



**SMUD**

SACRAMENTO MUNICIPAL UTILITY DISTRICT

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**SACRAMENTO MUNICIPAL UTILITY DISTRICT  
UPPER AMERICAN RIVER PROJECT**

**NEW SLAB CREEK POWERHOUSE PROJECT  
DRAFT BAT STUDY PLAN**

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## 1.0 INTRODUCTION

### 1.1 Background

SMUD is proposing to decommission the existing Slab Creek Powerhouse at the base of Slab Creek Dam and construct a new powerhouse ¼-mile downstream of the dam on SMUD-owned land. This New Slab Creek Powerhouse Project (Project) is associated with the Amendment of License for the Upper American River Project (FERC Project No. P-2101). The Initial Consultation Document (ICD) for the Project identifies the potential for special-status bat species to roost within rock crevices in the canyon walls within the vicinity of the proposed Project. Results of the bat study will assist in evaluating the potential for the Project to impact special-status bat species, either through habitat loss/modification or due to disturbance resulting from Project construction activities or operations.

### 1.2 Study Objectives

The goal of the bat study is to address questions raised about bat use of the area and the potential for disturbance to bat species during Project construction and operations, as described in the comment letter on the ICD produced by the Resource Agencies for the Project, dated February 13, 2012. The comment letter states:

*“The ICD states that there is suitable roosting habitat for bat species within the crevices of the SFAR canyon walls (section 5.5.2) in the vicinity of the Project. The Resource Agencies raise concern for acoustic disturbances to bat species during the 1.5 years of construction and for potential long-term disturbance and habitat loss as a result of the Project facilities and operation. Disturbances resulting from acoustic vibration and noise could potentially affect occupied bat sites in the immediate vicinity of Project activities as well as 0.5 miles upstream and downstream due to bedrock vibrations. A pre-construction survey of bat habitat value should be conducted immediately cross-channel from the construction site (north bank) and 0.5 mile upstream and downstream of the adit portal (along the south bank). This bat survey should include:*

- *Daytime observations and quantification of suitable roosting habitat.*
- *Sunset-night time assessments of presence/absence of individuals in the same SFAR stream segment, using acoustic devices, mist netting, and other standard techniques.*

*The Resource Agencies shall be consulted in survey methodologies and on appropriate protection and mitigation measures.”*

The objectives of this study are to gather information on the following within the Study Area:

1. an estimated amount and type of suitable roosting habitat present,
2. the presence/absence of bat species, and
3. an indication of the type of any roosts (i.e., day roost, night roost, or maternity roost).

This Study Plan describes general survey methodologies and briefly outlines an approach to avoid, minimize, and/or mitigate for potential impacts if special-status bat species are found.

### 1.3 Study Area

The Study Area will include the survey area from the Terrestrial Resources Evaluation where suitable bat habitat was identified (Stillwater Sciences 2011), including the area surrounding the existing Slab Creek/White Rock facilities at Slab Creek Dam and area surrounding the construction footprint of the powerhouse adjacent to White Rock Adit 3. The Study Area will also include the area immediately cross-channel from the construction site (north bank), and 0.5 mile upstream and 0.5 mile downstream of the adit portal (along the south bank). While the focus of the study will be the rocky canyon walls in the Project vicinity, existing and proposed features in the Study Area would also be inspected. The inside of White Rock Adit 3 will be excluded from the Study Area, since bat surveys conducted as part of relicensing studies in 2003 resulted in no bat detections; this conclusion was confirmed by Stillwater Sciences staff in 2010 during the Terrestrial Resources Evaluation, when no signs of bat use in the adit were evident.

### 1.4 Special-Status Bat Species

Table 1 lists the three special-status bat species with potential to occur in the Project vicinity, their status, a brief description of their habitat and life history notes, and preferred survey methodology for each.

**Table 1. Special-status bat species that potentially to occur in the Project-affected area.**

| <b>Common name<br/>(Scientific name)</b>                     | <b>Status:<br/>Federal/State/USFS</b>                 | <b>Habitat and Life History Notes</b>  | <b>Preferred Survey Methods<sup>1</sup></b>                 |
|--|---|--|---|
| Pallid bat<br>( <i>Antrozous pallidus</i> )                  | –/Species of Special Concern/Forest Service Sensitive | Crevice-roosting. Roosts in rock crevices, live or dead tree hollows, mines, caves, and a variety of vacant and occupied structures or buildings. Feeds low to the ground in a variety of open habitats. Colony size 35–300. Often gives birth to twins; one litter per year.  | Netting<br>Acoustic (passive)<br>Acoustic + Visual (active) |
| Spotted bat<br>( <i>Euderma maculatum</i> )                  | –/Species of Special Concern/–                        | Crevice-roosting. Highly associated with cliffs and rock crevices/features (often steep slopes or rock outcrops associated with river drainages), although may occasionally use caves and buildings. Inhabits arid deserts, grasslands, and mixed coniferous forests. Non-colonial. Single young per adult female per year.          | Acoustic (passive)<br>Acoustic + Visual (active)            |
| Western mastiff bat<br>( <i>Eumopsperotis californicus</i> ) | –/Species of Special Concern/Forest Service Sensitive | Crevice-roosting. Primarily a cliff-dwelling species. Found in rock features, often steep slopes or rock outcrops associated with river drainages, under slabs of exfoliating granite, or in basaltic columns. May be found in crevices in large boulders and buildings. Colony size 35–200. Single young per adult female per year. | Acoustic (passive)<br>Acoustic + Visual (active)            |

<sup>1</sup>Recommended survey methodology based on those described as “preferred/highly effective” or “effective in most habitats” on the Western Bat Working Group website ([http://www.wbwg.org/speciesinfo/survey\\_matrix/recommended\\_survey\\_methods.pdf](http://www.wbwg.org/speciesinfo/survey_matrix/recommended_survey_methods.pdf)).

## 2.0 METHODS

A survey will be conducted during the summer and methods will include: (1) a roost assessment to evaluate the amount and suitability of bat roosting habitats in the Study Area; and (2) focused surveys for bat species using standard survey protocols described below, as appropriate for the life history of the species that may occur in the Project area. Surveys will be performed by a qualified biologist. A summary of the proposed methods and how they will support the study objectives are provided in Table 2.

**Table 2. Proposed methods designed to answer study objectives.**

| Method  | Study Objective   |
|---|---|
| Day-time visual observation of potential roosting habitat                           | #1 – Estimated amount of suitable roosting habitat<br>#3 – Indication of type of roost  |
| Night-time visual and acoustic monitoring within or near potential roosting habitat | #1 – Estimated amount of suitable roosting habitat<br>#2 – Presence/absence of bat species<br>#3 – Indication of type of roost  |
| Acoustic monitoring along the South Fork American River                             | #2 – Presence/absence of bat species  |
| Netting in suitable flyways, foraging areas, and/or potential roost sites           | #2 – Presence/absence of bat species<br>#3 – Indication of type of roost (capture of a lactating, post-lactating, or mature female pallid bat would indicate a maternity roost) |

### 2.1 Roost Habitat Assessment

A reconnaissance survey of the Study Area will be conducted during daylight hours to identify potential roosting habitat and sites. To the extent feasible, structures will be surveyed internally and externally to identify evidence of bat use (e.g., bats, guano, urine stains) and assess habitat suitability.

### 2.2 Focused Surveys

Because of the differences among species in roost and foraging site preferences, vulnerability to net or trap capture, and both intensity and distinctiveness of their echolocation calls, bat community field surveys typically include several complementary techniques: visual inspection of roost surveys at facilities, net and/or trap capture stations, and/or acoustic monitoring. A combination of both passive acoustic monitoring (i.e., placing an acoustic detector at a fixed point) and active acoustic monitoring (i.e., pointing the microphone of a hand-held acoustic detector towards the area where a call is best detected, often combined with spotlighting a bat to look at its shape, coloration, and flight pattern) may be used to detect all three of the potentially occurring special-status species (Table 1). Acoustic monitoring will be employed at potential roost sites (identified during the roost habitat assessment) and along South Fork American River stream segment. This method offers minimally disruptive detection of bat echolocation and social calls, and permits identification of many species or acoustically similar species groups based on call characteristics. If feasible, netting will also be conducted at potential roost sites and nearby flyways or foraging areas; capturing individuals is the only way to observe the reproductive status of individuals (e.g., lactating adult females), which indicates whether a maternity colony may occur near the Study Area (although depending on the capture location, the information may not allow for positively determining whether the maternity colony occurs within the Study Area).

### **3.0 AVOIDANCE, PROTECTION, AND/OR MITIGATION MEASURES**

If the surveys indicate the presence of special-status bats, appropriate avoidance, protection, and/or mitigation measures would be developed, supported by additional analyses as necessary. Determining the nature of the use will help define such measures, the most sensitive to disturbance being a maternity roost. To the extent feasible and necessary, construction activities may be scheduled to occur outside of the breeding/maternity roosting season (May 1 through August 31). If construction activities that have the potential to disturb bats cannot be scheduled to occur outside of this work window, mitigation measures could include: (1) appropriate buffer zones from identified maternity roosts during the breeding season; (2) standards for excluding bats from identified maternity roosts, if possible; or (3) other measures developed in consultation with CDFG and USFS if maternity roosts are suspected to occur in the Study Area but their locations are unknown. Details (e.g., size and location of buffers, or specific techniques for bat exclusion) would be developed with guidance from CDFG and USFS.