

BIO-1 FOOTHILL YELLOW LEGGED FROG INTERIM TECHNICAL MEMORANDUM

**KERN RIVER No. 3 HYDROELECTRIC PROJECT
*FERC PROJECT No. 2290***

PREPARED FOR:



October 2023

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LIST OF ACRONYMS AND ABBREVIATIONS

FERC	Federal Energy Regulatory Commission
KR3	Kern River No. 3
NFKR	North Fork Kern River
Project	Kern River No. 3 Hydroelectric Project (FERC Project No. 2290)
RM	River Mile
SCE	Southern California Edison
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VES	Visual Encounter Survey

1.0 INTRODUCTION

This interim Technical Memorandum provides the methods and findings of field surveys associated with the *BIO-1 Foothill Yellow-legged Frog Study Plan* in support of Southern California Edison's (SCE) Kern River No. 3 (KR3) Hydroelectric Project (Project) relicensing, Federal Energy Regulatory Commission (FERC) Project No. 2290. The BIO-1 Study Plan was included in SCE's Revised Study Plan submitted on July 1, 2022 (SCE, 2022). In the October 12, 2022, Study Plan Determination (FERC, 2022), FERC approved the BIO-1 Study Plan with modifications. Specifically, FERC stipulated that SCE conduct one additional field survey, for a total of two field surveys. One survey was conducted in late spring / early summer to observe egg oviposition sites, and the other survey will be conducted in late summer prior to larvae (tadpole) metamorphosis. FERC also stipulated that SCE consult with the U.S. Fish and Wildlife Service (USFWS) and U.S. Forest Service (USFS) in selecting appropriate survey sites.

Biologists conducted a reconnaissance and site-selection field visit on August 29 to 31, 2022. The first field survey was conducted from June 20 to 22, 2023, the results of which are discussed below. The second field survey is scheduled for September 2023, and the results will be included with the License Application and Updated Study Report.

2.0 STUDY GOALS AND OBJECTIVES

The objectives of the study, as outlined in the BIO-1 Study Plan (SCE, 2022), include:

- Evaluate habitat suitability for all foothill yellow-legged frog (*Rana boylei*) life stages (i.e., egg masses, larvae, subadults, and adults) in the study area; and
- Determine whether any life stage of foothill yellow-legged frog is present within the study area.

Both study objectives are associated with in-progress tasks and will be addressed in the final Technical Memorandum.

3.0 STUDY AREA AND STUDY SITES

The study area includes lands and waters within the FERC Project Boundary in addition to areas adjacent to, or in the proximity of, the FERC Project Boundary along the North Fork Kern River (NFKR) and Salmon, Corral, and Cannel Creeks.

SCE identified eight survey sites, which extend up to 400 meters at each location.

- NFKR upstream of Fairview Dam:
 - Brush Creek Confluence at Brush Creek Campground (River Mile [RM] 20.4)

- Fairview Dam Bypass Reach:¹
 - Fairview Campground (RM 16.2)
 - Salmon Creek confluence (RM 13.2)
 - Headquarters Campground (RM 5.0)
- NFKR between KR3 Powerhouse and Kernville:
 - Below the Kern River No. 3 Powerhouse (RM 2.9)
- Tributaries to the NFKR:
 - Salmon Creek
 - Corral Creek
 - Cannell Creek

A map of specific survey sites is provided in Figure 3-1.

¹ The Fairview Dam Bypass Reach is defined as the approximately 16-mile bypass reach of the NFKR between Fairview Dam and the KR3 Powerhouse tailrace.



Figure 3-1. Foothill Yellow-legged Frog Survey Sites.

4.0 METHODS

Study implementation followed the methods described in SCE's Revised Study Plan Package (SCE, 2022), as amended by FERC in its Study Plan Determination (FERC, 2022), with the exceptions noted below.

Study Plan Variances

During the June 20 to 22, 2023, field surveys, the NFKR and Salmon Creek sites were not surveyed because high flows created unsafe wading conditions.

Study Plan Modification

Visual encounter surveys at the six sampling sites in the NFKR and Salmon Creek will be resurveyed in spring/early summer 2024.

4.1. PHASE I: IDENTIFICATION OF SUITABLE HABITAT AND SELECTION OF SURVEY SITES

Survey sites were selected using results from a desktop analysis and information gathered during a reconnaissance field visit. Prior to the reconnaissance visit, biologists reviewed available data sources such as online databases including California Natural Diversity Database, iNaturalist, and Global Biodiversity Information; aerial satellite imagery; and drone video to aid in identifying areas of potential habitat for the foothill yellow-legged frog. On August 29 to 31, 2022, biologists conducted a reconnaissance field visit with a USFS representative to identify suitable foothill yellow-legged frog habitat and select study sites that would provide reasonable coverage of representative highly or moderately suitable habitat. Suitability was characterized based on the following categories.

- **High:** areas containing suitable habitat for all life stages, especially breeding. These stream segments would provide protection for egg mass deposition and larval maturation (e.g., wide channel areas with edgewater and backwater areas sheltered from flow; banks with shallow slopes).
- **Moderate:** areas containing suitable habitat for most life stages, although areas may lack potential habitat for one or more life stages (e.g., some habitat may be exposed to the main flow or may include moderately steep or incised banks).
- **Low:** areas containing little or no suitable habitat for breeding or larval development and minimal refugia for post-metamorphic life stages (i.e., young-of-year, juveniles, and adults). Habitat may function as a dispersal corridor or overwintering habitat.
- **Not suitable:** areas containing no potentially suitable habitat for any life stage.

4.2. PHASE II: CONDUCT FIELD SURVEYS

Two biologists working in tandem conducted Visual Encounter Surveys (VESs). Surveyors waded into shallow-water habitats or walked along the shoreline of shallow-

water habitats scanning ahead and searching stream banks, back-channel areas, and instream habitats for egg masses, larvae, and post-metamorphic frog life stages (juveniles and adults) on both sides of the river, where possible.

Any other amphibian and aquatic reptile species observed during the surveys were recorded. Each species' detection was recorded by life stage along with associated habitat data. Surveyors also noted any incidental observations of non-native invasive aquatic species and other key species of interest.

5.0 DATA SUMMARY

5.1. PHASE I: IDENTIFICATION OF SUITABLE HABITAT AND SELECTION OF SURVEY SITES

Because the reconnaissance visit was conducted during extreme drought conditions, study sites were reassessed for habitat suitability during the early season 2023 field survey. Table 5.2-1 includes habitat rankings and descriptions for study sites surveyed during the June 2023 field effort.

5.2. PHASE II: CONDUCT FIELD SURVEYS

Early season VESs in 2023 occurred in late June to align with the descending hydrograph and oviposition timing. VESs were conducted on June 22 to 22, 2023, at Cannell and Corral Creeks.

Surveyors did not observe foothill yellow-legged frogs during the June 2023 field surveys. Table 5.2-1 presents a summary of all other observed herpetofaunal species. Figure 5.2-1 shows a subset of incidental observations.

Table 5.2-1. Foothill Yellow-legged Frog Visual Encounter Survey and Habitat Characterization Results, June 2023

Site	RABO Observed	Habitat Quality	High-Quality Breeding Habitat Present	Moderate-Quality Breeding Habitat Present	Average Riparian Canopy Cover	Reach Description and Habitat Notes	Fish Observed	Other Species Observed
Corral Creek at Diversion Dam	No	Moderate	0%	0%	26–50%	Overgrown vegetation and high canopy cover. Mid-channel and side-channel habitat with limited or poor breeding locations. Potentially good overwintering habitat depending on flow conditions.	No	ELMU
Corral Creek at NFKR Confluence	No	Moderate	0%	0%	51–75%	Few sunny areas with numerous basking rocks. Limited or poor breeding habitat. Potentially good overwintering habitat depending on flow conditions.	Yes	None
Cannell Creek at confluence with spillway channel	No	High	1–20%	21–40%	1–25%	Numerous backwater pools and channels with areas of high-quality breeding habitat. Small unembedded boulders present for ovipositing. Basking habitat present, especially in the upper section of reach.	No	PSSI, ACMA
Cannell Creek at NFKR Confluence	No	High	1–20%	21–40%	1–25%	Areas of high-quality breeding habitat with slow-moving water and small-sized unembedded boulders. Open canopy with hanging vegetation/undercut banks that provides protection and good basking habitat.	Yes	None

ACMA = *Actinemys marmorata* (western pond turtle); ELMU = *Elgaria multicarinata* (southern alligator lizard); NFKR= North Fork Kern River; PSSI = *Pseudacris sierra* (Sierran treefrog); RABO = *Rana boylei* (foothill yellow-legged frog)



Photo Credit: J. Woodall, Stillwater Sciences; photos take during the June 2023 field surveys

Figure 5.2-1. Incidental Herpetofauna Observed: Southern Alligator Lizard (*Elgaria multicarinata*) (top) and Western Pond Turtle (*Actinemys marmorata*) (bottom).

6.0 STUDY SPECIFIC CONSULTATION

- Biologists consulted with the USFWS and USFS regarding survey timing, study design, and study site selection.
 - On August 24, 2022, USFS, USFWS, and California Department of Fish and Wildlife were notified regarding the site selection field reconnaissance site visit. From August 29 to 31, 2022, USFS participated in the field reconnaissance effort.
 - On July 31, 2023, USFWS was notified regarding foothill yellow-legged frog survey schedule timing. USFWS agreed that given the substantial water year, the updated survey timing would be suitable for the detection of foothill yellow-legged frog larva.

7.0 OUTSTANDING STUDY PLAN ELEMENTS

The outstanding Study Plan elements include the following:

- Conduct a late summer season field VES and collect environmental DNA samples at all study sites.
- Conduct a late spring / early summer field VES at the five NFKR sites and along Salmon Creek:
 - Brush Creek Confluence at Brush Creek Campground (River Mile [RM] 20.4)
 - Fairview Campground (RM 16.2)
 - Salmon Creek confluence (RM 13.2)
 - Headquarters Campground (RM 5.0)
 - Below the Kern River No. 3 Powerhouse (RM 2.9)
 - Salmon Creek
- Analyze results from the environmental DNA samples and VESs.

The anticipated schedule to complete these remaining tasks is identified in Table 7-1.

Table 7-1. Schedule

Date	Activity
September 2023	Conduct a late summer season VES and collect environmental DNA samples.
Spring/Summer 2024	Conduct a late spring / early summer VES at NFKR sites and along Salmon Creek.
Summer 2024	Analyze data and prepare final Technical Memorandum.

NFKR = North Fork Kern River; VES = Visual Encounter Survey

8.0 REFERENCES

FERC (Federal Energy Regulatory Commission). 2022. *Study Plan Determination for the Kern River No. 3 Hydroelectric Project*. Accession No. 20221012-3024. October 12.

SCE (Southern California Edison). 2022. *Kern River No. 3 Hydroelectric Project, Revised Study Plan*. Filed with FERC on July 1. Accessed: August 2023. Retrieved from: [sce.com/sites/default/files/custom-files/Webfiles/Revised Study Plan KR3 20220701.pdf](https://sce.com/sites/default/files/custom-files/Webfiles/Revised_Study_Plan_KR3_20220701.pdf)

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