# SACRAMENTO MUNICIPAL UTILITY DISTRICT UPPER AMERICAN RIVER PROJECT (FERC NO. 2101)

# BATS TECHNICAL REPORT

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#### LIST OF APPLICABLE STUDY PLANS

# **Description**

• Bat Study Plan

#### 6.2 Bat Study Plan

#### 6.2.1 <u>Pertinent Issue Questions</u>

The bat study addresses Terrestrial Resource Issue Questions:

- 7(c). "What are the relevant and known factors (limiting and beneficial) affecting special status bat populations in the Project area and how/where are these factors influenced by Project operation and maintenance?"
- 11. "Where and to what extent has the Project created or affected bat roosts and foraging habitat?"

#### 6.2.2 Background

Bats are closely associated with hydroelectric projects where many species are known to roost in dams, powerhouses, adits, and other project structures. Many bats also forage preferentially over project reservoirs and streams or on insects attracted to project lights. Bats are highly sensitive to disturbance, especially at roost sites. Operation, maintenance, and management of Project facilities may have both beneficial and adverse effects on bats in the vicinity of the UARP. The Initial Information Package for the UARP (SMUD 2001) identifies the following 17 species of bats with the potential to occur in the vicinity of the Project.

Common Name	Foraging Habitat	Roosting Habitat
Fringed myotis	Open areas and over water	Generalist: buildings, mines, caves, crevices
Little brown myotis	Open areas and over water	Caves, mines, snags
Yuma myotis	Open forest and over water	Generalist: buildings, mines, caves, crevices
California myotis	Open areas and over water	Snags, trees, rocks
Long-eared myotis	Gleans off of foliage, trees, ground	Tree bark, cavities, snags, caves, mines, rocks
Long-legged myotis	Open forest and over water	Tree bark, cavities, buildings, crevices, mines
Western small-footed myotis	Open forest and over water	Caves, mines, talus, buildings, bark
Hoary bat	Forest and over water	Dense tree foliage
Western red bat	Open areas	Tree foliage, especially in riparian forests
Spotted bat	Over water, meadows, open forests	Cliffs, crevices, caves, buildings
Silver-haired bat	Over water and forest openings	Snags, buildings, crevices, caves, mines, bark
Townsend's big-eared bat	Open areas	Caves, mines
Pallid bat	Woodlands	Caves, mines, crevices, buildings, snags
Big brown bat	Open areas and over water	Snags, trees, caves, mines, crevices
Western pipistrelle	Open areas and over water	Crevices
Western mastiff bat	Open forests, meadows, agriculture	Cliffs, crevices, some buildings and trees.
Brazilian free-tailed bat	Open woodlands, shrublands	Caves, mines, crevices, buildings

#### 6.2.3 <u>Study Objectives</u>

The objectives of the bat study are to: 1) determine which species of bats occur in the study area; 2) locate active bat roosts that could be affected by Project-related activities; and 3) identify measures for the protection of bat roosts and foraging habitat that may be adversely affected by the Project.

#### 6.2.4 Study Area and Sampling Sites

The study area includes all suitable roosting and foraging habitat within 0.25-mile of Project dams, powerhouses, adits, switchyards, penstocks, reservoirs, rights-of-way, and developed recreation sites associated with the project. Sampling sites will be determined during field reconnaissance. The project area may be modified based on activities (e.g., operational, recreational) that are determined by the Terrestrial TWG to have a potential effect on roost sites. Field studies will be restricted to those lands where the Licensee has legal access (e.g., ownership/easement rights, public lands) and will not occur on private lands without prior permission from the landowner.

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#### 6.2.5 <u>Information Needed From Other Studies</u>

Important information will be derived (at a minimum) from the Vegetation Mapping, Riparian, Wetland, Lands Management, Recreation, and Hydrologic Model studies.

#### 6.2.6 <u>Study Methods and Schedule</u>

A reconnaissance of the entire study area will be performed during early spring 2002 to determine the location of trapping sites in late spring/early summer 2002. A recommendation on the number and location of trap sites will be presented to Eldorado National Forest (ENF) biologists for review and approval prior to initiation of the trapping effort. Mist nets and/or harp nets will be used to capture bats and determine species occurrence. In most cases, trapping sites are selected near identified roost sites and/or within narrow flight corridors between roost sites and foraging habitat (e.g., within stream channels and ravines adjacent to a reservoir). All bat captures will be documented by species, sex, age, reproductive status, location, habitat descriptors, and other parameters deemed appropriate. Voucher calls will be recorded for captured bats as they are released. Trapping will be supplemented by acoustic sampling using an Anabat II detection system or other suitable acoustic detection equipment. Potential day and night roosts in Project facilities/features will be inspected visually for evidence of bat use (e.g., bats, guano, staining). Prior to initiating bat trapping efforts, the necessary collecting permit and Memorandum of Understanding will be obtained from the California Department of Fish and Game (CDFG).

#### 6.2.7 Analysis

Study results will be evaluated with respect to both positive and adverse effects related to the Project. Trapping, roost site inspections, and acoustic detections will provide evidence of species distribution and habitat utilization (e.g., foraging/roosting) within the study area. An assessment will be made of the degree of risk to foraging and roosting bats due to Project-related operations, maintenance, and management, as well as management of recreational facilities. The analysis will include recommendations for protections and enhancement of roosting and foraging habitat for special status bats that are affected by the Project.

#### 6.2.8 Study Output

Study results will be presented to the Terrestrial Resources Technical Working Group (TWG) and Plenary Group toward the end of 2002. However, the ultimate study output will be a written report that includes the issues addressed, objectives, study area, methods, analysis, results, discussion, and conclusions. The reports will be prepared in a format that allows the information to be inserted directly into the Licensee-prepared Draft Environmental Assessment that will be submitted to FERC with the Licensee's application for a new license.

#### 6.2.9 <u>Preliminary Estimated Study Cost</u>

A preliminary estimated study cost will be prepared after the Plenary Group approves the plan.

#### 6.2.10 TWG and Plenary Group Endorsement

On April 16, 2002 the following participants gave TWG approval to the plan: USFS, BLM and SMUD.

On May 1, 2002 the following participants gave Plenary Group approval to the plan: USFS, BLM, USFWS, Taxpayers of El Dorado County, Friends of El Dorado County, Camp Lotus, El Dorado County Water Agency, El Dorado County, Placer County Water Agency, California Department of Fish and Game, California State Water Resources Control Board, Pacific Gas and Electric and Friends of the River. None of the participants at the meeting said they could not "live with" this study plan.

#### 6.2.11 <u>Literature Cited</u>

SMUD (Sacramento Municipal Utility District). 2001. Initial Information Package for Relicensing of the Upper American River Project (FERC Project No. 2101). Sacramento. July 2001.

#### BATS TECHNICAL REPORT

#### **SUMMARY**

This technical report describes the results of bat studies conducted during 2002 and 2003 for relicensing of SMUD's Upper American River Project (UARP). Trapping was conducted at 19 locations in the study area from July 15-25, 2002 and on August 13-14, 2003. Five species of bats were captured among six trapping locations and none were captured at the remaining 13 sites. The captured species were Yuma myotis, fringed myotis, California myotis, big brown bat, and Brazilian free-tailed bat. All of these species are afforded special status designations by the State of California, United States Department of Agriculture, or the Western Bat Working Group. Yuma myotis was captured at the most locations and in the greatest number. Roost inspections were performed at 43 UARP facilities, developed recreation facilities, and non-UARP bridges. A large night roost, used primarily by Brazilian free-tailed bats, was found at White Rock Powerhouse. Smaller roosts were found under non-UARP bridges along Ice House Road at the crossings of Tells Creek, Big Silver Creek, and Jones Fork Silver Creek, which are located from 0.26- to 0.48-mile upstream of the maximum surface elevation (high water line) of Union Valley Reservoir. A fourth roost was found under the Ice House Road bridge-crossing of South Fork Silver Creek approximately 0.82-mile downstream from Ice House Reservoir.

#### 1.0 INTRODUCTION

This technical report is one in a series of reports prepared by Devine Tarbell & Associates, Inc. (DTA) for the Sacramento Municipal Utility District (SMUD) as an appendix to SMUD's application to the Federal Energy Regulatory Commission (FERC) for a new license for the Upper American River Project (UARP or Project). The report addresses bats and includes the following sections:

- **BACKGROUND** Summarizes the applicable study plan approved by the UARP Relicensing Plenary Group; a brief description of the issue questions addressed, in part, by the study plan; the objectives of the study plan; the study area, and agency information requests. In addition, requests by resource agencies for additions to and modifications of this technical report are described in this section.
- **METHODS** A description of the methods used in the study, including a listing of study sites.
- **RESULTS** A description of the most important data.
- ANALYSIS An analysis of the results, where appropriate.
- LITERATURE CITED A listing of all literature cited in the report.

This technical report does not include a detailed description of the UARP Alternative Licensing Process (ALP) or of the UARP, which can be found in the following sections of SMUD's application for a new license: The UARP Relicensing Process, Exhibit A (Project Description), Exhibit B (Project Operations), and Exhibit C (Construction).

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In addition, this technical report does not include a discussion of the effects of the UARP on bats and related environmental resources, nor does the report include a discussion of appropriate protection, mitigation and enhancement (PM&E) measures. An impacts discussion regarding the UARP is included in the applicant-prepared preliminary draft environmental assessment (PDEA) document, which is part of SMUD's application for a new license. Development of resource measures will occur in settlement discussions, which will commence in early 2004, and will be reported in the PDEA.

#### 2.0 BACKGROUND

#### 2.1 Bat Study Plan

At least 17 species of bats occur or potentially occur in the UARP vicinity (SMUD 2001) (Table 2.1-1). Of these 17 species, 12 have been afforded special status designations (e.g., federal and/or state species of concern, USFS sensitive species, or Western Bat Working Group (WBWG) designation for high priority/imperiled bat species). In response to the status and protections afforded bats under the California Fish and Game Code, Eldorado National Forest Land and Resource Management Plan (LRMP), and various state and federal management directives, the UARP Terrestrial Resources Technical Working Group (TWG) developed the UARP Bats Study Plan. The Terrestrial Resources TWG approved this plan on April 16, 2002, and the UARP Relicensing Plenary Group approved the plan on May 1, 2002. The study plan was designed to address, in part, the following issue questions developed by the Plenary Group:

Issue Question 7(c) What are the relevant and known factors (limiting and beneficial)

affecting special status bat populations in the UARP area and how/where are these factors influenced by UARP operations and

maintenance?

Issue Question 11. Where and to what extent has the UARP created or affected bat

roosts and foraging habitat?

The objectives of the study plan were to:

- 1. Determine which species of bats occur in the study area.
- 2. Locate active bat roosts that could be affected by UARP-related activities.
- 3. Identify measures for the protection of bat roosts and foraging habitat that may be adversely affected by the UARP.

The study area included all suitable roosting and foraging habitat within 0.25-mile of UARP dams, powerhouses, adits, switchyards, penstocks, reservoirs, right-of-way, and developed recreation sites associated with the UARP. Specific sampling sites were determined during field reconnaissance (see Methods, Section 3.0).

Common Name	Scientific Name	Foraging Habitat	Roosting Habitat
Family Vespertilionidae:			
-			Buildings, mines, caves,
Fringed myotis <sup>2, 4, 5</sup>	Myotis thysanodes	Open areas and over water	crevices
Little brown myotis	Myotis lucifugus	Open areas and over water	Caves, mines, snags
•			Buildings, mines, caves,
Yuma myotis <sup>1, 2</sup>	Myotis yumanensis	Open forest and over water	crevices
California myotis	Myotis californicus	Open areas and over water	Snags, trees, rocks
		Gleans off of foliage, trees,	Tree bark, cavities, snags,
Long-eared myotis <sup>2, 4</sup>	Myotis evotis	ground	caves, mines, rocks
			Tree bark, cavities, buildings,
Long-legged myotis <sup>2, 4, 5</sup>	Myotis volans	Open forest and over water	crevices, mines
Western small-footed			Caves, mines, talus,
myotis <sup>2, 4</sup>	Myotis ciliolabrum	Open forest and over water	buildings, bark
Hoary bat <sup>4</sup>	Lasiurus cinereus	Forest and over water	Dense tree foliage
			Tree foliage, especially in
Western red bat <sup>4</sup>	Lasiurus blossevilli	Open areas	riparian forests
		Over water, meadows, open	Cliffs, crevices, caves,
Spotted bat <sup>1, 2, 4, 5</sup>	Euderma maculatum	forests	buildings
_	Lasionycteris	Over water and forest	Snags, buildings, crevices,
Silver-haired bat <sup>5</sup>	noctivagans	openings	caves, mines, bark
Townsend's big-eared bat <sup>1, 2, 3, 5</sup>	Corynorhinus		
bat <sup>1, 2, 3, 5</sup>	townsendii	Open areas	Caves, mines
			Caves, mines, crevices,
Pallid bat <sup>1, 3</sup>	Antrozous pallidus	Woodlands	buildings, snags
			Snags, trees, caves, mines,
Big brown bat	Eptesicus fuscus	Open areas and over water	crevices
Western pipistrelle	Pipistrellus hesperus	Open areas and over water	Crevices
Family Mollosidae:			
		Open forests, meadows,	Cliffs, crevices, some
Western mastiff bat <sup>1, 2, 4</sup>	Eumops perotis	agriculture	buildings and trees.
			Caves, mines, crevices,
Brazilian free-tailed bat <sup>5</sup>	Tadarida brasiliensis	Open woodlands, shrublands	buildings

<sup>&</sup>lt;sup>1</sup>California species of special concern

### 2.2 Water Year Types

The information in this subsection is provided for informational purposes, as requested by agencies. The derivation of water year types is described in the *Water Quality Technical Report*. Table 2.2-1 presents water types for the period that is pertinent to this *Bats Technical Report*.

Table	Table 2.2-1. Water year types applied to individual months of years 2001-2003 (D=Dry; BN=Below Normal).											
Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
2002	D	BN	BN	BN	BN	BN	BN	BN	BN	BN	BN	BN
2003	BN	BN	BN	D	BN	BN	BN	BN	BN	BN	BN	BN

<sup>&</sup>lt;sup>2</sup> Federal Category 2 candidate for listing by the U.S. Fish and Wildlife Service as Threatened or Endangered.

<sup>&</sup>lt;sup>3</sup> USFS sensitive species

<sup>&</sup>lt;sup>4</sup> Sierra Nevada Framework species of moderate-high vulnerability and species of concern

<sup>&</sup>lt;sup>5</sup> western Bat Working Group designation for high priority/imperiled bat species

#### 2.3 Agency Requested Information

In a letter dated December 17, 2003 to SMUD, the agencies identified, by study, information they believed they needed to begin settlement discussions with the understanding that additional information might be requested. While the Bat Study was not specifically addressed, the agencies general comment regarding terrestrial studies is pertinent:

- Shape files will need to include survey locations and positive sightings/responses.
- Spreadsheet formats that include: bats, bald eagle/osprey, mesocarnivores, goshawks, California spotted owl, willow flycatcher, rare plants, noxious weeds.
  - Location
  - Date
  - Species observed/captured and specific UTM coordinates
  - Habitat composition
  - On site (In situ) verification of WHR habitat types
  - Method of capture
  - Nest locations
  - Activity centers

Bat survey and capture locations are shown graphically in Figure 4.1-1 (Appendix A). Pertinent data collected during the bat study are provided on the completed field data forms (Appendix B) and summarized in Section 4.0, Results.

In a letter dated May 13, 2004, the agencies stated in regards to the *Bats Technical Report* (February 2004) the following:

• Issue Question 11 and Objective 3 of the study plan relate to roosting and foraging habitat for bats. The existing study plan evaluates bat roosts at Project facilities and no additional studies for 2004 are identified related to bat roosts.

Related to Issue Question 11 and Objective 3, the extent that Project facilities provide foraging habitat has not been evaluated. Bats often forage on the insects that are attracted to artificial lighting. An evaluation of Project facility lighting and its relationship to bat foraging needs to be conducted. This evaluation should include a listing of Project facilities with artificial outdoor lighting, the nature of the lighting, and use by foraging bats. The information will be used to evaluate Project effects on bats.

The Terrestrial Resources TWG met on June 7, 2004 to consider "conclusions" relative to bats and to develop recommendations for consideration by the Settlement Negotiations Group. The TWG agreed on the following general conclusions:

1. The Issue Questions and Objectives stated in the Bat Study Plan are adequately addressed by the information provided in the *Bats Technical Report*.

- 2. Methods employed were adequate to address Issue Questions and Objectives.
- 3. There is no known negative effect of UARP operations and maintenance on bat roosting and foraging. The UARP may provide significant benefits for bats at most UARP locations.

Based on the conclusions of the TWG at its meeting on June 7, 2004, SMUD believes that an evaluation of UARP facility lighting and its relationship to bat foraging is not warranted. Most UARP facilities require lighting for safety and security purposes. Bats are known to be opportunistic foragers (Pierson and Rainey 1994), that will prey on insects attracted to light sources (Blake, Hutson, et al. 1994; Rydell and Baagoe 1996; Swensson and Rydell 1998). SMUD considers this a UARP benefit to bats that requires no further study. However, the Terrestrial Resources TWG developed the following recommendations for consideration by the Settlement Negotiations Group.

- SMUD should coordinate with state and federal resource agencies and other interested entities in development of a bat management plan. This plan should consider the following actions:
  - 1. The Loon Lake Chalet attic has in the past supported roosting bats and may present a human health hazard. The attic area could be assessed to restrict bat access by screening or other means. Alternative roosting opportunities could be provided by installing an artificial roost structure atop the Loon Lake Chalet;
  - 2. The White Rock Powerhouse parking area below the switchyard deck has supported a significant bat roost in the past. Any change in the design of this area should be coordinated with resource management agencies;
  - 3. Gates at tunnel adits should be evaluated to determine if adequate access is provided to bats at the exclusion of human entry;
  - 4. To be considered only as an enhancement measure, SMUD could consider cooperating with El Dorado County Department of Transportation to install bat roosts under bridges on Ice House Road;
  - 5. To minimize human contact, any new UARP or recreational facilities should be evaluated to discourage bat roosting or foraging. Installation of artificial roosts can be considered on a case-by-case basis; and
  - 6. SMUD supports the concept of the ongoing Engineering, Education, and Enforcement ("Triple Es") programs as administered by the Forest Service. There may be an opportunity to contribute to this program for the protection of bats (e.g., interpretive outreach).

#### 3.0 METHODS

#### 3.1 Bat Trapping, Roost Surveys, and Acoustic Surveys

The study methods conformed to those approved by the UARP Relicensing Plenary Group in the Bats Study Plan. These methods were based on commonly used survey techniques and

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recommendations (Kunz and Kurta 1988, Thomas and LaVal 1988, Thomas and West 1989, and MELP 1998). Initially, daytime field reconnaissance was conducted on May 14 and 15, 2002 to determine bat usage of UARP facilities from Loon Lake Reservoir westward to White Rock Powerhouse. These visits generated information on potential day and night roost sites, foraging habitats and flight corridors, and preferred locations for subsequent trapping efforts. Foraging habitats and, perhaps more importantly, flight corridors often provide optimal opportunities for mist net placement (Kunz and Kurta 1988, Thomas and West 1989, Nagorsen and Brigham 1993). Flight corridors refer to any feature that channels bats in flight between roost sites and foraging sites. Research suggests that bats do not always echolocate during flights to and from known foraging and roosting sites (Thomas and West 1989), and therefore, may be less able to detect and avoid nets than when actively echolocating.

Daytime and nighttime roost surveys were performed at 43 SMUD UARP facilities, developed recreation facilities, and non-UARP bridges along Ice House Road. Evidence of bat roosting and potential foraging areas were documented at these sites although access to the interior of some powerhouses and appurtenant structures was not available during site visits. However, roosting evidence was generally discernable at all facilities through external evidence including the presence and amount of guano build-up and bodily staining on the surface of roost entrances, walls, and/or ceilings (Thomas and LaVal 1988, Adam and Hayes 2000).

Bat trapping and acoustic detection surveys were conducted at 19 locations in the study area from July 15 through 25, 2002 and on August 13 and 14, 2003 (see Results, Section 4.1). Selection of trapping sites was based on several factors: 1) distance from a UARP facility (i.e. < 0.25-mile); 2) distribution of suitable bat foraging habitat; 3) proximity of known or potential roost sites; and 4) overall feasibility of site access and placement of trapping equipment. Mist netting was the primary technique use to capture and identify bats. At each trapping location, mist nets were set up before dark and oriented to provide optimal coverage and maximize chances of capturing bats. In most situations, nets were set from about three to four feet above ground (i.e., above shrubs and low-growing vegetation) to approximately 10 feet above the ground. Nets were monitored continuously from time of net deployment to when bat activity diminished (i.e., as determined by direct observation of bats in flight and use of an Anabat II echo-location detection instrument). Generally, bat activity diminishes following an initial period of drinking and foraging after emergence from a roost (Hayes 1997). Following capture, bats were removed from the nets and processed. Processing of bats involved species identification through weighing, measuring forearm and ear lengths, and characterization of pelage color. Sex, age class, and reproductive status (i.e., examination of testes in males and nipple development in females) were also documented for captured individuals. All measurements were recorded on field data sheets along with additional notes regarding overall condition, temperament, and specific capture location (Appendix B). Trapping and handling of bats was authorized by the California Department of Fish and Game under individual Scientific Collecting Permits and a Memorandum of Understanding dated July 8, 2002 (Appendix C).

To facilitate species identification, recordings were made of echolocation calls emitted by bats foraging near trap sites and of captured bats upon their release (i.e., voucher calls). Voucher calls using Anabat II recordings of sufficient quality can be a useful tool in confirming the

identification of captured bats that are morphologically similar to one or more other species. For some taxa, however, Anabat II recordings can only be reliably categorized to broad species groups and not identified to species (Seidman and Zabel 2001).

#### 3.2 Incidental Observations

Biologists engaged in these field surveys also recorded incidental observations of wildlife for purposes of generating a comprehensive species list for the overall UARP area. Data recorded for each observation generally included species, date of observation, location, and any remarkable behavior or activity exhibited by the animals observed.

#### 4.0 RESULTS

#### 4.1 Bat Captures

#### 4.1.1 Mist Net Captures

Five bat species were captured among six of the 19 sites where trapping was performed in 2002 and 2003 (Table 4.1-1; Figure 4.1-1, Appendix A; Appendix B). No bats were captured at the remaining 13 trapping sites. Species captured were: Yuma myotis, California myotis, fringed myotis, big brown bat, and Brazilian free-tailed bat. Bats were captured in 2002 at Junction Reservoir Dam, Brush Creek Dam, Slab Creek Power House, Jones Fork Powerhouse, and White Rock Powerhouse (Table 4.1-1). In 2003, bats were captured at the entrance (i.e., adit) of the Camino Tunnel. Yuma myotis was documented at the most sites (5): Junction Reservoir Dam, Brush Creek Dam, Slab Creek Powerhouse, White Rock Powerhouse and Camino Tunnel Adit). The four other species captured were each from only one trap site. California myotis was captured at Junction Reservoir Dam, fringed Myotis was captured at Jones Fork Powerhouse, big brown bat was captured at Camino Tunnel Adit, and Brazilian free-tailed bat was captured at White Rock Powerhouse.

Table 4.1	Table 4.1-1. Bat trapping locations and captures at Upper American River Project facilities, 2002-2003.						
Date	Trapping Hours	Net Length(s) (meters)	Facility/UTM <sup>1</sup>	Species Captured (No. of individuals)			
July 15,		54m (3x6m, 2x9m,	Loon Lake Intake				
2002	2030-2315	1x18m)	731756E 4318275N	None			
July 16, 2002	2045-2315	39m (2x6m, 1x9m, 1x18m)	Robb's Peak Forebay 726315E 4314126N	None			
July 16,		39m (2x6m, 1x9m,	Robb's Peak Powerhouse				
2002	2100-0000	1x18m)	727422E 430861N	None			
July 17, 2002	2100-2340	39m (2x6m, 1x9m, 1x18m)	Gerle Creek Dam 725799E 4316247N	None			
July 17,		39m (2x6m, 1x9m,	Gerle Creek Tunnel Adit/Canal				
2002	2045-2315	1x18m)	726082E 4316005N	None			
July 18,		39m(2x6m, 1x9m,	Union Valley Dam				
2002	2030-2315	1x18m)	721796E 4304849N	None			
July 18,		39m(2x6m, 1x9m,	Junction Reservoir Dam Intake	Myotis yumanensis (1)			
2002	2045-2352	1x18m)	720688E 430337N	Myotis thysanodes (1)			

Table 4.1-	-1. Bat trapp	oing locations and captures	s at Upper American River Proj	ject facilities, 2002-2003.
Date	Trapping Hours	Net Length(s) (meters)	Facility/UTM <sup>1</sup>	Species Captured (No. of individuals)
July 19,		45m(3x6m, 1x9m,	Brush Creek Dam	
2002	2045-2345	1x18m)	706498E 4298499N	Myotis yumanensis (2)
July 19,		39m(2x6m, 1x9m,	Camino Powerhouse	
2002	2045-2335	1x18m)	706472E 4296769N	None
July 20,		45m(3x6m, 1x9m,	Slab Creek Powerhouse	
2002	2030-0030	1x18m)	699941E 4294042N	Myotis yumanensis (34)
July 21, 2002	2030-2300	36m (3x6m, 1x18m)	Jaybird Canyon Tunnel Adit 717197E 4301915N	None
July 22, 2002	2045-2300	33m (4x6m, 1x9m)	Loon Lake Powerhouse 731452E 4318488N	None
July 23, 2002	2030-2300	27m (3x6m, 1x9m)	Ice House Dam Outflow 729138E 4300485N	None
July 23, 2002	2045-2315	39m(2x6m, 1x9m, 1x18m)	Jones Fork Powerhouse 727255E 4303430N	Myotis californicus (2)
July 24, 2002	2045-2245	39m (2x6m, 1x9m, 1x18m)	Camino Dam 713847E 4300603N	None
July 24, 2002	2050-2230	39m (2x6m, 1x9m, 1x18m)	Jaybird Powerhouse 714243E 4301205N	None
July 25, 2002	2030-2255	66m(2x6m, 2x9m, 2x18m)	White Rock Powerhouse 692253E4293033N	Myotis yumanensis (12) Tadarida brasiliensis (13)
August 13, 2003	1955-2230	21m (2x6m, 1x9m)	Slab Creek Dam Tunnel Adit 710124E 4298866N	None
August 14, 2003	2022-2350	36m (3x6m, 1x18m)	Camino Tunnel Adit 699512E 4293879N	Myotis yumanensis (2) Eptesicus fuscus (1)

<sup>&</sup>lt;sup>1</sup>UTM are in zone 10s and meters

#### 4.1.2 Bridge Roost Captures

In addition to mist net captures, three bat species were captured by hand during 2002 beneath three non-UARP bridges on Ice House Road near Ice House and Union Valley reservoirs. Captures at the South Fork Silver Creek Bridge (0.82-mile below Ice House Dam) and Jones Fork Silver Creek Bridge (0.26-mile above Union Valley Reservoir high water line) (Figure 4.1-1, Appendix A), yielded six individual Yuma myotis. In addition, Brazilian free-tailed bats (five individuals) and big brown bat (one individual) were captured at the Ice House Road Bridge spanning Big Silver Creek (0.48-mile above the Union Valley Reservoir high water line) (Figure 4.1-1, Appendix A).

#### 4.2 Roost Searches

As previously stated, three bat species were observed (and several individuals captured) beneath four bridges on Ice House Road, which were being used as night roosts. These bridges spanned South Fork Silver Creek, Jones Fork Silver Creek, Big Silver Creek and Tells Creek (Table 4.2-1). The bridge spanning Big Silver Creek had the greatest number of bats present (>300 individuals) while the bridges spanning South Fork Silver Creek and Jones Fork Silver Creek

had 20 and 10-15 individuals, respectively. The bridge spanning Tells Creek (0.43-mile above the Union Valley Reservoir high water line) had the smallest number of individuals at five. Probable roosts were also located at three UARP facilities (Robb's Peak Powerhouse, Gerle Creek Dam, and Loon Lake Powerhouse) and one recreational facility (Loon Lake Chalet) based on the presence of staining or small amounts of guano: (Table 4.2-1).

Table 4.2-1. Results of roost surveys	at Upper American River Project facilities.
Location	Survey results
Project Facilities	
Loon Lake Intake Structure	No bat evidence observed
Robb's Peak Forebay	No bat evidence observed
Robb's Peak Powerhouse	Some guano observed under the crane
Gerle Creek Dam	A small amount of guano were observed
Gerle Creek Tunnel Adit and Gerle Canal	Bo bat evidence observed
Union Valley Dam	No bat evidence observed
Junction Reservoir Dam and Intake <sup>1</sup>	No bat evidence observed
Brush Creek Dam 1	No bat evidence observed
Camino Powerhouse	No bat evidence observed
Camino Tunnel Adit <sup>1</sup>	No bat evidence observed
Slab Creek Powerhouse <sup>1</sup>	No bat evidence observed
Slab Creek Tunnel Adit	No bat evidence observed
Jaybird Canyon Tunnel Adit	No bat evidence observed
Loon Lake Powerhouse	Some staining in entry way with guano deposits in several locations
Ice House Dam Outflow	No bat evidence observed
Jones Fork Powerhouse <sup>1</sup>	No bat evidence observed
Camino Dam	No bat evidence observed
Jaybird Powerhouse	No bat evidence observed
White Rock Powerhouse <sup>1</sup>	Large amounts of staining and guano present
Recreation Facilities	2 Mary William of Switting with granto present
Loon Lake Campgrounds	
Loon Lake	No bat evidence observed
Loon Lake Chalet	Staining observed at the eve of the chalet
North Shore RV	No bat evidence observed
Red Fir Group	No bat evidence observed
Gerle Creek Campgrounds	
Gerle Creek	No bat evidence observed
South Fork	No bat evidence observed
Union Valley Campgrounds	
SMUDEA	No bat evidence observed
Yellow Jacket	No bat evidence observed
Wolf Creek	No bat evidence observed
Camino Cove	No bat evidence observed
Westpoint	No bat evidence observed
Fashoda	No bat evidence observed
Sunset	No bat evidence observed
Big Silver Group	No bat evidence observed
Wench Creek/Azalea Cove	No bat evidence observed
Ice House Reservoir Campgrounds	
Ice House	No bat evidence observed

Table 4.2-1. Results of roost surveys	s at Upper American River Project facilities.
Location	Survey results
Northwind	No bat evidence observed
Strawberry Point	No bat evidence observed
Bridges	
South Fork Silver Creek	20 bats present. Staining along supporting rafters of bridge <sup>1</sup>
Jones Fork Silver Creek	10-15 bats present. Staining along supporting rafters of bridge <sup>1</sup>
Big Silver Creek	300+ bats present. Abundant staining along supporting rafters of bridge <sup>1</sup>
Tells Creek	5 bats present. Staining along supporting rafters of bridge
South Fork Rubicon River	No bat evidence observed
Gerle Creek	No bat evidence observed

<sup>&</sup>lt;sup>1</sup> Sites with captures. See text, Section 4.1.

#### 4.3 Anabat II Surveys

Analysis of Anabat II recordings confirmed the presence of bats at five sites where trapping was unsuccessful: Camino Dam, Gerle Creek Tunnel Adit, Ice House Dam, Robbs Peak Powerhouse, and Union Valley Reservoir. However, efforts to assign these echolocation calls to specific species were inconclusive but suggest that the recordings could be from one of two families: *Vespertilionidae* and *Mollosidae* (Table 2.1-1). Spotted bat, a Vespertilionid species and one of the few bats that can be detected through echolocation vocalizations audible to humans, was not detected at any of the sites. Bats of undetermined species were also observed in flight at all trapping locations, whether or not individuals were captured in mist nets or detected acoustically with Anabat II.

#### 4.4 Incidental Observations

Biologists recorded 140 species of birds and mammals during UARP field studies including this Bat Study. These incidental observations are provided in Appendix D of the *Waterfowl Nesting Habitat Technical Report*.

#### 5.0 ANALYSIS

#### 5.1 Occurrence and Roosting by Bats at UARP Facilities

All 17 species of bats that occur or potentially occur within the study area are insectivorous and use echolocation for navigation and foraging. These species often forage over open habitats such as water, forest, meadows, and occasionally agricultural areas. Thirteen of these species roost colonially and four roost solitarily. The lands surrounding UARP facilities contain many of the physical and biological components needed to satisfy the foraging and/or roosting habitat requirements of these bats, including the five species captured during this study. The few active roosts found at UARP facilities were all located beneath concrete structures such as the entrance to the Loon Lake Powerhouse and beneath the substation deck at White Rock Powerhouse. Active roosts were also located beneath several non-UARP bridges along Ice House Road. In general, inspections performed for this study confirmed that most UARP facilities are well sealed, with few openings of sufficient size to allow access by bats. However, the presence of

bats at all trapping locations suggests that bats are roosting in nearby natural sites such as crevices, snags, cliffs, or tree bark, rather than roosting in UARP facilities.

#### **5.2** Echolocation Analysis

Anabat II recordings of bat vocalizations had limited value in this study. The analysis of recorded echolocation calls for species identification is limited by the length of the call, the distance of the recording device to the bat, and the orientation of the bat relative to the device (O'Farrell et al. 1999). Incomplete calls or "clutter" within calls resulting from the surrounding vegetation, wind, and other bat activity can limit the clarity and ultimate efficacy of recorded calls. Each of these factors is believed to have contributed to relatively poor quality of calls recorded during this study. In addition to the quality of a call, the variability within calls of an individual bat can also limit the use of a call. Bats vary their call regularly in response to their environment and their activity (Kalko 1995, Kalko and Schnitzler 1993, Obist 1995, and Schnitzler and Kalko 1998). This variability among the calls of individual bats coupled with the variation found among species compounds the difficulty of using acoustical analysis for species identification.

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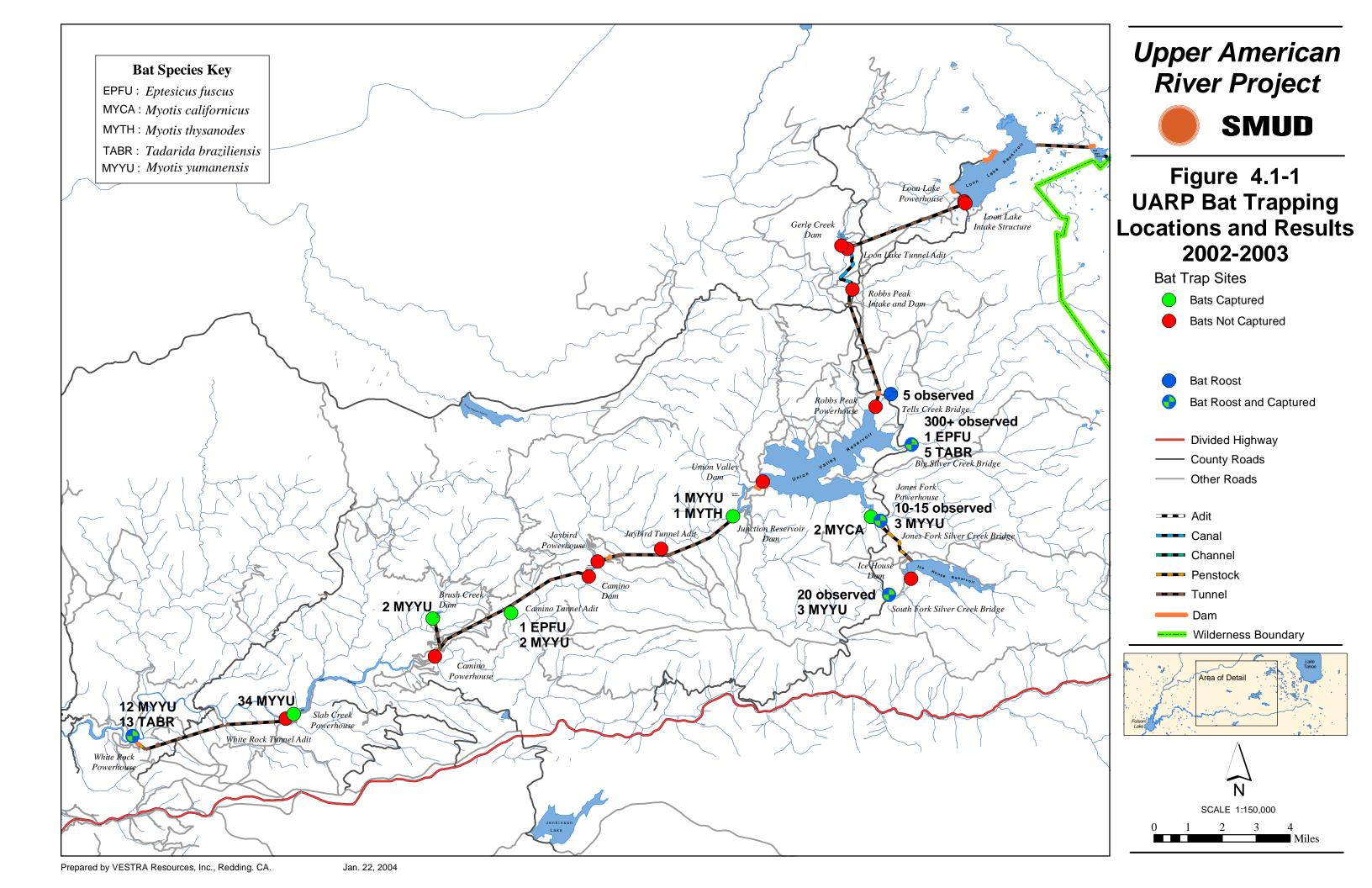
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# **APPENDIX A**

# FIGURE 4.1-1. UPPER AMERICAN RIVER PROJECT BAT TRAPPING LOCATIONS AND RESULTS



# **APPENDIX B**

# FIELD DATA FORMS USED IN THE UPPER AMERICAN RIVER PROJECT BAT STUDY

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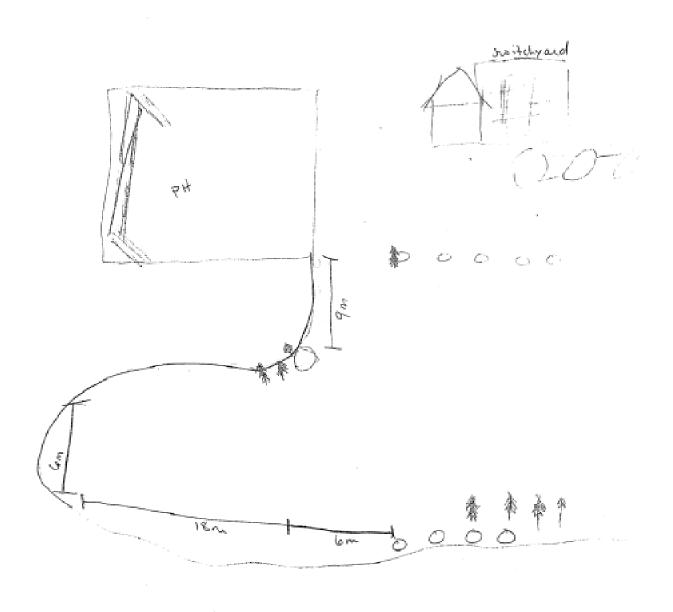
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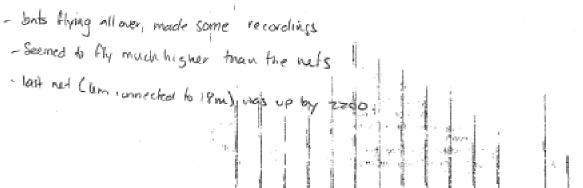
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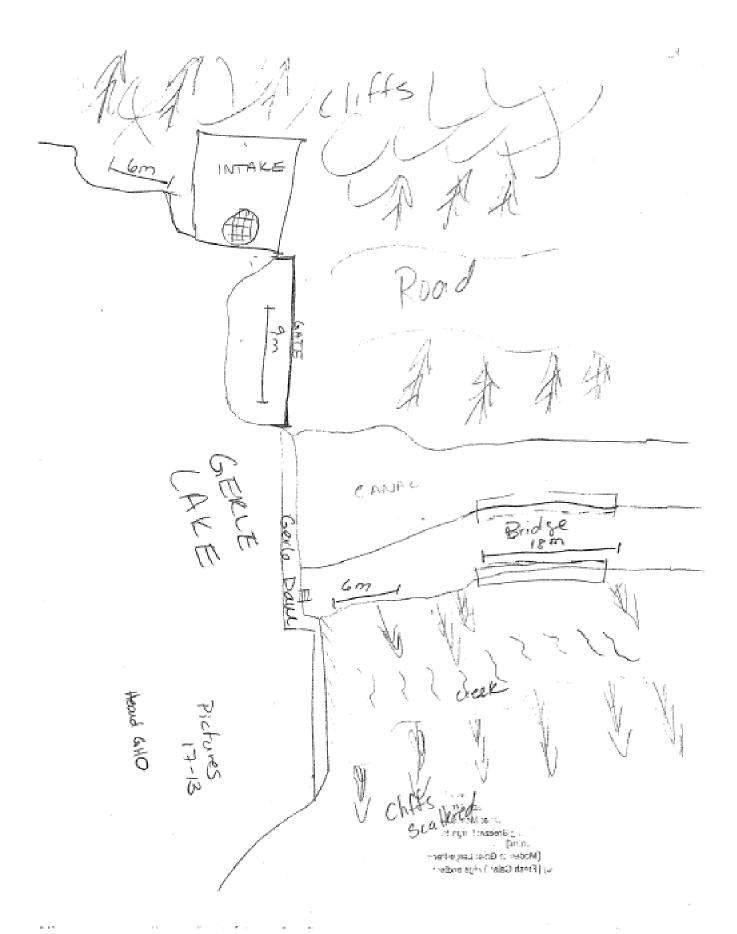
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22-15	Fog: N - No 1mph (<1.640 1=1-3 (1.2=4-7 (8 3=8-12 (14=13-18 5=19-24 (14=13-18 6=25-31	Cloud Cover No. L - Li mph) [Calm 8-4.8) [Lig 4-11.3) [U 12.9-19.3) [ (20.9-29.0) (20.9-29.0) (20.9-29.0)	wisible Distance	derate, H	Heavy , can feel on twigs restricted the strength of twigs restricted the strength of the stre	Precipil Fog  IV  wind on your arounches, rail rees swalls move.	Other/Notes  Out facel  out facel  nd. Light weight fis ses dust and paper vi	Wind Speed and Direction (from)	

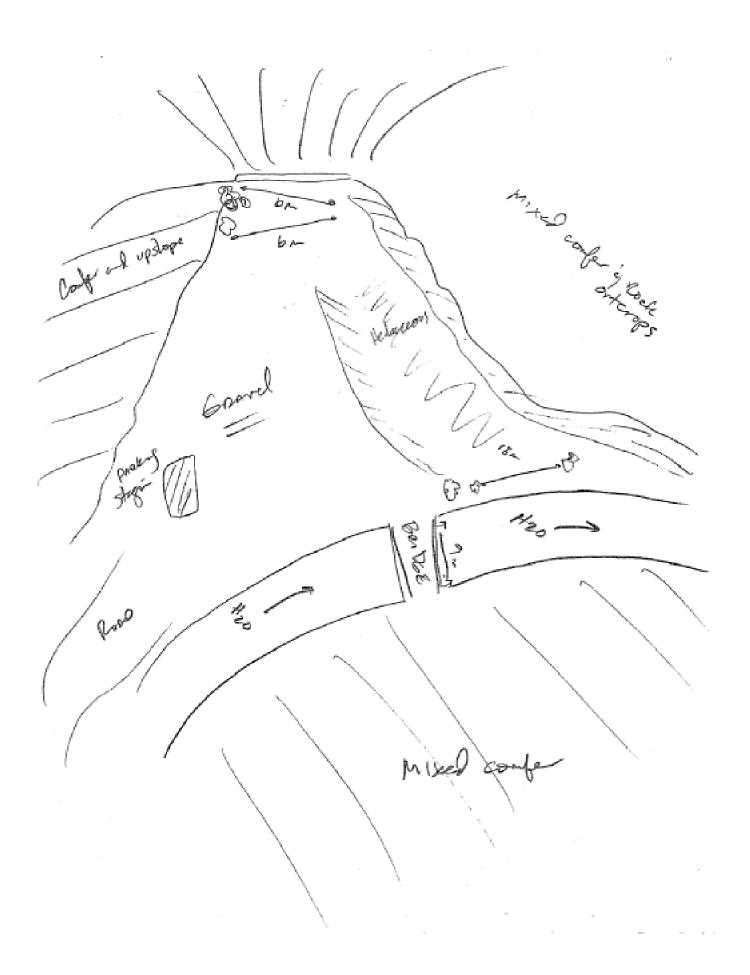




1 <sub>1</sub> / <sub>2</sub>										
BAT SUR	VEY I	FORM	<b>I</b> Obs	ervers:_ <del>T</del>	<u>G., O</u>	4		Date: 7/1	7/02	Page: / ø
Area/Job Name:	SMMS	S,UA	RP		Si	te Name	/Number <u>G.e</u>	rle Dau		<del></del> '
							, QQ (1/16)_			
-							k side of page)	الما		
verial Photo: , Y	es No	Neares	st Water: F	ond Lak	Rive	er Cro	Estuary	Marine	Elevation: 5	5,231'
istance to Wat		The second second					Pool Size (l			
)verall Site Can	opy Cover	<u>_\\a'_</u>	_%   # c	of Canopy	Layers:_	<u>s</u>	Define (A)	ilens scatte	red alon	<del>garde d</del> a
otential Roost	Sites: 🕼	ffs For	est (Conife	/ Deciduo	xus) (S	nage	Joseph Spilling	Other:		
Roost Observed	? Yes 1₹	9	Nets: Z	6m,		9m,	18m, Han	p Trap(s) (size)		
Roost Description										
labitat Type Do	scription:_	Alunessa Thou	e dam	Jake C	anal i	e interi	ce stuch	re are s	one eliffs	. many
earest Project	Facility : _	Dami	white, co	Inni		Dist	D feet	to which ho	forcible by ?	on
vironmental	Condition	s C	official Sum	set: 20%	5D 9	learnesses	3. ° Temp. s			
egin Survey_			LANCE I	بدا طعيته				Wind	Comments	
Time		Visibility		Audio to		Precipi	(30.11.031)	Speed and Direction	Cumacum	
				100m	Rain	T To	Other/Notes	(from)		
	Cloud Height	Cloud Cover	Visible Distance	u <sub>e</sub> s		Fog	Officeroles	-		
2100	20,000,14	25%	(5 mil	مها <u>ده</u>	N	N	N	0		
						1				
b				-						
34  V				1						
8.		-								
<u>Sr</u>										
-										
For Rain and P Wind: 0=<10	noh (<1.6Kn	nph) [Calm]			Heavy					
	1=1-3 (1.8	6-4.8) [Ligh 4-44.3) [Ligh	t Air: smoke nhi Breeze: L	oáves rustle	e, can feet	wind on y	your face]			
	9-0-49 /4	9 0.49 % F	Gentle Breez	e: Leaves a	nd twigs n	nove arou	nd, Light weight fla lees dust and pape	gs extent) t)		
		ena a ma di	Effected Depos	on Mouse b	reaches !	trace earc	y] open wires (such :		) begin to "whi	stle", umbrellas a
\*	difficult to	keep unde	er control] Diseasonto G	inter Large t	mee henir	to swaw	noticeably difficult.	to walki		
F.	7=32-38 8=39-46	(62.8-74.0)	[Fresh Gale	: Twigs and	amali brar	nches are	broken from trees,	walking into the	wind is very diff	louit)
1981 Zacil 388		$\wedge$	$\bigcap$	صدط						
# P		110	Cap	LOYC	7					



. 14								a - 1	
BAT SUF	RVEY !	FORM	<b>Г</b> Ове	ervers:_ <u>v</u> -	1wg	JK.	1	Date: 7/17	Page: 10
Area/Job Name	UARA	PATT			Si	te Name	/Number <u>64</u>	lie Creek	adit of cond
									Q (1/4)
survey Locatio									
Aerial Photo:	Yes No	Neares	t Water: P	ond La	ke Rive	r Cre	Estuary	Marine	Elevation:
Distance to Wat	iar: (Over	Adjace	o	ther -		m	Pool Size (	LxW) 13 W	x ? Congras
Overall Site Car	nopy Cover	7_	_%: #o	f Canopy	Layers:_	3	Define her	orcions, 50	with thee
Potential Roost	Sites: Ci	iffs) Fore	est ( Conifer	)/.Decidu	ous) Si	nags I	Buildings Grids	Other: A	rdul
							18m, Ha		
Roost Descripti									
Jabitat Type D	escription:_	muses)	confer	or pr	سلسوسه	pou	leresa più	به الإساليال م	e & name alon
							mce: <u>0.5</u> Mi		-
G				en en	a.s	0			
Time		Visibility		Audio	1	Precipi		Wind	Comments
				to 100m.				Speed and Direction	. ,
	Cloud	Cloud	Visible		Rain	Fog	Other/Notes	(from)	
In -	Height	Cover 5%	Distance	ly.	1	n	N		
2015	Siad		Chem						-
1315		100	man	5					
b									
N	1								
6.									
For Rain and I Wind: 0= <10	mph (<1.6Kr 1=1-3 (1, 2=4-7 (6, 3=8-12 (1, 4=13-16, 5=19-24, 6=25-31, 7=29-38	rph) [Caim] 8-4.8) [Light .4-11.3) [Lig 12.9-18.3) [( (20.9-29.0) (30.6-38.6) (40.2-50.0) c keep unde	t Air: smoke of the Breeze: Le Gentle Breeze: Le Gentle Breeze: [Moderate Br [Fresh Breeze: [Strong Breeze ontrol] [Moderate Gi [Fresh Gale:	iritia] saves rustle s: Leaves a eeze: Moves b ze: Large t ale: Large t	e, can feel and twigs m as thin bran ranches, t ree branch trees begin small bran	nove arou nches, rai rees away es move, to sway, ches are	nd. Light weight fla ses dust and pape of open wires (such a noticeably difficult	r] as telegraph wires; to walk]	) begin to "whistle", umbrellas : vind is very difficult)
1 35			20	Ca	ptw	æs			4°



									10Z Page: 10
krea/Job Name:	Sv	1100	VARP		Si	te Name	Number )	nchan	Reservoir Dam
urvey Location	: T	N or	S, R	Е о	rW, S		QQ (1/16)_	of	Q (I/4)
TM zone:	_ Coordin	ites: E(x)			, N(	y)		, Source:_	
urvey Location	n (Create I	Diagram o	f Survey St	te and Net	Placemen	t on bac	k side of page)		
Aerial Photo: Y	es No								Elevation: 4,450 '
Distance to Wate	r: Over	Adjac	gmt)	Other -		m	Pool Size (	xW) 3251	Dat raight aut rood/cliff & becides
Overall Site Can	opy Cover	:_10_	_% #	of Canopy	Dier (DD Layers:_	3	Define	nikik along	road/cliff & besidus
Potential Roost S	Sites: Œ	iffs For	est (Conife	Deciduo	ms) (Si	nags I	Buildings Bridg	es Other:	
	\	And the second	f e	Colored Dark.			18m, Has		Rock or house probably
Ichitot Time De	emintion: 7	Zana A. C.	chill onto	en de D	8/04 min 1	~1,C2 h	ica francia s	ores 5 and M	ouderoost shuch re any rock cultiops. 2
Januari Project I	Socility:	road i	s sheep.	ette wi	m some	wees Dist	ance: 25ft Mi	Đs.	, , , , , , ,
12									دار قامیم سدد
segin Survey 2	OH5	End Sur	voy <b>2.5-5</b> 7	Z Ter	np. at sta	n 73	Temp. a	end	? see on qua
Time		Visibility		Audio		Precipi		Wind	Comments
								Wind Speed and Direction	
	Cloud			Audio to	Rain			Wind Speed and	Comments
Time		Cloud Cover	Visible	Audio to		Precipi	tation	Wind Speed and Direction	The caryon.
	Cloud Height	Cloud Cover	Visible Distance	Audio to 100m	Rain	Precipi Fog	Other/Notes	Wind Speed and Direction (from)	the curyon.
Time 2040	Cloud Height 20 200	Cloud Cover	Visible Distance	Audio to 100m	Rain	Fog	Other/Notes	Wind Speed and Direction (from)	Comments  St. Curyon
2040 2152	Cloud Height 40,200	Cloud Cover (65 1/.	Visible Distance	Audio to 100m	Rain	Fog N	Other/Notes	Wind Speed and Direction (from)	the curyon.
2040 2152	Cloud Height 40,200	Cloud Cover (65 1/.	Visible Distance	Audio to 100m	Rain	Fog N	Other/Notes	Wind Speed and Direction (from)	the curyon.
2040 2152	Cloud Height 40,200	Cloud Cover (65 1/.	Visible Distance	Audio to 100m	Rain	Fog N	Other/Notes	Wind Speed and Direction (from)	the curyon.
2040 2152 2352	Cloud Height 40,200	Cloud Cover (65 1/.	Visible Distance	Audio to 100m	Rain	Fog N	Other/Notes	Wind Speed and Direction (from)	the curyon.

@ 2145 added a lom off bridge because . Many books flew under bridge + over water. Mio seemed that buts whitzed tree or symall cave near tree hnot Make. Caught 2 buts in this net - occurred mow other owned Intake buildge. According metrates potential roost. Several bats were Oland and Story DAKK to that area. 12 looks like a Tree of metal from his while is coming offer Number of Luts seemed to Deak Asain @ 2352 and talk wors when they were observed going to make how and near guito vent, then flying around not. The three other reto were pulled down @ 2345 Junction Reservoir

and Dam

Area/Job Name: UADP

Site Name/Number Just hon Intale / Dam Date 7/18/00

TIME	SPECIES	SEX (M/F)	AGE (J/A)	REPROD. STATUS	FORE- ARM (mm)	WEIGHT (g)	NET #	COMMENTS - SPECIES CONDITION
1223	Maphis thysomoeless (Fringed)	M	Α	REPRODO	,HD	<u> </u>	D	Vocale.
22 39	Yuma	M	Ą	סטג	36	ba	D	stightly agressive
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		-					<del>                                     </del>	
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		-					<u> </u>	

Area/Job Name:	UKR	PB	<del>413</del>		_ Si	te Name	/Number_Unca	n valley P	for-
Survey Location	T	N or 3	s, R	E or	w, s		, QQ (1/16)_	of	Q (1/4)
TM zone: 10	Scoording	tes: B(x)	07227	110	, N(	y) <u>443</u>	04860	, Source:_	<i>6</i> 75
urvey Location	(Create L	hagram o	f Survey Site	and Net I	Placemen	t on bac	k side of page)		
Aerial Photo: Y	es No	Neares	rt Water: P	ond Lak	œ Rive	r Cre	ek Estuary	Marine	Elevation:
							Pool Size (I		
Overall Site Can	эру Сочет	17_	_% #o	f Canopy :	Layers:_	Z	_ Define <u>වේ</u>	who of the	حع
Potential Roost S	lites: Cli	ffs For	est Conifer	Deciduo	ons) Sa	nags l	Buildings Bridg	es Other: <u>D</u> B	creto aturops
Roost Observedi	Yes No	9	Nots: _Z	6m,	9	m,	18m, Har	p Trap(s) (size)	
Roost Description									
							ita com		'
, (earest Project I	acility : <u>U</u>	rom way	ley inte	de a	_	Dist	ance: <u>—</u> Mil	चंड	
	en nome		enter de la Company	- 201	a A	economic and	Que		
Segin Survey 2	<u>080</u>	End Sur	rey <u>23\</u> 6	Tes	mp. at sta	rt <u>7.0</u>	⊃ Temp. at	end OU	
Time	-	Visibility		Audio to		Precipi	tation	Wind Speed and	Comments
				100m				Direction (from)	
	Cloud	Cloud	Visible		Rain	Fog	Other/Notes	(,	
2015	Height	Cover	Distance	y			Other/Notes	1` ′	
2015	Height	Cover 1959 Lo	Distance	y	Rain	Fog	Other/Notes	O-Singh Vorable Vierable	
2015	Height	Cover	Distance  Online		n	N	Other/Notes	0-5 mpla Vormbold	
	Height	Cover 1959 Lo	Distance  Online		n	N	Other/Notes	0-5 mpla Vormbold	
2315	Height	Cover 1959 Lo	Distance  Online		n	N	Other/Notes	0-5 mpla Vormbold	
2315	Height	Cover 1959 Lo	Distance  Online		n	N	Other/Notes	0-5 mpla Vormbold	
2315	Height	Cover 1959 Lo	Distance  Online		n	N	Other/Notes	0-5 mpla Vortable	
Z315	Height Spoo	Cover	Distance   On-le   UK	- <i>y</i>	n	N	Other/Notes	0-5 mpla Vortable	

FW. deray woold Log / D) (Free - Subm Triggs of / Rocky should 182

BAT SUF	RVEY:	FORM	I Obs	ervers:_6	boldell	Gree	/Λ	Date: 7-19	-62	Page: 14 Z
Area/Job Name:	5muD	upper	1 Americ	an Rive	A Si	te Name	Number <u>Bn</u>	ush Creek	. Dom	v
Curvey Location	E T	N or 8	S , R	E o	. w, s		, QQ (1/16)_	of	Q (1/4)	
TM zone: 105	Coordina	ates: E(x)	07065	50	, N(	y)_47	298516	, Source:_	<u>Abranin</u> GF	<u> </u>
urvey Locatio	n (Create l	Diagram o	Survey Site	and Net I	Placemen	it on bai	ck side of page)			-
Aerial Photo:	res No	Neares	et Water: P	ond Lal	ce Rive	r Cre	ek Estuary )	Marine	Elevation:	
							Pool Size (L			
Overall Site Can	topy Cover	:_10	_% #a	f Canopy	Layers:_	7_	Define Tra	s + thn	alos .	
		***************************************			-	- Territoria	Buildings Bridge			
Roost Observed	7 Yes N	<u>و</u>	Nets: <u>3</u>	6m, _	9	m,	18m, Hary	Trap(s) (size)		
Roost Description	on:								<del></del>	
Nabitat Type De	escription:	Mixed	conteror	<u>ವ ಕೊಂ</u>	ot (	pinest	ir) w Monz	ando unde	istry , C	ecialistis
							, anoe: <u>500</u> MH		of to	SENOV
ု rvironmental Jegin Survey <u>ပြ</u>	Condition	is O End Sur	official Suns rey <u>2.346</u>	et:Ter	mp. at sta	ource:_ rt	Temp. at	end <u>59</u> °		
Time	-	Visibility		Audio to		Precipi	tation	Wind Speed and	Comments	
				100m				Direction (from)	1	
	Cloud Height	Cloud Cover	Visible Distance		Rain	Fog	Other/Notes			
Q: 45pm	NA	None	UI	¥	Ŋ	N	4	3 East		
2345		ĵνο	chana		<u></u>					
h								<u> </u>		
8					<u> </u>					: .
ľ.	-							<u> </u>		
3						-				
For Rain and F			ht, M - Mo	icrate, H -	Heavy					
Wind: 0= <ir< td=""><td>nph (&lt;1.6Kn 1=1-3 (1.</td><td>6-4.8) [Light</td><td>t Air: smoke d ht Breeze: Le</td><td>rifts]</td><td>one facili</td><td>uind on a</td><td>mur fana)</td><td></td><td></td><td></td></ir<>	nph (<1.6Kn 1=1-3 (1.	6-4.8) [Light	t Air: smoke d ht Breeze: Le	rifts]	one facili	uind on a	mur fana)			
	3=8-12 (1	12.9-19.31 [0	Sentie Breeze	: Leaves a	nd twigs m	iowe arrou	ind. Light weight flag	s extend]		
	5-40.04	ran e se es	Danielo Branco	e Milesana be	ranches t	name awa	ises dust and paper) v1			
	6=25-31	(40.2-50.0)	Strong Brees	e: Large to	ee branch	es move,	obeu mites (anch s	telegraph wires	begin to "whisti	e", umbrellas are
** E	7-99-98	keep unde (51.5-61.2)	Dioderate Ga	ale: Large t	rees begin	to sway,	noticeably difficult t	o walk)	to different Property	
Z L	8=39-45	(62.8-74.0)	[Fresh Galo:	Twigs and	smali bran	ches are	broken from trees, v	walking into the w	ind is very diffic	nd
N										

Brush Creek

9m Shows been 18m.

	- 6850		All Control of the	4 20 mm <sup>2</sup>	The selfer	
The second second second second	Street, Street, Street, Street,	IES SU	CONTRACTOR AND ADDRESS.	20 10 10 10 10	100 Charles 24-201 Ba	C 10 10 10 10 10 10 10 10 10 10 10 10 10
THE RESERVE OF THE PARTY OF	<b>(1) 10 10 10 10 10 10 10 10 10 10 10 10 10 </b>	All all to the second second	11 H AC 36 a.	Sec. 167	<b>建建工 医发光</b>	100 (10)
APPENDING TO SERVICE THE	ACCOUNT OF THE PARTY OF THE PAR	THE WAY IN THE	LIES W	13 c 1	H 1 2 E 1 2	110011

BAT SPECIES SURVEY FORM Observers: Worldell Green Page 252

Area/Job Names Thul Ugger Amogeon Cher Site Name/Number Brush Cherk Oam Date 7-19-02

TIME	SPECIES	SEX (M/F)	(J/A)	REPROD. STATUS	FORE- ARM (mm)	WEIGHT (g)	NET #	COMMENTS - SPECIES CONDITION
2225	Myotis jumanensis	M	A	NR	55 mm	7.09	E	Opplaced in 6m net hangis alone woler (from bridge to inhole st
	1		/			***		woller from bridge to intoller of
2245	Myoto yumanensis	m	Ą	NR	35 mm	(ø-Oq	E	Cophored in 6 m net hanging dance.
								Cophued in 6 m net harging date.
		<u>                                     </u>					-	
		-	-					
			-		-		-	
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· ·		-	-		-			
		-						

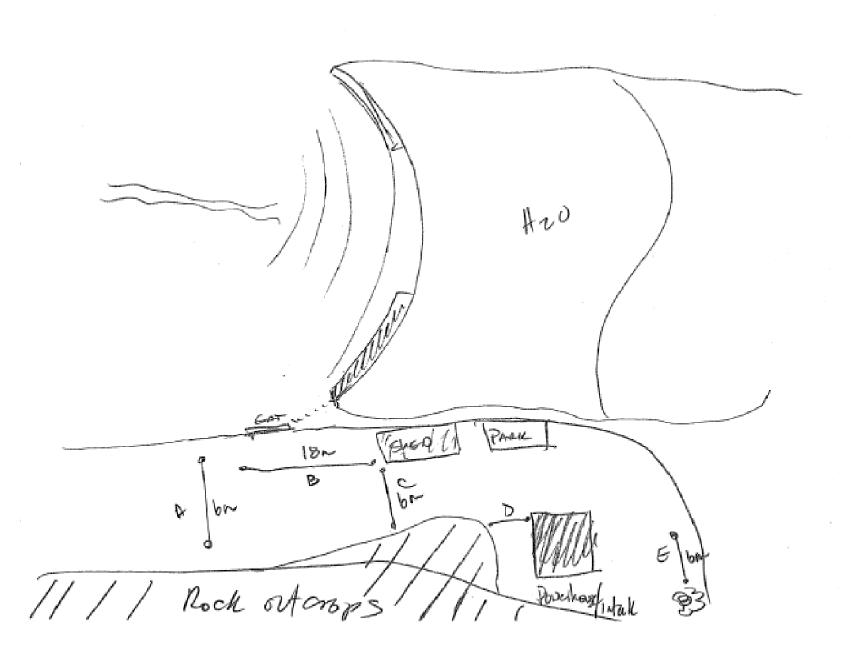
Nordinates: E(x eate Diagram to Near ver Adja cover: 4 I	of Survey Silvest Water: I	E o  7. 36 S  te and Net.  Pond La  Other - 1  of Canopy  r / Becidus  2. 6m, 1	Placement Riv	y) 38 on bace of Cree m	Pool Size ()  Define re  Sulding Bridge  18m. Har	Marine  as (Shanke (River, but along to 0 finer: along to 1 finer)	Elevation: ~ 1, B40
cdinates: E(x eate Diagram to Near ver Adja cover: 4 I Cliffs Fo No No Sand Cover to Cliffs A	of Survey Sit	7. 26 S  to and Not.  Pond La  Other - 1  of Canopy  r / Becidar  2 6m,  a va. ad	Placement Riv	y) 38 or backer) Creen or backer or ba	k side of page)  k side of page)  k Estuary  Pool Size (I  Define   re  Sulding Brids	Marine  as (Shanke (  River, but  alout + 0.2  p Trap(s) (size)	Elevation: ~ 1, B40
cate Diagram  Near  Ver Adja  Cliffs Fo	of Survey Silvest Water: I	te and Net. Pond La  Other - 1  of Canopy  r / Decidus  2 6m, _  a valad	Placement Riv	or bacer) Cree	ek side of page)  ek Estuary  Pool Size (l  Define re  Sulding Bridg	Marine  as (Shruhe )  River, but  about 0.2  p Trap(s) (size)	Elevation: ~ 1, B40
Cliffs Fo	ncent (Conification of the Conification of the	Pond Lal Other of Canopy r / Decidar 2 6m, a.vaad	ke Riv	cro cro	Pool Size ()  Define re  Sulding Bridge  18m. Har	as   Shanne   River but  Birth Office:  About 0.2  Trap(s) (size)	slower cliffs + oh accept thee to ne! Sui away
Ver Adja Cliffs Fo  No Sand Char ion: PH A	Nets:	Otheri of Canopy r / Besida 2_6m, _ a va. ad	Layers:	m _3 	Pool Size ()  Define re  Sulding Bridge  18m. Har	as   Shanne   River but  Birth Office:  About 0.2  Trap(s) (size)	slower cliffs + oh accept thee to ne! Sui away
Ver Adja Cliffs Fo  No Sand Char ion: PH A	Nets:	Otheri of Canopy r / Besida 2_6m, _ a va. ad	Layers:	m _3 	Pool Size ()  Define re  Sulding Bridge  18m. Har	as   Shanne   River but  Birth Office:  About 0.2  Trap(s) (size)	slower cliffs + oh accept thee to ne! Sui away
Cliffs Fo  No  Sand Sno  Sand Sno  Sand Sno	Nets: Conife Nets: Conife Nets: Conife Nets: Conife Nets: Conife Nets: Conife Nets: Conife Nets: Conife Nets: Conife	of Canopy r/Decidu 26m, availed	Layers:_	nags d	Define re	es Khange ( River, but  108 Other:  108 - About 0.2  109 Trap(s) (size)	engared was to we
Cliffs For No Blownial & and Concurrent Sand C	Nets: Coniff  Nets: Coniff  Post has	r/Becidus 2-6m, avalid	) S	nags i	Suildings Strice	Other: alou + 0.2 p Trap(s) (size)	engared was to we
: No Blential r Sand Crossion: PH A	Nets:	26m,_ araund	1	em.	/ 18m, Har	– .იპლ.	· · · · · · · · · · · · · · · · · · ·
Blential r s and snow ion: PH a	obsting	anuid	<b>₽</b> Α.	977. (P.)54	1_18m, Har	41 awey ()	Less likely), club
ion: <u>PH a</u>	indice in	uho chu	PH.	( <u>6</u> 2), <u>15</u> 11	10 0.25 e	NI AMEU ()	Less likely 1. Cliff
ion: <u>PH a</u>	indice in	جائد				760	V
y: Carry	700-1						
	no PH			Dist	anoe:Mil	les -@ P.F.	
	0.00 -1-1 (0	2ma	< s	omme:	485		
End St	rvey 233	5 Te	mp. at sta	nt_ 7	F Temp. a	t end 72°	
Visibilit	31	Audio	Τ	Precipi	tation	Wind	Comments
		to 100m				Speed and Direction	
1 1 01-1	10-04-		Dain	Eng	Other/Motor	(from)	
	Distance		Kam	rog	Omenwood		PH is the ly lead I W
A 0	Imi	car	N	N	N	0	GOW DV
						-	
			1				
	1	+					
	+	+	<del>                                     </del>				
	+	-					
Mana T. T.	into M. Ma	dente U	Henry				
1,6Kmph) (Calm	n()		· mesvy				
3 (1.5-4.8) [Lig	jht Air: amoke ( Joht Brooms: L	drifts] 	ron fooi	wind on v	nur face)		
STAN ALMA SAID.	Life - the Brown	e: Leaves a	nd twigs m	nove arou	nd. Light weight flat	gs extend)	
12 (12.9-19.3)	Geutte preen	reeze: Mose	s thin brai	nches, rai rees sway	ses dust and paper	)	
	Visibilit  ud Cloud ght Cover  A D  - None, L - I  1.6Kmph) [Cals 3.01.654.8) [La	Visibility  ud Cloud Visible ght Cover Distance  A D   Cover    - None, L - Light, M - Me    1.6Kmph) [Caim]    3 (1.6-4.8) [Light Air; smoke	None, L - Light, M - Moderate, H - 1.6Kmph) [Calm]	Visibility  Audio to 100m  ud Cloud Visible Rain Cover Distance  A O Iron Car N  - None, L - Light, M - Moderate, H - Heavy 1.6Kmph) [Calm] 3 (1.6-4.8) [Light Air; smoke drifts]	Visibility  Audio to 100m  Rain Fog pht Cover Distance  A O Con Car N  None, L - Light, M - Moderate, H - Heavy 1.6Kmph) [Calm] 3 (1.6-4.8) [Light Air; amoke drifts]	Visibility  Audio to 100m  ud Cloud Visible Rain Fog Other/Notes ght Cover Distance  A O Von Car N N  - None, L - Light, M - Moderate, H - Heavy 1,6Kmph) [Calm]	To 100m Speed and Direction (from)  Let 100m Pain Fog Other/Notes  A D Len Car N N D  None, L - Light, M - Moderate, H - Heavy 1.6Kmph) [Calm] 3 (1.64.8) [Light Air smoke drifts]

2 T20 T2 T20

No Captures

Road 20[4 fall 18.00 1014 60 Road 星 South Fork VIPPEI American

Roost Description: Description: Calc. LANGER     Laborated Project Facility: Slab creek   twironmental Conditions Office     Survey 2030 End Survey	RE on Canopy:  Water: Pond Lal  Other  Water: Pond Canopy:  Conifer Decidue  ets: 3 6m,  Syrasses: 203	N(y) Placement Placement River  Sus  Sus  Sus  Sus  Sus  Sus  Sus  Su	on back: Torock	Pool Size () Define   18m, Har	of Source: 6 Source: 6 Narine LxW) LxW) Lxw Ges Other:  p Trap(s) (size) Communication	Q(1/4) SARMIN CPF Elevation: Lup   Thub
errey Location (Create Diagram of Statement to Water: Over Adjacent Overall Site Canopy Cover: Z Potential Roost Sites: Cliffs Forest Roost Observed? Yes No New Roost Description: Down Adjacent Canopy Cover: Z Potential Roost Sites: Cliffs Forest Roost Observed? Yes No New Roost Description: Down Adjacent Canopy Cover: Z Potential Roost Sites: Cliffs Forest Roost Observed? Yes No New Roost Observed? Yes No New Roost Description: Down Adjacent Cliffs Forest Project Facility: Slob Creek Project Facility: S	Water: Pond Lab  Water: Pond Canopy:  Conifer Deciduo  ets: 3 6m,  Syrasses: 8	N(y) Placement  River  River  Snz  Snz  Voors	on back: Torock  Toroc	Pool Size (I	Source: 6  Marine LxW)  LxW)  Ges Other:  p Trap(s) (size)  rest (and	Strann CPr Elevation: Lap 18hub
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Potential Roost Sites: Cliffs Forest Roost Observed? Yes No No Roost Description: Down to Control Jabitat Type Description: Down to Control Jearest Project Facility: Slab creek Project Facility: Slab creek Project Facility: Slab creek	Conifer Deciduo  ets: 3 6m,  signal of Surasses	Layers:  Sna  9m  No. 1  1 19m  No. 1  No. 1	m,] / Mean	Define     ilding Bridg18m, Har	bree q ges Other: p Trap(s) (size) Commo	18hub
Potential Roost Sites: Cliffs Forest Roost Observed? Yet No No Roost Description: Down A E Roost Description: Down A E Roost Project Facility: Slab creek Point Project Facility: Slab creek Point Survey 20 30 End Survey	Conifer Decidus  ets: 3 6m, _  Dak / Ove  1 5124 / Sep  2 5725 565.	Sna Sna Sna Sna Sna Sna Sna Sna	m,] / Men	alding Bridg 18m, Har 2mtha myler (1	p Trap(s) (size)	
Roost Observed? Yet No No Roost Observed? Yet No No Roost Description: Down to E Roost Description: Down to E Roost Project Facility: Slab Creek	ets: 3 6m, _ Date / bus 1 size / is p il grasses.	oken /	m,] / Men Ly ex	18m, Har untla	p Trap(s) (size)	
Roost Description: Down & Ende LAND Roll Inhitat Type Description: 66 on Lessenset Project Facility: Slab Creek  avironmental Conditions Office Survey 2030 End Survey	Dak / bus I sure is p il grasses.	thors'	/ Men Ly en Distan	suthander (1	brest and	nt on forced
carest Project Facility: Slabs Greek wireamental Conditions Offi segin Survey 2030 End Survey	LD my Down	shows'	Distan			Alexante a
carest Project Facility: Slabs Greek wireamental Conditions Offi segin Survey 2030 End Survey	LD my Down	shows'	Distan			Muzute "
parest Project Facility : Slab Creek  vironmental Conditions Offi  begin Survey 2030 End Survey	LD my Porce	dvavs'		ce: ÆMi	les	
vironmental Conditions Offi legin Survey 2030 End Survey	inial Sunset: Zo 3	○ Sou		_		
Segin Survey 2030 End Survey	Ter 0,600 - 0,000	and the state of	ALC: USE			
TV URLather Com-		np. at statt	t 78	Temp. a	t end <u>62*</u>	
Time Visibility	Audio	P	Precipitat	ion	Wind Speed and	Comments
	100m				Direction (from)	
CODE CONTRACT	/isible	Rain	Fog (	Other/Notes	(11011)	-
111	Vistance y	14	N	7	Variable	
5 17	UL V	<u> </u>	N	~	Venuldo	
2000   UL -						
G.						
For Rain and Fog: N - None, L - Light, Wind: 0= <1mph (<1.8Kmph) [Calm]	, M - Moderate, H -	Heavy				
1=1-3 (1.6-4.6) [Light Al 2=4-7 (8.4-11.3) [Light]	ir: smoke driffs] Breeze: Lesves rustio	nan fool wi	ánd an sau	r facel		
3=8-12 (12.9-19.3) [Ger	ntie Breeze: Leaves an	nd twigs mov	eve around	. Light weight flag	gs extend)	
4=13-18 (20,9-29.0) [Mic 5=19-24 (30,6-38.6) [Fin	resh Breeze: Moves br	anches, tre	lvswa zee			
6=25-31 (40.2-50.0) [85 difficult to keep under or	trong Breeze: Large tre ontrol)	ee branches	s move, op			begin to "whistle", umbrellas
wood on one of a sec on the	oderate Galo: Large tr	ees begin to	io sway, no tues our br	riceably difficult	to walk) walking into the wi	ind is very difficulti
E 8=39-45 (52.8-74.0) [H	resit Gale: Twigs and t	sitali dranch	and after Diff.	ANNEL HOLLI DOGG.	marring after the till	and the state of t
8=39-46 (62.8-74.0) [Fr						



Observers: ON JW

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Area/Job Name: SAJUP UARP

Site Name/Number Stab Creek Dans

ate 7/20/2003

TIME	SPECIES	SEX (M/F)	AGE (J/A)	REPROD. STATUS	FORE- ARM (mm)	WEIGHT (g)	NET #	COMMENTS - SPECIES CONDITION
2030-2100	Wyotis yumanoxis	F	J	NR	36,0	5.04	Œ	Voucher call
<b>V</b>	NYVU	F	4	PL	35.0	5.75	D	ie «
	MYYU	F	<u>A</u>	PU	34	5.0	E	
	WAAA	F	)		34	4,25	E	- ,
	WALA	W	٠ (	-	33	4.75	E	,
	MYYU	M	J	NX	35	4,0	ڪ	
	MY YIL	F	Pr	PL	35.C	5.0	E	
	MYYU	K	7		a.y.c	4,5	E	
	WAAN	· F	A	PC	35	5,5	도	WT
	MYYA	t	<b>A</b> √	٩١	9	5,5	E	-
	WAAA	W	7	1	34	4,5	E	; n==
	MY AN	M	A		35	5,25	E	
	WAAN	F	74	PL	36.	5,75	E	11.
	NYYY	М	7		34	45	E	
	MYYLL	W	)		34	4.75	E	
	NYYU	*	1		35	5,0	E	
	VAAN .	F	1	PL	33	0,0	E	
	MAAN	F	A	PL	34	00	E	
	MAAM	ku	1		34	4/05	Е	
	MAAM	W	1		34	4.25		
	MAAM	M	J	ND ND	39	4.50	E	

Observers: OW 10

Page 3.

Area/Job Name: SWUD UPRD

Site Name/Number Slab Creak Dam

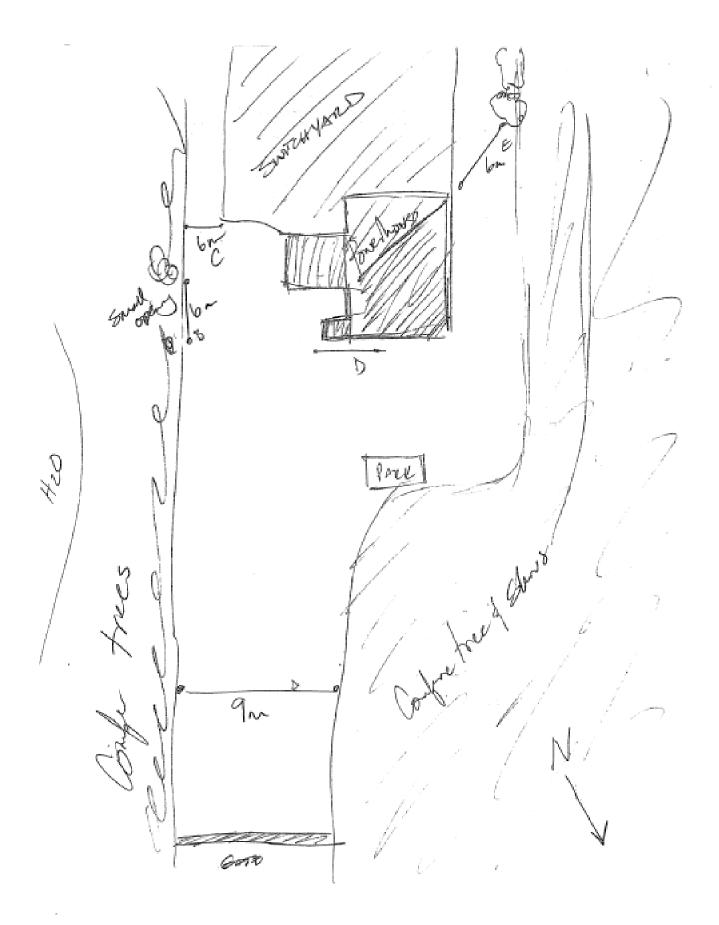
Date 7/20/2002

TIME	SPECIES	SEX (M/F)	AGE (J/A)	REPROD. STATUS	FORE- ARM (mm)	WEIGHT (g)	NET #	COMMENTS - SPECIES CONDITION
7030-1100	MYYU	1~	J		32.	4.75	D	
1	NYYU	M	-t		36	4,25	5	
	MAAM	F	₽-	PL	35	5.75		
	WAAN	F	Δ.		35	5.5	E	
	MYYW	F	Ą	PL	35	5125	E	
	NYYU	F		NR	34	4.75	E	
V	NYYN	F	A	L	36	5.25	E	
2240	WAAM	F	A	P	34	6.5	E	Abdoner Very Truggel/ Distention
2325	myyj	F. F	<u>k</u> k	P	34	6.25	81	lc - 'r
	Myyu	8		5	34	8.D	É	YERRY TOT ; TIGHT ABJONESN
2345	MYYU	F	J	NR	33	5.0	C	
2400	myyu	W	7		33	5.5	E	1
1475	MYYU	M	Δ		24	5.0	<u>C</u>	
				1.5	,			
		1						/

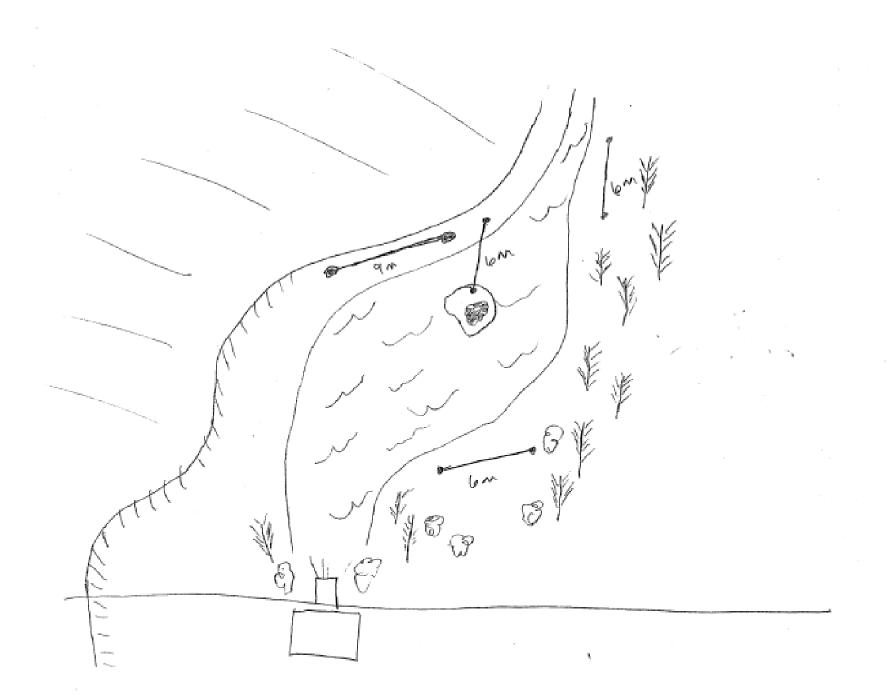
BAT SU	PS 70.		I ∩he	arreare: 🗀	m.	لمالا		Date: 7/2	4/02 Page: 18
DAI SU	Liberi.	a Br	. O.	01 Y 013. <u>~</u>	0:	in Money	-Number Hotel	no Coine	on ASIL
rea/Job Ivanik	E VAC					in Lauri	00.000		0(1/4)
		-							Q (1/4)
								, Source:_	GPS Exemp
rrvey Locati	on (Create l	Diagram 05	Survey Site	and Net I	Placemen	ıt on ba	ck side of page) Swall Po sek Estuary	of out of	seit
istance to Wa	ster: Over	djacı	mt_> 0	ther		m	Pool Size (I	xW) <u>SMX</u>	7n
verall Site Ca	шору Сочес	:35	%: #o	f Canopy 1	Layers		Define Tre	Hetyplayor	MI
							Buildings Bridge		
oost Observe	d? Yes (N	(يو	Nets:	56m,	5	m,	↓ 18m, Harj	Trap(s) (size)	
oost Descript	ion:								
	d Condition		Giolal Susa	Zo z	o O	outroe:			soning from
sgin Survey_	2030	End Surv	ty <u>2300</u>	(1) Ter	np. at sta		Temp. st		
ime	,	Visibility		Audio to 100m		Precipi	tation	Wind Speed and Direction (from)	Comments
	Cloud Height	Cloud Cover	Visible Distance		Rain	Fog	Other/Notes		
2030	5,000	25%	3m	1	'n	N			creek.
2240	11	55%	h1		00	her	e beside	العمال ال	3
							-		
-				<u> </u>	<u> </u>				
	-								
1	-								
						ļ			
or Rain and I	Fae: N - No	na. L - Lid	ht. M - Moo	ierate, H -	Heavy		'		
Find: 0= <1	1=1-3 (1.) 2=4-7 (6.) 3=8-12 (1.) 4=13-18 (1.) 5=19-24 (1.) 6#flouti to 7=32-38 (1.) 8=39-46 (1.)	3-4.8) [Light 4-11.3] [Light 4-11.3] [Ug 2.9-19.3) [G 20.9-29.0] [ 30.6-38.6) [ 40.2-50.0) [ keep under [51.5-61.2) ]	Moderate Bro Presh Breeze Strong Breez control] Moderate Ga Fresh Gale:	eves rustle, : Leaves ar beze: Moves e: Moves br e: Large tre sle: Large tr	nd twigs m s thin bran anches, to se branche ses begin	ove arounds over around the control over a control ove	nd. Light weight flag ises dust and paper) vl	telegraph wires)	begin to "whistle", umbrellas ar Ind is very difficulti
S.	No	CAPT	wis						

В Grane

	RVEY	FORM	<b>vI</b> Obse	rvers:	DIL	: In	)	Date: 7/22	2/02	Page:
Area/Job Name	VAR	PB	473		Si	te Name	/Number <u>Loo</u>	n Lake	PWHS.	
Survey Locatio	n: T	N or	S, R	Εα	w, s		, QQ (1/16)_	of	Q (1/4)	
TM zone: M	5 Coordin	ates: E(x)	0731	470	, N(	y) 각	318505	, Source:		
arvey Locatio	m (Create i	Diagram o	of Survey Site	and Net	Placemer	t on bac	k side of page)			
Aerial Photo:	Yes No	Neare	est Water: Po	and Lai	c Riv	er Cre	ák Estnary	Marine	Elevation:_	
Distance to Wa	ter: Over	Adjac	ent O	ther	70	m	Pool Size (I	xw) <u>See</u>	Map	
Overall Site Ca	nopy Cover	- 3	%:- # od	Сапору	Layers:_	2	Define €	shub f.	ree_	
Potential Roost	Sites: Cl	iiffs For	rest Conifer	Decidno	ous) S	nags (j	Buildings Bridg	cs Other: E	stemps	
Roost Observed	Y Y N	lo ·	Nets: 4	6m,		)m,	18m, Har	p Trap(s) (size	)	
Roost Descripti	on: Very S		at exort	، ملنج	edve	<u>~ 4</u>	cho pour	اعران الما		
Mabitat Type D	escription:_	Corle	- Sonest	[در -	9772	atc ]	Rozle ov	terpos)	both L	me mi
s Mearest Project	Facility :	الماليسية مصيح	2) tree	- phre	eghente March	, Dist	ance: 15 Mil	les		U
	ere ere		Outrain Comme	2 <i>n</i> :	4 7A 0	OTHER DESIGNATION OF THE PERSON OF THE PERSO				
Service Services	7 ms=	End Sur	vey 1,300	Tes	mp. at sta	rt	Temp. at	end V		
Sogn Survey_	473									
Time		Visibility		Audio		Precipi		Wind Speed and	Comments	
								Wind		
	Cloud	Visibility	Visible	Audio to	Rain			Wind Speed and Direction		
Time		Visibility	L	Audio to		Precipi	tation	Wind Speed and Direction	Comments	roice for
	Cloud Height	Visibility	Visible Distance	Audio to	Rain	Precipi	tation	Wind Speed and Direction (from)	Comments	roice fi
Time	Cloud Height	Visibility	Visible Distance	Audio to	Rain	Precipi	tation	Wind Speed and Direction (from)	Comments	roise fi
Time	Cloud Height	Visibility	Visible Distance	Audio to	Rain	Precipi	tation	Wind Speed and Direction (from)	Comments	roise for
7me	Cloud Height	Visibility	Visible Distance	Audio to	Rain	Precipi	tation	Wind Speed and Direction (from)	Comments	roice for
7me	Cloud Height	Visibility	Visible Distance	Audio to	Rain	Precipi	tation	Wind Speed and Direction (from)	Comments	roice for
7me	Cloud Height	Visibility	Visible Distance	Audio to	Rain	Precipi	tation	Wind Speed and Direction (from)	Comments	roice P
7000	Cloud Height UL	Cloud Cover	Visible Distance	Audio to 100m	Rain	Precipi	tation	Wind Speed and Direction (from)	Comments	POICE P
7me	Cloud Height UL	Cloud Cover	Visible Distance	Audio to 100m	Rain	Precipi	tation	Wind Speed and Direction (from)	Comments	roice P
7000	Cloud Height UL	Cloud Cover  Cloud Cover  Cloud Cover  Cloud Cover  Cloud Cover	ght, M - Mod	Audio to 100m	Rain A. Heavy	Precipi  Fog  wind on y	Other/Notes	Wind Speed and Direction (from)	Comments	roice Pr
7000	Cloud Height UL Fog: N - No nph (<1.6Kn 1=1-8 (1) 2=4-7 (8. 3=8-12 (1)	Cloud Cover Cove Cove Cover Cover Cover Cove Cove Cove Cove Cove Cove Cove Cove	ght, M - Mod	Audio to 100m	Rain  A.  Heavy  can feel od twigs in	Precipi  Fog  wind on your arou	Other/Notes  our face)  nd. Light weight flag	Wind Speed and Direction (from)	Comments	roice for
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7000	Cloud Height UL Height UL 1-1-3 (1) 2-4-7 (8, 3-6-12 (1) 4-13-18 (6-25-31 4-16-18 (1)	Cloud Cover 	ght, M - Mod  at Air: smake dr  ght Breeze: Les  Gentie Breeze: [Moderate Bre [Fresh Breeze [Strong Breeze	Audio to 100m  Iterate, H-  Ite	Rain  N  Heavy  can feel of twigs me thin brain anches, the branches are transfered to the transfered	Precipi  Fog  wind on your arounches, rail rees swar, es move,	Other/Notes  Our face)  nd. Light weight flages dust and paper	Wind Speed and Direction (from)  Sport 1-3	Comments	



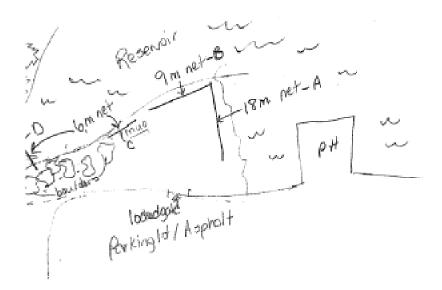
The zone: 100 Coordinates: E(x) 0720 Mo N(y) 4300 717 Source:  The zone: 100 Coordinates: E(x) 0720 Mo N(y) 4300 717 Source:  The zone: 100 Coordinates: E(x) 0720 Mo N(y) 4300 717 Source:  The zone: 100 Coordinates: E(x) 0720 Mo N(y) 4300 717 Source:  The zone: 100 Coordinates: E(x) 0720 Mo N(y) 4300 717 Source:  The zone: 100 Coordinates: E(x) 0720 Mo N(y) 4300 717 Source:  The zone: 100 Coordinates: E(x) 0720 Mo N(y) 4300 717 Source:  The zone: 100 Coordinates: E(x) 0720 Mo N(y) 4300 717 Source:  The zone: 100 Coordinates: E(x) 0720 Mo N(y) 4300 717 Source:  The zone: 100 Coordinates: E(x) 0720 Mo N(y) 4300 717 Source:  The zone: 100 Coordinates: E(x) 0720 Mo N(y) 4300 717 Source:  The zone: 100 Coordinates: 2000 71 Source: 2000 71 Source:  The zone: 100 Coordinates: 2000 71 Source: 2000 7										3/02 Page: 18
erial Photo: Yes No Nearest Water: Pond Lake River Cress Estuary Marine Elevation:    Second   Second										
erial Photo: Yes No Nearest Water: Pend Lake River Crew Estuary Marine Elevation:  istance to Water: Over Adjacent Other	TM zone: 10	Coordin	ates: E(x)	0729	roa	, N	(y) <u>4,3</u>	00417	, Source:	
erial Photo: Yes No Nearest Water: Pond Lake River Cress Estuary Marine Elevation:  istance to Water: Over Adjacent Other m Pool Size (LxW) 20mx 45m  verall Site Canopy Cover: 5 % # of Canopy Layers: 3 Define No Secrets Investigation of Canopy Cover Investigation of Canopy Cover Distance Investigation of Canopy Cover Distance Investigation (From)  Rain Fog Other/Notes  20 10 UL 0 UL 9 N N N N N N N N N N N N N N N N N N	arvey Locati	on (Create .	Diagram c	of Survey Sta	e and Net	Placeme.	nt on ba			: "
verall Site Canopy Cover: 5 % # of Canopy Layers: 3 Define Wise Canopy Cover: 5 % # of Canopy Layers: 3 Define Wise Canopy Cover: 5 % # of Canopy Layers: 3 Define Wise Cover: 5 % # of Canopy Layers: 3 Define Wise Cover: 5 % # of Canopy Layers: 3 Define Wise Cover: 5 % # of Canopy Layers: 3 Define Wise Cover: 5 % # of Canopy Layers: 3 Define Wise Cover: 5 % # of Canopy Layers: 5 % # of Canopy Layers: 5 % # of Canopy Layers: 3 Define Wise Cover: 5 % # of Canopy Layers: 5 % # of Canop	erial Photo:	Yes No	Neare	st Water: P	ond La	ke Riv	er Cr	Estuary	Marine	Elevation:
State of the forest Confer Decidence   Snage Suitdings Reidges Other    October Observed? Yes (No) Nets: 3 6m, 9m, 18m, Harp Trap(s) (size)  October Description: Sperk Confer w/ 18m, Harp Trap(s) (size)  October Description: October w										
State of Sites: Cliffs Forest Comifer Deciduous   Snage Suildings Ridges Other    Doest Observed? Yes No Nets: 3 6m, 9m, 18m, Harp Trap(s) (size)  Doest Observed? Yes No Nets: 3 6m, 9m, 18m, Harp Trap(s) (size)  Doest Description: Speek Comifer Wy France: Tock of ways w States    Shadd Seley Readown   Shadder    Shadd Seley Readown   Shadder    Shadd Seley Readown   Shadder    Shadd Seley Readown    Distance: Miles  Temp. at end  Clime   Visibility   Audio   Precipitation   Speed and Direction (from)  Cloud Cloud Visible   Rain Fog Other/Notes    2010 UL D UL Y N N O D	verall Site Ca	mopy Cover	:_\5	_% # o	f Canopy	Layers:_	3-	Define 🕢	deactors;	amob stree
Does Description: Spore Confe w/ promet tock out crops w Stably behaved shired Type Description:  Description: Description:  Description: Description:  Description: Description:  Description: Description: Description:  Description: Descrip			- CONTRACTOR - CON	Contract Contract	Table 1		The second second			er .
escrest Project Facility: Canotic Dev Jofflew Distance: D Miles  rvironmental Conditions Official Sunset; 2030 Source:  egin Survey 2050 End Survey 2300 (.) Temp. at start 1940 Temp. at end  Time Visibility Audio Precipitation Wind Speed and Direction (from)  Cloud Cloud Visible Rain Fog Other/Notes  One of the Condition of the Condition (from)  Cloud Cloud Distance Distance Other Notes	oost Observe	d? Yes N	(a)	Nets: Z	26m, _		9m,	18m, Har	p Trap(s) (size)	)
exercit Project Facility: Calaste Dev Joseph Distance: D	oost Descript	ion: <u> </u>	rse co	mer u	s/ 1000	muners	t po	ckotar	ops w	Statoby bedvoch
Project Pacility: Calcabel Dev / official Sunset: Distance: Distan	ивият туре п	veiscuilbinom:								
Cloud   Cloud   Cloud   Height   Cover   Distance   Cover   Distance   Cover	sarest Project	Pacility :	بودمالك	e Don	/off	1000.	Dist	ance:Mi	les	
Fime Visibility Audio to 100m Rain Fog Other/Notes  Ul G Ul G Ul Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	asicomments	1 Condition	ns (	Official Sams	et: 20;	30 s	Source:			
Cloud Cloud Visible Rain Fog Other/Notes Height Cover Distance	gin Survey_	2030	End Sur	vey 2300	(7.) Te	mp. at st	art	Temp. a	t end	
Cloud   Cloud   Visible   Rain   Fog   Other/Notes	Time		Visibility				Precipi	tation		Comments
Cloud Height Cover Distance  20% UL & UL Y N N									Direction	
2010 UL & UL Y N N N -			C01			Rain	Fog	Other/Notes	1 (,	
				Dictampa						1
	201-2	Height	Cover		V	n	N	v .	0	-
	2000	Height	Cover		У	n	N	Λ.	0	-
	2050	Height	Cover		У	n	N	~	9-	
	2040	Height	Cover		y	n	N	~	0	
	-	Height	Cover		У	n .	N	~	0	
	-	Height	Cover		. Y	n	N	~	9	
	-	Height	Cover		У	n	N		9	
or Rain and Fog: N - None, L - Light, M - Moderate, H - Heavy	2040	Height	Cover		y	n .	N	~	0	
2017 UE \$1000 (\$1.06000)   A001	or Rain and J	Height	Cover	UL.	derate, H		N		9	
1=1-3 (1.6-4.8) [Light Air: smoke drifts]	or Rain and I	Fog: N - No	Cover	eht, M - Moo	hilla]	Heavy			9	
1=1-3 (1.6-4.8) [Light Air: smoke drifts] 2=4-7 (6.4-11.3) [Light Breeze: Leaves rustle, can feel wind on your face) 3=8-12 (12.9-19.3) [Gende Breeze: Leaves and twigs move around, Light weight flags extend]	or Rain and J	Fog: N - No mph (<1.64n 1=1-3 (1) 2=4-7 (8. 3=8-12 (1)	Cover  De, L - Lingth (Calm) 194.8) [Lighth 4-11.3) [Lighth 2-9-19.3) [	ght, M - Mox t. Air. smoke d tht Breeze: Le Gerde Breeze	irifa] saves rustis :: Leaves a	Heavy	wind on y	our face)	ps extend]	
2=4-7 (6.4-11.3) [Light Breeze: Leaves rustle, can feel wind on your face]	or Rain and J	Fog: N - No mph (<1.60m 1=1-3 (1) 2=4-7 (8, 3=8-12 (1) 4=13-18: 5=10-24	De, L - Limph) [Calm] 5-4.8) [Light 4-11.3) [Light 4-11.3) [15 2.9-19.3) [15 150.6-38.6]	ght, M - Moo t Air: smoke d ght Breeze: Le Gende Braeze [Moderate Br	hills] saves rustle :: Leaves a eaze: Moves :: Moves b	Heavy  can feel and Mega n s thin brai	wind on y	our face) nd, Light weight fla ses dust and paper	]	



BAT SU	RVEY	FOR	M oi	bservers:_	Munzer	c, Gre	en	Date: 7-	23-02	Page: /1 2/ 2
Area/Job Nam	e:SMull	Upper	American	RNer	Project :	Site Nam	ns/Number	Tones fork	PH	0
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									×	
							ck side of page)			
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Distance to Wa	ster: (Ov <del>e)</del>	Adji	ncent	Other		m	Pool Size	(LxW)		
Overall Site Ca	апору Соче	T 20	_% #	of Canopy	Layers:	3	Define_/Mc	thre confer	2 Loolin	nc
Potential Roos	t Sites: C	liffs Fo	rest (Conifi	nr XDecide	10115) (Š		Buildings Bric	ges Other:		<i>y</i>
Roost Observe	d? Yes/1	arrive.							:)	
Roost Descript	ion:	No.								
Labitat Type D	escription:	Conifer	ous breed	SWI	oundin	4 lal	co Strenov	Classin	nito rec	erum
jearest Project	Facility : \( \)	Jones F	Ork PH			J Dist	ance:M	les		
vironmenta Jegin Survey_	I Condition 장 나타아	ns End Su	Official Sun rvey <u>   [.   5</u>	set: <b>20</b> 3	S mp. at sta	ource:_ rt_ ~ 3	O <sup>®</sup> Temp. s	t end ~ SO	•	
Time		Visibility	Ž.	Audio		Precipi	ation	Wind	Comments	
File.				100m				Speed and Direction		
	Cloud Height	Cloud Cover	Visible Distance		Rain	Fog	Other/Notes	(from)		
2045	N/p	N/A	VL.	YES.	N/A	N/A	MA	10		
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<u> </u>			ļ				-	-		
S								ļ		
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For Rain and Fo	ph (<1.6Km; 1=1-3 (1.6- 2=4-7 (6.4- 3=6-12 (12- 4=13-16 (2- 5=19-24 (3- 6=25-31 (4- difficult to k	ph) [Calm] 4.8) [Light -11.3) [Light .9-19.3) [G 0.9-28.0) [I 0.6-38.6) [I 0.2-50.0) [š	Air: smoke dr nt Breeze: Les entie Breeze: Moderate Bree Fresh Breeze: Strong Breeze control]	its] rves rustle, i Leawes and eze: Moves Moves brei : Large tree	can feel wi I fwigs mov thin branch nohes, tree I branches	ve around hea, raise es sway] move, op	Light weight flags s dust and paper]	telegraph wirea) b	egin to "whistle", u	mbrellas are
	8=39-48 (B	2.8-74.0) [1	resh Gala: Tv	vigs and sm	nali branchi	oway, no as are bro	ken from trees, wa	walk] liking into the wind	d is very difficulti	

THE LESS THE PARTY OF

# Sow first bat at 8:50pm



ip r

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Observers: Muricer Breen

Page Z & Z

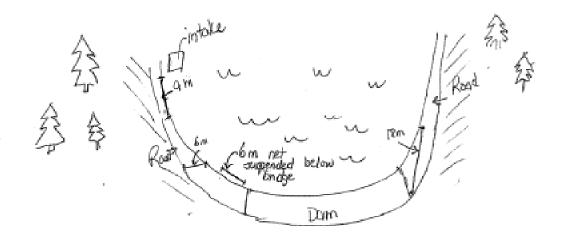
Area/Job Name: UARP

Site Name/Number Jones Fork PH

Date- 7-73-07

TIME	SPECIES	SEX (M/F)	AGE (J/A)	REPROD. STATUS	FORE- ARM (mm)	WEIGHT (g)	NET #	COMMENTS - SPECIES CONDITION
9:10 pm	Mysts coliforniais	F	$\mathcal{L}_{i}$	NR	3/100	49	٥	After measuring and identifying ste did not immediately fly anov- location, near PH adder whom not
-								ore did not immediately fly anon-
				<u> </u>				O location - moved her to that
-					-			booking hower to the thin
1			:					200
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		-						42
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	The state of the s							
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					-0%	9	Λ			Page: 6
Area/Job Name:	Smul	ирр и	er Ameri	ican Ri	<u>ver</u> Hi	h ide Name	/Number hr	nina Dani	n	
							, QQ (1/16)_			
							00635			
arvey Locatio									-	
-	•						ék Estuary I	Marine	Elevation:	
Distance to Wat	er:/Over	) Adjac	ent) O	ther -		m	Pool Size (I	xW)		
Overall Site Car	nopy Cover		_% #0	f Canopy	Layers:_	2	Define he	occerus, t	യട	
					-		Suildings Bridg			
Roost Observed	7 Yes N	is) _	Nets: 2	6m,		9m,	18m, Harp	Trap(s) (size)		
Roost Description										
							Roods on e	thur side,	bluffs abu	e the rood.
earest Project	Facility : _	Camin	o Dam			Dist	ance:Mil	es Omyers No.64	selon to	p of 400e
rvironmental Segin Survey_	Condition VOV.5	ns ( End Sur	official Supe vey 1145	et: <u>7.038</u> Ter	D S	lource: art <u> </u>	Temp. at			
Time		Visibility		Audio		Precipi	tation	Wind Speed and	Comments	
				100m				Direction (from)		
	Cloud Height	Cloud	Visible Distance	1	Rain	Fog	Other/Notes	]		
7030	N	N	UL		N	N	N	J		
n i										
<u>b</u>						-			-	
7. T					<u> </u>					
E.	-		1		-	-				
	-	-			1			-		
For Rain and F	og: N - No	me, L - Li	ght, M - Moo	derate, H -	Heavy				1	
Wind: 0= <in< td=""><td>1=1-3 (1.</td><td>8-4.8) [Ligh</td><td>t Air: smoke d</td><td>irifts]</td><td></td><td></td><td></td><td></td><td></td><td></td></in<>	1=1-3 (1.	8-4.8) [Ligh	t Air: smoke d	irifts]						
	3=8-12 (1	12.9-19.31	ght Breeze: Le Gende Breeze	c Leaves at	nd twigs n	nove arou	nd. Light weight flag	gs extend)		
	5-40.24	(20.6-26.6)	[Fresh Breez)	ic Moves be	ranches, i	trees swa	ises dust and paper y]			
γ*	8=25-31	(40.2-50.0)	[Strong Breez	se: Large tr	ee branch	es move,	open wires (such a		) begin to "whist	e", umbrellas are
- B	7=32-38 8=39-46	(51.5-61.2) (62.8-74.0)	[Moderate Ga [Fresh Gale:	ale: Large to Twigs and	rees begin small bran	to sway, nches are	noticeably difficult t broken from trees,	o waiki walking into the v	vind is very diffic	sult
<u> </u>		1 0	منابي						16	
E	ſ	10 (	jap tur	67						

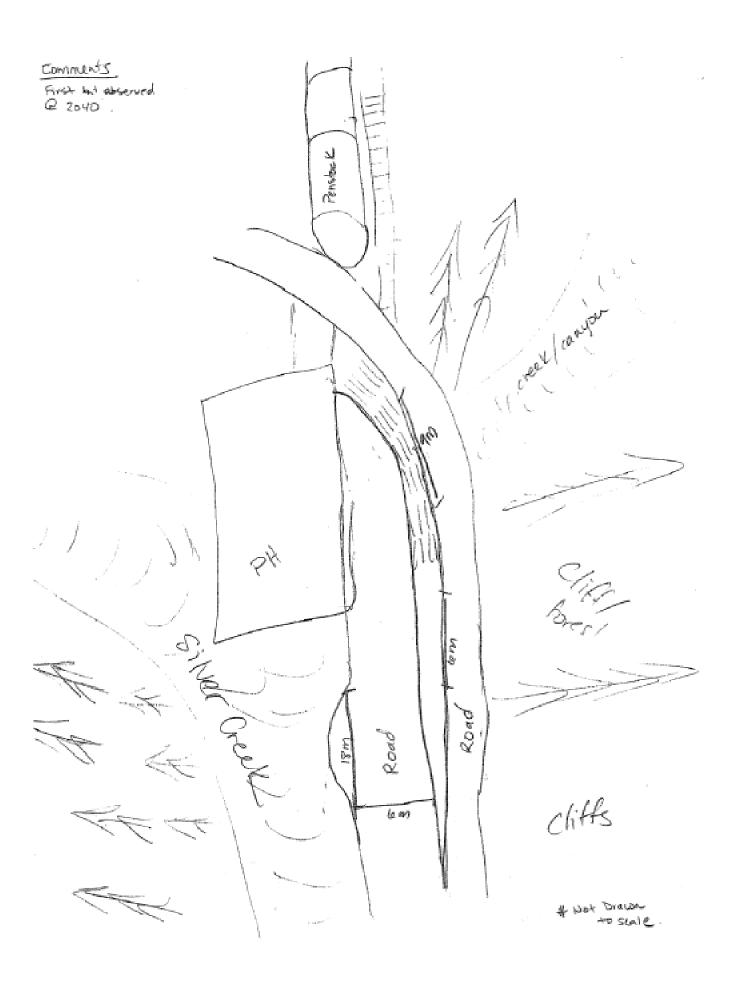


BAT SU	otos Po RVEY			servers:_J	<u> </u>	:		Date: 7/2	4/07 Page: (d.
									t
									Q (1/4)
							k side of page)		
Aerial Photo:	Yes No	Near	est Water: I	ond Lak	a Rive	Cre	ek Estuary	Marine	Elevation: Z915
Distance to W	ater: Over	Adja	ogat (	Other Z	·5	m	Pool Size (l	LxW)	
Overall Site C	anopy Cove	26	_% # o	of Canopy I	FDW4 Layers:_	3	Define (Or	ifenous tre	es of various sizes, mos and -tall canopy l
Potential Roos	st Sites: 🗷	iff Fo	rest (Conife	Decidoo	us) 🔇	nage	Buildings Bridg	es Other:	WA - FAIT CAOPY I
Roost Observe	ed? Yes 🔬	$\Box$	Nets:	<u> </u>	5	)m,	18m, Har	p Trap(s) (size)	
Roost Descrip	_								-
Jabitat Type I	Description:	River	in comp	ادر سدن	court	<u>Some</u>	(primer by)	trees, chil	the surrounding PH
jearest Projec	ot Facility : _	Jany Br	rd PH			Distr	ance:D_ME	les @ PH	-
- vvironment Segin Survey	al Condition	ns End Sur	Official Sun rvey 223 C	set: 2039 Ten	S np. at sta	ource:_ nt_∃2	o Temp. a	t end	,
Tims		Visibilit	Ţ.	Audio to 100m		Precipit	ation	Wind Speed and Direction (from)	Comments
1			Visible	1	Rain	Fog	Other/Notes	1 (11011)	
	Cloud Height	Cloud	Distance			1.08	Other/Noiss		
21115	Cloud Height	Cover		W.S See comment	s N	N	N Other/Notes	0	hear when alley from PH
2115	Height	Cover	Distance	Set tomored . VI	. 2			0 2,/00	hear when alley from PH Full Moon
	Height N/A	Cover N/A	Distance UL			Ŋ	N	2,/00	from PH 1
	Height N/A	Cover N/A	Distance UL			Ŋ	N	2,/00	from PH 1
	Height N/A	Cover N/A	Distance UL			Ŋ	N	2,/00	from PH 1
2155	Height N/A	Cover N/A	Distance UL			Ŋ	N	2,/00	from PH 1
	Height N/A	Cover N/A	Distance UL			Ŋ	N	2,/00	from PH 1

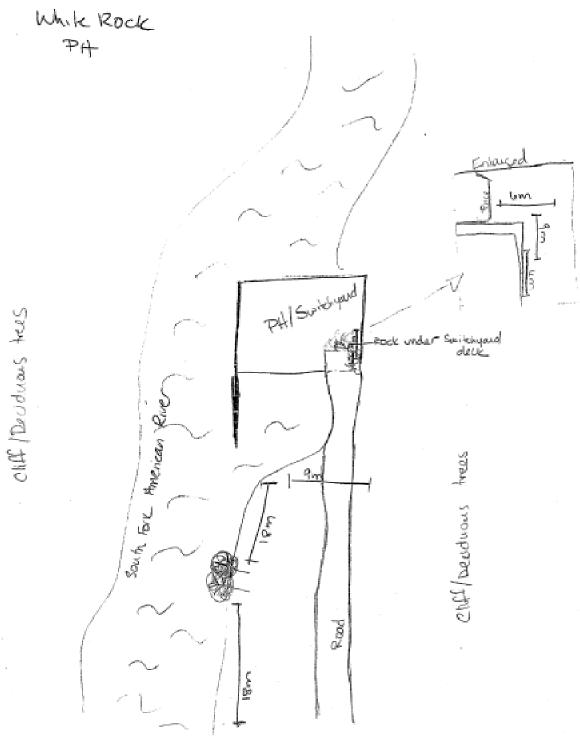
5=19-24 (30.5-38.6) [Fresh Breeze: Moves branches, trees sway]
6=25-31 (40.2-50.0) [Strong Breeze: Large tree branches move, open wires (such as telegraph wires) begin to "whistle", umbreilas are difficult to keep under control)

7=32-38 (31.5-61.2) [Moderate Gale: Large trees begin to sway, noticeably difficult to walk] 8=39-46 (62.6-74.0) [Fresh Gale: Twigs and small branches are broken from trees, walking into the wind is very difficult)

No Captros



	VEY I	EODA							
		PORT	¶ Obse	ervers:	تبلب	om'	, PW	Date: 7/29	7/02 Page: 193
rea/Job Name:/	CONE	UARF	>		Sit	te Name	Number 12h	le Rock	PH
arvey Location:	Т	N or	S, R	Βα	. W , S		_, QQ (1/16)	of	Q (1/4)
TM zone:	Coordina	ites: E(x)	1250 43	1,290	, N(	y) <u>38</u>	45.872	, Source:_	
urvey Location	(Create I	Diagram Q	f Survey Site	and Net	Placemen	t on bac	k side of page)		
erial Photo: Y	es No	Neare	st Water: Po	ond Lal	ce Kive	South Cro	K Estuary N	Marine	Eleyation: 993'
istance to Wate	r: Over	Adjac	<u> </u>	<u> </u>	10	m	Pool Size (L	$_{xW)}$ $N/A$	
werall Site Can	opy Cover	12.0	<u></u> % # o	f Canopy	Layers:	3	Define Alei	was sweet	of our trees and scale
otential Roost S	ites: <u>(</u>	iffs For	est Conife	Decidus	<u>a</u> b) (S	and a	uildings Bridge	es Other: <u>San</u>	Osc. /Constr treas acc. /Constr treas are 3rd
COST COSSET ANDS	2.00 ( 2.4	ω <i>γ</i>	Tables 1			- 40		4 5 6 5 6	
کار <i>ن کے چا</i> Sost Descriptio	n: <u>`\a</u>	GO PIU	es of hi	Ont.	m.A.Es	الماندى	mard Dock	-Pokatia	1 Prest Site but none
abitat Type De	scription:_	PAins	mall can	(9) (u)	prima	ilu d	ariduant free	S Ruce TE	chappens we arrived
earest Project F	acility :	سكام دكور	ROCK P	14	— arymin	Dista	nce:Mile	S @ PH	an lesmon PH
duommantelli	Condition	а (	Official Suma	et: 27) 13	. Si	ournee	6.PS		, , , , , , , , , , , , , , , , , , ,
egin Survey 2	080	End Sur	vey 2255	Ter	mp. at sta	rt_ <u>77</u>	° ⊱ Temp. at	end	
Time		Visibility		Audio		Precipi	ation	Wind Speed and	Comments
				100m				Direction (from)	-
	Cloud Height	Cloud Cover	Visible Distance		Rain	Fog	Other/Notes		
1800	N/A	N/A	リじ	WKS	N	N	N	. 0	7H norse
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					1				
For Rain and Fo	197: N - No	ne. L - Lis	ght, M - Moo	ierate, H	Heavy	<u> </u>			
Wind: 0= <1m	ph (<1.8Kn	nph) [Calm)	it Air: smoke d						
	2=4.7 (8)	4-41.30 [Lie	oht Breeze: Le	javes rustie	, can feel t	wind on y	our face]		
	3=8-12 (1	2.9-19.3) [ 20 p.30 m	Gentie Bresze  [Moderate Per	i: Leaves a esse: More	nd twigs m is thin bren	ove arou iches, rek	d. Light weight flag es dust and paper)	s extend)	
,	Se40.24 (	(20 6.38.6)	Feroch Breezy	e: Moves b	ranches, it	1965 SW8	9		through the brokeledge? combined from the
79	efficult to	keep unde	er control1						) begin to "whistie", umbrellas are
	7=32-38 8=90-49	(51.5-61.2) (62.8-74 M	[Moderate Gale:	ale: Large t Twics and	rees begin small bran	to sway, ches are	noticeably difficult b proken from trees, v	owalk) valking into the w	vind is very difficult]
	o=a0=90	America (assy)	Li reali dele.		- arrant of the			=	-
N. 8.									
Ke.	A <sub>to</sub>								



Observers: JOJUL ON RW

Page 2 3

Area/Job Name: SMvD, UARP

Site Name/Number Walk Rock PH

Date July 25, 2002

TIME	SPECIES	SEX (M/F)	AGE (J/A)	REPROD. STATUS	FORE- ARM (mm)	WEIGHT (g)	NET #	COMMENTS - SPECIES CONDITION
2050	Mi yumanensis	$\simeq$	Α	POST-	34	5,5	_7_	Nipples hard & crusty. Vovebar
2100	MYYU	M	1		34	4.5	5	When whitehr
2100	MAAN				,4			possible your prematine re
2135	MYYU	M	7		32	6.0	5	. , ,
2151	TABR	W	4		40	12.0	5	
2155	и .	M	P		42	125	5	
2204	TABL	MA	A	ļ	43	14.25		
2155	TABR	M	7		43	/6,0	6	
カラス	TABL	44	M		Tomati		6	Premoture Kellows &
5207	TABR.	ps	J		41	13.0		
2210	myyu.	T	A	NR	33	5.5	5	1
2210	TABR.	I.F.	Δ	Nr	47	130	Q	
22.s.Ce	Myra	F	#-	PL	34	4.75		-
2223	MYYIL	F	<u>A</u>	PL	33	6.0	5	
2224	TABR	W	.A		43	12.75		
2230	Mya	F	7	مستسلسان	35	6.75	4	-
2235	TABR	F	A	1	43	17.75	4	
2235	TRBR	M	J.		40	11.75	4	
2235	TABR	24	7		42	13.0	4/3	
2235	TABR	M	7		43	14.6	11	
2235	P-Pregnant, L-Lactating,	M	Lactating	NR - Non-B	142	125		

### BAT SPECIES SURVEY FORM

BAT SPECIES SURVEY FORM
Observers: JW JK OM RW

Page 393
Area/Job Name: S MUO WARP
Site Name/Number WHITE ROCK PH
Date July 25, 2002

TIME	SPECIES	SEX (M/F)	AGE (J/A)	REPROD. STATUS	FORE- ARM (mm)	WEIGHT (g)	NET #	COMMENTS - SPECIES CONDITION
1.235	MYXM	(=	I		32	5.0	4:6	
(	MYYU	F	3	Non-Rep	35	5.5	ς.	
	MYYY					-	4	BICHPS FROM ROK
)	MAAA	M	2		.33	5.0	<u> </u>	
(,							1	
							/	
			-					
			-					
	3	-	<u> </u>	-	-			17
		-		-				
	1	-			-			
		-					-	
			-				1	
					1			

Reproductive Status: P - Pregnant, L - Lactating, PL - Post-Lactating, NR - Non-Reproductive

### **APPENDIX C**

# CALIFORNIA DEPARTMENT OF FISH AND GAME MEMORANDUM OF UNDERSTANDING ON TRAPPING AND HANDLING OF SPECIAL STATUS BATS



State of California - The Resources Agency

dray DAVIS, Governor



http://www.dfg.ca.gov 1416 Ninth Street Sacramento, CA 95814 (916) 653-4875



July 8, 2002 -

Mr. Richard D. Williams Senidr Wildlife Biologist Duke Engineering and Services 2150 River Plaza Drive, Suite 140 Sacramento, California 9583

Dear Mr. Williams:

You and Mr. Dean Rofkar recently requested a renewal of and changes to your Membrandum of Understanding (MOU) that authorizes field studies of bats. Per your request, a revised List of Authorized Individuals is enclosed, the geographic scope of your MOU is hereby expanded from the counties of Calaveras, Stanislaus, and Tuolumne to Statewide, and the new expiration date of your MOU is December 31, 2004. All other provisions of your original MOU remain in full effect.

Thank you for your summary report and California Native Species Field Survey Forms for the work authorized by your previous MOU. We look letward to receiving additional reports and forms from your continuing field work

Please remember to contact the regional Fish and Game office prior to initiating field work A map and list of regional office telephone numbers is enclosed.

If you have any questions, please contact Ms. Betsy C. Bolster at the letterhead address, by e-mail at bbolster@dfg.ca.gov or by telephone at (916) 654-3806.

Sincerely,
Betz, C., Poolste

Dale T. Steele, Supervising Biologist Habitat Conservation Planning Branch

Enclosures

cc: See page two.

Conserving California's Wildlife Since 1870



Mr. Richard D. Williams July 8, 2002 Page Two

cc: Mr. Dean Rofkar
Duke Engineering and Services
1111 North Forest Street
Bellingham, Washington 98225-5119

Department of Fish and Game

Ms. Betsy Bolster Sacramento, California

Mr. Don Koch Northern California – North Coast Region Redding, California

Mr. Banky Curtis Sacramento Valley – Central Sierra Region Rancho Cordova, California

Mr. Rob Floerke Central Coast Region Yountville, California

Mr. Bill Loudermilk
San Joaquin Valley – Southern Sierra Region
Fresno, California

Mr. Chuck Raysbrook South Coast Region San Diego, California

Mr. Curt Taucher Eastern Sierra – Inland Deserts Region Chino Hills, California



GRAY DAVIS, Governor



State of California - The Resources Agency

DEPARTMENT OF FISH AND GAME

http://www.dfg.ca.gov 1416 Ninth Street Sacramento, CA 95814



## LIST OF AUTHORIZED INDIVIDUALS FOR DUKE ENGINEERING BAT MOU

(effective 7/8/02; expires 12/31/04)

1. Individuals authorized to conduct activities pursuant to this MOU:

Principal Investigator:

Mr. Dean Rofkar.

Field assistants:

Mr. Rick Williams, Mr. Jeromy Waddell.

2. Mr. Williams must be present on site to directly supervise Mr. Waddell until Mr. Williams is confident that Mr. Waddell is competent to accurately identify California bat species.

7/8/02

Betsy C. Bolster

Staff Environmental Scientist

Habitat Conservation Planning Branch California Department of Fish and Game

This list is valid only if dated on or after the MOU effective date. This list, the MOU, and a valid California Scientific Collecting Permit must be possession of at least one individual on site while conducting permitted activities.

Conserving California's Wildlife Since 1870





State of California - The Resources Agency

### DEPARTMENT OF FISH AND GAME

http://www.dfg.ca.gov 1416 Ninth Street Sacramento, CA 95814 (916) 653-4875



April 16, 2001

Mr. Richard D. Williams Senior Wildlife Biologist Duke Engineering and Services 2150 River Plaza Drive, Suite 140 Sacramento, California 95833

Dear Mr. Williams:

Enclosed is a copy of a Memorandum of Understanding (MOU) that will authorize Mr. Dean Rofkar, a biologist in your Bellingham, Washington office, to conduct field studies involving live-capture, handling, and collection of bats. Signatures from both you and Mr. Rofkar are required on the MOU to indicate your agreement with the conditions stipulated. Please sign and date your copy, retain a photocopy, and return the original to Ms. Betsy Bolster, Habitat Conservation Planning Branch, at the letterhead address.

Note that the MOU requires the completion and submission of the enclosed California Native Species Field Survey Form. Field survey forms are also available for download at http://www.dfg.ca.gov/whdab/html/cnddb.html.

Please note that the MOU requires notification of the local Department office prior to commencing field work. A map and list of telephone numbers for Department offices is enclosed.

We are pleased to work with you to obtain more information about bats. We look forward to receiving your netting summaries, preliminary results, field survey forms and annual report. If you have any further questions, please contact Ms. Betsy Bolster by e-mail at bbolster@dfg.ca.gov, or by telephone at (916) 654-3806.

Sincerely,

Sandra C. Morey, Chief

Habitat Conservation Planning Branch

Enclosures

cc: Department of Fish and Game

Regional Manager Rancho Cordova, California

Regional Manager Fresno, California

Conserving California's Wildlife Since 1870





## FOR DUKE ENGINEERING AND SERVICES BAT MOU (effective 4/16/01, expires 12/31/01)

1. Individuals authorized to conduct activities pursuant to this MOU:

Principal Investigator:

Mr. Dean A. Rofkar

Field assistants:

Ms. Olivia Munzer

Mr. Chris Vera

Mr. Jeromy Waddell

2. Field assistants must be directly supervised by Mr. Rofkar during any capture and handling of bats.

16 April 2001 Date

Betsy C. Bolster

Senior Biologist Specialist

Habitat Conservation Planning Branch California Department of Fish and Game

This list is valid only if dated on or after the MOU effective date. This list and the MOU must be possession of all individuals while conducting permitted activities.

Expiration Date: December 31, 2001

## MEMORANDUM OF UNDERSTANDING BY AND BETWEEN DUKE ENGINEERING SERVICES AND CALIFORNIA DEPARTMENT OF FISH AND GAME REGARDING BATS

This Memorandum of Understanding (MOU) is made and entered into on 16 April, 2001, by and between Duke Engineering and Services, Sacramento, California (Consultant), and the California Department of Fish and Game, Sacramento, California (Department).

Whereas, the Consultant has expressed an interest in conducting field surveys for bats, which are considered standard exceptions to State of California Scientific Collecting Permits and many of which are considered mammal species of special concern by the Department, and

Whereas, the Department encourages field research by competent investigators to expand the scientific knowledge of the geographic range, population density, habitat requirements, ecology, and taxonomic status of these species, and

Whereas, the Consultant and the Department wish to cooperate in field studies of bats by means of this MOU,

Therefore, it is mutually agreed and understood as follows:

### **PERMIT**

- 1. The Department grants the Consultant permission to salvage dead bats and live-capture, identify, and immediately release all species of bats. Authorized capture methods are mist nets and harp traps. All handling activities shall be conducted using standard restraint procedures for bats. Special care must be taken to avoid injury to individuals during capturing and handling activities. Any inadvertent casualties or salvaged specimens must be donated to a public scientific institution in California where access to collection materials and information is provided willingly and free of charge.
- 2. All mist nets in operation shall be continuously attended and located a sufficient distance away from any known bat roost to minimize disturbance and avoid capturing an unmanageable number of individuals. No mist nets shall be operated near a known maternity roost from April through August, inclusive. Any pregnant or lactating females inadvertently captured shall be immediately released.
- 3. Potential cave or mine roost sites may be entered to initially determine presence or absence of bats. No roosting bats shall be disturbed. No bat roosts or hibernacula, natural or human-made, shall be entered or otherwise disturbed when bats are known to be present. If a maternity roost is located during a survey, the all field investigators shall immediately leave the site.
- 4. The Investigator may not purposefully sacrifice any individuals.

- 5. Permanent marking, including the use of wing-notches, wing bands, or radiotransmitter, is not authorized.
- 6. Authorized geographic area of capture is Calaveras, Stanislaus, and Tuolumne counties.

### PERMITTEE

7. Mr. Dean Rofkar is designated as the principal investigator for this study. The only additional individuals authorized to conduct activities pursuant to this MOU are on the enclosed "List of Authorized Individuals". This list may be amended under the Authorized Individuals provision of Attachment 1.

### STANDARD PROVISIONS

8. Standard provisions are enumerated in Attachment 1, incorporated into this MOU by this reference.

### **SPECIAL CONDITIONS**

- 9. The Consultant may not hold any bats in captivity.
- 10. The Department strongly encourages the Consultant to ensure that all persons involved in bat handling activities have received appropriate preexposure rabies vaccinations and boosters, and/or have maintained a rabies antibody titer of greater than 1:5 during the past two years, as recommended by the U.S. Department of Health and Human Services Centers for Disease Control, and the California Department of Health Services.

### **COORDINATION**

- 11. The Department contact on matters relating to this MOU is Ms. Betsy C. Bolster, Species Conservation and Recovery Program, Habitat Conservation Planning Branch, 1416 Ninth Street, Sacramento, California, 95814, e-mail bbolster@dfg.ca.gov, telephone (916) 654-3806.
- 12. The principal investigator is responsible for notifying the Department's regional office prior to commencing field activities. A map of Department regions and telephone numbers is enclosed.

### REPORTING

13. The Consultant shall provide to the Department's contact a written annual report of activities and preliminary results including, but not limited to, 1) a summary of all trapping effort whether the target species was found or not, 2) Universal Tranverse Mercator (UTM) coordinates of all trapping localities, descriptions of habitat types, and a list of all individuals captured and their disposition. In addition to the capture summary and preliminary results, any captures or sightings of Macrotus, Choeronycteris, Euderma, Lasiurus blossevillii, Corynorhinus (=Plecotus), Antrozous, Nyctinomops, Eumops, Myotis occultus, M. thysanodes, M. volans, or M.

- velifer must be reported, either on the enclosed California Native Species Field Survey Form, which may be photocopied as necessary, or in a format containing equivalent information.
- 14. Annual reports shall be provided on or before December 31, each year this MOU is in effect, to Ms. Bolster at the above address. In addition, final copies of any manuscripts, publications, or other reports resulting from these studies shall be provided.

### PERMIT TERM

- 15. This MOU is effective on April 16, 2001 and shall expire on December 31, 2001, unless terminated sooner by either party. This MOU may be renewed under the Permit Renewal provision in Attachment 1.
- 16. This MOU is not valid until signed the Consultant, whose signature signifies understanding of and agreement to abide by the conditions and authorizations of this permit.

This MOU has been executed by and on behalf of Duke Engineering and Services and the Department as of the dates shown below.

Thurling D Williams
Mr. Richard D. Williams, Senior
Wildlife Biologist
Duke Engineering and Services
2150 River Plaza Drive, Suite 140
Sacramento, California 95833
(916) 564-4214

Date: 4/26/01

Ms. Sandra C. Morey, Chief
Habitat Conservation Planning Branch
Department of Fish and Game
1416 Ninth Street
Sacramento, California 95814-5560

Date: April 14, 2001

Mr. Dean A. Rofkar, Principal Investigator Duke Engineering and Services 1111 North Forest Street Bellingham, Washington 98225-5119 (360) 671-1150

Date:\_\_\_\_