarity precludes snorkeling at this site).

    - Electrofishing will be conducted using Smith-Root™ “E-Cat” light-duty cataraft electrofisher (e-cat) with oars and a small outboard motor or similar equipment. It is assumed the cataraft can be safely deployed at the site (i.e., the flow allows safe deployment with no risk of entrainment over the diversion dam).

    - If the e-cat cannot be deployed, backpack electrofishers will be used along the shore where wading is possible.

    - If the e-cat can be deployed, then it will be used to set 2 trammel nets for 4 hours (daylight) in deeper portions of the impoundment that cannot be electrofished effectively.

BYPASS REACH (RIVER) SAMPLING

- The bypass reach (river) study sites will be sampled using electrofishing and trammel netting (Table AQ 3-1) (poor water clarity precludes snorkeling at these sites).
    - Where possible due to natural river features or the river being amendable to blocknetting, multi-pass electrofishing (e.g., Reynolds 1996; Van Deventer and Platts 1989; Rexstad and Burnham 1992) will be used to sample and estimate fish populations in shallow stream habitats (<1.5 m) at each study site.
    - Captured fish from each pass will be kept in separate live wells or buckets. Where possible, the sampling sites will be partitioned into mesohabitat types for sampling.
    - In deeper portions of the sampling site, an e-cat electrofisher cataraft will be used to obtain abundance estimates based on length/area sampled provided the e-cat cataraft can be transported to the sampling site.
    - If pool habitat exists that is deeper than the e-cat can effectively electrofish, 1 to 2 trammel nets will be set in the river for 4 hours (daylight), if possible.

FISH PROCESSING

- Fish will be anesthetized (CO2), enumerated, identified to species, and measured (fork length and weight).
- Fish will be returned to the study site when the sampling is completed.
- Sampling protocols and field data forms will be consistent with those in Flosi et al. 1998.
- The lengths and widths of the habitat units sampled will be recorded to calculate fish abundance by length and area (density) of stream sampled.
    - Captured fish from each pass will be kept in separate live wells or buckets. Where possible, the sampling sites will be partitioned into mesohabitat types for sampling.
    - In deeper portions of the sampling site, an e-cat electrofisher will be used to obtain abundance estimates based on length/area sampled if the e-cat can be transported to the sampling site.
- If fish mortalities occur, they will be recorded and the fish will be properly placed back into the river system for organic decomposition in deep pools by puncturing their air bladders.

REPORTING

- Study methods and results will be documented in a AQ 3 – Fish Population Technical Study Report (TSR). Stakeholder review and comment period for the TSR is identified below in the schedule.

- Fish abundance will be reported by species and depending on the sampling method used by either catch-per-unit-effort (CPUE) (fish per length/area of stream sampled or by net-hour) in the case of trammel netting or e-cat electrofishing and by (fish per mile, fish per acre) for multi-pass electrofishing.

- Fish abundance will be compared to historical data sets in the Kern River No. 1 bypass reach and recent sampling in the upstream Borel Project river reach (ENTRIX 2009; Cardno 2021).

- Develop a distribution map for each species in the Project study area using the quantitative abundance estimates and qualitative sampling data.

- Develop a fish life stage periodicity chart (or life history chronology chart by month) for each species based on available literature, consultation with qualified fisheries biologists, and the fish population sampling data.

- Develop length frequency histograms of sampled fish and to determine the age structure of fish populations using scale data.

- Calculate fish condition factors using measured weight and length data.

- Upon request, an electronic database (Excel spreadsheet) will be provided of all fish sampling data (date, location, fish species, fish size, sampling pass, etc.) to resource agencies and interested stakeholders.

SCHEDULE

This is a one-year study to be conducted during the first year of the study period with the study results reported in the Initial Study Report (ISR).

Date	Activity
April 2024–July 2024	Select fish population sampling sites in collaboration with interested resource agencies
August 2024–October 2024	Conduct quantitative/quantitative fish sampling (electrofishing/ snorkeling)
November 2024–February 2025	Analyze data and prepare technical memo
February 2025	Distribute draft technical memo to the stakeholders
March 2025–May 2025	Stakeholders review and provide comments on draft technical memo (90 days)
June 2025–July 2025	Resolve comments and prepare final technical memo
December 2025	Distribute final technical memo in Draft License Application

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TABLES

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Table AQ 3-1. Fish Population Sampling Locations[1] – Development in Progress

Study River and Site ID	Sampling Location		Site Length (m)	Sampling Dates	Sampling Method	Type of Reach	
	River Miles	GPS at Downstream Starting Location				Bypass Reach	Impoundment
Kern River							
Democrat Dam Impoundment	RM 54.6	TBD	100	Late Summer / Fall 2024	Electrofishing/Trammel Netting		●
Site A -- Kern River Bypass Reach	KXX	TBD	100	Late Summer / Fall 2024	Electrofishing/Trammel Netting	●	
Site B -- Kern River Bypass Reach	KXX	TBD	100	Late Summer / Fall 2024	Electrofishing/Trammel Netting	●	
Site C -- Kern River Bypass Reach	KXX	TBD	100	Late Summer / Fall 2024	Electrofishing/Trammel Netting	●	
Site D -- Kern River Bypass Reach	KXX	TBD	100	Late Summer / Fall 2024	Electrofishing/Trammel Netting	●	
Site E -- Kern River Bypass Reach	KXX	TBD	100	Late Summer / Fall 2024	Electrofishing/Trammel Netting	●	

[1]All information is tentative. Information to be determined in the field and completed in coordination with interested resource agencies.

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FIGURES

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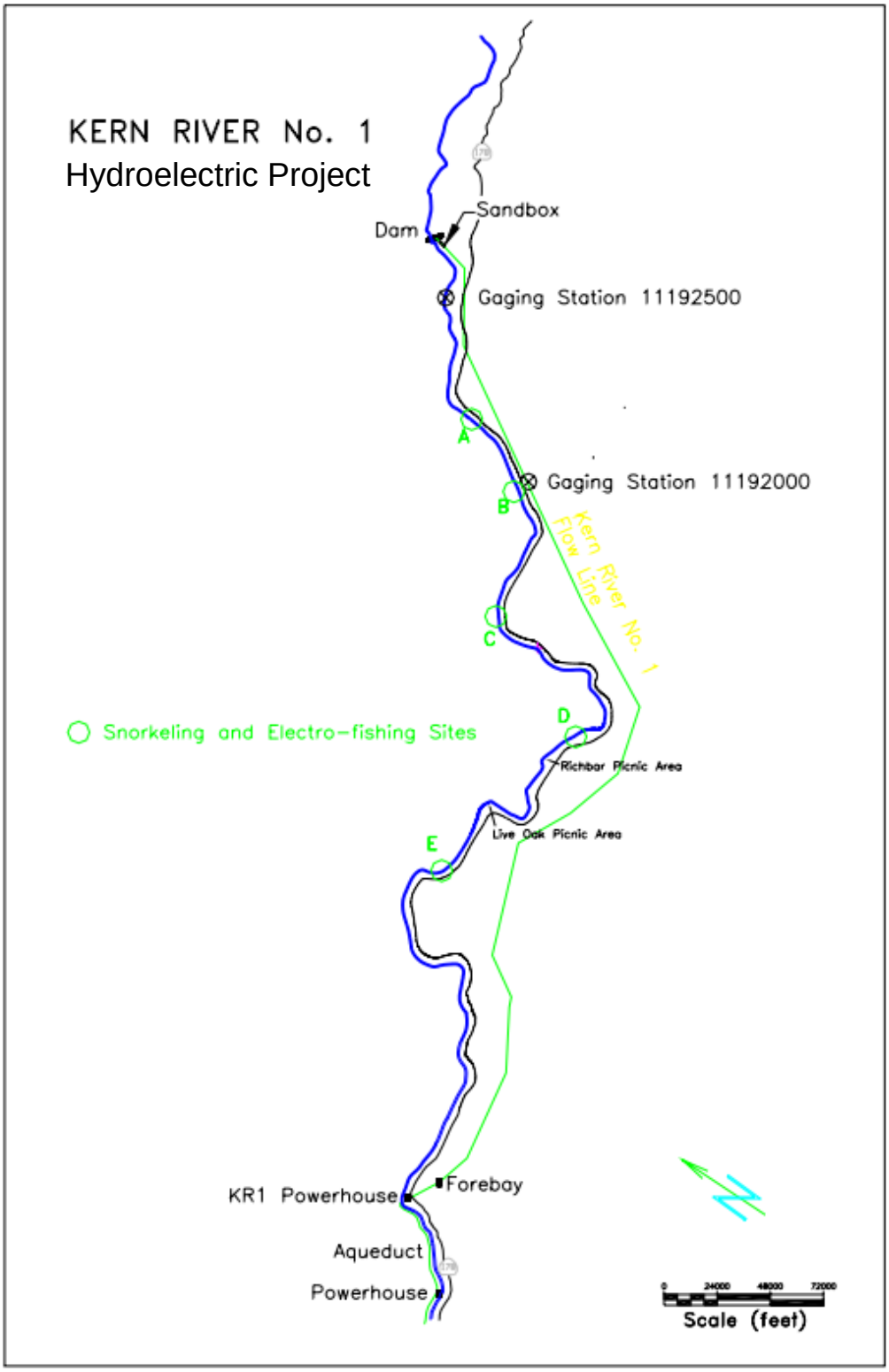

Figure AQ 3-1. Historical Kern River No. 1 Hydroelectric Project Fish Populations Sampling Site Locations.

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MAPS

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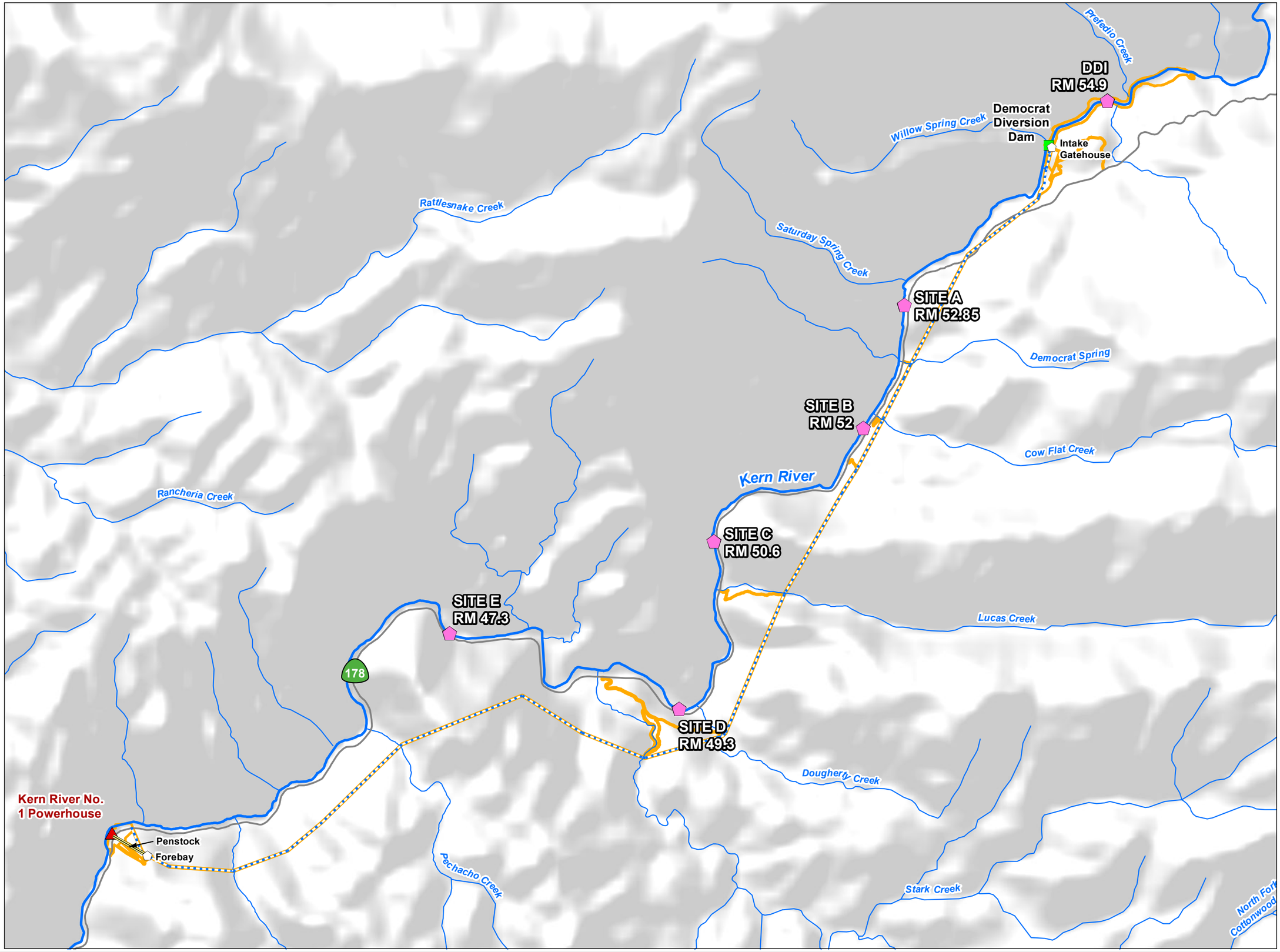


Facilities

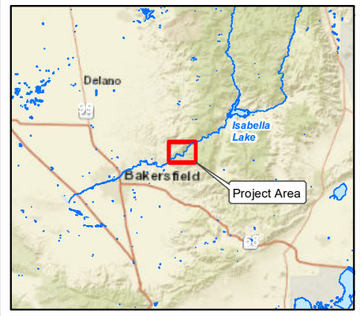
- Dam
- Powerhouse
- Water Conveyence Feature
- Flowline
- Penstock
- FERC Boundary

Other Features

- Watercourse
- Highway

Fish Population Sampling Location

- Site Location w/ID and River Mile



SOUTHERN CALIFORNIA EDISON®
An EDISON INTERNATIONAL® Company

Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

Map AQ 3-1

Fish Population Sampling Locations

0 0.25 0.5 Miles

Projection: UTM Zone 11
Datum: NAD 83

Date: 3/29/2023

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DRAFT
CUL 1 – BUILT ENVIRONMENT
TECHNICAL STUDY PLAN

Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

May 2023

TECHNICAL STUDY PLAN
CUL 1 – Built Environment

POTENTIAL RESOURCE ISSUES

- Management of built environment historic properties.

PROJECT NEXUS

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

Project Operation and Maintenance (O&M) activities could potentially affect built environment historic properties as follows:

- Removal of and/or alteration to a built environment historic property.
- Change in use of a built environment historic property.
- Alterations that do not meet the *Secretary of Interior's Standards for Rehabilitation of Historic Places* to the contributing resources of a National Register of Historic Places (NRHP) historic district including the Kern River No. 1 Historic District.

RELEVANT INFORMATION

The following information is available regarding built environment cultural resources and historic properties in the vicinity of the Project. See Pre-Application Document (PAD) Section 3.13, Cultural Resources for a summary of available cultural resource information.

- Records search information from the ArcGIS Online (AGOL) database maintained by SCE, received October 10, 2022. The database includes heritage data from the Forest Service Heritage Programs in Region 5 within the SCE service territory and subscription data from the California Historical Resources Information System (CHRIS). The CHRIS provides detail regarding previous survey and documentation in the vicinity of the Project (inclusive of FERC Project boundary and a half-mile record search Study Area).
- *Cultural Resources Management Plan for Southern California Edison Company's Kern River No. 1 Hydroelectric Project, Kern County, California, FERC Project No. 1930* (SCE 1993). The Management Plan provides documentation and background information on the known historic properties in the Project Boundary and current SCE management responsibilities and requirements for cultural resources.

- *Cultural Resources Inventory of Pacific Gas and Electric Company's Kern Canyon Project and National Register of Historic Places Evaluation of Pacific Gas and Electric Company's Kern Canyon Powerplant, Pacific Gas and Electric Company's Kern Canyon Project, FERC No.178, Kern County, California* (Pacific Legacy 2002). The report documents the archaeological and built-environment resources at the Kern Canyon Powerplant.

- *An Inventory and Evaluation of Archaeological and Historic Resources along the Kern River in the Vicinity of Democrat Hot Springs, Kern County, California, for the Proposed SCE Democrat Hydroelectric Project* (White and Taylor 1984). The report documents the archaeological and built-environment resources near Democrat Hot Springs.

- *Cultural Resources Inventory Report of Access Roads and Flume Sections Associated with the Kern River No. 1 Hydroelectric Project* (Kovak and Jackson 2010). The report documents some of the archaeological and built environment resources associated with CA-178/Kern Canyon Road and the Kern River No. 1 Hydroelectric Project.

- *Historic-Era Built Environment Survey Report, Transmission Line Rating Remediation Program. Kern River to Los Angeles Project. Kern and Los Angeles Counties, California* (Urbana Preservation and Planning 2022). The report documents and evaluates the built environment resources associated with the SCE Kern River to Los Angeles 60V transmission line and supplements documentation of resources associated with CA-178/Kern Canyon Road and a potential San Joaquin Valley Historic Cultural Landscape.

- *Historic Resource Evaluation Report Kern River No. 1 Powerhouse. FHWA881212A. In Proposed, Widening and Curve Realignment Project, HPR-CA, FAP-178, 06-Ker-178- 15.3/15.5*. (Mikesell 1988). The report documents the Kern River No. 1 Hydroelectric Project Powerhouse and associated built environment resources and recommends National Register eligibility.

- Historic American Engineering Record (HAER) CA-165-A, Kern River No. 1 Hydroelectric System, Powerhouse Exciters (Taylor 1994).

- HAER, FERC 080206D, Kern River No. 1 Stable (Collum 2009). The HAER documentation of the Kern River No. 1 Hydroelectric Project Stable was accepted by California State Historic Preservation Officer (SHPO) but only a FERC number assigned.

POTENTIAL INFORMATION GAPS

- Updated physical documentation and information on known built environment cultural resources located within the Area of Potential Effects (APE).

- Built environment surveys of the APE using current protocols.

- NRHP evaluations or updated evaluations of historic-period built environment resources that could be potentially affected by Project O&M activities (Undertaking).

- Updated NRHP evaluation of the Kern River No. 1 Historic District that documents the current status and condition of the District contributors and includes Project facilities that were not documented as part of previous District recordation.

STUDY OBJECTIVES

- Document all built environment cultural resources within the APE.

- Evaluate or, as appropriate, provide update evaluation under the criteria of the NRHP for built environment cultural resources in the APE to determine whether built environment historic properties may be affected by O&M of the Project.

EXTENT OF STUDY AREA AND AREA OF POTENTIAL EFFECT:

- For built environment cultural resources, the Study Area includes the area within 0.5 mile of the APE (Map 3.13-1).

    - This Study Area will be used only for records searches and archival research to develop contextual and background information.

- Under 36 CFR Part 800, the APE is defined as “the geographic area or areas within which an undertaking may cause changes in the character or use of historic properties” (36 CFR 800.16[d]). Changes may be direct or indirect.

    - The proposed APE for the purposes of study implementation is defined as the area within the FERC Project boundary, a 25-foot buffer from centerline of the access trails located outside of the FERC boundary, and a 50-foot radius around FERC ancillary facilities such as gauges located outside of the FERC boundary (Map 3.13-1).

    - Built environment resources are identified in Tables 3.13-3 and 3.13-4. All resources within the APE will be considered as part of study implementation and included in the study survey population. Detailed maps showing the location of built environment resources are available in ([CONFIDENTIAL] Maps 3.13-3a–g).

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

- The Study Area and APE may be expanded during the relicensing proceeding, in consultation with the cultural resources Technical Working Group (TWG).

STUDY APPROACH

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

ESTABLISH APE

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

REVIEW OF PREVIOUS STUDIES AND SITE RECORDS

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

ARCHIVAL RESEARCH

- Conduct supplemental background research to develop an appropriate historical context for the Project, including a general history of the contextual Study Area framing the APE, and coordination with the Tribal Resources Study to identify local Native Americans who may have contributed to construction and operation of the historic hydroelectric system.

  This research will utilize, be validated and build upon the existing studies documenting resources within the Project APE to support NRHP evaluations.

  Archival research may include the following sources, as well as other sources and repositories identified through research undertaken as part of the study:

  - California State Archives, Sacramento
  - California State Library, California History Room, Sacramento
  - Contextual research regarding utility and hydroelectric development
  - Huntington Library, SCE Records, and Photographs and Negatives Collection, San Marino
  - Library of Congress

- Kern County Museum, Bakersfield
- Kern County Historical Society, Bakersfield
- Records from the Sequoia National Forest (SNF), Porterville
- Online research, including general and engineering periodicals
- SCE Engineering Drawings
- United States Geological Survey (USGS) Historical Topographic Map Collection
- Other data repositories as identified through research

BUILT ENVIRONMENT INVENTORY

- Conduct field inspection and documentation of historic period (i.e., 50 years old or older) built environment resources (i.e., buildings, structures, and objects) and resources that will be historic in age at the time of relicensing (i.e., minimally 45 years old at the time of the study) located within the APE.
  - The inventory will be conducted by qualified, professional individuals meeting the Secretary of the Interior's Professional Qualification Standards for Architectural History and History (36 CFR Part 61).
- Record and/or update historic-period-built environment resources within the APE to current California Department of Parks and Recreation standards (DPR 523 series). This will include digital color photography and sketch maps of individual features that show the relationship between buildings and structures.
- Assess historic-period-built environment resources within the APE identified during the study as a system/district, as well as on an individual basis.

NRHP EVALUATION ELIGIBILITY

- Evaluate historic-period-built environment resources in the Project APE for eligibility to the NRHP under the criteria for listing in the NRHP. Evaluation will include consideration of both individual eligibility and potential of eligibility as a historic district.
- Specifically, the Study plan will update the Kern River No. 1 Historic District evaluation (Collum 1999; Mikesell 1988; Taylor 1994; White and Taylor 1989). Effort will include reevaluation of the existing evaluation, as well as identifying and evaluating any other potential contributors that may not have been identified and evaluated during the previous relicensing.
- Evaluation will utilize appropriate guidance including *NRHP Bulletin 15: How To Apply the NRHP Criteria for Evaluation* (NPS 1995).

REPORTING AND CONSULTATION

- Study methods and results will be documented in a CUL 1 – Built Environment Technical Memo. To ensure compliance with FERC reporting requirements and with the standards of Section 106 of the NHPA, the technical memo will include the following sections: (1) Study Goals and Objectives; (2) Study Methods; (3) Study Results (including eligibility recommendations); and (4) Variances from the FERC-approved Study Plan. In addition, the technical memo will include the following information, as appropriate:
  - Project location and description
  - Regulatory nexus
  - Historic context for the Study Area
  - Mapping depicting the location of built environment cultural resources within the APE
  - NRHP inventory and evaluation of historic-period-built environment resources in the APE
  - An appendix containing updated and/or new DPR Series 523 forms for each built environment cultural resource, individually and collectively as a district, as appropriate.
- A draft technical memo will be distributed to the TWG for review and comment. Comments on the draft technical memo will be addressed in a final technical memo, which will be included in the Draft License Application. Any sensitive information will be included in a confidential appendix withheld from public disclosure, in accordance with Section 304 (16 USC 4702-3) of the NHPA and the Archaeological Resources Protection Act. The California Public Records Act similarly exempts site data from disclosure while Public Resources Code Section 21082.3(c) contains provisions specific to confidentiality related to any information submitted by an American Indian Tribe during the environmental review process.
- The review and comment period for the technical memo is identified below in the Schedule.

HISTORIC PROPERTIES MANAGEMENT PLAN

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

SCHEDULE

This is a one-year study to be conducted during the first year of the study period with the study results reported in the Initial Study Report (ISR).

Date	Activity
June 2023–March 2024	Meet with the TWG to discuss Draft Study Plan and adequacy of the APE
June 2023–March 2024	Consult with SHPO regarding adequacy of the APE
January 2024	Submit Built Environment technical qualifications to Sequoia National Forest for permit
April–December 2024	Conduct archival research
April–October 2024	Conduct fieldwork
October 2024–January 2025	Compile results of research and fieldwork and prepare draft technical memo
January 2025	Distribute draft technical memo to TWG
February–April 2025	TWG review and provide comment on draft technical memo
April–June 2025	Resolve comments and prepare final technical memo
April–October 2025	Develop Draft HPMP
December 2025	Distribute final technical memo and Draft HPMP in Draft License Application

REFERENCES

Collum, Nicole. 2009. Kern River No. 1 Stable Historic American Engineering Record. Prepared for Southern California Edison. Rosemead, California. Galvin Preservation Associates, Redondo Beach, California.

Kovak, Amy and Thomas Jackson. 2010. Cultural Resources Inventory Report of Access Roads and Flume Sections Associated with the Kern River No. 1 Hydroelectric Project. Prepared for Southern California Edison, Rosemead, California. Pacific Legacy, Inc., El Dorado Hills, California.

Mikesell, Stephen D. 1988. Historic Resource Evaluation Report, Kern River No. 1 Power House, 6-KER-178, 15.3, 06-275701. California Department of Transportation, Office of Environmental Analysis, Sacramento, California.

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

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SCE (Southern California Edison Company). 1993. *Cultural Resources Management Plan for Southern California Edison Company's Kern River No. 1 Hydroelectric Project, Kern County, California, FERC Project No. 1930*.

Taylor, Thomas T. 1994. Historic American Engineering Record (HAER) CA-165-A, Kern River No. 1 Hydroelectric System, Powerhouse Exciters.

Urbana Preservation and Planning. 2022. Historic-Era Built Environment Survey Report, Transmission Line Rating Remediation Program. Kern River to Los Angeles Project. Kern and Los Angeles Counties, California.

Valentin, Sylvere. 2019. ASR for Kern Canyon Culvert Rehab Project, 06-KER-178, PM 12.6/55.4. Caltrans District 6, Fresno, California.

White, David R.M. and Thomas T. Taylor. 1984. An Inventory and Evaluation of Archaeological and Historic Resources along the Kern River in the Vicinity of Democrat Hot Springs, Kern County, California, for the Proposed SCE Democrat Hydroelectric Project. Southern California Edison, Rosemead, California.

DRAFT
CUL 2 – ARCHAEOLOGY
TECHNICAL STUDY PLAN

Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

May 2023

TECHNICAL STUDY PLAN
CUL 2 – Archaeology

POTENTIAL RESOURCE ISSUES

- Management of archaeological resources and other historic properties within the Project's Area of Potential Effects (APE).

PROJECT NEXUS

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

Project operation and maintenance (O&M) activities could potentially affect archaeological resources by:

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

RELEVANT INFORMATION

The following information is available regarding archaeological resources including historic properties in the vicinity of the Project. See Pre-Application Document (PAD) Section 3.13, Cultural Resources for a summary of available archaeological resource information.

- Records search information from the ArcGIS Online (AGOL) database maintained by SCE, received October 10, 2022. The database includes heritage data from the Forest Service Heritage Programs in Region 5 within the SCE service territory and subscription data from the California Historical Resources Information System (CHRIS). The CHRIS provides detail regarding previous survey and documentation in the vicinity of the Project (inclusive of FERC Project boundary and a half-mile record search Study Area).

- Native American Heritage Commission (NAHC) Sacred Lands File (SLF) for the Project area, received on November 10, 2022 (NAHC 2021). The NAHC SLF provides an inventory of Native American resources and sacred sites.

- *Historic Resource Evaluation Report, Kern River No. 1 Powerhouse* (Stephen Mikesell 1988). Built Environment evaluation report for the Kern River No. 1 Powerhouse.

- *Cultural Resources Management Plan for Southern California Edison Company's Kern River No. 1 Hydroelectric Project, Kern County, California, FERC Project No. 1930* (SCE 1993). The Management Plan provides documentation and background information on the known historic properties in the Project Boundary and current SCE management responsibilities and requirements for cultural resources.

- *Cultural Resources Inventory of Pacific Gas and Electric Company's Kern Canyon Project and National Register of Historic Places Evaluation of Pacific Gas and Electric Company's Kern Canyon Powerplant, Pacific Gas and Electric Company's Kern Canyon Project, FERC No.178, Kern County, California* (Pacific Legacy 2002). The report documents the archaeological and built-environment resources at the Kern Canyon Powerplant.

- *An Inventory and Evaluation of Archaeological and Historic Resources along the Kern River in the Vicinity of Democrat Hot Springs, Kern County, California, for the Proposed SCE Democrat Hydroelectric Project* (White and Taylor 1984). The report documents the archaeological and built-environment resources near Democrat Hot Springs.

- *Cultural Resources Inventory Report of Access Roads and Flume Sections Associated with the Kern River No. 1 Hydroelectric Project* (Kovak and Jackson 2012). The report documents the most recent inventory of Project roads and flumes.

- Background studies that include several major archaeological and geoarchaeological overviews, and studies conducted in the region by Leach-Pal et al. (2010), Meyer et al. (2010), and Theodoratus (1984).

POTENTIAL INFORMATION GAPS

- Updated physical documentation and information on known archaeological resources located within the APE.

- Intensive archaeological surveys of the APE using current protocols.

- NRHP evaluations or updated evaluations of archaeological resources that could be potentially affected by Project O&M activities (Undertaking).

STUDY OBJECTIVES

- Document known and currently undocumented archaeological resources within the APE.

- Evaluate or, as appropriate, provide update evaluation(s) under the criteria of the NRHP for archaeological resources in the APE to determine whether archaeological resources may be affected by O&M of the Project and/or develop a NRHP evaluation plan to be implemented as part of the Historic Properties Management Plan (HPMP).

EXTENT OF STUDY AREA AND AREA OF POTENTIAL EFFECT

- For archaeological resources, the Study Area includes the area within 0.5 mile of the APE (Map 3.13-1).
    - This Study Area will be used only for records searches and archival research to develop contextual and background information.
- Under Section 106 of the NHPA, the APE is defined as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR § 800.16[d]). Additionally, the ACHP and the California Office of Historic Preservation has provided guidance for Federal agencies and their delegated licensees to consider potential effects that:
    - May occur immediately and directly.
    - Are reasonably foreseeable or may occur later in time.
    - Are farther removed in distance and potentially affected indirectly.
    - Include cumulative effects that may result from the undertaking.
- The proposed APE for the purposes of study implementation is defined as the area within the FERC Project boundary, a 25-foot buffer from centerline of the access trails located outside of the FERC boundary, and a 50-foot radius around FERC ancillary facilities such as gauges located outside of the FERC boundary (Map 3.13-1).
- Studies will not be conducted at locations where access is unsafe (e.g., where there is very steep terrain) or on private property for which SCE has not received specific approval from the landowner to enter the property to perform the study.
- The Study Area and APE may be expanded during the relicensing proceeding, in consultation with the cultural resources Technical Working Group (TWG).

STUDY APPROACH

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

ESTABLISH APE

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

REVIEW OF PREVIOUS STUDIES AND SITE RECORDS

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

ARCHIVAL RESEARCH

- Conduct archival research at the following repositories to obtain additional information specific to the prehistory, ethnography, and history in the vicinity of the Project. This research will build upon the existing studies to support necessary NRHP evaluation of archaeological resources in the APE. Archival research may include the following sources and other sources and repositories identified through research undertaken as part of the study:
    - California State Library, California History Room, Sacramento
    - California State University Bakersfield, Historical Research Center
    - Huntington Library, SCE Records, and Photographs and Negatives, San Marino
    - Kern County Museum, Bakersfield
    - Kern County Historical Society, Bakersfield
    - Native American Heritage Commission
    - Records from the Sequoia National Forest (SNF), Porterville
    - Southern California Edison Archaeological Records
    - Southern San Joaquin Valley Information Center, California State University, Bakersfield
    - UCLA Fowler Museum, Los Angeles
    - Other online repositories as applicable

ARCHAEOLOGICAL INVENTORY

- As described in 36 CFR § 800.4(b)(1), a field survey will be performed in accordance with the *Secretary of the Interior's Standards and Guidelines for Identification* to verify locations of previously recorded archaeological resources within the APE and to examine all accessible lands not previously subject to adequate survey within the APE or that need to be resurveyed to meet current professional standards (NPS 1983).

- Qualified professional archaeologists (i.e., individuals who meet the Secretary of the Interior's Professional Qualifications Standards for Archaeology [NPS 2021]) will supervise and participate in all field work.

    - During the survey, archaeologists will walk parallel transects spaced at no more than 30-meters as vegetation and terrain allow.

- Previously recorded archaeological sites within the APE will be relocated, and their site records will be updated only if the existing documentation does not meet current standards for recording or if the condition and/or integrity of the property has changed since its previous recording.

- Newly discovered archaeological resources within the APE, including isolated finds, will be documented following the documentation procedures outlined in *Instructions for Recording Historical Resources* (OHP 1995), which utilizes California Department of Parks and Recreation (DPR) Forms 523 A through L. Sketch maps will be drawn to-scale, and the resource will be photographed.

- Field personnel will use a Global Positioning System (GPS) receiver to document the location of archaeological resources (including isolates) within the APE, 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 SNF 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 SNF lands will require valid Organic Act permits. Any ground disturbing testing that occurs on SNF lands will require valid Archaeological Resources Protection Act permits. SCE or their consultants will obtain all required permits prior to beginning field work and will notify the SNF when field work is scheduled.

- Representative examples of time diagnostic artifacts will be photographed and described. All artifacts encountered during the field survey will be left in place; no artifacts will be collected during the field survey.

- A field report will be submitted to the SNF according to stipulations in the archaeological permit.

NRHP ELIGIBILITY EVALUATION:

- NRHP evaluations will focus on resources within the APE that may be adversely affected by Project O&M activities. The evaluation strategy will be developed in consultation with the TWG. Applicable archaeological permits will be obtained from the SNF.

- Evaluations will be documented on appropriate DPR 523 series forms and will utilize appropriate guidance including *NRHP Bulletin 15: How To Apply the NRHP Criteria for Evaluation* (NPS 1995).

REPORTING AND CONSULTATION:

- Study methods and results will be documented in a CUL 2 – Archaeology Technical Memo. To ensure compliance with FERC reporting requirements and with the standards of Section 106 of the NHPA, the technical memo will include the following sections: (1) Study Goals and Objectives; (2) Study Methods; (3) Study Results (including eligibility recommendations); and (4) Variances from the FERC-approved Study Plan. In addition, the technical memo will include the following information, as appropriate:

  - Project location and description;

  - Regulatory nexus;

  - Pre-contact, ethnographic, and historic-era context for the Study Area;

  - Traditional Tribal place names for areas of the Project will be incorporated into site records and the Archaeological Technical Memo;

  - Generalized maps showing the location of archaeological resources with respect to the APE;

  - Detailed maps that depict the following on USGS 1:24,000 topographic maps: survey area and coverage types (intensity); and the locations of all resources identified during the study; and

  - An appendix containing updated and/or new DPR Series 523 forms for each archaeological resource in the APE.

- A draft technical memo will be distributed to qualified TWG members for review and comment. Sensitive information will be included in a confidential appendix

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

- The review and comment period for the technical memo is identified below in the Schedule.

HISTORIC PROPERTIES MANAGEMENT PLAN

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

SCHEDULE

This is a one-year study to be conducted during the first year of the study period with the study results reported in the Initial Study Report (ISR).

Date	Activity
June 2023–March 2024	Meet with the TWG to discuss Draft Study Plan and adequacy of the APE
June 2023–March 2024	Consult with SHPO regarding adequacy of the APE
January 2024	Submit Archaeological technical qualifications to Sequoia National Forest for permit
April–December 2024	Conduct archival research
April–October 2024	Conduct fieldwork
October 2024–January 2025	Compile results of research and fieldwork and prepare draft technical memo
January 2025	Distribute draft technical memo to TWG
February–April 2025	TWG review and provide comment on draft technical memo
April–June 2025	Resolve comments and prepare final technical memo
April–October 2025	Develop Draft HPMP
December 2025	Distribute final technical memo and Draft HPMP in Draft License Application

REFERENCES

Kovak, Amy, and Thomas L. Jackson. 2012. *Cultural Resources Inventory Report of Access Roads and Flume Sections Associated with the Kern River No. 1 Hydroelectric Project*. Prepared for Southern California Edison, Rosemead, California. Pacific Legacy, Inc., El Dorado Hills, California.

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DRAFT
TRI 1 – TRIBAL RESOURCES TECHNICAL STUDY PLAN

Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

May 2023

TECHNICAL STUDY PLAN
TRI 1 – Tribal Resources

POTENTIAL RESEARCH ISSUES

- Tribal resources potentially affected by the Project, including properties of traditional religious and cultural importance to an Indian tribe (commonly referred to as Traditional Cultural Properties (TCP[1])).

PROJECT NEXUS

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

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

RELEVANT INFORMATION

The following information is available to characterize Tribal resources in the vicinity of Project. See Pre-Application Document (PAD) Section 3.13, Cultural Resources and Section 3.14, Tribal Resources for a summary of available cultural resource and Tribal resource information.

- NAHC Sacred Lands File for the Project, received on November 10, 2022 (NAHC 2022).

- Fourteen cultural affiliations/heritage associations have been identified based on information provided by the NAHC and extracting data from mid-late 20th century ethnographic work in the Project vicinity.

- Key available ethnographic literature regarding Tubatulabal includes Davis-King et al., 2010; Stephen Powers, 1976; Smith, 1978; C. Voegelin, 1935a, 1935b; E. Voegelin, 1938; Gehr and Conlan 1984; and J.P. Harrington (nd).

- Local historian, Bob Powers (1974, 1979, 1980, 1989, 1999, 2003) provided extensive summaries of historic and American Indian issues in the region, particularly regarding Tubatulabal and Kawaiisu peoples.

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

- Yokuts sources include Latta (2014), who specifically discusses Yowlumne lifeways; more general information is from Wallace (1978) on Southern Valley Yokuts and Spier (1978) on Foothill Yokuts. Gayton (1929,1930, 1945, 1946) discusses various aspects of Yokuts life; her monograph on Yokuts and Mono peoples is an important source.

- The Garcés Diary (Coues, 1900) of pre-statehood exploration in the Study Area provided details about lifeways, trade patterns, and cultural affiliations.

- Numerous named places known in the Project vicinity have been identified to include villages, gathering locales, sacred areas, burial grounds, fishing locales, and hunting grounds.

These background data are applicable to a broader territory than lands in the vicinity of the Project, as there has not been an American Indian ethnographic investigation to date of the immediate Kern River No. 1 Hydroelectric Project.

POTENTIAL INFORMATION GAPS

- Ethnohistory of lands in the vicinity of the Project (study area).

- Archival research and interviews to identify Tribal resources within the Area of Potential Effects (APE) (see Extent of Study Area section).

- NRHP evaluations of Tribal resources that could be potentially affected by O&M the Project (Undertaking).

- Tribal resources of value that may not be historic properties, but nonetheless are to be considered.

STUDY OBJECTIVES

- Communicate and consult with Tribes regarding the Project.

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

- Identify and document Tribal resources in the vicinity of the Project. Characterize Tribal values and resources from a Tribal perspective through outreach and contact with Tribal governments and their representatives.

- Evaluate Tribal resources, as appropriate, to determine if they are eligible for listing on the NRHP and determine whether these resources will be affected by actions of the Proposed Project.

EXTENT OF STUDY AREA AND AREA OF POTENTIAL EFFECT

- For Tribal resources, the study area includes the area within 5 miles of the APE (Map 3.14-1).

  - This study area will be used only for archival research and interviews to develop contextual and background information.

- Under Section 106 of the NHPA, the APE is defined as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR § 800.16[d]). Additionally, the ACHP and the California Office of Historic Preservation (OHP) has provided guidance for Federal agencies and their delegated licensees to consider potential effects that:

  - May occur immediately and directly;

  - Are reasonably foreseeable or may occur later in time;

  - Are farther removed in distance and potentially affected indirectly; and

  - Include cumulative effects that may result from the undertaking.

- The proposed APE for the purposes of study implementation is defined as the area within the FERC Project boundary, a 25-foot buffer from centerline of the access trails located outside of the FERC boundary, and a 50-foot radius around FERC ancillary facilities such as gauges located outside of the FERC boundary (Ma 3.14-1).

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

STUDY APPROACH

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

ESTABLISH APE

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

ARCHIVAL RESEARCH

- Conduct archival research at repositories to obtain additional information specific to the prehistory, ethnography, and history associated with the study area. The results of the archival research will: (1) provide primary data to create an American Indian ethnohistory including maps depicting Tribal territories and traditional use areas in the study area; and (2) develop the Tribal resources historic context which will be used in identification and evaluation of Tribal resources within the APE for the NRHP. The Tribal resources team will conduct background archival research of the study area, which may include the following:

    - Annie Mitchell Local History Research Room, Tulare County Library, Visalia
    - California State Library, California History Room
    - Harrington (n.d.) fieldnotes (available online)
    - Hulse and Essene (Bancroft Library, Berkeley and elsewhere)
    - Kern County Museum, Bakersfield
    - Kern County Historical Society, Bakersfield
    - California State University Bakersfield Archives
    - National Archive and Records Administration (Riverside and San Bruno)

MEETINGS WITH TRIBAL GOVERNMENTS

Meetings with Tribal governments/administrators and/or attendance at Tribal Council meetings (if approved), will provide Project information to Tribal groups, elicit areas of interest, identify appropriate Tribal contacts, and establish protocols for conveying information gathering activities. To date, 14 American Indian Tribes have been identified as having potential interests in the Project area. These are listed below (in alphabetical order):

- Big Pine Paiute Tribe of Owens Valley
- Chumash Indian Council of Bakersfield
- Fort Independence Indian Community of Paiute Indians/ Fort Independence Reservation
- Kawaiisu Tribe
- Kern Valley Indian Community
- Kitanemuk & Yowlumne Tejon Indians
- Kings River Choinumne Farm Tribe (Foothill Yokut)

- Lone Pine Paiute-Shoshone Tribe
- Santa Rosa Indian Community of The Santa Rosa Rancheria
- Tachi Yokut Tribe
- Tejon Indian Tribe
- Tübatulabals of Kern Valley
- Tule River Indian Tribe of California
- Wuksache Indian Tribe/Eshom Valley Band

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

INTERVIEWS

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

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

DOCUMENTATION AND EVALUATION

Three main categories of Tribal resources may be present in the APE and documented and evaluated as described below.

- **Tribal Places** are locations associated with the ancestral past, places related to current gathering and/or hunting practices or to consist of other resource types. Those that qualify as potential historic properties will be documented on California Department of Parks and Recreation (DPR) 523 forms as appropriate and with Tribal permission, while others will be described in the TRI 1 – Tribal Resources Technical Memo.

- **TCPs** will be documented on DPR 523 forms as appropriate and with permission of the community who has identified the TCP.

- **Tribal Government Resources** such as documentation of Indian allotments located within the study area will be documented in the TRI 1 – Tribal Resources Technical Memo.

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

- The location of culturally important plant species identified by American Indian Tribes may be incorporated into the TRI 1 – Tribal Resources Technical Memo, as appropriate, and shared with the botanical resources study team.

- Information about culturally important aquatic species, including fisheries, identified by American Indian Tribes may be incorporated into the TRI 1 – Tribal Resources Technical Memo, as appropriate, and shared with the proposed aquatic resources study team.

- Information about culturally important terrestrial animal species identified by American Indian Tribes may be incorporated into the TRI 1 – Tribal Resources Technical Memo, as appropriate, and shared with the proposed terrestrial resources study team.

- The locations of culturally important plant and/or animal species may be considered in the recreation and land use studies, to the extent possible without divulging confidential information.

- Information on sites associated with prehistoric and ethnographic-period American Indian occupation and use of the landscape will be identified in both the CUL 2 – Archaeological Resources Technical Memo and TRI 1 – Tribal Resources Technical Memo.

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

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

TECHNICAL STUDY REPORTING AND CONSULTATION

- Study methods and results will be documented in a TRI 1 – Tribal Technical Memo. A draft technical memo will be distributed to the Tribal Resources Technical Working Group (TWG) for review and comment. Comments on the draft technical memo will be addressed in a final technical memo, which will be included in the Draft License Application. The draft and final technical memo will include a summary of the information and findings of the technical studies.

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

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

- The review and comment period for the technical memo is identified below in the Schedule.

HISTORIC PROPERTIES MANAGEMENT PLAN

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

SCHEDULE

This is a one-year study to be conducted during the first year of the study period with the study results reported in the Initial Study Report (ISR).

Date	Activity
June 2023–March 2024	Meet with the TWG to discuss Draft Study Plan and adequacy of the APE
June 2023–March 2024	Consult with SHPO regarding adequacy of the APE
January 2024	Submit Tribal Resources technical qualifications to Sequoia National Forest
April–December 2024	Conduct archival research
April–October 2024	Engage Tribal groups to arrange meetings and establish protocols

Date	Activity
April–October 2024	Conduct Tribal interviews to identify Tribal resources
October 2024–December 2025	Compile results of data gathered, evaluate Tribal resources, and prepare draft technical memo
December 2025	Distribute draft technical memo to TWG
February–April 2025	TWG review and provide comment on draft technical memo
April–June 2025	Resolve comments and prepare final technical memo
April–October 2025	Develop Draft HPMP
December 2025	Distribute final technical memo and Draft HPMP in Draft License Application

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DRAFT
LAND 1 – ROAD AND TRAIL CONDITION ASSESSMENT TECHNICAL STUDY PLAN

Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

May 2023

TECHNICAL STUDY PLAN
LAND 1 – Road and Trail Condition Assessment

POTENTIAL RESOURCE ISSUES

- Project road and trail maintenance.
- Erosion on or adjacent to Kern River No. 1 Hydroelectric Project (Project) roads and trails may deliver sediment to adjacent drainages.
- Protection of resources during Project operation and maintenance (O&M) activities.

PROJECT NEXUS

- Roads and trails on Forest Service, Sequoia National Forest (SQF) and SCE owned lands are necessary to access Project facilities and conduct O&M of the Project.
- SCE is responsible for maintaining Project roads and trails.
- Identification of erosion or sources of sediment from roads or trails. Refer to the LAND 2 – Erosion and Sedimentation Technical Study Plan regarding runoff from roads with potential to affect stream drainages.

RELEVANT INFORMATION

The following information was reviewed to determine Project road and trail study needs. See Pre-Application Document (PAD) Section 2.0, Project Location, Facilities, and Operations for a summary of the existing Project roads and trails:

- The list of Project Facility Access Roads and Trails identified in PAD Table 2-3.
- Maintenance activities associated with Project roads and trails as summarized in Section 2.0.
- Federal Energy Regulatory Commission (FERC) Project boundary information as shown on Exhibit G of the Project license.

POTENTIAL INFORMATION GAPS

- Information on existing Project road and trail conditions in relation to applicable maintenance standards.
- Information on public use of Project roads and trails within the FERC Project boundary.

STUDY OBJECTIVES

- Document current Project road and trail conditions by conducting a reconnaissance-level inventory.

- Document SCE's current maintenance practices and frequency of use along Project roads and trails.

EXTENT OF STUDY AREA

The Study Area includes Project roads and trails that are used to access Project facilities to conduct O&M activities. A list and description of Project roads and trails is provided in Table 2-3 and shown on Maps 2-3a-g in the PAD.

STUDY APPROACH

STUDY-SPECIFIC CONSULTATION

- Consult with the SQF on approach for reconnaissance-level inventory on Project roads and trails.

- If available, obtain additional road and trail information from the SQF and incorporate information into the desktop analysis.

DESKTOP ANALYSIS

- With support from SCE O&M staff, characterize SCE's frequency of use of Project roads and trails, frequency and type of maintenance activities, and location and size of culverts or other drainage features.

- Use desktop geographic information system (GIS) to compile data of available road features (i.e., culverts) and develop annotated maps for use during the reconnaissance level condition assessment.

RECONNAISSANCE-LEVEL CONDITION ASSESSMENT

- Road Inventory

    - Conduct a road assessment to characterize the current condition of Project roads. Project roads will be surveyed with respect to Forest Service criteria for the assigned maintenance level (USFS 2005, 2014) to assess the current condition relative to prescribed maintenance levels and standards.

    - The assessment will include the collection of the following information:

        - Land ownership/jurisdiction;

        - Road name;

        - Beginning and end points, and overall length;

- Average width;
- Surface type (e.g., paved, gravel, dirt);
- Overall road condition, including identification or issues pertaining to condition such as active erosion, potholes, ruts, loose aggregate, missing aggregate, cracking, debris, and excessive vegetation;
- Location of natural resource features that may occur along Project roads, such as stream crossings or riparian areas;
- Location, size, and condition of drainage and erosion control features such as culverts, water bars, and other drainage features;
- Location of areas experiencing erosion;
- Location, type, and condition of signs (i.e., safety, traffic control, or informational);
- Location and condition of access control features and barriers such as gates and other closure methods.

- Road features will be photographed and located using a sub-meter Global Positioning System (GPS) unit, and the data will be incorporated into the Project GIS database for tabulation, analysis, and mapping.
- Describe SCE's maintenance practices and frequency of activities, including culvert clearing, vegetation management, and avoidance measures for the protection of sensitive resource areas.

- Trail Inventory
  - Conduct a trail assessment to characterize the current condition of Project trails. The assessment will include the collection of the following information:
    - Land ownership/jurisdiction;
    - Trail name;
    - Location and condition of trailhead(s), if appropriate;
    - Beginning and end points, and overall length;
    - Average width;
    - Average slope;
    - Presence/absence of safety features such as hand rails;

- Overall condition, including identification of issues pertaining to condition such as rutting, loose aggregate, obstacles, and excessive vegetation;
- Location, size, and condition of culvert and other drainage features, if applicable;
- Location of areas experiencing erosion, if any;
- Location and condition of access control features and barriers such as gates and other closure methods;
- Location of water crossings, if applicable;
- Observed public recreational use (e.g., hiking); and
- Resource concerns.

- Trail features will be photographed and located using a sub-meter Global Positioning System (GPS) unit, and the data will be incorporated into the Project GIS database for tabulation, analysis, and mapping.

REPORTING

- Study methods and results will be documented in a LAND 1 – Road and Trail Condition Assessment Technical Study Report (TSR). The TSR will include an inventory and assessment of the selected roads and trails and appurtenant features, including applicable maps and data tables. Stakeholder review and comment period for the TSR is identified below in the Schedule.

- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

SCHEDULE

This is a one-year study to be conducted during the first year of the study period with the study results reported in the Initial Study Report (ISR).

Date	Activity
April 2024–August 2024	Conduct desktop reconnaissance and field surveys
September 2024–December 2024	Analyze data and prepare draft technical memo
January 2025	Distribute draft technical memo to stakeholders
February 2025–April 2025	Stakeholders review and provide comments on draft technical memo (90 days)
May–June 2025	Resolve comments and prepare final technical memo
December 2025	Distribute final technical memo in Draft License Application

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DRAFT
LAND 2 – EROSION AND SEDIMENTATION TECHNICAL STUDY PLAN

Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

May 2023

TECHNICAL STUDY PLAN
LAND 2 – Erosion and Sedimentation

POTENTIAL RESOURCE ISSUES

- Erosion and sedimentation associated with operation and maintenance (O&M) of the Project.

PROJECT NEXUS

- Routine Project O&M activities have the potential to increase erosion and sediment delivery to nearby drainages. Runoff from hard surfaces such as Project roads, trails, and facilities have the potential to increase surface erosion.

RELEVANT INFORMATION

The following information is available regarding erosion and sedimentation in the vicinity of the Project. See the Pre-Application Document (PAD) Section 3.4, Water Quality and Section 3.8, Geomorphology for a summary of relevant information:

- National Best Management Practices for Water Quality Management on National Forest System Lands (FS-990a). Volume 1: National Core BMP Technical Guide (Forest Service 2012)

- Final Environmental Assessment for Hydropower License, Kern River No. 1 Hydroelectric Project, FERC Project No. 1930-014 (FERC 1998)

- Application for New License for the Kern River No. 1 Hydroelectric Project (SCE 1994)

- Incident Report of Landslide Initiated Forebay Spill Kern River No. 1 Project – FERC Project No. 1930 (SCE 2013)

- Sediment Monitoring Results and Sediment Management Plan (SCE 1999)

- Kern River No. 3 Pre-Application Document, FERC Project No. 2290 (SCE 2021)

- Plan for Control of Erosion, Stream Sedimentation, Soil Mass Movement, and Dust. Kern River No. 3 Hydroelectric Project FERC No. 2290 (SCE 1997)

POTENTIAL INFORMATION GAPS

- Updated information on Project-related sources of sediment and erosion.

STUDY OBJECTIVES

- Identify historical and existing sources of sediment adjacent to the bypass reach, Democrat Dam Impoundment, water conveyance system, and other Project facilities, including major gullies; areas of vegetation and/or soil loss; hillslope destabilization; and mass wasting.

- Document erosion and sedimentation associated with SCE's ongoing O&M activities.

- Document natural sources of sediment unrelated to the Project.

EXTENT OF STUDY AREA

- The study area for erosion and sedimentation includes the bypass reach, Democrat Dam Impoundment, water conveyance system, and other Project facilities listed in PAD Table 2-1. Underground and underwater Project facilities will not be evaluated.

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

STUDY APPROACH

The approach for identifying historical and existing sediment sources and Project-related erosion areas is described below.

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

- Document the location and relative volume of historic and existing sediment recruitment to stream channels.

    - Significant sediment recruitment, mass wasting, and/or bank erosion sites will be mapped via aerial reconnaissance, ground survey, and/or aerial photography.

    - Identify whether the sources of sediment are derived from natural watershed process or Project-related effects.

    - Generalize whether sediment sources are actively or inactively contributing sediment and if so by how much (e.g., low, moderate, high delivery potential to the stream channel).

    - Review the August 19, 2013, storm event causing a landslide and subsequent Forebay spill. Highway 178 was closed due to multiple slides blocking the roadway (SCE 2013). See Section 3.7, Geology and Soils of the PAD for additional information.

  - Review winter storm cycles of 2022-2023, which have caused debris slides in the Project area/canyon closing Highway 178.

- Historic and/or ongoing erosion at the Project facilities (including Project reservoirs) will be mapped via aerial reconnaissance, ground survey, and/or aerial photography.

REPORTING

- Study methods and results will be documented in a LAND 2 – Erosion and Sedimentation Technical Study Report (TSR). The TSR will include summary tables and maps, as appropriate. Stakeholder review and comment period for the TSR is identified below in the Schedule.

- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

SCHEDULE

This is a one-year study to be conducted during the first year of the study period with the study results reported in the Initial Study Report (ISR).

Date	Activity
April 2024–August 2024	Initiate desktop review and field surveys
September 2024–December 2024	Analyze data and prepare draft technical memo
January 2025	Distribute draft technical memo to stakeholders
February 2025–April 2025	Stakeholders review and provide comments on draft technical memo (90 days)
May 2025–June 2025	Resolve comments and prepare final technical memo
December 2025	Distribute final technical memo in Draft License Application

REFERENCES

SCE (Southern California Edison). 2013. Incident Report of Landslide Initiated Forebay Spill Kern River No. 1 Project – FERC Project No. 1930. September 10, 2013.

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TABLES

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Table 1-1. Project Facilities

Diversion Dam
Democrat Dam
Impoundment
Democrat Dam Impoundment
Water Conveyance System
Sandbox
Tunnels
Flumes, Conduits, and Adits
Forebay
Forebay Overflow Spillway
Penstock
Powerhouse and Switchyard
Kern River No. 1 Powerhouse and Switchyard
Access Roads
Willow Spring Creek Road (also referred to as Democrat Dam Road)
Powerline Road
Flume No. 1 Road
Dougherty Creek Road
Stark Creek Road
Forebay Operations Area Road
Lower Powerhouse Road
Upper Powerhouse Road
Access Trails
Democrat Gage Trail
Conduit No. 3 Trail
Cow Flat Creek Trail
Steel Flume Trail
Lucas Creek Trail
Dougherty Creek Trail
Stark Creek Trail
Adit 17 & 18 Trail
Overflow Spillway Trail
Skip Hoist / Forebay Trail
Communication and Power Lines
Intake Gatehouse to Flume No. 1 Powerline
Powerhouse to Forebay Communication / Powerline

Gages and Stilling Wells
Kern River near Democrat Springs (USGS Gage No. 11192500 / SCE Gage No. 409)
Kern River No. 1 Conduit near Democrat Springs (USGS Gage No. 11192000 / SCE Gage No. 410)
Kern River near Democrat Springs (USGS Gage No. 11192501; calculated 11192500+11192000)
Stilling Well No. 1
Stilling Well No. 2
Ancillary and Support Facilities
Democrat Dam Area
Buoy Line in Democrat Dam Impoundment
Democrat Dam Intake Gatehouse
Democrat Dam Drainage Tower
Democrat Dam Drainage Tunnel
Democrat Dam Drainage Tunnel Outlet
Democrat Dam Access Walkway
Sandbox Drainage Channel
Gaging Cableway
Water Conveyance
Flume No. 6 Access Platform
Forebay Operations Area
Old Admin Building
Garage No. 1
Garage No. 2
Old Ice House
Water Tank
Aerial Cable Tower
Skip Hoist House and Lower Landing
Skip Hoist Cables and Cart
Skip Hoist Upper Landing
Skip Hoist Upper Landing to Forebay Catwalk
Communication Site
Forebay Operations Area Perimeter Fence
Forebay Perimeter Fence
Powerhouse Area
Machine Shop
Office / Lunchroom
Restroom
Powerhouse and Switchyard Perimeter Fence

DRAFT
REC 1 – RECREATION FACILITY CONDITION ASSESSMENT TECHNICAL STUDY PLAN

Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

May 2023

TECHNICAL STUDY PLAN
REC 1 – Recreation Facility Condition Assessment

POTENTIAL RESOURCE ISSUES

- Recreation facility use in the vicinity of the Project.

PROJECT NEXUS

- Forest Service day use areas are located adjacent to the Democrat Dam impoundment and the bypass reach.

RELEVANT INFORMATION

The following information is available regarding recreation in the vicinity of the Kern River No. 1 Hydroelectric Project. See Pre-Application Document (PAD) Section 3.11 Recreation Resources for a description of existing recreation resources.

- Management prescriptions and direction relevant to recreation included in the Sequoia National Forest Land and Resource Management Plan, Forest Plan (Forest Service 1988).

- Management prescriptions and direction relevant to recreation included in the draft Land Management Plan for the Sequoia National Forest, Pre-Objection Version (Forest Service 2022).

- Final Environmental Assessment for Hydropower License, Kern River No. 1 Hydroelectric Project, FERC Project No. 1930-014 (FERC 1998)

- Five-Year Recreation Use Report, Kern River No. 1 Hydroelectric Project – FERC No. 1930 (TCW 2005).

- Various state and federal agency websites.

POTENTIAL INFORMATION GAPS

- Updated recreation facility condition assessments at select Sequoia National Forest (SQF) facilities in the vicinity of the Project.

STUDY OBJECTIVES

- Identify, map, and describe public developed recreation facilities in the vicinity of the Project, including capacity.

- Conduct a facility inventory and condition assessment at the public recreation facilities including overflow parking areas, including an evaluation of signage and public safety features; and an assessment of the condition and potential for universal accessibility.

EXTENT OF STUDY AREA

The study area will be focused on public day-use areas in the vicinity of the Project. These day use facilities are owned and operated by the SQF. The recreation day-use facility locations are listed below and shown on Map 3.11-1.

- Democrat Raft Take-out Boating Site
- Upper Richbar Day Use Area
- Lower Richbar Day Use Area
- Live Oak Day Use Area

STUDY APPROACH

Section 3.11 Recreation Resources of the PAD identifies, maps, and describes developed public recreation facilities in the vicinity of the Project, based on data and information readily available from existing information sources. The study element described below will build on the information presented in the PAD.

CONDUCT A FACILITY INVENTORY AND CONDITION ASSESSMENT AT EXISTING PUBLIC RECREATION FACILITIES

A facility inventory and condition assessment will be performed at the four Forest Service day-use areas. SCE will consult with the Forest Service to develop appropriate methods and forms for the inventory and condition assessment. Generally, the study will include an inventory and condition assessment including:

- Inventory of features at the day-use facilities
- Overall day-use facility capacity
- Assessment of the condition of facilities and associated features;
- Characterization of universal accessibility;
- Public safety measures;
- Signage and wayfinding; and
- Site-specific circulation road(s) and parking area(s).

The survey will document facility condition according to Table 1. All inventories will be documented with photographs and integrated into a GIS database with relevant attributes to facilitate future analysis and on-going assessments.

REPORTING

- Study methods and results will be documented in a REC 1 – Recreation Facility Condition Technical Study Report (TSR). The TSR will include an inventory and assessment of the selected site facilities 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 1988 Sequoia National Forest Land and Resource Management Plan (1988 Forest Plan), and the draft 2022 Sequoia National Forest Land Management Plan – pre objection version (revised Forest Plan), as applicable. Stakeholder review and comment period for the TSR is identified below in the Schedule.

- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

SCHEDULE

This is a one-year study to be conducted during the first year of the study period with the study results reported in the Initial Study Report (ISR).

Date	Activity
April 2024–May 2024	Develop facility inventory and condition assessment forms in consultation with the SQF
June 2024–September 2024	Conduct the facility inventory and condition assessment
October 2024–January 2025	Analyze data and prepare draft technical memo
February 2025	Distribute draft technical memo to stakeholders
March 2025–May 2025	Stakeholders review and provide comments on draft technical memo (90 days)
June 2025–July 2025	Resolve comments and prepare final technical memo
December 2025	Distribute final technical memo in Draft License Application

REFERENCES

FERC (Federal Energy Regulatory Commission). 1998. Final Environmental Assessment for Hydropower License. Kern River No. 1 Hydroelectric Project. FERC Project No. 1930-014. California. June 17.

Forest Service (United States Forest Service). 1988. Sequoia National Forest Land and Resource Management Plan. U.S. Department of Agriculture, Forest Service, Sequoia National Forest. March 1988. Accessed: October 2022. Available online: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5400303.pdf.

———. 2022. Land Management Plan for the Sequoia National Forest, Pre-Objection Version. Fresno, Kern, and Tulare Counties, California. R5-MB-325-A. U.S. Department of Agriculture, Forest Service, Pacific Southwest Region. Accessed: October 2022. Available online: https://www.fs.usda.gov/project/?project=3375

SCE (Southern California Edison Company). 1994. Application for New License for the Kern River No. 1 Hydroelectric Project, FERC Project No. 1930. Kern County, California. April 28.TCW TCW Economics. 2005. Report on Five Year Recreation Use Monitoring Study for the Kern River No. 1 Hydroelectric Project (FERC No. 1930). Prepared for Southern California Edison, Hydro Generation Division, 300 North Lone Hill, San Dimas, CA 91773. Prepared by TCW Economics, 27569th Ave. Sacramento, CA. December 2005.

TABLES

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Table 1. Facility Feature Condition Rating Table

ID	Category	Description
N	Need Replacement	Facility feature is non-functional or has broken or missing components.
R	Needs Repair	Facility feature has structural damage or is in an obvious state of disrepair.
M	Needs Maintenance	Facility features needs maintenance, such as cleaning or painting.
G	Good Condition	Facility feature is functional and well maintained.

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REC 2 – RECREATION FACILITY USE ASSESSMENT TECHNICAL STUDY PLAN

Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

May 2023

TECHNICAL STUDY PLAN
REC 2 – Recreation Facility Use Assessment

POTENTIAL RESOURCE ISSUES

- Recreation use and opportunities in the vicinity of the Project.
- Public safety.

PROJECT NEXUS

- Forest Service day use areas are located adjacent to the Democrat Dam impoundment and the bypass reach.

RELEVANT INFORMATION

The following information is available regarding recreation in the vicinity of the Project. See the Pre-Application Document (PAD) Section 3.11, Recreation Resources for a summary of relevant information:

- Management prescriptions and direction relevant to recreation included in the Sequoia National Forest Land and Resource Management Plan, Forest Plan (Forest Service 1988).
- Management prescriptions and direction relevant to recreation included in the draft Land Management Plan for the Sequoia National Forest, Pre-Objection Version (Forest Service 2022).
- Five-Year Recreation Use Report, Kern River No. 1 Hydroelectric Project – FERC No. 1930 (TCW 2005).
- National Visitor Use Monitoring (NVUM) Reports for the Sequoia National Forest[1]
- California's 2021-2025 Statewide Comprehensive Outdoor Recreation Plan (California State Parks, 2020).
- Safety-related information that may be included in the Federal Energy Regulatory Commission (FERC) Environmental Inspection Reports for the Project.
- Safety Incident Reports that may have been filed by SCE, as required by Title 18 of the Code of Federal Regulations §12.10.
- Various state and federal agency websites.
- Various whitewater boating websites.

[1] Sequoia National Forest National Visitor Use Monitoring (NVUM) data and reports are available for 2006, 2011, and 2016. 2021 NVUM data is currently being analyzed by the Forest Service. A report will be made available once analysis is complete and posted to the Forest Service NVUM website: https://apps.fs.usda.gov/nvum/results.

POTENTIAL INFORMATION GAPS

- Recreation use data associated with developed public recreation facilities in the Project vicinity.
- Recreation trends and future recreation demand.
- Identify potential safety issues and describe existing features or measures implemented to protect the public health and safety.

STUDY OBJECTIVES

- Characterize recreation use at the developed public recreation facilities in the Project vicinity. Estimate future recreation use in the vicinity of the Project using existing use data and published recreation trends information.
- Document potential public safety issues and existing programs and measures that are implemented by SCE to protect public health and safety.

EXTENT OF STUDY AREA

The study area will be focused on public day-use areas in the vicinity of the Project. These day use facilities are outside the Project boundary, owned and operated by the Sequoia National Forest (SQF), and not part of SCE's Project license. The recreation day-use facility locations are listed below and shown on Map 3.11-1:

- Democrat Raft Take-out Boating Site
- Upper Richbar Day Use Area
- Lower Richbar Day Use Area
- Live Oak Day Use Area

STUDY APPROACH

The following describes the approach for: (1) characterizing use of public recreation day-use facilities in the vicinity of the Project, (2) estimating future recreation use and demand, and (3) documenting public safety and associated measures.

CHARACTERIZE RECREATION USE AT DEVELOPED RECREATION FACILITIES

- Document annual recreation use at the public recreation day-use facilities over the most recent 5-year period using Forest Service capacity estimates.
- Estimate weekday, weekend, and holiday use, if possible, given the information available from the Forest Service and/or their concessionaire, Rocky Mountain Recreation.

- Document the number of times capacity at the recreation facilities was met or exceeded based on utilization of available parking spaces.

- If sufficient data is not available to characterize recreation use using existing information, SCE will conduct on-ground vehicle counts at the day-use facilities in 2024, in consultation with the SQF.

- If necessary, SCE will conduct vehicle counts at each day-use facility inclusive of associated overflow parking and collect the following information: date, time, weather conditions, and number of vehicles parked at each facility.

    - The vehicle counts will be conducted as follows:

        - A survey technician will count the number of vehicles observed at each facility four days per month (two randomly selected weekdays and two randomly selected weekend) from April – September 2024 week (total of 24 days).

        - The 4 randomly selected days per month will not include days when it is raining or substantive precipitation is forecast or days when any access restriction is in place.

        - In addition, the survey technician will count the number vehicles 1 randomly selected day on each of the following holiday weekends (3 days total):

            - Memorial Day

            - Fourth of July

            - Labor Day

        - On each day a vehicle count is conducted, the vehicle count will be completed during two of three randomly selected shifts:

            - Shift 1 (7 a.m. to 11 a.m.)

            - Shift 2 (11 a.m. to 3 p.m.)

            - Shift 3 (3 p.m. to 7 p.m.)

        - During each shift the vehicle count will be conducted twice, once while travelling west to east (upstream) on SR-178, and once travelling east to west (downstream) on SR-178. Two shifts per day and two counts per shift will result in four vehicle counts on each of the survey days.

        - Estimate the intensity of recreation use at informal river access points based on vehicle count data. Recreation user day estimates will be based on vehicle counts using an average party size of 2.4 people per vehicle, per the

Sequoia National Forest's 2016 National Visitor Use Monitoring (NVUM) data report (Forest Service 2018).

- Utilize existing information available from SCE and the Forest Service to characterize likely recreation use activities undertaken by visitors to the identified river access points.

ESTIMATE FUTURE RECREATION USE AND DEMAND

- Utilize census data and information available in current relevant federal, state, and local comprehensive plans (including the Statewide Comprehensive Outdoor Recreation Plan [SCORP] and supporting survey information) to identify population projections and to document outdoor recreation use trends and needs.

- Utilize the recreation use data collected in this study along with trends and population projections to estimate future recreation needs over the license period (assumed to be 50 years).

- Determine whether future public recreation needs can be met in the vicinity of the Project.

DOCUMENT PUBLIC SAFETY

- Identify and describe existing programs and measures implemented by SCE to protect public health and safety (i.e., buoy lines, fencing, signage, and alarms). The inventory will include a description of the condition of the existing safety features.

- Characterize the number, type, and location of safety incidents related to recreation that have occurred in the vicinity of the Project over the past ten years. This effort will be conducted by reviewing existing records and databases maintained by the FERC and the Forest Service and by consulting with SCE staff.

REPORTING

- Study methods and results will be documented in a REC 2 – Facility Use Assessment Technical Study Report (TSR). The TSR will include summary tables and figures, as appropriate, to ensure results can be easily understood. Detailed maps and graphics will be used to convey spatial relationships when necessary. Stakeholder review and comment period for the TSR is identified below in the Schedule.

- All data collected during the study will be entered into a data base (excel or similar) by the technical staff, under the supervision of the task lead.

- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

SCHEDULE

This is a one-year study to be conducted during the first year of the study period with the study results reported in the Initial Study Report (ISR).

Date	Activity
April 2024–June 2024	Acquire and review key information sources to characterize recreation facility use (i.e., Forest Service recreation planners, concessionaire, and existing data files and reports)
April 2024–September 2024	If necessary, conduct vehicle counts at the public recreation day-use facilities in the vicinity of the Project
October 2024–January 2025	Analyze data and prepare draft technical memo
February 2025	Distribute draft technical memo to stakeholders
March 2025–May 2025	Stakeholders review and provide comments on draft technical memo (90 days)
June 2025–July 2025	Resolve comments and prepare final technical memo
December 2025	Distribute final technical memo in Draft License Application

REFERENCES

California State Parks (California Department of Parks and Recreation). 2021. California's 2021-2025 Statewide Comprehensive Outdoor Recreation Plan, A Five-Year Plan for Increasing Park Access, Community-Based Planning, and Health Partnerships Through Grants. Accessed February 2023. Available online: Parks for All Californians: SCORP 2020 Report (parksforcalifornia.org).

FERC (Federal Energy Regulatory Commission). 1998. Final Environmental Assessment for Hydropower License. Kern River No. 1 Hydroelectric Project. FERC Project No. 1930-014. California. June 17.

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REC 3 – WHITEWATER BOATING TECHNICAL STUDY PLAN

Kern River No. 1 Hydroelectric Project
FERC Project No. *1930*

May 2023

TECHNICAL STUDY PLAN
REC 3 – Whitewater Boating

POTENTIAL RESOURCE ISSUE

- Whitewater boating opportunities.

PROJECT NEXUS

- Project operations modify the flow regime in the Kern River No. 1 bypass reach[1], potentially affecting whitewater boating opportunities (timing and/or duration).

RELEVANT INFORMATION

The following information is available regarding recreation in the vicinity of the Project. See Section 3.11, Recreation Resources Pre-Application Document (PAD) for a summary of relevant information:

- Sequoia National Forest Land and Resource Management Plan, Forest Plan (Forest Service 1988).
- Application for New License, Kern River No. 1 Hydroelectric Project, FERC Project No. 1930 (SCE 1994).
- Final Environmental Assessment for Hydropower License, Kern River No. 1 Hydroelectric Project, FERC Project No. 1930-014 (FERC 1998a).
- FERC Order Issuing New License (Major Project), FERC Project No. 1930-014 (FERC 1998b).
- Five-Year Recreation Use Report, Kern River No. 1 Hydroelectric Project – FERC No. 1930 (TCW 2005).
- Draft Land Management Plan for the Sequoia National Forest, Pre-Objection Version (Forest Service 2022a).
- The Best Whitewater in California (Holbeck, L. and Stanley, C. 1998).
- California Whitewater, A Guide to the Rivers (Cassady J. and Calhoun F. 1995).
- Various state and federal agency websites.
- Various whitewater boating websites.

[1] A bypass reach is a segment of a river downstream of a diversion facility where Project operations result in the diversion of a portion of the water from the river.

POTENTIAL INFORMATION GAPS

- Whitewater boating trends and future demand.
- Whitewater boating use associated with Democrat Raft Take-out Boating Site.

STUDY OBJECTIVES

- Characterize the whitewater boating run in the Kern River No. 1 bypass reach including the length, whitewater difficulty, name of key rapids, and typical access locations for put-in and take-out.
- Identify the range of flows (minimum acceptable and optimum) that would provide whitewater boating opportunities in bypass reach for a variety of watercraft including, kayaks, rafts, packrafts, stand-up paddleboards, and body boards.
- Quantify the annual and monthly frequency that minimum acceptable and optimum whitewater flows occur in the bypass reach under current Project operations and without Project diversion for each watercraft type.
- Describe existing mechanisms for dissemination flow information to the public.
- Document potential conflicts of whitewater boating flows with other recreation users.

EXTENT OF STUDY AREA

The study area includes the bypass reach between Democrat Dam and the Kern River No. 1 Powerhouse Tailrace.

STUDY APPROACH

The study approach generally follows the methods identified in *Flows and Recreation: A Guide to Studies for River Professionals* (Whittaker et al., 2005). The 2005 publication outlines a sequential framework to investigate flow dependent whitewater boating opportunities using various investigative tools across three progressive levels of study. Progression through the framework affords a better understanding of the whitewater boating opportunities and associated flow in the bypass reach. The three levels of study increase data resolution as investigations progress from one level to the next and share interim results earlier in the relicensing process across resource disciplines.

LEVEL 1: DESKTOP REVIEW

The Level 1 Desktop Review will include the following elements:

- Literature review to augment information in PAD Section 11, Recreation Resources.
  - Literature review will include reviewing existing studies/publications, whitewater guidebooks, magazine publications, and online river information sites.

  - A table summarizing whitewater opportunities in the Kern River Basin (including the study bypass reach) will be compiled including the name of the whitewater run, river name, put-in and take-out location, length, gradient (feet per mile), and whitewater difficulty for comparative purposes.

  - Characterization of whitewater boating use in the study bypass reach, as available, using records from the Sequoia National Forest (SQF) and other sources.

- Hydrology Assessment

  - Utilizing existing gage data compiled as part of AQ-1 Hydrology Technical Study Plan, summarize hydrology in the bypass reach both with and without Project diversion.

    - The hydrology summary will include frequency, timing, duration, and magnitude of flows. Data will be reported using mean, median, interquartile, range, and exceedance metrics.

- Project Facility Capabilities

- Description of operational capabilities of Democrat Dam facilities, including the Project Intakes.

- Structured interviews:

  - Conduct structured interviews (not to exceed 10) with individuals nominated from the whitewater boating community representative of a range of watercraft, skill levels, and knowledge of the whitewater boating run in the bypass reach.

  - The interviews will focus on individual knowledge of the whitewater boating run between Democrat Dam and the Kern River No. 1 Powerhouse Tailrace to estimate range of preferred flows (minimum acceptable and optimum whitewater flows) for the bypass reach for respective watercraft; identify constraints, if any, for estimating range of preferred flows; flow information needs; and whitewater use patterns.

Information obtained in the Level 1 investigation will be used to determine, in consultation with the resource agencies and whitewater boating community, whether Level 2 Limited Reconnaissance is necessary.

LEVEL 2: LIMITED RECONNAISSANCE

The Level 2 investigation will include a limited reconnaissance site visit with study participants consisting of agency staff and boaters. The elements of the Level 2 Limited Reconnaissance are described below.

Limited Reconnaissance

- Conduct a site visit for direct observation of the whitewater boating run with a group of study participants consisting of agency staff and boaters.
    - The boating community will nominate study participants for the Level 2 Limited Reconnaissance Site Visit. Study participant composition should be representative of a range of watercraft, skill levels and knowledge of the whitewater boating segments in study bypass reach. For logistical and safety reasons, the Level 2 Limited Reconnaissance will be limited to 12 individuals.
- Information collected during the Level 2 Limited Reconnaissance may include:
    - Review of information collected in Level 1 to confirm accuracy and revise based on input from Level 2 study participants and field observations.
    - Estimates of flow preferences (minimum acceptable and optimum whitewater flows) for respective watercraft types and potential knowledge gaps in flow preferences based on input from study participants.
    - Factors influencing flow preferences based on input from study participants.
    - Recreation use patterns in the bypass reach river for different watercrafts and timing of use (weekday, weekend, time of day);
    - Visits to formal and informal access locations; and
    - Flow information dissemination – currently available and additional needs

The Level 2 Limited Reconnaissance Site Visit coupled with input from the study participants will increase the precision of estimated boating flow ranges for the various watercraft types and knowledge of recreation use patterns. Information obtained in the Level 1 and Level 2 investigations will be used to determine, in consultation with the resource agencies and whitewater boasting community, whether a Level 3 On-water Boating Assessment is necessary.

LEVEL 3: ON-WATER WHITEWATER BOATING ASSESSMENT

A Level 3 On-water Boating Assessment will only be conducted if results from the Level 1 Desktop Review and Level 2 Limited Reconnaissance are insufficient to characterize flow preferences over a variety of watercraft types. If necessary, the Level 3 On-water Boating Assessment will collect flow preference information directly from whitewater boaters for a variety of watercraft for the bypass reach using a single flow survey for individual trips. The single flow survey would be similar to other studies conducted by American Whitewater (AW) to collect flow preference information and recreation use patterns on rivers where a controlled flow study is not possible and/or have unpredictable flow conditions (AW, 2017 and 2021).

In the single flow study, whitewater boaters can provide input immediately after completing individual boating trips using the single flow survey. If the boater completes multiple trips over the study season or has past experiences over a wide range of water year types, the boater can fill out the flow comparison survey. The surveys will be available online to expand the pool of study participants, regardless of geographic location or schedule. SCE will provide the flow for each individual boating trip based on the data provided. The goal of the survey is to improve the precision for developing flow preferences for a variety of watercraft types.

SCE will make a good-faith effort to inform the boating community in advance when hydrologic conditions are within the boatable flow ranges identified in the Level 1 and/or Level 2 assessments. If flows are anticipated to be within the boatable flow ranges, SCE will reach out to Kern River Boaters, AW, Los Angeles Kayak Club, and Dreamflows. This is not a guarantee of a particular flow, just an indication that there may be the possibility for boating in the bypass reach. SCE will attempt (good faith effort) to give boaters advance notice to plan trips to the river using information on flow releases from Lake Isabella and forecasting technology available to SCE at the time of study. Ideally, boaters will be notified 2 to 3 days in advance to plan a trip.

The On-water Whitewater Boating Assessment described above will include the following elements:

- A whitewater single flow survey available online.
    - Information collected in Levels 1 and 2 will be used to develop an online single flow survey form.
    - The single flow survey from will allow respondents to evaluate individual flows shortly after experiencing them. Respondents will be asked name, zip code, date, time, watercraft type, and to rate the acceptability of the flow using scale in Whittaker et al. (2005). Single flow survey questions will be formatted for viewing on smart phone screens.
    - Posters containing the link to the single flow survey including a QR code will be installed at river access locations and distributed to local retailers in Kernville as well as local, regional, and national whitewater boating groups, and will be accessible on the Kern River No. 1 Hydroelectric Project relicensing website.
- A whitewater flow comparison survey available online.
    - Information collected in Levels 1 and 2 will be used to develop an online whitewater flow comparison survey.
    - The online whitewater flow comparison survey from will be designed to obtain information on flow preferences on the bypass reach. Survey questions will ask respondents to rate the acceptability of a range of flows for each watercraft type, timing of use, preferred whitewater segments, river access locations, flow information needs, and comparison with other whitewater opportunities in the

Kern River Basin. The range of flows presented in comparative flow questions will be based on information gathered in Levels 1 and 2.

- Posters containing the link to the whitewater flow comparison survey including a QR code will be installed at river access locations and distributed to local retailers in Kernville as well as local, regional, and national whitewater boating groups, and will be accessible on the Kern River No. 1 Hydroelectric Project relicensing website.

- Whitewater focus group

  - The Level 3 On-water Boating Assessment Intensive Study will include a focus group designed to additional gather information from boaters with direct experience on the bypass reach. Focus group questions will prompt discussion on suitable range of flows for a variety of watercraft; navigability and whitewater difficulty across a range of flows; daily, weekly, and seasonal use patterns; flow information needs; river access; safety; other areas of concern; and uniqueness of the whitewater river segments compared to other opportunities in the region.

  - Focus group participants will be identified in advance and nominated collaboratively with the whitewater community. Selection will be based in part on knowledge of whitewater boating opportunities in the Kern River Basin and direct experience on the bypass reach. The focus group will include representation across watercraft types.

PUBLIC SAFETY AND USE CONFLICTS

Public safety concerns associated with whitewater boating in the bypass reach will be documented using available information such as the Kernville Chamber of Commerce, SQF, California Department of Boating and Waterways, AW accident database, Federal Energy Regulatory Commission (FERC) incident reports, focused interviews (Level 1) and whitewater boating focused group discussions (Level 3).

Potential recreation-use conflicts associated with whitewater boating flows will be identified where possible.

REPORTING

- Study methods and results will be documented in a REC 3 – Whitewater Boating Technical Study Report (TSR). The TSR will include summary tables and figures, as appropriate, to ensure results can be easily understood. Stakeholder review and comment period for the TSR is identified below in the Schedule.

- All data collected during the study (existing records and data from surveys) will be entered into a data base (excel or similar) by the technical staff, under the supervision of the task lead.

- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

SCHEDULE

This is a one-year study to be conducted during the first year of the study period with the study results reported in the Initial Study Report (ISR).

Date	Activity
April 2024–August 2024	Conduct Level 1 Desktop Study
August 2024–September 2024	Complete Level 2 Limited Reconnaissance
October 2024–January 2025	Analyze data and prepare draft technical memo (Level 1 and Level 2)
February 2025	Distribute draft technical memo to stakeholders
February 2025–April 2025	Stakeholders review and provide comments on draft technical memo (90 days)
April 2025	Determine in consultation with resource agencies and whitewater community whether a Level 3 On-water Boating Assessment is needed
May 2025–June 2025	Resolve comments and prepare draft final technical memo (Level 1 and Level 2)
May 2025–September 2025	If necessary, conduct Level 3 On-water Boating Assessment
October 2025–November 2025	Incorporate results from the Level 3 Assessment into final technical memo
December 2025	Distribute final technical memo in the Draft License Application for stakeholder review

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DRAFT
TERR 1 – BOTANICAL RESOURCES TECHNICAL STUDY PLAN

Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

May 2023

TECHNICAL STUDY PLAN
TERR 3 – Botanical Resources

POTENTIAL RESOURCE ISSUES

- Protection of vegetation alliances.
- Protection of special-status plant populations.
- Reduce the introduction or spread of non-native invasive plants (NNIPs).

PROJECT NEXUS

- Project maintenance could result in direct loss or degradation of vegetation alliances, including communities afforded special recognition by state and federal agencies (e.g., riparian areas and special aquatic features [e.g., lakes, wet meadows, bogs, fens, wetlands, vernal pools, seeps, and springs]).
- Project maintenance activities could result in removal or disturbance of special-status plant populations.
- Project maintenance activities could result in the introduction or spread of NNIPs.

RELEVANT INFORMATION

The following information is available regarding botanical resources in the vicinity of the Project. See Pre-Application Document (PAD) Section 3.6, Botanical and Wildlife Resources for a summary of relevant information:

VEGETATION ALLIANCES AND WILDLIFE HABITATS

- Classification and Assessment with land satellite (LANDSAT) imagery of Visible Ecological Groupings (CALVEG) United States Forest Service (Forest Service) Region 5, Southern Sierran Ecological Province (Forest Service 2014).
- Supplemental information (e.g., habitat descriptions) obtained from review of the following Project-specific sources:
  - The Final Environmental Assessment for Kern River No. 1 Hydroelectric Project – Federal Energy Regulatory Commission (FERC) No. 1930-014, California (Environmental Assessment) (FERC and Forest Service 1998).
  - The Application for New License, Kern River No. 1 Hydroelectric Project – FERC Project No. 1930, Kern County, California (License Application) (SCE 1994).

SPECIAL-STATUS PLANTS

- Sequoia National Forest (SQF) Species of Conservation Concern (FSCC) List (Forest Service 2019) and associated Natural Resources Information System (NRIS) (Forest Service 2022).
- California Native Plant Society (CNPS) Inventory of Rare, Threatened, and Endangered Plants (CNPS 2022).
- The California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2022).
- The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) website (USFWS 2022).
- Supplemental information (e.g., special-status species occurrences) obtained from review of the following Project-specific sources:
  - The Environmental Assessment (FERC and Forest Service 1998).
  - The License Application (SCE 1994).

NON-NATIVE INVASIVE PLANTS

- The California Invasive Plant Council's (Cal-IPC's) California Invasive Plant Inventory (Cal-IPC 2022)

POTENTIAL INFORMATION GAPS

- Updated information on vegetation alliances, including riparian alliances.
- Updated information on special-status plant populations.
- Updated information on NNIPs.

STUDY OBJECTIVES

- Document vegetation alliances adjacent to Project facilities.
- Document riparian vegetation alliances and wetlands adjacent to Project facilities.
- Document special-status plant populations at Project facilities.
- Document NNIPs at Project facilities.

EXTENT OF STUDY AREA

VEGETATION ALLIANCES AND WILDLIFE HABITATS

- For vegetation alliances, the study area is 0.25 mile around Project facilities (see Table TERR 1-1).

- For riparian vegetation alliances and special aquatic features, the study area is the FERC Project boundary (excluding underground Project features) and 10 feet on either side of Project access trails located outside the FERC Project boundary.

SPECIAL-STATUS PLANTS AND NON-NATIVE INVASIVE PLANTS

- For the purposes of the special-status plants and NNIP studies, the study area is the FERC Project boundary (excluding underground Project features) and 10 feet on either side of Project access trails located outside the FERC Project boundary.

PRIVATE PROPERTY

- For surveys at or around Project facilities that are located outside of the FERC Project Boundary or on private property, SCE will take the following steps to obtain approval prior to implementation of studies:

    - Provide notification to landowner of Project relicensing and request authorization to enter property to conduct surveys.

    - If authorization is obtained, SCE will complete surveys as described in this TSP.

    - If authorization is not obtained, SCE will not complete surveys at these locations.

STUDY APPROACH

VEGETATION ALLIANCES

- Develop vegetation alliance maps of the study area based on CALVEG mapping and vegetation alliance descriptions.[1]

    - Preliminary vegetation alliance information is presented in the following:

        - Section 3.6, Botanical and Wildlife Resources of the PAD provides a draft map of CALVEG vegetation alliances within 1 mile of Project facilities.

        - Section 3.9, Wetland, Riparian, and Littoral Habitats of the PAD provides a draft map showing riparian and wetland vegetation associated with the

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

floodplains and littoral zones along the bypass reach of the Kern River and the Democrat Dam Impoundment. Also included are wetland and riparian habitats that are associated with the flumes, conduits, and adits along Project tunnels and which may be influenced by flume leakage as identified in Article 405 of the current FERC license order.

- Verify the accuracy of CALVEG data and update vegetation alliances using recent aerial photographs.

- Conduct ground-truthing of vegetation alliances within 0.25-mile of Project facilities, concentrating in areas where questions about vegetation community identification or boundaries arise from review of aerial photographs. Inaccessible areas will not be ground-truthed.

- Develop a Geographic Information System (GIS) map of vegetation alliances in the study area and overlay information on Project facilities.

- Develop a GIS map of riparian vegetation alliances and special aquatic features in the study area and overlay information on Project facilities.

SPECIAL-STATUS PLANTS

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

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

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

- 1A (presumed extirpated in California and either rare or extinct elsewhere).

- 1B (rare, threatened, or endangered in California and elsewhere).

- 2A (presumed extirpated in California, but common elsewhere).

- 2B (rare, threatened, or endangered in California, but common elsewhere).

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

- Identify and map known occurrences of special-status plants within the study area, based on agency consultation and a review of existing information. Preliminary information is presented in Section 3.6, Botanical and Wildlife Resources of the PAD.

- Develop a list of special-status plant species potentially occurring in the Project vicinity based on literature review and agency consultation. A preliminary list is provided in Section 3.6, Botanical and Wildlife Resources, Table 3.6-2 of the PAD.

- Conduct focused special-status plant surveys, according to the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018).

    - Field surveys will be conducted at the proper time of year when rare, threatened, or endangered species are both evident and identifiable. Generally, this is when the plants are flowering. Based on the blooming periods for plants known or potentially occurring within the Project vicinity, two surveys will be conducted, one in late April and one in late July (Table TERR 1-2).

    - The timing of surveys will be verified based on reference population monitoring. Agencies will be notified of population monitoring results and proposed survey dates prior to implementation of special-status plant surveys.

    - Systematic field techniques will be implemented (e.g., zigzag patterns, random meandering, and linear transects) in the study area.

    - If a special-status plant species population is identified on the perimeter of the study area, the study area will be expanded to document the full extent of the population.

    - Surveys will be floristic in nature and taxonomy will be based on The Jepson Manual (Baldwin et al. 2012). A comprehensive list of species observed during field surveys will be compiled.

    - Digital photographs, Global Positioning System (GPS) information, an estimate of the number of individuals present, and a description of associated vegetation alliance will be collected for each special-status plant population observed.

- Develop a GIS map of special-status plant populations and overlay information on Project facilities.

- Prepare and submit California Native Species Field Survey Forms for all special-status plant populations recorded to California Natural Diversity Database (CNDDB).

NON-NATIVE INVASIVE PLANTS

The Cal-IPC defines NNIPs as plants that 1) are not native to, yet can spread into, wildland ecosystems, and that also 2) displace native species, hybridize with native species, alter biological communities, or alter ecosystem processes (Cal-IPC 2022).

The study approach for NNIPs is provided below.

- Identify and map known occurrences of NNIPs based on agency consultation and a review of existing information. Preliminary information is presented in Section 3.6, Botanical and Wildlife Resources of the PAD.
- Develop a list of priority NNIPs for focused NNIP surveys. This list will incorporate priority NNIPs identified through consultation with agencies.
- Conduct focused NNIP surveys in conjunction with special-status plant surveys.
- Collect data and report survey results as follows:
  - Data collected will include species, location, and number of acres infested by NNIPs.
  - If a NNIP population is identified on the perimeter of the study area, the study area will be expanded to document the extent of the population.
  - Levels of infestation will be reported as: low (<5% cover); moderate (6–25% cover), and high (>25% cover). Areas that have been surveyed and found to be weed-free will also be identified.
- Develop a GIS map of noxious weeds and invasive non-native plants and overlay information on Project facilities.

REPORTING

- Study methods and results will be documented in a TERR 1 – Botanical Resources Technical Study Report (TSR). The TSR will include summary tables and maps, as appropriate. Stakeholder review and comment period for the TSR is identified below in the Schedule.
- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

SCHEDULE

This is a one-year study to be conducted during the first year of the study period with the study results reported in the Initial Study Report (ISR).

Date	Activity
April 2024–August 2024	Initiate desktop review and field surveys[2]
September 2024–December 2024	Analyze data and prepare draft technical memo
January 2025	Distribute draft technical memo to stakeholders
February 2025–April 2025	Stakeholders review and provide comments on draft technical memo (90 days)
May 2025–June 2025	Resolve comments and prepare final technical memo
December 2025	Distribute final technical memo in Draft License Application

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Bruce G. Baldwin (Editor), Douglas Goldman (Editor), David J Keil (Editor), Robert Patterson (Editor), Thomas J. Rosatti (Editor). 2012. The Jepson Manual, Vascular Plants of California. Second Edition.

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TABLES

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Table TERR 1-1. Kern River No. 1 Hydroelectric Project – Project Facilities

Diversion Dam
Democrat Dam
Impoundment
Democrat Dam Impoundment
Water Conveyance System
Sandbox
Tunnels, Flumes, Conduits, and Adits
Forebay
Forebay Overflow Spillway
Penstock
Powerhouse and Switchyard
Kern River No. 1 Powerhouse and Switchyard
Access Roads
Willow Spring Creek Road (also referred to as Democrat Dam Road)
Powerline Road
Flume No. 1 Road
Dougherty Creek Road
Stark Creek Road
Forebay Operations Area Road
Lower Powerhouse Road
Upper Powerhouse Road
Access Trails
Democrat Gage Trail
Conduit No. 3 Trail
Cow Flat Creek Trail
Steel Flume Trail
Lucas Creek Trail
Dougherty Creek Trail
Stark Creek Trail
Adit 17 & 18 Trail
Overflow Spillway Trail
Skip Hoist / Forebay Trail
Communication and Power Lines
Intake Gatehouse to Flume No. 1 Powerline
Powerhouse to Forebay Communication / Powerline

Gages and Stilling Wells
Kern River near Democrat Springs (USGS Gage No. 11192500 / SCE Gage No. 409)
Kern River No. 1 Conduit near Democrat Springs (USGS Gage No. 11192000 / SCE Gage No. 410)
Kern River near Democrat Springs (USGS Gage No. 11192501; calculated 11192500+11192000)
Stilling Well No. 1
Stilling Well No. 2
Ancillary and Support Facilities
Democrat Dam Area
Buoy Line in Democrat Dam Impoundment
Democrat Dam Intake Gatehouse
Democrat Dam Drainage Tower
Democrat Dam Drainage Tunnel
Democrat Dam Drainage Tunnel Outlet
Democrat Dam Access Walkway
Sandbox Drainage Channel
Gaging Cableway
Water Conveyance
Flume No. 6 Access Platform
Forebay Operations Area
Old Admin Building
Garage No. 1
Garage No. 2
Old Ice House
Water Tank
Aerial Cable Tower
Skip Hoist House and Lower Landing
Skip Hoist Cables and Cart
Skip Hoist Upper Landing
Skip Hoist Upper Landing to Forebay Catwalk
Communication Site
Forebay Operations Area Perimeter Fence
Forebay Perimeter Fence
Powerhouse Area
Machine Shop
Office / Lunchroom
Restroom
Powerhouse and Switchyard Perimeter Fence

Table TERR 1-2. Blooming Periods for Special-Status Plants Known or Potentially Occurring in the Kern River No. 1 Hydroelectric Project Vicinity.

Scientific Name	Common Name	Species Code	Federal Status	Forest Service Status	State Status	California Rare Plant Ranking	Bloom Period								
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Calochortus striatus	Alkali mariposa lily	CAST2	-	FSCC	-	CRPR 1B.2			■	■	■				
Camissonia integrifolia	Kern River evening-primrose	CAIN22	-	FSCC	-	CRPR 1B.3				■					
Clarkia springvillensis	Springville clarkia	CLSP6	FT	-	CE	CRBR 1B.2			■	■	■	■			
Delphinium purpusii	Rose-flowered larkspur	DEPU	-	FSCC	-	CRPR 1B.3			■	■					
Diplacus pictus (Mimulus pictus)	Calico monkeyflower	MIPI2	-	FSCC	-	CRPR 1B.2		■	■	■					
Eriastrium tracyi	Tracy's eriastrum	ERSPH2	-	FSCC	CR	CRPR 3.2				■	■	■			
Eschscholzia lemmonii ssp. *kernensis*	Tejon poppy	ESLEK	-	FSCC	-	CRPR 1B.1		■	■	■					
Fritillaria brandegeei	Greenhorn fritillary	FRBR	-	FSCC	-	CRPR 1B.3			■	■	■				
Fritillaria striata	Striped adobe-lily	FRST	-	FSCC	CT	CRPR 1B.1	■	■	■						
Hesperocyparis nevadensis	Piute cypress	HENE2	-	FSCC	-	CRPR 1B.2	Identifiable year-round								
Heterotheca shevockii	Shevock's golden aster	HESH4	-	FSCC	-	CRPR 1B.3							■	■	■
Monardella linoides ssp. *anemonoides*	Southern Sierra monardella	MOLIA	-	-	-	CRPR 1B.3					■	■	■		
Navarretia setiloba	Piute Mountains navarretia	NASE2	-	-	-	CRPR 1B.1			■	■	■	■			
Opuntia treleasei (= O. basilaris var. *treleasei)*	Bakersfield cactus	OPTR3	FE	-	CE	CRPR 1B.1			■	■					
Pseudobahia peirsonii	San Joaquin adobe sunburst	PSPE	FE	-	CE	CRPR 1B.1	■	■	■						
Stylocline citreolum	Oil neststraw	STCI10	-	-	-	CRPR 1B.1		■	■						

■ Blooming Period

Federal Status
FE = Federal Endangered
FT = Federal Threatened
FC = Federal Candidate

Forest Service Status
FSCC = Sequoia National Forest Species of Conservation Concern

State Status
CE = State Endangered
CT = State Threatened
CR = State Rare

California Rare Plant Rank
1B = Rare, threatened or endangered in California and elsewhere.
2B = Rare in California but more common elsewhere.
4 = Plants of limited distribution – a watchlist.
_.1 = Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
_.2 = Moderately threatened in California (20-80% occurrences threatened)
_.3 = Not very threatened in California (<20% of occurrences threatened, or no current threats known)

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TERR 2 – WILDLIFE RESOURCES
TECHNICAL STUDY PLAN

Kern River No. 1 Hydroelectric Project
FERC Project No. 1930

May 2023

TECHNICAL STUDY PLAN
TERR 2 – Wildlife Resources

POTENTIAL RESOURCE ISSUES

- Protection of special-status wildlife species and their habitats.

PROJECT NEXUS

- Project maintenance activities could disturb or result in direct loss of special-status wildlife species or their habitat.

RELEVANT INFORMATION

The following information is available regarding wildlife resources in the vicinity of the Project. See Section 3.6, Botanical and Wildlife Resources Pre-Application Document (PAD) for a summary of relevant information:

- Wildlife habitats and common wildlife species present within 0.25 mile of the Federal Energy Regulatory Commission (FERC) Project boundary based on a crosswalk from the United States Forest Service's (Forest Service) Classification and Assessment with Landsat of Visible Ecological Groupings (CALVEG) alliances (Forest Service 2014) to California Department of Fish and Wildlife's (CDFW) California Wildlife Habitat Relationship (CWHR) System wildlife habitats (CDFW 2022a).

- Known occurrences of special-status wildlife in the vicinity of the Project based on the CDFW California Natural Diversity Database (CNDDB) (CDFW 2022b); CDFW list of species considered California Fully Protected under the California Fish and Game Code (CDFW 2022c); Sequoia National Forest (SQF) Species of Conservation Concern List (Forest Service 2019); and Forest Service Natural Resource Information System (NRIS) (Forest Service 2022); and the USFWS Information for Planning and Consultation (IPaC) website (USFWS 2022a).

- Special-status wildlife species potentially occurring within CWHR designations based on *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988).

- Proposed Critical Habitat present in the Project area for the Kern Canyon slender salamander and relictual slender salamander (USFWS 2022b).

- Location of Project facilities, including power lines.

- Supplemental information (e.g., habitat descriptions and special-status species occurrences) obtained from a review of the following Project-specific sources:

    - The Final Environmental Assessment for Kern River No. 1 Hydroelectric Project – FERC No. 1930-014, California (Environmental Assessment) (FERC and Forest Service 1998).

- The Application for New License, Kern River No. 1 Hydroelectric Project – FERC Project No. 1930, Kern County, California (License Application) (SCE 1994).

POTENTIAL INFORMATION GAPS

- Updated information on wildlife habitats within 0.25 mile of the FERC Project boundary.
- Updated information on wildlife use within the FERC Project boundary, and Project access trails located outside the FERC Project boundary.
- Data on Project powerline pole configurations to determine if they are consistent with guidelines for avoidance of avian mortalities.
- Information on special-status salamander distribution and use of the FERC Project boundary and Project access trails located outside the FERC Project boundary.
- Information on the location of bat roosts in Project facilities.

STUDY OBJECTIVES

- Identify special-status wildlife species potentially occurring in CWHR habitats documented as part of the TERR 1 – Botanical Resources Technical Study Plan (TSP).
- Identify potential habitat for special-status salamanders within the FERC Project boundary (excluding underground Project features) and 10 feet on either side of Project access trails located outside the FERC Project boundary and conduct visual encounter surveys (VES) to document their presence.
- Determine whether Project powerline pole configurations are consistent with guidelines for the avoidance of avian mortalities.
- Document use of Project facilities by special-status bats during reproduction and other seasonal use.

EXTENT OF STUDY AREA

SPECIAL-STATUS WILDLIFE SURVEYS

Wildlife Habitats

- For identification of special-status wildlife species potentially occurring in CWHR habitats, the study area is 0.25 mile around Project facilities (see Table TERR 2-1).

Wildlife Reconnaissance Surveys

- For wildlife reconnaissance surveys, the study area is the FERC Project boundary (excluding underground Project features) and 10 feet on either side of Project access trails located outside the FERC Project boundary.

Evaluation of Project Powerline Pole Configurations

- For the evaluation of consistency with guidelines for the avoidance of avian mortalities, the study area is Project powerlines (see Table TERR 2-1).

SPECIAL-STATUS SALAMANDER SURVEYS

- For special-status salamanders (Kern Canyon slender salamander, relictual slender salamander, and yellow-blotched salamander), the habitat assessment study area is the FERC Project boundary (excluding underground Project features) and 10 feet on either side of Project access trails located outside the FERC Project boundary. The VES study area is potential habitat identified during implementation of the habitat assessment. If habitats extend outside the habitat assessment study area, VES will include:
  - Potential habitat up to 100 feet outside the FERC Project boundary.
  - Potential habitat up to 100 feet outside of Project access trails located outside of the FERC Project boundary.

SPECIAL-STATUS BAT ROOST AND SEASONAL USE SURVEYS

- For special-status bat facility assessment, the study area is Project facilities (Table TERR 2-1).
- For special-status bat reproductive and seasonal use surveys, the study area is the Project facilities potentially supporting bats.

PRIVATE PROPERTY

- For surveys at or around Project facilities that are located outside of the FERC Project Boundary or on private property, SCE will take the following steps to obtain approval prior to implementation of studies:
  - Provide notification to landowner of Project relicensing and request authorization to enter property to conduct surveys.
  - If authorization is obtained, SCE will complete surveys as described in this TSP.
  - If authorization is not obtained, SCE will not complete surveys at these locations.

STUDY APPROACH

For the purposes of this study, a special-status wildlife species is defined as any animal species that is granted status by a federal or state agency. Federally listed species granted status by the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act (ESA) include Federal Threatened (FT), Federal Endangered (FE), Federal Proposed Threatened or Endangered (FPT, FPE), candidates for listing (FC), or proposed for delisting (FPD). Also included are those species listed by USFWS as Birds of Conservation Concern (BCC) which include "species, subspecies, and populations of all migratory nongame birds that, without additional conservation action, are likely to become candidates for listing under the ESA of 1973" (USFWS 2021).

Special-status wildlife designated by the SQF as Forest Species of Conservation Concern (FSCC) are also included (Forest Service 2019).

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

The study approach for special-status wildlife surveys; evaluation of Project powerline pole configurations; special-status salamander surveys; and special-status bat surveys is provided below.

SPECIAL-STATUS WILDLIFE SURVEYS

- Update Table 3.6-1 included in Section 3.6, Botanical and Wildlife Resources of the PAD, based on CALVEG vegetation alliances identified as part of the TERR 1 – Botanical Resources TSP and cross referenced with CWHR System wildlife habitats, using the CALVEG–CWHR Crosswalk (Forest Service 2014). This crosswalk was developed by the Forest Service and the CDFW as a way to determine which wildlife habitats are likely to be present based on existing vegetation alliances and forest structural characteristics.

- Develop an updated Geographic Information System (GIS) map of wildlife habitats within the study area and overlay information on Project facilities.

- Identify and map known occurrences of special-status wildlife species within 0.25 mile of Project facilities based on agency consultation and a review of existing information. Preliminary information is presented in Section 3.6, Botanical and Wildlife Resources of the PAD.

- Identify special-status wildlife species potentially occurring within CWHR designations based on A Guide to Wildlife Habitats of California (Mayer and Laudenslayer 1988). Preliminary information is presented Section 3.6, Botanical and Wildlife Resources of the PAD.

- Conduct wildlife reconnaissance surveys to characterize wildlife use.

- Surveys will be conducted during the avian nesting season (March – June) to allow for identification of nests within the study area.
- Survey methods will include both zigzag and linear transects depending on the survey area and terrain. Zigzag transects cover more ground and work well in larger habitat areas (e.g., mixed conifer forest) while linear transects work well in narrow habitats (e.g., riparian).
- Species will be recorded as present if they are observed, species-specific vocalizations are heard, or if diagnostic field signs are found (e.g., scat, tracks, pellets).
- Wildlife taxonomy will be based on California's Wildlife, Volumes I, II, and III (Zeiner et al. 1988-1990).
- For each special-status species observed, a California Native Species Field Survey Form field survey form will be completed and submitted to the California Natural Diversity Database (CNDDB).
- Provide an electronic database (Excel spreadsheet) of special-status wildlife observed to resource agencies and interested stakeholders.

- Record incidental observations of any special-status species during all field surveys completed in support of the relicensing of the Kern River No. 1 Hydroelectric Project.

EVALUATION OF PROJECT POWERLINE POLE CONFIGURATIONS

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

SPECIAL-STATUS SALAMANDER SURVEY

Habitat Assessment

- Consult with resource agencies and recognized experts to obtain additional information on known occurrences and habitat (including microsites) for special-status salamanders in the study area. Preliminary information is presented in Section 3.6, Botanical and Wildlife Resources of the PAD.

- Prepare preliminary maps of potential habitat within the study area (i.e., physical and biological features necessary for the conservation of the slender salamanders) using information from USFWS, Sequoia National Forest, and recognized experts with experience identifying special-status salamander microsites (e.g., microhabitats) in the Kern River Canyon. Sources include the following:
    - Recent aerial photographs of the study area.
    - Twelve-Month Finding for the Kern Plateau Salamander; Threatened Species Status with Section 4(d) Rule for the Kern Canyon Slender Salamander and Endangered Species Status for the Relictual Slender Salamander; Designation of Critical Habitat; Proposed Rule. (Federal Register, Vol. 87, No. 200, Pages 63150–63199) (USFWS 2022).
    - Rationales for Animal Species Considered for Species of Conservation Concern, Sequoia National Forest (Forest Service 2019).
    - Elizabeth Jockusch; recognized slender salamander expert with experience in surveying and identification of microsites within the Kern River Canyon (E. Jockusch, pers. comm, 2023).
- Habitat (including microsite) requirements for each special-status salamander are summarized below:
    - Kern Canyon slender salamander:
        - Wet stream and seep margins within rocky narrow canyons supporting chapparal shrubs, sycamore, California buckeye, willow, Fremont cottonwood, interior live oak, canyon live oak, and foothill pine. Historically, the Kern Canyon slender salamander was found on exposed hillsides and open grasslands, but the primary habitat of the species is now limited to riparian habitats or other moist microsites (Lannoo 2005 and Jockusch 2021, pers. comm. *in* USFWS 2022b).
        - In addition, species experts indicate this species also occurs on rocky hillsides littered with talus and scree; these sites may be unassuming (i.e., moisture-associated vegetation is not visible except at very close range) and only slightly more mesic than the surrounding habitat (Jockusch et al. 2022).
    - Relictual slender salamander:
        - Seeps, perennial springs, and streams in rocky habitat supporting limited tree cover of oaks, buckeyes, sycamores, pines, and firs (USFWS 2022).
        - This species is tightly associated with aquatic habitats compared to other slender salamanders, and is found in areas of reduced flow, such as side

seeps and relatively flat terrain, but in contact with water or fully saturated soil (Jockusch et al. 2022).

- Yellow-blotched salamander:
  - Coniferous forest, deciduous forest, oak woodland, and chaparral under logs, bark, moss, leaf litter, talus, and animal burrows, often near streams and creeks (Forest Service 2019).

- Develop preliminary GIS map of potential habitat and overlay information on Project facilities plus a protective buffer.

- Ground-truth preliminary GIS map and document any microsites not identified through existing information review, and agency and expert consultation.

- Biologists will follow decontamination guidelines consistent with the *Declining Amphibian Task Force Fieldwork Code of Practice* (Declining Amphibian Task Force 2005).

- Prepare a GIS map of special-status salamander habitat in the study area.

Visual Encounter Survey

- A VES will be conducted in special-status salamander habitat mapped as part of the habitat assessment.

- Pedestrian VES will be seasonally timed to maximize the potential for observing special-status slender salamanders based on the timeframes described in USFWS (2022) and as refined based on consultation with recognized salamander experts in the Kern River Canyon (E. Jockusch, pers. comm., 2023).
  - Surveys will be conducted within 2 days following a rain event when slender salamanders are generally easier to observe, and habitats are damp. In the lower Kern River Canyon this typically occurs in February and March.

- Surveys will generally follow the methods described in Grover (2006) and may include lifting, overturning, and carefully replacing objects such as rocks, boards, and debris; carefully searching leaf litter and under loose tree bark; and inspecting burrows and rock crevices. Aquatic habitat will be surveyed by slowly walking the water's edge, scanning for salamanders in water, and overturning cover objects in the water. Rock outcrops will be searched with spotlights and shining lights into suitable crevices. Biologists will take care to minimize disturbance to suitable habitat and animals during field surveys.
  - If special-status salamanders are observed, the individual or populations will be documented and recorded with a global positioning system (GPS) unit, photographed, and a photograph of the habitat where the individual/population is observed will be obtained.

    - Slender salamanders will be identified to species in the field to the extent possible based on Jockusch et al. (2012), Stebbins (2003), and other references; individual salamanders will not be collected for later identification.

  - Special-status reptiles such as legless lizards, night lizards, and snakes may also be found using these methods, though the survey will target special-status salamanders. If any special-status reptile is observed, information listed above will also be collected for each observation.

- Biologists will follow decontamination guidelines consistent with the *Declining Amphibian Task Force Fieldwork Code of Practice* (Declining Amphibian Task Force 2005).

- For all special-status salamanders or reptiles observed, a California Native Species Field Survey Form will be completed and submitted to the CNDDB.

- A table and map will be developed summarizing the results of surveys and location of any special-status species observed.

SPECIAL-STATUS BAT ROOST AND SEASONAL USE SURVEYS

Facility Assessment

- Conduct an initial desktop assessment of Project facilities to determine each facility's potential to support bat roosts. Information to be reviewed includes:

  - Existing photographs of Project facilities.

  - Descriptions of Project facilities included in Section 2.0 of the PAD.

- Conduct a preliminary visual field assessment of Project facilities, during wildlife reconnaissance surveys, to determine the potential to support bat roosts.

- Develop a list of Project facilities potentially supporting bat roosts (by facility type).

Reproductive Survey

Reproductive surveys include roost surveys, guano DNA sampling, and acoustic sampling. Each of these surveys is described below.

Roost Surveys

- Conduct a visual roost survey at Project facilities identified as potentially supporting roosting bats. The assessment will be conducted June–August during the maternal roosting period when colonies may still be present, but after the critical sensitive period (i.e., parturition and early nursing period).

- Facilities will be closely inspected for bat roost signs (e.g., skeletons, dead young, placentas, guano deposits, urine staining, and culled insect parts) and/or live bats. If bats are observed, the species, roost type (day roost/night roost/maternal roost), and number of adults and/or juveniles will be determined by a qualified biologist. Any location where bat species cannot be determined from visual evaluations will be monitored at emergence time using acoustic equipment.

Guano DNA Sampling

- DNA samples will be collected at roost sites where fresh guano is available and bat species could not be determined visually during the roost survey.

- The samples will be stored in a stabilizing solution to prevent DNA degradation and submitted to the Genidaqs SM Molecular Biology and Genetics Lab (Cramer Fish Sciences) for DNA sequencing and species identification.

- DNA sequences will be compared to species-specific genetic markers developed by Walker et al. 2016 and further verified by comparison to samples at the National Center for Biotechnology Information DNA sequence database.

- A table and map will be developed identifying the location of guano DNA sampling and sequencing results (i.e., species present), if applicable.

Acoustic Sampling

- Conduct acoustic sampling (i.e., sampling of echolocation calls) during the reproductive season at potential flight corridors between potential roosting habitat and foraging habitat, and any additional locations where bats were detected during roost surveys but were not identified to species.

- Acoustic sampling will be conducted using full-spectrum Wildlife Acoustics SM4BAT-FS detector units (acoustic units). Sonogram files will be processed using Kaleidoscope Pro 4.5.5 (Wildlife Acoustics), which auto-classifies each sonogram into tentative species determinations with 70 to 80 percent accuracy. The Anabat Insight software program will then be used to further classify files and reduce the amount of time required to manually inspect sonograms. Finally, a qualified bat biologist will review the auto-classified sonograms to confirm species designations.

- The acoustic units will be operated at the selected sites for 5 nights from sunset until sunrise between June and August.

Seasonal Use Surveys

- Conduct an additional survey in October at those locations where active roosts were identified and/or within flight corridors between roost sites and potential foraging habitat to determine seasonal patterns of use. This survey will entail acoustic sampling as described above.

- Upon completion of the reproductive and seasonal use surveys, SCE will complete the following deliverables:
  - Develop a GIS map of special-status bat roosts and overlay information on Project facilities.
  - For all special-status bats observed, a California Native Species Field Survey Form will be completed and submitted to the CNDDB.
  - Provide an electronic database (Excel spreadsheet) of special-status bat survey data to resource agencies and interested stakeholders.

REPORTING

- Study methods and results will be documented in a TERR 2 – Wildlife Resources Technical Study Report (TSR). The TSR will include summary tables and maps, as appropriate. Stakeholder review and comment period for the TSR is identified below in the Schedule.
- Upon request, data will be provided to resource agencies and interested stakeholders in an Excel spreadsheet (electronic format).

SCHEDULE

This is a one-year study to be conducted during the first year of the study period with the study results reported in the Initial Study Report (ISR).

Date	Activity
April 2024–June 2024	Conduct wildlife reconnaissance surveys (during the avian nesting season)
June 2024– August 2024	Conduct special-status bat reproductive surveys
October 2024	Conduct special-status bat seasonal use surveys
January 2025	Conduct special-status salamander habitat assessment
February 2025–March 2025	Conduct special-status salamander VES (following rain events)
November 2024–May 2025	Analyze data and prepare draft technical memo
May 2025–August 2025	Stakeholders review and provide comments on draft technical memo (90 days)
September 2025–October 2025	Resolve comments and prepare final technical memo
December 2025	Distribute final technical memo in Draft License Application

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TABLES

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Table TERR 2-1. Kern River No. 1 Hydroelectric Project – Project Facilities

Diversion Dam
Democrat Dam
Impoundment
Democrat Dam Impoundment
Water Conveyance System
Sandbox
Tunnels, Flumes, Conduits, and Adits
Forebay
Forebay Overflow Spillway
Penstock
Powerhouse and Switchyard
Kern River No. 1 Powerhouse and Switchyard
Access Roads
Willow Spring Creek Road (also referred to as Democrat Dam Road)
Powerline Road
Flume No. 1 Road
Dougherty Creek Road
Stark Creek Road
Forebay Operations Area Road
Lower Powerhouse Road
Upper Powerhouse Road
Access Trails
Democrat Gage Trail
Conduit No. 3 Trail
Cow Flat Creek Trail
Steel Flume Trail
Lucas Creek Trail
Dougherty Creek Trail
Stark Creek Trail
Adit 17 & 18 Trail
Overflow Spillway Trail
Skip Hoist / Forebay Trail
Communication and Power Lines
Intake Gatehouse to Flume No. 1 Powerline
Powerhouse to Forebay Communication / Powerline

Gages and Stilling Wells
Kern River near Democrat Springs (USGS Gage No. 11192500 / SCE Gage No. 409)
Kern River No. 1 Conduit near Democrat Springs (USGS Gage No. 11192000 / SCE Gage No. 410)
Kern River near Democrat Springs (USGS Gage No. 11192501; calculated 11192500+11192000)
Stilling Well No. 1
Stilling Well No. 2
Ancillary and Support Facilities
Democrat Dam Area
Buoy Line in Democrat Dam Impoundment
Democrat Dam Intake Gatehouse
Democrat Dam Drainage Tower
Democrat Dam Drainage Tunnel
Democrat Dam Drainage Tunnel Outlet
Democrat Dam Access Walkway
Sandbox Drainage Channel
Gaging Cableway
Water Conveyance
Flume No. 6 Access Platform
Forebay Operations Area
Old Admin Building
Garage No. 1
Garage No. 2
Old Ice House
Water Tank
Aerial Cable Tower
Skip Hoist House and Lower Landing
Skip Hoist Cables and Cart
Skip Hoist Upper Landing
Skip Hoist Upper Landing to Forebay Catwalk
Communication Site
Forebay Operations Area Perimeter Fence
Forebay Perimeter Fence
Powerhouse Area
Machine Shop
Office / Lunchroom
Restroom
Powerhouse and Switchyard Perimeter Fence