

**Placer County Water Agency
Middle Fork American River Project
(FERC No. 2079)**

FINAL

**TERR 4 – SPECIAL-STATUS WILDLIFE
TECHNICAL STUDY REPORT – 2008**



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1.0 INTRODUCTION

This report describes surveys conducted by the Placer County Water Agency (PCWA) in accordance with the TERR 4 – Special-Status Wildlife Technical Study Plan (TERR 4 – TSP) for the Middle Fork American River Project (MFP or Project). The TERR 4 – TSP was included in Supporting Document (SD) H of the Pre-Application Document (PAD) (PCWA 2007). Specifically, this report provides a detailed description of the methods and results of special-status wildlife studies completed in 2006–2008.

This report addresses only special-status terrestrial wildlife species. For the purpose of this document, a special-status wildlife species is defined as any animal species that is granted status by a federal, state, or local agency. Federal listed species granted status by U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act (ESA) include Federal Threatened (FT), Federal Endangered (FE), Federal Threatened (Proposed) (FPT), Federal Endangered (Proposed) (FPE), Federal Candidate for Listing (FC), or Federal Proposed for Delisting (FPD). In addition, the U.S. Department of Agriculture - Forest Service (USDA-FS) grants special status to Forest Service Sensitive (FSS) wildlife species and National Forest Management Indicator Species (MIS) for each specific forest under their jurisdiction.

State of California listed terrestrial wildlife species which are granted status by the California Department of Fish and Game (CDFG) under the California Endangered Species Act (CESA) include State Threatened (ST), State Endangered (SE), California Fully Protected species (CFP), and California Species of Concern (CSC).

At the time the TERR 4 – TSP was developed in 2007, osprey were considered CSC by the CDFG. When CDFG revised the CSC bird list in 2008, osprey were no longer included. However, for consistency with the TERR 4 – TSP, osprey information is included in this report.

2.0 STUDY OBJECTIVES

The objectives of the special-status wildlife studies described in the TERR 4 – TSP are:

- Identify special-status wildlife species potentially occurring in California Wildlife Habitat Relationships (CWHR) habitats documented as part of the TERR 1 – Vegetation Communities and Wildlife Habitat Technical Study Report (TSR).
- Determine whether Project communication lines and powerlines are consistent with Avian Power Line Interaction Committee (APLIC) Guidelines.
- Identify wildlife species use and diversity as well as habitat relationships at potential Project betterments.
- Document USDA-FS land allocations and known occurrences of special-status wildlife species at Project facilities, roads, trails, recreation facilities, dispersed concentrated use areas, and bypass and peaking reaches.

- Document USDA-FS land allocations and known occurrences of special-status wildlife species at potential Project betterments.

Figure TERR 4-1 shows the TERR 4 – TSP study objectives and the study elements associated with each objective. It also shows where information developed is documented.

3.0 STUDY IMPLEMENTATION

Study elements described in the TERR 4 – TSP were initiated in 2006 and were completed in 2008. A summary of the study elements that have been completed, outstanding study elements, and any deviations or proposed modifications to the TERR 4 – TSP are discussed in the following subsections.

3.1 STUDY ELEMENTS COMPLETED

3.1.1 Documented Special-Status Wildlife Occurrences and Habitats

- Developed preliminary tables and maps of special-status wildlife species known to occur or potentially occurring in the study area.
- Documented USDA-FS Land Allocations and important habitats in the study area.
- Documented CWHR wildlife habitats and associated special-status wildlife species in the study area.
- Conducted field surveys.
- Developed final tables and maps of special-status wildlife species known to occur or potentially occurring in the study area.

3.1.2 Determined the Consistency of Project Communication Lines and Powerlines with APLIC Guidelines

- Mapped the location of Project communication lines and powerlines.
- Consulted with resource agencies and PCWA regarding avian electrocutions and mortalities on Project powerlines.
- Evaluated avian use of and consistency of Project communication lines and powerlines with Avian Power Line Interaction Committee (APLIC) guidelines.

3.2 VARIANCES FROM THE TERR 4 – TSP

All studies were conducted in accordance with the TERR 4 – TSP.

3.3 OUTSTANDING STUDY ELEMENTS

There are no outstanding study elements. However, per the TERR 4 – TSP, if additional Project facilities and features, recreation facilities, or dispersed concentrated use areas are identified, these areas will be surveyed consistent with the TSP.

3.3.1 Proposed Modifications to the TERR 4 – TSP

There are no proposed modifications to the TERR 4 – TSP.

4.0 EXTENT OF STUDY AREA

The study area for documenting special-status wildlife occurrences and CWHR habitats is defined as:

- ¼ mile around existing Project facilities and features, recreation facilities, and dispersed concentrated use areas (Table TERR 4-1, Table TERR 4-2, and Table TERR 4-3); and
- ¼ mile around potential Project betterments, including new facilities, roads, trails, staging and disposal sites, as well as new inundation areas (Table TERR 4-4).

The study area for osprey and bald eagle nesting surveys is defined as:

- Water bodies and upland areas within a half-mile of the following locations:
 - French Meadows Reservoir;
 - Hell Hole Reservoir;
 - Middle Fork Interbay,
 - Ralston Afterbay;
 - Rubicon River from Hell Hole Reservoir to Ralston Afterbay;
 - MFAR and from French Meadows Reservoir to the confluence with North Fork American River (NFAR); and
 - NFAR from confluence of MFAR to the Ordinary High Water Mark (OHWM) of Folsom Reservoir.

The study area for northern goshawk surveys is defined as:

- Appropriate habitat within ¼ mile of potential Project betterments where Project operation or construction activities could alter or remove habitat or result in disturbance.

The study area for general wildlife surveys is defined as:

- 100 feet around potential Project betterments, including new facilities, roads, trails, staging and disposal sites, as well as new inundation areas (Table TERR 4-4).

The study area for documenting USDA-FS land allocations and other important habitats is defined as:

- ¼ mile around existing Project facilities and features, recreation facilities, and dispersed concentrated use areas (Table TERR 4-1, Table TERR 4-2, and Table TERR 4-3); and
- ¼ mile around potential Project betterments, including new facilities, roads, trails, staging and disposal sites, as well as new inundation areas (Table TERR 4-4).

The study area for evaluating Project communication lines and powerlines is defined as:

- ¼ mile around existing Project facilities and features, recreation facilities, and dispersed concentrated use areas (Table TERR 4-1, Table TERR 4-2, and Table TERR 4-3); and
- ¼ mile around potential Project betterments, including new facilities, roads, trails, staging and disposal sites, as well as new inundation areas (Table TERR 4-4).

5.0 STUDY APPROACH

This section describes the study approach used to document special-status wildlife species and their habitats in the study area.

5.1 DOCUMENT SPECIAL-STATUS WILDLIFE OCCURRENCES AND HABITATS

The study approach for identifying special-status wildlife occurrences and habitats in the study area included developing preliminary tables and maps of special-status wildlife species known to occur or potentially occurring in the study area, documenting the location of USDA-FS land allocations and important habitats, documenting the distribution of CWHR habitats, conducting field surveys, compiling other incidental wildlife data, and developing final tables and maps of special-status wildlife species known to occur or potentially occurring in the study area. The approach for each of these study elements is described in detail below.

5.1.1 Develop Preliminary Table and Maps of Special-Status Wildlife

Existing information on special-status species known to occur or having the potential to occur in the study area was reviewed, and preliminary special-status wildlife occurrence tables and maps were developed in 2006 based on data obtained from the following sources:

- USDA-FS survey data for the Eldorado and Tahoe national forests;
- CDFG's Natural Diversity Database (CDFG 2008);

- USDA-FS Regional Forester's List of Sensitive Plant and Animal Species for Region 5 (USDA-FS 2007);
- USFWS Species List (USFWS 2008);
- Eldorado National Forest Land and Resource Management Plan (USDA-FS 1990a);
- Tahoe National Forest Land and Resource Management Plan (USDA-FS 1990b); and
- Sierra Nevada Forest Plan Amendment (USDA-FS 2004a).

Preliminary special-status wildlife tables and occurrence maps were provided in SD F of the PAD (PCWA 2007).

5.1.2 Document USDA-FS Land Allocations and Other Important Habitats

This section describes the study approach for documenting the location of USDA-FS land allocations and other protected habitat areas in the study area. The USDA-FS has identified these areas for the protection of selected species in the study area. These include Protected Activity Centers (PACs) for northern goshawk, PACs and Home Range Core Areas (HRCAs) for California spotted owl, planning areas (i.e., meadow habitats) for willow flycatcher, Forest Carnivore Den Sites for American marten and Pacific fisher, and migration corridors and important habitat areas for mule deer.

Preliminary land allocation and habitat maps were developed for PCWA's PAD in 2007 based on available USDA-FS data. USDA-FS and CDFG staff were contacted again in August and September 2008 to obtain any additional land allocation and habitat data that had become available since the PAD was filed. No new data were obtained from this effort. However, new data for willow flycatcher planning areas were obtained from the USDA-FS GIS clearinghouse website, *Statewide, Regionwide & Planning Area Layer Descriptions and Data Downloads, Forest Service, Region 5* (USDA-FS 2008). USDA-FS defines willow flycatcher planning areas as wet or moist meadows supporting woody vegetation, particularly willows (USDA-FS 2004), with meadows 15 acres in size or greater given management emphasis.

5.1.3 Document CWHR Wildlife Habitats and Associated Special-Status Wildlife

The study approach for documenting CWHR wildlife habitats and associated special-status wildlife in the study area included developing: (1) CWHR habitat maps for the study area; and (2) a table showing special-status wildlife associated with each wildlife habitat. Each approach is described below.

CWHR Habitat Maps

CWHR habitat maps for the study area were developed based on vegetation community maps published in PCWA's *TERR 1 – Vegetation Communities and Wildlife Habitats Technical Study Report* (TERR 1 – TSR) (PCWA 2008). Each CalVeg community

present in the study area was referenced to a CWHR wildlife habitat using the *CalVeg-CWHR Crosswalk for California* (USDA-FS 2004b). This information was then used to develop: (1) a Project-specific CalVeg-CWHR crosswalk table (refer to Table 1-2 of the TERR 1 – TSR); and (2) new maps showing the location of CWHR habitats in the study area.

Associated Special-Status Wildlife Species

CDFG's CWHR database was reviewed to develop a list of special-status wildlife species potentially occurring in each CHWR habitat (CDFG 2002). The CWHR database uses a predictive model to determine the likelihood of the occurrence of animal species in any given geographical location based on ecological data included in the model such as the life history and known distribution of an animal, existing vegetation, percent canopy cover, presence of water, and a number of other elements including landscape features.

A table was then developed showing each CWHR habitat in the study area, and special-status species known or potentially occurring in the study area that may occur in each habitat.

5.1.4 Conduct Field Surveys

This section describes field surveys conducted within the MFP and proposed Project betterments including focused raptor surveys (i.e., bald eagle wintering and nesting surveys, osprey nest surveys, and northern goshawk surveys) and general wildlife surveys (i.e., avian point count and area search surveys and Terrestrial Visual Encounter Surveys (TVES)).

Bald Eagle Wintering and Nesting Surveys

Focused surveys to identify the location of bald eagles, roosts and nests were conducted in the vicinity of Project reservoirs, large bypass and peaking stream reaches, and at potential Project betterments. Surveys were conducted by Ron Jackman, a recognized raptor expert, on December 13 and 14, 2007, January 15, 2008, February 12, 2008, March 25, 2008, May 6, 2008, and June 11 and 12, 2008. Refer to the TERR 5 – Bald Eagle TSR (PCWA 2008) for detailed survey methods and results.

Osprey Nest Surveys

Surveys for osprey and nests were conducted concurrently with bald eagle wintering and nesting surveys (dates above). The nest surveys were conducted monthly from December through June by helicopter, on the ground, or by boat. During helicopter surveys, one or two biologists visually searched for ospreys and nests while the helicopter flew at low elevations through the study area. During ground and boat surveys, one or two biologists also visually searched for osprey nests. A California Natural Diversity Database field survey form was completed and submitted to CDFG for each nest recorded. The Global Positioning System (GPS) coordinates of osprey nests and sightings were recorded. Geographic Information System (GIS) maps of osprey

data overlaying information on Project facilities and features, recreation facilities, dispersed concentrated use areas, associated bypass and peaking reaches, and potential Project betterments were developed.

Northern Goshawk Surveys

Surveys for northern goshawk were conducted in accordance with the intensive search survey guidelines set forth in the *Northern Goshawk Inventory and Monitoring Technical Guide* (Woodbridge and Hargis 2006). The study approach for the development of survey area maps and a summary of field survey methods are provided below.

Survey Area Maps

Northern goshawk survey area maps were developed in consultation with the Terrestrial Working Group (TWG). First, preliminary survey maps were developed that showed the location of northern goshawk habitat within ¼ mile of potential Project betterments, including new facilities, roads, trails, staging and disposal sites, and new inundation areas. For the purposes of this mapping process, northern goshawk habitat was defined as:

- USDA-FS northern goshawk PACs.
- Any other forested areas that have the following characteristics important to habitat for northern goshawk as defined by USDA-FS (USDA-FS 2004a) including:
 - Trees in the dominant and co-dominant crown classes averaging at least 24 inches diameter at breast height (dbh); and
 - At least 70% tree canopy cover in westside conifer and eastside mixed conifer forests, and at least 60% tree canopy cover in eastside pine forests.

Vegetation community and forest structure maps that were developed for the TERR 1 – Vegetation Communities and Wildlife Habitats TSR were reviewed to determine which forest stands in the study area met the USDA-FS definition of northern goshawk habitat. It was determined that these would include forest characterized as “Dense” (60 to 80 percent canopy cover) or “Extremely Dense” (greater than 80 percent canopy cover) *and* any of the following vegetation communities:

- Gray Pine (PD);
- Douglas-Fir-Pine (DP);
- Mixed Conifer-Fir (MF);
- Mixed Conifer-Pine (MP);
- Pacific Douglas-Fir (DF);
- Ponderosa Pine (PP); and
- White Fir (WF).

These preliminary northern goshawk survey maps were provided to the TWG for review and approval on June 3, 2008. As part of the review process, it was determined by the TWG that facilities and surrounding areas associated with two proposed Project betterments would not be included in the northern goshawk surveys or survey maps. First, the TWG determined that surveys would not be necessary at the proposed Ralston Powerhouse Capacity Upgrade Betterment for several reasons. First, the Ralston Powerhouse Capacity Upgrade Betterment is restricted to activities within the current powerhouse facility footprint with the exception of the equipment staging area, which would be located in an adjacent gravel parking area. Therefore, implementation of this betterment would not alter or remove northern goshawk habitat or result in disturbance to northern goshawk individuals. In addition, the Ralston Powerhouse is located in a steep river canyon and the surrounding land is inaccessible and would pose a safety risk for northern goshawk survey crews.

The TWG also determined that surveys at the South Fork Long Canyon component of the proposed Hell Hole Seasonal Storage Increase Betterment would not be necessary because USDA-FS has already documented a northern goshawk nest and designated a PAC at this location. Surveys would, however, be conducted in remaining appropriate habitat around the proposed Hell Hole Seasonal Storage Increase and French Meadows Powerhouse Upgrade betterments. A final survey map was developed showing the final survey area for northern goshawk as agreed upon by the TWG.

Survey Methods

Focused northern goshawk surveys were conducted July 24, 25, and 26, 2008, during northern goshawk nesting season, as described in the *Northern Goshawk Inventory and Technical Monitoring Guide* (Woodbridge and Hargis 2006). Three observers conducted the surveys. Materials used include: boat with outboard engine, mini-vox (Model PB-25) portable broadcast system with 108 decibel output at one meter (Anchor Audio, Inc., Torrance, California), mp3 player with recorded northern goshawk vocalizations, binoculars, baggies for collection of possible sign, flagging, aerial maps, GPS unit and compass.

Following a pre-determined compass bearing, the observers walked in parallel transects spaced approximately 30 meters apart throughout the survey area. Ten-second northern goshawk vocalizations were broadcast every 250 meters along the transect line. Specifically, broadcasts were sounded three times at approximately 60, 180, and 300 degrees from each call point. Between the broadcasts, surveyors listened and watched for any signs of northern goshawks for roughly 30 seconds before rotating to the next degree. Both the adult alarm call and the juvenile wail call were broadcast. Observers walked at a slow pace, allowing sufficient time to scan the ground, trees, low limbs and downed logs for any possible northern goshawk signs (feathers, prey remains, whitewash, or nests). All detections of northern goshawk or their sign were recorded and/or collected as necessary for species verification. General survey information was recorded for each site including a site identification number, date, visit number, survey method, team, wind speed, cloud cover, temperature, and survey time.

Some locations in the study area were inaccessible to the survey crew due to steep, rocky and densely vegetated slopes. In these areas, surveys were conducted by broadcasting calls at 250-meter intervals from a boat along the shoreline. The boat was anchored parallel to possible habitat along the shoreline. Broadcasts were performed using the duration and directional specifications described above.

General Wildlife Surveys

General wildlife surveys were conducted at potential Project betterments to determine wildlife species diversity and habitat use. Three survey protocols—avian point counts, avian areas searches, and TVES—were selected from USDA-FS's *Multiple Species Inventory and Monitoring Protocol: A Technical Guide for Monitoring Plants and Animals on National Forest Service Lands* (MSIM) (Manley et al. 2006). The MSIM was developed by USDA-FS to identify cost-effective and reliable sampling methods for each of several taxonomic groups found on National Forest lands, including reptiles, terrestrial birds, and mammals. Refer to Table TERR 4-5 for a summary of survey types that were implemented at each potential Project betterment. The location of avian point count stations and avian area search locations are shown in Map TERR 4-1.

Provided below is a description of the avian point count, avian area search, and TVES survey protocols.

Avian Point Counts

Avian point counts were conducted to document avian species assemblages and CWHR habitat use at potential Project betterments where linear survey designs were appropriate (Table TERR 4-5). Avian point counts are a commonly employed bird censusing technique effective for the detection of a majority of songbirds and woodpeckers (Manley et al. 2006).

Avian surveys were conducted at 32 point count stations established at potential Project betterments. Point counts were conducted twice—once between May 14 and June 6, 2008 to document breeding bird assemblages, and once between September 19 and 21 to document resident (i.e., non-breeding, non-migratory) bird assemblages. Point count stations were established every 0.2 miles (based on a recommended minimum distance of 250 meters (or approximately 820 feet) between each station) along pre-established linear transects, such as roads and trails, in the vicinity of potential Project betterments. Surveys were conducted from sunrise to 1000 hours. Two observers walked the designated transect, stopping at each station to conduct a point count 10 minutes in duration. During each ten-minute point count, observers noted each bird species heard or observed within a 160-foot (50-meter) range of the station. “Flyovers” (i.e., birds passing overhead) were also noted. Surveys were not conducted in windy (i.e., Beaufort rating of 3 or greater) or rainy conditions. The following data were recorded on datasheets developed for these studies:

- Date;
- General location;
- Point count station number and GPS coordinates;
- Weather conditions (e.g., wind speed);
- CWHR wildlife habitat;
- Start and stop time;
- Bird species observed; and
- Incidental wildlife species observed.

Avian Area Searches

Avian area searches were conducted to document avian species assemblages and CWHR habitat use at potential Project betterments for which linear survey designs were not appropriate (Table TERR 4-5).

Avian area searches were conducted at four area search locations established at potential Project betterments. Point counts were conducted twice—once between May 14 and June 6, 2008 to document breeding bird assemblages, and once between September 19 and 21 to document resident (i.e., non-breeding, non-migratory) bird assemblages. Search area polygons were established within 100 feet of potential Project betterments. Twenty minute searches were conducted within each search area from sunrise to 1000 hours. Two observers walked randomly around the designated polygon, noting each bird species heard or seen within the polygon. Observers also made a visual search for bird nests or special-status species, particularly in areas supporting riparian vegetation. “Flyovers” (i.e., birds passing overhead) were also noted. Surveys were not conducted in windy (i.e., Beaufort rating of 3 or greater) or rainy conditions. Data were recorded on datasheets consistent with data collected for the avian point counts (described above).

Terrestrial Visual Encounter Surveys

TVES are general wildlife surveys designed to detect a variety of terrestrial species, especially mammals, reptiles, and diurnal raptors (Manley et al. 2006). TVES were conducted in the study area from June through August 2008 in conjunction with avian point count surveys and the TERR 2 – Special-Status Plants and TERR 3 – Noxious Weed surveys. Surveys were conducted between 0800 and 1800 hours. Two observers searched within 100 feet of each potential Project betterment, walking in a zigzag pattern to cover the entire area. Wildlife signs to be recorded included direct species observation, scat, pellets, whitewash, tracks, nests, fur or feathers, burrows, dens, latrines, prey remains, vegetation browse, food caches, and markings on the ground or on tree bark. The following data were recorded on datasheets developed for these studies:

- Date;
- Time;
- General location;
- Weather conditions;
- CWHR wildlife habitat;
- Wildlife sign observed;
- Specific location or GPS coordinates of sign;
- Photographs of sign; and
- Incidental wildlife species observed.

5.1.5 Compile Incidental Wildlife Observation Data

Incidental observations of special-status species documented during technical studies completed for PCWA's MFP were compiled and reviewed. The following data were obtained for each observation: date, location of observation, species observed, and GPS coordinates (when available). These data were entered into a spreadsheet and reviewed for accuracy and reliability. Follow-up contact with the original observer was made to obtain additional information or clarification as necessary.

5.1.6 Develop Final Tables and Maps of Special-Status Wildlife Species and Habitats

Tables and maps showing special-status wildlife species known to occur or potentially occurring in the study area were revised and finalized based on study elements completed for this report including CWHR habitat analysis, agency consultation, field surveys, and incidental wildlife observations, as described below.

Resource agencies were contacted, and resource agency websites and databases (e.g., CNDDDB and CWHR) were reviewed to obtain any new data on special-status wildlife known to occur or potentially occurring in the study area that had become available since the development of the preliminary wildlife occurrence maps in 2006 (Section 5.1.1). USFWS, USDA-FS, and CDFG species lists were reviewed for any changes in the status of listed animals. Any new location data, including data obtained from implementation of TERR 5 and TERR 6 (bald eagle and special-status bat) technical studies, focused potential Project betterment surveys (Sections 5.1.3, 5.2.1, and 5.2.2), or from the compilation of incidental wildlife observation data (Section 5.1.4), was recorded, digitized, and incorporated into GIS layers.

5.2 DETERMINE THE CONSISTENCY OF PROJECT COMMUNICATION LINES AND POWERLINES WITH APLIC GUIDELINES

This section describes the study approach used to evaluate the consistency of Project communication lines and powerlines with guidelines outlined in *Suggested Practices for*

Avian Protection on Power Lines: The State of the Art in 2006 (Avian Power Line Interaction Committee (APLIC) 2006). The Guidelines were developed by USFWS and APLIC to provide recommendations for powerline structure designs and modifications for protecting raptors or other avian species from electrocution. APLIC is a committee that includes representatives from the utility industry, wildlife resource agencies, conservation groups, and manufacturers of avian protection products. Specific tasks involved in the evaluation of Project communication lines and powerlines are summarized below.

5.2.1 Map the Location of Project Communication Lines and Powerlines

Project communication lines and powerlines were identified and mapped in 2006 as part of the PAD (PCWA 2007). In addition, information on each communication line and powerline including length, voltage, and start and end points for each line, was obtained from PCWA personnel.

5.2.2 Consult with Resource Agencies and PCWA Regarding Avian Electrocutions and Mortalities on Project Powerlines

PCWA personnel and resource agencies (i.e., USFWS, CDFG, and USDA-FS) were consulted on March 8 and June 3, 2008 to obtain information on any avian electrocutions and/or mortalities recorded in the study area. The following data were obtained, where possible, for each electrocution or mortality: source or observer, date, location, and avian species involved.

5.2.3 Evaluate Avian Use of and Consistency of Project Communication Lines and Powerlines with APLIC Guidelines

Field inspections were conducted in August 2007 to document configurations and determine the extent of avian use of Project communication line and powerlines. Accessible portions of Project communication lines and powerlines were visited on foot or by vehicle, and photographs were taken of each type of pole configuration. During the field inspection, any sign of raptor use of the Project communication lines and powerlines (e.g., nests, perched birds, whitewashing) was documented.

Each Project communication and/or powerline pole configuration was evaluated against APLIC raptor-safe configuration guidelines. In general, electrocution can occur when birds perch on, nest on, or collide with structures having: (1) phase conductors separated by less than the wrist-to-wrist or head-to-foot measurement of a bird; or (2) distances between grounded hardware (e.g., grounded wires, equipment, or guy wires) and any energized phase conductors (or other energized equipment) less than the wrist-to-wrist or head-to-foot measurement of a bird. APLIC recommends a conductor-to-conductor or conductor-to-grounded hardware distance of about 60 inches to accommodate the body dimensions of large birds such as bald and golden eagles (APLIC 2006). Therefore, Project communication lines and powerlines were evaluated according to the following criteria:

- Whether communication lines and powerlines were underground and/or insulated (and therefore pose no electrocution risk);
- Whether the distance between phase conductors was less than 60 inches;
- Whether the distance between energized parts and grounded equipment on equipment poles was less than 60 inches; and
- Whether metal guy wires were located in close proximity to energized wires.

Additional pole configuration data were requested from PCWA as necessary to determine whether each configuration posed a potential risk for avian electrocution. Data requested included distance between conductors, length of wooden cross arm, and distance from the top of a pole to utility equipment such as transformers and jumpers.

6.0 STUDY RESULTS

The following presents results of the TERR 4 – Special-Status Wildlife technical studies conducted through 2008.

6.1 DOCUMENT SPECIAL-STATUS WILDLIFE OCCURRENCES AND HABITATS IN THE STUDY AREA

Provided below are the results of the documentation of wildlife habitats and special-status wildlife species in the study area.

6.1.1 Develop Preliminary Table and Maps of Special-Status Wildlife

Preliminary special-status wildlife occurrence tables and maps were developed in 2006 based on data obtained from USDA-FS, CDFG, USFWS, and other pertinent sources. These preliminary maps are available the SD F of the PAD (PCWA 2007).

6.1.2 Document USDA-FS Land Allocations and Other Important Habitats

As described in Section 5.1.5, resource agencies were contacted and the USDA-FS GIS clearinghouse was searched for any new land allocation or other important habitat data that had become available since the development of the PAD (PCWA 2007). No new data were available for northern goshawk PACs, California spotted owl PACs and HRCAs, American marten and Pacific fisher Forest Carnivore Den Sites, or mule deer migration routes and important habitat areas.

However, a USDA-FS planning area (meadow habitat) for willow flycatcher was identified at the Diamond Crossing Snow Course Site. Refer to Map TERR 4-1 for a map of the location and extent of this habitat.

The final land allocation and other important habitat maps are included as Maps TERR 4-2 through TERR 4-4 of this report. This includes Map TERR 4-2 (northern goshawk PACs and nest trees), Map TERR 4-3 (California spotted owl PACs and HRCAs and

nest trees), and Maps TERR 4-4a and 4-4b (mule deer migration routes and important habitat areas).

6.1.3 Document CWHR Wildlife Habitats and Associated Special-Status Wildlife

Based on the CalVeg-CWHR crosswalk developed for the study area (PCWA 2007, Table 6.6-3), the following CWHR habitats were identified in the study area:

- Annual Grass;
- Barren;
- Blue Oak-Foothill Pine;
- Douglas-Fir;
- Montane Chaparral;
- Montane Hardwood;
- Montane Riparian;
- Ponderosa Pine;
- Sierran Mixed Conifer;
- Water (Riverine and Lacustrine);
- Wet Meadow; and
- White Fir.

Refer to Table TERR 4-6 and Maps TERR 4-5 through 4-5g for the location and distribution of these habitats within the study area.

Table TERR 4-7 provides information on special-status species known to occur or potentially occurring in the study and their potential distribution within CWHR habitats.

6.1.4 Conduct Field Surveys

Provided below are the results of focused raptor surveys and general wildlife surveys conducted in the study area.

Osprey Nest Surveys

A total of eight osprey nests were identified during implementation of the TERR 4 surveys. This includes six active nests identified during osprey surveys in the study area—three nests at French Meadows Reservoir, and three nests at Hell Hole Reservoir. In addition, numerous incidental osprey observations were recorded during implementation of other technical studies (refer to Section 6.1.4, below). The observations included identification of two additional active osprey nests at French Meadows Reservoir that were not visible by helicopter. Refer to Appendix A and Map TERR 4-6 for details on the location of each osprey nest.

Northern Goshawk Surveys

The preliminary northern goshawk survey map developed for TWG review is provided as Map TERR 4-7a. The final TWG-approved northern goshawk survey map is provided as Map TERR 4-7b. No northern goshawks or their sign were identified during northern goshawk surveys. Refer to Appendix B for copies of the datasheets from the surveys.

General Wildlife Surveys

Provided below are the results of avian surveys (i.e., point counts and area searches) and TVES implemented at potential Project betterments.

Avian Point Counts and Area Searches

A total of 50 birds identifiable to species were detected by sound or sight during early season (spring/summer) avian point count and area search surveys. In addition, two groups of birds were identifiable to genus, but were not identifiable to species. These were woodpeckers that were tapping or drilling but did not call or were not seen to provide additional information necessary to identify them to the species level, and swifts that were seen but were flying too high to be identifiable to species by sight or sound. Bird species detected during the early season surveys represent birds that are migratory through the area and summer breeding birds, as well as resident birds. Two special-status species, yellow warbler (CSC) and mountain quail (MIS) were detected.

A total of 23 species were detected by sound or sight during late season (fall) avian point count and area search surveys. Species detected during the late season surveys represent resident birds that are present year-round. Three special-status bird species were detected: blue grouse (MIS), mountain quail (MIS), and hairy woodpecker (CSC).

Refer to Table TERR 4-8 for a summary of the results of the avian point counts and avian area searches. Map 4-8 provides the locations of the point counts.

Terrestrial Visual Encounter Surveys

Two special-status wildlife species were observed during TVES: bald eagle (FSS, CE, CFP) and mule deer (MIS). Common species or their sign observed included raptors such as osprey and red-tailed hawk, mammals such as mountain lion, coyote, black bear, northern river otter and rodent species (e.g., squirrels and chipmunks), and terrestrial reptiles including the Sierran alligator lizard and California racer. Black bear and mule deer sign (i.e., scat, hair, and bedding areas) were especially prevalent. Some wildlife signs were recorded but could not be identified to a specific species. The greatest species diversity and greatest number of detections was documented on the northern shore of Hell Hole Reservoir within Montane Hardwood habitat.

Refer to Table TERR 4-9 for a summary of wildlife species detected at each potential Project betterment.

6.1.5 Compile Incidental Wildlife Observation Data

Ninety incidental wildlife observations for the period from 2005 through 2008 were obtained from survey crews and PCWA staff. This includes 21 sightings of nine special-status bird species including:

- American white pelican (CSC);
- Northern goshawk (FSS, CSC);
- Golden eagle (CSC, CFP);
- Bald eagle (FSS, FD, SE, CFP);
- Osprey;
- Vaux's swift (CSC);
- Olive-sided flycatcher (CSC);
- Yellow-breasted chat (CSC); and
- Yellow warbler (MIS, CSC).

It should be noted that osprey were removed from CDFG's list of California bird species of special concern in 2008. However, for consistency with the TERR 4 – TSP, osprey information is included in this report. No incidental sightings of special-status species of non-avian taxa (e.g., terrestrial reptiles and mammals) were reported. Refer to Appendix C for a complete list of incidental observations of special-status and common wildlife species that were compiled for this report. Refer to Appendix A for CNDDDB forms submitted to CDFG to document observations of the special-status species listed above.

6.1.6 Develop Final Tables and Maps of Special-Status Wildlife Species and Habitats

Refer to Table TERR 4-10 for the final list of special-status wildlife known to occur or potentially occurring in the MFP. Refer to Table TERR 4-11 for a list of Project facilities and features that are located near known bald eagle roosts and nests and osprey nests or within USDA-FS allocations (i.e., northern goshawk PACs or California spotted owl HRCAs). Final maps of special-status wildlife occurrences in the study area are provided as Maps TERR 4-9a, TERR 4-9b, TERR 4-10a, and TERR 4-10b of this report.

6.2 DETERMINE THE CONSISTENCY OF PROJECT POWERLINES WITH APLIC GUIDELINES

This section describes the results of the evaluation of the consistency of Project communication lines and powerlines with APLIC guidelines.

6.2.1 Map the Location of Project Communication Lines and Powerlines

There are 14 Project communication lines and powerlines in the study area. Refer to Table TERR 4-12 for a list of each Project communication line/powerlines as well as the length, voltage, and start and end point of each line. The locations of Project communication lines and powerlines in relation to CWHR habitats are shown in Maps TERR 4-5 through TERR 4-5g.

6.2.2 Consult with Resource Agencies and PCWA Regarding Avian Electrocutions and Mortalities on Project Powerlines

Based on agency consultation, there are no reported instances of avian electrocutions or mortalities resulting from birds perching on, nesting on, or colliding with Project communication lines and powerlines.

6.2.3 Evaluate Avian Use Of and Consistency of Project Communication Lines and Powerlines with APLIC Guidelines

No avian use of Project communication lines and/or powerlines (i.e., nests, whitewash, or perching birds) was detected during the field inspections. Project communication lines and powerlines are located within habitats that provide appropriate habitat for a number of avian species, and, more specifically, structural elements within these habitats such as large trees and snags provide excellent nesting and perching structures for a variety of species. This information suggests that avian species in the study area may be preferentially selecting natural nesting and perching structures over artificial structures such as powerline poles.

Of the 14 Project communication lines and/or powerlines associated with the MFP, six lines posed no risk for avian electrocution. The remaining eight lines have design elements that may pose a potential risk for avian electrocution, including one or more of the following:

- The distance between phase conductors was less than 60 inches;
- The distance between energized parts and grounded equipment on equipment poles was less than 60 inches; and
- Metal guy wires were located in close proximity to energized wires.

Refer to Table TERR 4-12 for details on the consistency of each Project communication line and/or powerline configuration with APLIC guidelines. Refer to Appendix D for a photograph and description of each pole configuration type.

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TABLES

Table TERR 4-1. Existing Project Facilities and Features.

Dams, Reservoirs, and Diversion Pools	
Large Dams	
French Meadows Dam and Outlet Works	
Hell Hole Dam and Outlet Works	
Medium Dams	
Middle Fork Interbay Dam	
Ralston Afterbay Dam	
Small Dams	
Duncan Creek Diversion Dam	
North Fork Long Canyon Diversion Dam	
South Fork Long Canyon Diversion Dam	
Large Reservoirs	
French Meadows Reservoir	
Hell Hole Reservoir	
Medium Reservoirs	
Middle Fork Interbay	
Ralston Afterbay	
Small Diversion Pools	
Duncan Creek Diversion Pool	
North Fork Long Canyon Diversion Pool	
South Fork Long Canyon Diversion Pool	
Water Conveyance Systems	
Tunnels	
Duncan Creek-Middle Fork Tunnel	
French Meadows-Hell Hole Tunnel	
Hell Hole - Middle Fork Tunnel	
Middle Fork - Ralston Tunnel	
Ralston - Oxbow Tunnel	
Diversion Pipes and Drop Inlets	
North Fork Long Canyon Diversion Pipe and Drop Inlet	
South Fork Long Canyon Diversion Pipe and Drop Inlet	
Surge Shafts and Adits	
Brushy Canyon Adit	
Hell Hole - Middle Fork Tunnel Surge Shaft and Tank	
Middle Fork - Ralston Tunnel Surge Shaft and Tank	
Removable Sections and Portals	
Duncan Creek - Middle Fork Tunnel Portal	
French Meadows - Hell Hole Tunnel Removable Section	
Hell Hole - Middle Fork Tunnel Removable Section	
Middle Fork - Ralston Tunnel Removable Section	
North Fork Long Canyon Crossing Removable Section	
Intakes and Gatehouses	
Duncan Creek - Middle Fork Tunnel Intake	
French Meadows - Hell Hole Tunnel Gatehouse	
French Meadows - Hell Hole Tunnel Intake	
Hell Hole - Middle Fork Tunnel Gatehouse	
Hell Hole - Middle Fork Tunnel Intake	
Middle Fork - Ralston Tunnel Intake and Gatehouse	
Ralston - Oxbow Tunnel Intake	

Table TERR 4-1. Existing Project Facilities and Features (continued).

Water Conveyance Systems (continued)	
Penstocks and Valve Houses	
French Meadows Powerhouse Penstock and Butterfly Valve House	
Middle Fork Powerhouse Penstock and Butterfly Valve House	
Ralston Powerhouse Penstock and Butterfly Valve House	
Powerhouses, Switchyards, and Substations	
French Meadows Powerhouse and Switchyard	
Hell Hole Powerhouse	
Middle Fork Powerhouse and Upper and Lower Switchyards	
Ralston Powerhouse and Switchyard	
Oxbow Powerhouse and Switchyard	
Hell Hole Substation	
Gaging Stations and Weirs	
Stream Gages and Weirs	
Duncan Creek Gage and Weir above Diversion Dam (USGS Gage and Weir No. 11427700)	
Duncan Creek Gage and Weir below Diversion Dam (USGS Gage and Weir No. 11427750)	
Middle Fork American River Gage and Weir below French Meadows Dam (USGS Gage and Weir No. 11427500)	
Middle Fork American River Gage at Interbay Dam (USGS Gage No. 11427770)	
Middle Fork American River Gage above Middle Fork Powerhouse (USGS Gage No. 11427760)	
Middle Fork American River Gage below Oxbow Powerhouse (USGS Gage No. 11433300)	
North Fork Long Canyon Gage and Weir at Diversion Dam (USGS Gage and Weir No. 11433085)	
South Fork Long Canyon Gage and Weir at Diversion Dam (USGS Gage and Weir No. 11433065)	
Rubicon River Gage and Weir below Hell Hole Dam (USGS Gage and Weir No. 11428800)	
Diversion Gages	
North Fork Long Canyon Gage at Diversion Dam (USGS Gage No. 11433080)	
South Fork Long Canyon Gage at Diversion Dam (USGS Gage No. 11433060)	
Reservoir Gages	
French Meadows Reservoir Gage (USGS Gage No. 11427400)	
French Meadows Reservoir Staff Gage	
Hell Hole Reservoir Gage (USGS Gage No. 11428700)	
Hell Hole Reservoir Staff Gage	
Middle Fork Interbay Reservoir Gage	
Ralston Afterbay Reservoir Gage	
Powerhouse Gages	
French Meadows Powerhouse Gage (USGS Gage No. 11427200)	
Middle Fork Powerhouse Gage (USGS Gage No. 11428600)	
Oxbow Powerhouse Gage (USGS Gage No. 11433212)	
Ralston Powerhouse Gage (USGS Gage No. 11427765)	
Leakage Weirs	
French Meadows Dam Leakage Weirs Nos. 1-6	
Hell Hole Dam Leakage Weir	
Project Communication Lines and Powerlines	
French Meadows Area	
French Meadows Dam Generator Building to French Meadows Dam Outlet Works Powerline	
French Meadows Dam Generator Building to French Meadows Dam Spillway Gates Powerline	

Table TERR 4-1. Existing Project Facilities and Features (continued).

Project Communication Lines and Powerlines (continued)
Hell Hole Area
French Meadows Powerhouse to French Meadows Powerhouse Penstock and Butterfly Valve House Communication Line/Powerline
French Meadows Powerhouse and Switchyard to Hell Hole - Middle Fork Tunnel Gatehouse, Dormitory Facility, Operator's Cottages, and Hell Hole Powerhouse Communication Line/Powerline
Dormitory and Cottages Water Supply Tank Powerline
Hell Hole Powerhouse to Rubicon River Gage and Weir below Hell Hole Dam Communication Line/Powerline
Middle Fork Interbay Area
Middle Fork Powerhouse to Middle Fork Powerhouse Butterfly Valve House Communication Line/Powerline
Middle Fork Powerhouse Butterfly Valve House to Radio Repeater near Hell Hole - Middle Fork Tunnel Surge Tank (underground) Communication Line/Powerline
Middle Fork Powerhouse to Middle Fork - Ralston Tunnel Intake and Gatehouse Communication Line/Powerline
Middle Fork Powerhouse to Middle Fork American River Gage above Middle Fork Powerhouse Communication Line/Powerline
Ralston - Oxbow Area
Ralston - Oxbow Tunnel Intake to Ralston Powerhouse Communication Line
Ralston Powerhouse to Ralston Powerhouse Butterfly Valve House Communication Line/Powerline
Ralston Afterbay Dam Generator Building to Ralston - Oxbow Tunnel Intake Communication Line/Powerline
Oxbow Powerhouse to Ralston Afterbay Dam Generator Building Communication Line/Powerline
Photovoltaic Poles and Powerlines
Photovoltaic Poles and Powerline to Duncan Creek Gage above Diversion Dam
Photovoltaic Pole and Powerline at Duncan Creek Gage below Diversion Dam
Photovoltaic Pole and Powerline at Middle Fork American River Gage below French Meadows Dam
Photovoltaic Pole and Powerline at Middle Fork American River Gage above Middle Fork Powerhouse
Photovoltaic Pole and Powerline at North Fork Long Canyon Gage at Diversion Dam
Photovoltaic Pole and Powerline at South Fork Long Canyon Gage at Diversion Dam
Photovoltaic Pole at Middle Fork American River Gage below Oxbow Powerhouse
Microwave Reflectors and Radio Towers
Passive Microwave Reflector Station above Middle Fork Interbay
Radio Communications Tower near French Meadows - Hell Hole Tunnel Gatehouse
Radio Communications Tower and Repeater near Hell Hole - Middle Fork Tunnel Surge Shaft and Tank
Passive Microwave Reflector Station above Ralston Afterbay
Disposal Sites
Duncan Diversion Dam Sediment Disposal Area
North Fork Long Canyon Crossing Sediment Disposal Area
Middle Fork Interbay Sediment Disposal Area
Ralston Ridge Sediment Disposal Area
Indian Bar Sediment Disposal Area
Ancillary Facilities
French Meadows Dam Generator Building
French Meadows Dam Staging Area
Dormitory Facility
Dormitory and Cottages Water Supply Tank

Table TERR 4-1. Existing Project Facilities and Features (continued).

Ancillary Facilities (continued)
Hell Hole Staging Areas
Operator Cottages and Shop
Ralston Afterbay Dam Generator Building
Storage Building at Middle Fork - Ralston Tunnel Surge Shaft and Tank
Wabena Meadows Snow Course
Miranda Cabin Snow Course
Diamond Crossing Snow Course
Talbot Camp Snow Course
Project Fences
Slope Fences
French Meadows Powerhouse Penstock Rock Fence
French Meadows Powerhouse Slope Fence
Long Canyon Crossing Slope Fence
Middle Fork Powerhouse Upper Switchyard Slope Fence
Middle Fork Interbay Dam Slope Fence
Oxbow Powerhouse Slope Fence
Ralston Powerhouse Penstock and Butterfly Valve House Slope Fences
Ralston Powerhouse Slope Fence
Public Safety Fences
Dormitory Facility Barrier Fence
Hell Hole Dam General Parking Area Barrier Fence
North Fork Long Canyon Crossing Removable Section Barrier Fence
Project Roads and Access Points
Duncan Creek Area
Duncan Creek Diversion Intake Road and Diversion Pool Access Point
Duncan Creek Diversion Dam Road
Duncan Creek Diversion Pool Road and Access Point
French Meadows Area
Duncan Creek - Middle Fork Tunnel Portal Road and Spillway Access Point
French Meadows - Hell Hole Tunnel Gatehouse Road
French Meadows Dam Outlet Works and Leakage Weirs Road
French Meadows Dam Staging Area Road
Middle Fork American River Gage and Weir below French Meadows Dam Road
Hell Hole Area
Hell Hole Dam and Powerhouse Road and Spillway Southern Access Point
Rubicon River Gage and Weir below Hell Hole Dam Road
Hell Hole Dam Leakage Weir Road
Hell Hole Dam Spillway Northern Access Point
French Meadows - Hell Hole Tunnel Portal Road
French Meadows Powerhouse Road
Hell Hole - Middle Fork Tunnel Gatehouse Road
Dormitory Facility Road
Hell Hole Dam Spillway Discharge Channel Road
Long Canyon Area
North Fork Long Canyon Diversion North Road
North Fork Long Canyon Diversion South Road
North Fork Long Canyon Diversion Drop Inlet Road

Table TERR 4-1. Existing Project Facilities and Features (continued).

Project Roads and Access Points (continued)
Long Canyon Area (continued)
South Fork Long Canyon Diversion and Drop Inlet Road
North Fork Long Canyon Crossing Removable Section North Road and Parking Area
North Fork Long Canyon Crossing Removable Section South Road
Middle Fork Interbay Area
Middle Fork Powerhouse Butterfly Valve House Road
Middle Fork Powerhouse Penstock and Butterfly Valve House Road
Middle Fork Interbay Dam and Powerhouse Road and Interbay Access Points
Middle Fork Powerhouse Upper Switchyard Road
Ralston-Oxbow Area
Brushy Canyon Adit Road
Oxbow Powerhouse Road
Ralston Powerhouse Butterfly Valve House Road
Ralston - Oxbow Tunnel Intake Road
Ralston Afterbay Road and Boat Ramp
Ralston Afterbay Dam Road and Afterbay Access Point
Ralston Afterbay Sediment Removal Access Point
Project Trails
Duncan Creek Area
Duncan Creek Diversion Dam North Trail
Duncan Creek Diversion Dam South Trail
Photovoltaic Poles and Powerline to Duncan Creek Gage above Diversion Dam Trail
Duncan Creek Gage and Weir above Diversion Trail
Duncan Creek Gage and Weir below Diversion Trail
French Meadows Area
Middle Fork American River Gage and Weir below French Meadows Dam Trail
Middle Fork Interbay Area
Middle Fork American River Gage above Middle Fork Powerhouse Trail
Passive Microwave Reflector Station above Middle Fork Interbay Trail
Ralston Afterbay Area
Passive Microwave Reflector Station above Ralston Afterbay Trail
Middle Fork American River Gage below Oxbow Powerhouse Trail

Table TERR 4-2. Project Recreation Facilities.

French Meadows Area
Ahart Campground
Coyote Group Campground
Poppy Campground
French Meadows Campground
Gates Group Campground
Lewis Campground
French Meadows Picnic Area
McGuire Picnic Area
French Meadows Boat Ramp
McGuire Boat Ramp
Dolly Creek Water Supply
French Meadows Campground Water Supply
Hell Hole Area
Big Meadows Campground
Hell Hole Campground
Upper Hell Hole Campground
Hell Hole Vista
Hell Hole General Parking Area
Hell Hole Boat Ramp Parking Area
Hell Hole Boat Ramp
Big Meadows Campground Water Supply
Ralston Afterbay Area
Ralston Picnic Area
Ralston Picnic Area Cartop Boat Ramp
Indian Bar Rafting Access and General Parking
Long Canyon Area
Middle Meadows Group Campground
Middle Meadows Group Campground Water Supply

Table TERR 4-3. Dispersed Concentrated Use Areas.**Dispersed Concentrated Use Areas****French Meadows Reservoir Area**

Area near French Meadows-Hell Hole Tunnel Gatehouse

Area immediately downstream of French Meadows Dam (both sides of river)

Area located immediately northwest of French Meadows Dam

Area near bridge over the Middle Fork American River, upstream French Meadows Reservoir

Duncan Creek Diversion Dam Area

Area on north side of Duncan Creek Diversion Dam

Area near Duncan Creek Gage and Weir, upstream of Duncan Creek Diversion Dam

Area near new bridge crossing Duncan Canyon on the road to the Grizzly, etc.

Hell Hole Reservoir Area

Area on west side of Hell Hole Reservoir, between dam and Hell Hole Boat Ramp

Grey Horse Area

Long Canyon Area

Area surrounding South Fork Long Canyon Diversion Dam

Areas along South Fork Long Canyon Creek, downstream of South Fork Long Canyon Diversion Dam

Middle Fork Interbay Area

Shoreline area surrounding Middle Fork Interbay

Ralston Afterbay Area

Ralston Afterbay Sediment Disposal Area

Shoreline area surrounding Ralston Afterbay

Area along Middle Fork American River, between Ralston Picnic Area and the new gage

Area at confluence of North Fork of the Middle Fork American River and Middle Fork American River

Indian Bar, Willow Bar, and Junction Bar Areas

Table TERR 4-4. Potential Project Betterments.**Hell Hole Reservoir Seasonal Storage Increase**

Hell Hole Dam
Modified Facilities
Hell Hole Dam Spillway Crest Gates
Hell Hole Dam Parapet Walls
New Facilities
Hell Hole Dam Spillway Crest Gates Control Building
Hell Hole Dam Spillway Crest Gates Control Building Powerline
Temporary Construction and Staging Areas
Hell Hole Dam Spillway Crest Gates Construction Road
Hell Hole Dam Spillway Crest Gates Construction Work Area
Hell Hole Dam Spillway Crest Gates and Control Building Construction Staging Area
Hell Hole Dam Parapet Wall Construction Staging and Work Area
Hell Hole Dam Spillway Crest Gates Control Building Construction Work Area
Hell Hole Dam Spillway Crest Gates Control Building Powerline Construction Work Area
Hell Hole Dam Spillway Crest Gates Control Building Powerline Construction Staging Area
Hell Hole-Middle Fork Tunnel Gatehouse
Modified Facilities
Hell Hole - Middle Fork Tunnel Gatehouse Parapet Wall
Temporary Construction and Staging Areas
Hell Hole-Middle Fork Tunnel Gatehouse Parapet Wall Construction Staging and Work Area
French Meadows Powerhouse
Modified Facilities
French Meadows Powerhouse Parapet Wall
Temporary Construction and Staging Areas
French Meadows Powerhouse Parapet Wall Construction Staging and Work Area
South Fork Long Canyon Diversion
Modified Facilities
South Fork Long Canyon Diversion Dam Crest Gates
New Facilities
South Fork Long Canyon Diversion Dam Crest Gates Generator Building
Temporary Construction and Staging Areas
South Fork Long Canyon Diversion Dam Crest Gates and Generator Building Construction Staging and Work Area

French Meadows Powerhouse Capacity Upgrade

French Meadows Reservoir
Modified Facilities
French Meadows - Hell Hole Tunnel Intake Trash Rack
Temporary Construction and Staging Areas
French Meadows - Hell Hole Tunnel Intake Trash Rack Construction Staging Area
French Meadows - Hell Hole Tunnel Intake Trash Rack Construction Work Area
French Meadows - Hell Hole Tunnel Intake Trash Rack Construction Road
French Meadows Powerhouse
Modified Facilities
French Meadows Powerhouse Switchyard
New Facilities
French Meadows Powerhouse

Table TERR 4-4. Potential Project Betterments (continued).

French Meadows Powerhouse Capacity Upgrade (continued)

French Meadows Powerhouse (continued)
French Meadows Powerhouse Penstock
French Meadows - Hell Hole Tunnel Surge Shaft/Tank
French Meadows - Hell Hole Tunnel Surge Pipeline
French Meadows - Hell Hole Tunnel Surge Shaft or Pipeline Road
Temporary Construction and Staging Areas
French Meadows Powerhouse/Switchyard Construction Work Area
French Meadows Powerhouse/Switchyard Construction Staging Area
French Meadows Powerhouse Penstock Construction Work Area
French Meadows Powerhouse Penstock Construction Staging Areas
French Meadows - Hell Hole Tunnel Surge Shaft/Tank or Pipeline Construction Staging Areas
French Meadows - Hell Hole Tunnel Surge Shaft/Tank Construction Work Area
French Meadows - Hell Hole Tunnel Surge Pipeline Construction Work Area
French Meadows - Hell Hole Tunnel Surge Shaft or Pipeline Road Construction Staging and Work Area
Non-Project Facilities Modified During Construction
Forest Road 14N09A
Forest Road 14N09A Construction Staging and Work Area
Middle Fork Powerhouse
Modified Facilities
Middle Fork Powerhouse Upper and Lower Switchyard

Ralston Powerhouse Capacity Upgrade

Ralston Powerhouse
Modified Facilities
Ralston Powerhouse
Temporary Construction and Staging Areas
Ralston Powerhouse Construction Staging Area

Table TERR 4-5. Surveys Implemented at Potential Project Betterments.

Facility	Northern Goshawk Surveys	General Wildlife Surveys		
		Terrestrial Visual Encounter Surveys	Avian Point Counts	Avian Area Searches
Hell Hole Reservoir Seasonal Storage Increase				
Hell Hole Dam				
Modified Facilities				
Hell Hole Dam Spillway Crest Gates		x	x	
Hell Hole Dam Parapet Walls		x	x	
New Facilities				
Hell Hole Dam Spillway Crest Gates Control Building		x	x	
Hell Hole Dam Spillway Crest Gates Control Building Powerline		x	x	
Temporary Construction and Staging Areas				
Hell Hole Dam Spillway Crest Gates Construction Road		x	x	
Hell Hole Dam Spillway Crest Gates Construction Work Area		x	x	
Hell Hole Dam Spillway Crest Gates and Control Building Construction Staging Area		x	x	
Hell Hole Dam Parapet Wall Construction Staging and Work Area		x	x	
Hell Hole Dam Spillway Crest Gates Control Building Powerline Construction Staging Area		x	x	
Hell Hole-Middle Fork Tunnel Gatehouse				
Modified Facilities				
Hell Hole – Middle Fork Tunnel Gatehouse Parapet Wall	x	x	x	
Temporary Construction and Staging Areas				
Hell Hole-Middle Fork Tunnel Gatehouse Parapet Wall Construction Staging and Work Area	x	x	x	
French Meadows Powerhouse				
Modified Facilities				
French Meadows Powerhouse Parapet Wall	x	x	x	
Temporary Construction and Staging Areas				
French Meadows Powerhouse Parapet Wall Construction Staging and Work Area	x	x	x	
South Fork Long Canyon Diversion				
Modified Facilities				
South Fork Long Canyon Diversion Dam Crest Gates		x		x
New Facilities				
South Fork Long Canyon Diversion Dam Crest Gates Generator Building		x		x
Temporary Construction and Staging Areas				
South Fork Long Canyon Diversion Dam Crest Gates and Generator Building Construction Staging and Work Area		x		x

Table TERR 4-5. Surveys Implemented at Potential Project Betterments (continued).

Facility	Northern Goshawk Surveys	General Wildlife Surveys		
		Terrestrial Visual Encounter Surveys	Avian Point Counts	Avian Area Searches
French Meadows Powerhouse Capacity Upgrade				
French Meadows Reservoir				
Modified Facilities				
French Meadows – Hell Hole Tunnel Intake Trash Rack	x	x		x
Temporary Construction and Staging Areas				
French Meadows – Hell Hole Tunnel Intake Trash Rack Construction Staging Area	x	x		x
French Meadows – Hell Hole Tunnel Intake Trash Rack Construction Work Area	x	x		x
French Meadows – Hell Hole Tunnel Intake Trash Rack Construction Road	x	x		x
French Meadows Powerhouse				
Modified Facilities				
French Meadows Powerhouse Switchyard	x	x	x	
New Facilities				
French Meadows Powerhouse	x	x	x	
French Meadows Powerhouse Penstock	x	x	x	
French Meadows – Hell Hole Tunnel Surge Shaft/Tank	x	x	x	
French Meadows – Hell Hole Tunnel Surge Pipeline	x	x	x	
French Meadows – Hell Hole Tunnel Surge Shaft or Pipeline Road	x	x	x	
Temporary Construction and Staging Areas				
French Meadows Powerhouse/Switchyard Construction Work Area		x	x	
French Meadows Powerhouse/Switchyard Construction Staging Areas		x	x	
French Meadows Powerhouse Penstock Construction Work Area		x	x	
French Meadows Powerhouse Penstock Construction Staging Areas		x	x	
French Meadows – Hell Hole Tunnel Surge Shaft/Tank or Pipeline Construction Staging Areas		x	x	
French Meadows – Hell Hole Tunnel Surge Shaft/Tank Construction Work Area		x	x	
French Meadows – Hell Hole Tunnel Surge Pipeline Construction Work Area		x	x	
French Meadows – Hell Hole Tunnel Surge Shaft or Pipeline Road Construction Staging and Work Area		x	x	
Non-Project Facilities Modified During Construction				
Forest Road 14N09A		x	x	
Forest Road 14N09A Construction Staging and Work Area		x	x	

Table TERR 4-5. Surveys Implemented at Potential Project Betterments (continued).

Facility	Northern Goshawk Surveys	General Wildlife Surveys		
		Terrestrial Visual Encounter Surveys	Avian Point Counts	Avian Area Searches
Ralston Powerhouse Capacity Upgrade				
Ralston Powerhouse				
Modified Facilities				
Ralston Powerhouse		x		x
Temporary Construction and Staging Areas				
Ralston Powerhouse Construction Staging Area		x		x

Table TERR 4-6. CWHR Habitats Within ¼ Mile of the Middle Fork American River Project and Potential Project Betterments.

Project Facilities	CWHR Wildlife Habitats												
	Annual Grass	Barren	Blue Oak-Foothill Pine	Douglas-Fir	Montane Chaparral	Montane Hardwood	Montane Riparian	Ponderosa Pine	Sierran Mixed Conifer	Developed	Riverine / Lacustrine	Wet Meadow	White Fir
Dams, Reservoirs, and Diversion Pools													
Large Dams													
French Meadows Dam and Outlet Works					X		X		X	X	X		
Hell Hole Dam and Outlet Works		X		X	X	X	X		X	X	X		
Medium Dams													
Middle Fork Interbay Dam		X		X		X	X			X	X		
Ralston Afterbay Dam		X		X	X	X	X			X	X		
Small Dams													
Duncan Creek Diversion Dam					X		X		X		X		
North Fork Long Canyon Diversion Dam					X		X		X		X		
South Fork Long Canyon Diversion Dam						X	X		X	X	X		
Large Reservoirs													
French Meadows Reservoir		X			X		X		X	X	X		
Hell Hole Reservoir		X		X	X	X	X		X	X	X		
Medium Reservoirs													
Middle Fork Interbay		X		X	X	X	X		X	X	X		
Ralston Afterbay	X	X	X	X	X	X	X			X	X		
Small Diversion Pools													
Duncan Creek Diversion Pool					X		X		X		X		
North Fork Long Canyon Diversion Pool					X		X		X		X		
South Fork Long Canyon Diversion Pool						X	X		X	X	X		
Water Conveyance Systems													
Tunnels													
Duncan Creek - Middle Fork Tunnel					X		X		X		X		
French Meadows - Hell Hole Tunnel		X			X		X		X		X		X

Table TERR 4-6. CWHR Habitats Within ¼ Mile of the Middle Fork American River Project and Potential Project Betterments (continued).

Project Facilities	CWHR Wildlife Habitats												
	Annual Grass	Barren	Blue Oak-Foothill Pine	Douglas-Fir	Montane Chaparral	Montane Hardwood	Montane Riparian	Ponderosa Pine	Sierran Mixed Conifer	Developed	Riverine / Lacustrine	Wet Meadow	White Fir
Water Conveyance Systems (continued)													
Tunnels (continued)													
Hell Hole - Middle Fork Tunnel		X		X	X	X			X	X	X		
Middle Fork - Ralston Tunnel		X	X	X		X		X		X	X		
Ralston - Oxbow Tunnel		X			X	X	X			X	X		
Removable Sections and Portals													
Duncan Creek - Middle Fork Tunnel Portal					X				X	X	X		
French Meadows - Hell Hole Tunnel Removable Section		X			X	X					X		
Hell Hole - Middle Fork Tunnel Removable Section		X		X			X		X	X			
Middle Fork - Ralston Tunnel Removable Section		X	X	X	X	X				X			
North Fork Long Canyon Crossing Removable Section				X			X		X				
Diversion Pipes and Drop Inlets													
North Fork Long Canyon Diversion Pipe and Drop Inlet					X		X		X		X		
South Fork Long Canyon Diversion Pipe and Drop Inlet						X	X		X	X	X		
Surge Shafts and Adits													
Brushy Canyon Adit		X		X		X		X	X				
Hell Hole - Middle Fork Tunnel Surge Shaft and Tank				X		X			X				
Middle Fork - Ralston Tunnel Surge Shaft and Tank		X	X	X	X	X				X			
Intakes and Gatehouses													
Duncan Creek - Middle Fork Tunnel Intake					X		X		X		X		
French Meadows - Hell Hole Tunnel Gatehouse					X		X		X		X		X
French Meadows - Hell Hole Tunnel Intake							X		X		X		
Hell Hole - Middle Fork Tunnel Gatehouse						X			X	X	X		
Hell Hole - Middle Fork Tunnel Intake						X			X	X	X		
Middle Fork - Ralston Tunnel Intake and Gatehouse		X		X		X	X			X	X		

Table TERR 4-6. CWHR Habitats Within ¼ Mile of the Middle Fork American River Project and Potential Project Betterments (continued).

Project Facilities	CWHR Wildlife Habitats												
	Annual Grass	Barren	Blue Oak– Foothill Pine	Douglas-Fir	Montane Chaparral	Montane Hardwood	Montane Riparian	Ponderosa Pine	Sierran Mixed Conifer	Developed	Riverine / Lacustrine	Wet Meadow	White Fir
Water Conveyance Systems (continued)													
Penstocks and Valve Houses													
Ralston - Oxbow Tunnel Intake		X		X	X	X	X			X	X		
French Meadows Powerhouse Penstock and Butterfly Valve House		X			X	X					X		
Middle Fork Powerhouse Penstock and Butterfly Valve House		X		X		X			X	X			
Ralston Powerhouse Penstock and Butterfly Valve House		X	X	X	X	X	X			X	X		
Powerhouses, Switchyards, and Substations													
French Meadows Powerhouse and Switchyard		X			X	X					X		
Hell Hole Powerhouse		X			X	X				X	X		
Middle Fork Powerhouse and Upper and Lower Switchyards				X	X	X	X		X	X	X		
Ralston Powerhouse and Switchyard		X	X	X	X	X	X			X	X		
Oxbow Powerhouse and Switchyard		X		X	X	X	X			X	X		
Hell Hole Substation		X			X	X					X		
GAGING STATIONS AND WEIRS													
Reservoir Gages													
French Meadows Reservoir Gage (USGS Gage No. 11427400)							X		X		X		
French Meadows Reservoir Staff Gage					X		X		X	X	X		
Hell Hole Reservoir Gage (USGS Gage No. 11428700)						X			X	X	X		
Hell Hole Reservoir Staff Gage		X		X	X	X				X	X		
Middle Fork Interbay Reservoir Gage		X		X		X	X			X	X		
Ralston Afterbay Reservoir Gage		X		X	X	X	X			X	X		
Diversion Gages													
North Fork Long Canyon Gage at Diversion Dam (USGS Gage No. 11433080)					X		X		X		X		
South Fork Long Canyon Gage at Diversion Dam (USGS Gage No. 11433060)						X	X		X	X	X		

Table TERR 4-6. CWHR Habitats Within ¼ Mile of the Middle Fork American River Project and Potential Project Betterments (continued).

Project Facilities	CWHR Wildlife Habitats												
	Annual Grass	Barren	Blue Oak-Foothill Pine	Douglas-Fir	Montane Chaparral	Montane Hardwood	Montane Riparian	Ponderosa Pine	Sierran Mixed Conifer	Developed	Riverine / Lacustrine	Wet Meadow	White Fir
Gaging Stations and Weirs (continued)													
Stream Gages and Weirs													
Duncan Creek Gage and Weir above Diversion Dam (USGS Gage and Weir No. 11427700)					X		X		X	X	X		
Duncan Creek Gage and Weir below Diversion Dam (USGS Gage and Weir No. 11427750)					X		X		X	X	X		
Middle Fork American River Gage and Weir below French Meadows Dam (USGS Gage and Weir No. 11427500)		X			X	X	X		X	X			X
Middle Fork American River Gage at Interbay Dam (USGS Gage No. 11427770)		X		X		X	X			X	X		
Middle Fork American River Gage above Middle Fork Powerhouse (USGS Gage No. 11427760)				X	X	X	X		X	X	X		
Middle Fork American River Gage below Oxbow Powerhouse (USGS Gage No. 11433300)	X	X		X	X	X	X	X			X		
North Fork Long Canyon Gage and Weir at Diversion Dam (USGS Gage and Weir No. 11433085)					X		X		X		X		
South Fork Long Canyon Gage and Weir at Diversion Dam (USGS Gage and Weir No. 11433065)						X	X		X	X	X		
Rubicon River Gage and Weir below Hell Hole Dam (USGS Gage and Weir No. 11428800)		X			X	X	X		X	X	X		
Powerhouse Gages													
French Meadows Powerhouse Gage (USGS Gage No. 11427200)		X			X	X					X		
Middle Fork Powerhouse Gage (USGS Gage No. 11428600)		X		X		X	X		X	X	X		
Oxbow Powerhouse Gage (USGS Gage No. 11433212)		X		X	X	X	X			X	X		
Ralston Powerhouse Gage (USGS Gage No. 11427765)		X	X	X	X	X	X			X	X		
Leakage Weirs													
French Meadows Dam Leakage Weirs Nos. 1 -- 6		X			X	X	X		X	X	X		X
Hell Hole Dam Leakage Weir		X			X	X	X		X	X	X		
PROJECT COMMUNICATION LINES AND POWERLINES													
French Meadows Area													
French Meadows Dam Generator Building to French Meadows Dam Outlet Works Powerline					X		X		X	X	X		
French Meadows Dam Generator Building to French Meadows Dam Spillway Gates Powerline					X		X		X	X	X		

Table TERR 4-6. CWHR Habitats Within ¼ Mile of the Middle Fork American River Project and Potential Project Betterments (continued).

Project Facilities	CWHR Wildlife Habitats												
	Annual Grass	Barren	Blue Oak– Foothill Pine	Douglas-Fir	Montane Chaparral	Montane Hardwood	Montane Riparian	Ponderosa Pine	Sierran Mixed Conifer	Developed	Riverine / Lacustrine	Wet Meadow	White Fir
Project Communication Lines and Powerlines (continued)													
Hell Hole Area													
French Meadows Powerhouse to French Meadows Powerhouse Penstock and Butterfly Valve House Communication Line/Powerline		X			X	X					X		
French Meadows Powerhouse and Switchyard to Hell Hole - Middle Fork Tunnel Gatehouse, Dormitory Facility, Operator's Cottages, and Hell Hole Powerhouse Communication Line/Powerline		X			X	X			X	X	X		
Dormitory and Cottages Water Supply Tank Powerline		X			X	X			X	X	X		
Hell Hole Powerhouse to Rubicon River Gage and Weir below Hell Hole Dam Communication Line/Powerline		X			X	X	X		X	X	X		
Middle Fork Interbay Area													
Middle Fork Powerhouse to Middle Fork Powerhouse Butterfly Valve House Communication Line/Powerline				X	X	X	X		X	X	X		
Middle Fork Powerhouse Butterfly Valve House to Radio Repeater near Hell Hole - Middle Fork Tunnel Surge Tank (underground) Communication Line/Powerline		X		X		X			X	X			
Middle Fork Powerhouse to Middle Fork - Ralston Tunnel Intake and Gatehouse Communication Line/Powerline		X		X		X	X		X	X	X		
Middle Fork Powerhouse to Middle Fork American River Gage above Middle Fork Powerhouse Communication Line/Powerline				X	X	X	X		X	X	X		
Ralston - Oxbow Area													
Ralston - Oxbow Tunnel Intake to Ralston Powerhouse Communication Line	X	X	X	X	X	X	X			X	X		
Ralston Powerhouse to Ralston Powerhouse Butterfly Valve House Communication Line/Powerline		X	X	X	X	X					X		
Ralston Afterbay Dam Generator Building to Ralston - Oxbow Tunnel Intake Communication Line/Powerline		X		X	X	X	X			X	X		
Oxbow Powerhouse to Ralston Afterbay Dam Generator Building Communication Line/Powerline		X		X	X	X	X			X	X		
Photovoltaic Poles and Powerlines													
Photovoltaic Poles and Powerline to Duncan Creek Gage above Diversion Dam					X		X		X	X	X		
Photovoltaic Pole and Powerline at Duncan Creek Gage below Diversion Dam					X		X		X	X	X		
Photovoltaic Pole and Powerline at Middle Fork American River Gage below French Meadows Dam		X			X	X	X		X	X			X
Photovoltaic Pole and Powerline at Middle Fork American River Gage above Middle Fork Powerhouse				X	X	X	X		X	X	X		
Photovoltaic Pole and Powerline at North Fork Long Canyon Gage at Diversion Dam				X		X		X		X			

Table TERR 4-6. CWHR Habitats Within ¼ Mile of the Middle Fork American River Project and Potential Project Betterments (continued).

Project Facilities	CWHR Wildlife Habitats												
	Annual Grass	Barren	Blue Oak-Foothill Pine	Douglas-Fir	Montane Chaparral	Montane Hardwood	Montane Riparian	Ponderosa Pine	Sierran Mixed Conifer	Developed	Riverine / Lacustrine	Wet Meadow	White Fir
Photovoltaic Poles and Powerlines (continued)													
Photovoltaic Pole and Powerline at South Fork Long Canyon Gage at Diversion Dam					X	X		X	X	X			
Photovoltaic Pole at Middle Fork American River Gage below Oxbow Powerhouse	X	X		X	X	X	X	X			X		
Ancillary Facilities													
French Meadows Dam Generator Building					X		X		X	X	X		
French Meadows Dam Staging Area					X		X		X	X	X		
Dormitory Facility		X			X	X	X		X	X	X		
Dormitory and Cottages Water Supply Tank		X			X	X			X	X	X		
Hell Hole Staging Areas		X			X	X	X		X	X	X		
Operator Cottages and Shop		X			X	X			X	X	X		
Ralston Afterbay Dam Generator Building		X			X	X	X	X		X	X		
Storage Building at Middle Fork - Ralston Tunnel Surge Shaft and Tank		X	X	X	X	X				X			
Wabena Meadows Snow Course					X		X					X	X
Miranda Cabin Snow Course					X		X		X			X	X
Diamond Crossing Snow Course							X		X				X
Talbot Camp Snow Course					X				X				X
Microwave Reflectors and Radio Towers													
Passive Microwave Reflector Station above Middle Fork Interbay		X		X	X	X		X	X				
Radio Communications Tower near French Meadows - Hell Hole Tunnel Gatehouse					X		X		X		X		X
Radio Communications Tower and Repeater near Hell Hole - Middle Fork Tunnel Surge Shaft and Tank				X		X			X				
Passive Microwave Reflector Station above Ralston Afterbay		X			X	X	X	X			X		
Disposal Sites													
Duncan Diversion Dam Sediment Disposal Area					X		X		X	X	X		
North Fork Long Canyon Crossing Sediment Disposal Area		X		X			X		X	X			
Middle Fork Interbay Sediment Disposal Area				X		X			X	X			

Table TERR 4-6. CWHR Habitats Within ¼ Mile of the Middle Fork American River Project and Potential Project Betterments (continued).

Project Facilities	CWHR Wildlife Habitats												
	Annual Grass	Barren	Blue Oak-Foothill Pine	Douglas-Fir	Montane Chaparral	Montane Hardwood	Montane Riparian	Ponderosa Pine	Sierran Mixed Conifer	Developed	Riverine / Lacustrine	Wet Meadow	White Fir
Disposal Sites (continued)													
Ralston Ridge Sediment Disposal Area		X	X	X		X				X			
Indian Bar Sediment Disposal Area		X		X	X	X	X			X	X		
PROJECT FENCES													
Slope Fences													
French Meadows Powerhouse Penstock Rock Fence		X			X	X					X		
French Meadows Powerhouse Slope Fence		X			X	X					X		
Long Canyon Crossing Slope Fence		X		X			X		X	X			
Middle Fork Powerhouse Upper Switchyard Slope Fence				X		X	X		X	X	X		
Middle Fork Interbay Dam Slope Fence		X		X		X	X			X	X		
Oxbow Powerhouse Slope Fence		X		X	X	X	X			X	X		
Ralston Powerhouse Penstock and Butterfly Valve House Slope Fences		X	X	X	X	X	X			X	X		
Ralston Powerhouse Slope Fence		X	X	X	X	X	X			X	X		
Public Safety Fences													
Dormitory Facility Barrier Fence					X	X			X	X	X		
Hell Hole Dam General Parking Area Barrier Fence					X	X			X	X	X		
North Fork Long Canyon Crossing Removable Section Barrier Fence				X			X		X				
Project Roads and Access Points													
Duncan Creek Area													
Duncan Creek Diversion Intake Road and Diversion Pool Access Point					X		X		X	X	X		
Duncan Creek Diversion Dam Road					X		X		X	X	X		
Duncan Creek Diversion Pool Road and Access Point					X		X		X	X	X		
French Meadows Area													
Duncan Creek - Middle Fork Tunnel Portal Road and Spillway Access Point					X				X	X	X		

Table TERR 4-6. CWHR Habitats Within ¼ Mile of the Middle Fork American River Project and Potential Project Betterments (continued).

Project Facilities	CWHR Wildlife Habitats												
	Annual Grass	Barren	Blue Oak– Foothill Pine	Douglas-Fir	Montane Chaparral	Montane Hardwood	Montane Riparian	Ponderosa Pine	Sierran Mixed Conifer	Developed	Riverine / Lacustrine	Wet Meadow	White Fir
Project Roads and Access Points (continued)													
French Meadows Area (continued)													
French Meadows - Hell Hole Tunnel Gatehouse Road							X		X		X		
French Meadows Dam Outlet Works and Leakage Weirs Road					X		X		X	X	X		
French Meadows Dam Staging Area Road					X				X	X	X		
Middle Fork American River Gage and Weir below French Meadows Dam Road		X			X		X		X	X	X		
Hell Hole Area													
Hell Hole Dam and Powerhouse Road and Spillway Southern Access Point		X			X	X	X		X	X	X		
Rubicon River Gage and Weir below Hell Hole Dam Road		X			X	X	X		X	X	X		
Hell Hole Dam Leakage Weir Road		X			X	X	X		X	X	X		
Hell Hole Dam Spillway Northern Access Point					X	X			X	X	X		
French Meadows - Hell Hole Tunnel Portal Road		X			X	X			X		X		X
French Meadows Powerhouse Road		X			X	X			X		X		
Hell Hole - Middle Fork Tunnel Gatehouse Road					X	X			X	X	X		
Dormitory Facility Road					X	X			X	X	X		
Hell Hole Dam Spillway Discharge Channel Road		X			X	X	X		X	X	X		
Long Canyon Area													
North Fork Long Canyon Diversion North Road					X		X		X		X		
North Fork Long Canyon Diversion South Road					X		X		X		X		
North Fork Long Canyon Diversion Drop Inlet Road					X		X		X		X		
South Fork Long Canyon Diversion and Drop Inlet Road						X	X		X	X	X		
North Fork Long Canyon Crossing Removable Section North Road and Parking Area				X			X		X				
North Fork Long Canyon Crossing Removable Section South Road		X		X			X		X	X			

Table TERR 4-6. CWHR Habitats Within ¼ Mile of the Middle Fork American River Project and Potential Project Betterments (continued).

Project Facilities	CWHR Wildlife Habitats												
	Annual Grass	Barren	Blue Oak– Foothill Pine	Douglas-Fir	Montane Chaparral	Montane Hardwood	Montane Riparian	Ponderosa Pine	Sierran Mixed Conifer	Developed	Riverine / Lacustrine	Wet Meadow	White Fir
Project Roads and Access Points (continued)													
Middle Fork Interbay Area													
Middle Fork Powerhouse Butterfly Valve House Road		X		X					X	X			
Middle Fork Powerhouse Penstock and Butterfly Valve House Road				X	X	X	X		X	X	X		
Middle Fork Interbay Dam and Powerhouse Road and Interbay Access Points		X		X		X	X		X	X	X		
Middle Fork Powerhouse Upper Switchyard Road		X		X		X	X		X	X	X		
Ralston-Oxbow Area													
Brushy Canyon Adit Road		X		X		X		X	X				
Oxbow Powerhouse Road		X		X	X	X	X			X	X		
Ralston Powerhouse Butterfly Valve House Road		X	X	X		X				X			
PROJECT ROADS AND ACCESS POINTS (CONTINUED)													
Ralston-Oxbow Area (continued)													
Ralston - Oxbow Tunnel Intake Road		X		X	X	X	X			X	X		
Ralston Afterbay Road and Boat Ramp		X		X	X	X	X			X	X		
Ralston Afterbay Dam Road and Afterbay Access Point		X		X	X	X	X			X	X		
Ralston Afterbay Sediment Removal Access Point				X	X	X	X				X		
Project Trails													
Duncan Creek Area													
Duncan Creek Diversion Dam North Trail					X		X		X	X	X		
Duncan Creek Diversion Dam South Trail					X		X		X	X	X		
Photovoltaic Poles and Powerline to Duncan Creek Gage above Diversion Dam Trail					X		X		X	X	X		
Duncan Creek Gage and Weir above Diversion Trail					X		X		X	X	X		
Duncan Creek Gage and Weir below Diversion Trail					X		X		X		X		

Table TERR 4-6. CWHR Habitats Within ¼ Mile of the Middle Fork American River Project and Potential Project Betterments (continued).

Project Facilities	CWHR Wildlife Habitats												
	Annual Grass	Barren	Blue Oak– Foothill Pine	Douglas-Fir	Montane Chaparral	Montane Hardwood	Montane Riparian	Ponderosa Pine	Sierran Mixed Conifer	Developed	Riverine / Lacustrine	Wet Meadow	White Fir
Project Trails (continued)													
French Meadows Area													
Middle Fork American River Gage and Weir below French Meadows Dam Trail		X			X	X	X			X			X
Middle Fork Interbay Area													
Middle Fork American River Gage above Middle Fork Powerhouse Trail				X	X	X	X		X		X		
Passive Microwave Reflector Station above Middle Fork Interbay Trail		X		X	X	X			X				
Ralston Afterbay Area													
Passive Microwave Reflector Station above Ralston Afterbay Trail		X			X	X		X					
Middle Fork American River Gage below Oxbow Powerhouse Trail	X	X		X	X	X	X	X			X		
Project Recreation Facilities													
French Meadows Area													
Ahart Campground		X					X		X				
Coyote Group Campground		X			X		X		X		X		X
French Meadows Area (continued)													
Poppy Campground							X		X		X		X
French Meadows Campground							X		X		X		X
Gates Group Campground		X			X		X		X				
Lewis Campground					X				X		X		X
French Meadows Picnic Area									X		X		
McGuire Picnic Area					X				X		X		
French Meadows Boat Ramp									X		X		
McGuire Boat Ramp									X		X		X
Hell Hole Area													
Big Meadows Campground		X			X				X			X	
Hell Hole Campground					X	X			X		X		

Table TERR 4-6. CWHR Habitats Within ¼ Mile of the Middle Fork American River Project and Potential Project Betterments (continued).

Project Facilities	CWHR Wildlife Habitats												
	Annual Grass	Barren	Blue Oak-Foothill Pine	Douglas-Fir	Montane Chaparral	Montane Hardwood	Montane Riparian	Ponderosa Pine	Sierran Mixed Conifer	Developed	Riverine / Lacustrine	Wet Meadow	White Fir
Project Recreation Facilities (continued)													
Hell Hole Area (continued)													
Upper Hell Hole Campground		X			X				X		X		
Hell Hole Vista					X	X			X		X		
Hell Hole General Parking Area						X			X	X	X		
Hell Hole Boat Ramp Parking Area						X			X	X	X		
Hell Hole Boat Ramp						X			X	X	X		
Ralston Afterbay Area													
Ralston Picnic Area		X	X	X	X	X	X				X		
Ralston Picnic Area Cartop Boat Ramp		X	X	X	X	X	X				X		
Indian Bar Rafting Access and General Parking		X		X	X	X	X				X		
Long Canyon Area													
Middle Meadows Group Campground						X	X		X	X	X		
Project Recreation Facility Features													
Project Recreation Facility Water Supplies and Associated Maintenance Trails													
Dolly Creek Water Supply									X				X
French Meadows Campground Water Supply and Trail					X		X		X		X		X
Big Meadows Campground Water Supply and Trail		X			X	X			X			X	
Middle Meadows Group Campground Water Supply and Trail		X				X	X		X	X	X		

Table TERR 4-6. CWHR Habitats Within ¼ Mile of the Middle Fork American River Project and Potential Project Betterments (continued).

Proposed Betterments	CWHR Wildlife Habitats												
	Annual Grass	Barren	Blue Oak-Foothill Pine	Douglas-Fir	Montane Chaparral	Montane Hardwood	Montane Riparian	Ponderosa Pine	Sierran Mixed Conifer	Developed	Riverine / Lacustrine	Wet Meadow	White Fir
Hell Hole Reservoir Seasonal Storage Increase													
Hell Hole Dam													
Modified Facilities													
Hell Hole Dam Spillway Crest Gates		X		X	X	X	X		X	X	X		
Hell Hole Dam Parapet Walls		X		X	X	X	X		X	X	X		
New Facilities													
Hell Hole Dam Spillway Crest Gates Control Building		X		X	X	X	X		X	X	X		
Hell Hole Dam Spillway Crest Gates Control Building Powerline		X		X	X	X	X		X	X	X		
Temporary Construction and Staging Areas													
Hell Hole Dam Spillway Crest Gates Construction Road		X		X	X	X	X		X	X	X		
Hell Hole Dam Spillway Crest Gates Construction Work Area		X		X	X	X	X		X	X	X		
Hell Hole Dam Spillway Crest Gates and Control Building Construction Staging Area		X		X	X	X	X		X	X	X		
Hell Hole Dam Parapet Wall Construction Staging and Work Area		X		X	X	X	X		X	X	X		
Hell Hole Dam Spillway Crest Gates Control Building Powerline Construction Staging Area		X		X	X	X	X		X	X	X		
Hell Hole-Middle Fork Tunnel Gatehouse													
Modified Facilities													
Hell Hole – Middle Fork Tunnel Gatehouse Parapet Wall						X			X	X	X		
Temporary Construction and Staging Areas													
Hell Hole-Middle Fork Tunnel Gatehouse Parapet Wall Construction Staging and Work Area						X			X	X	X		
French Meadows Powerhouse													
Modified Facilities													
French Meadows Powerhouse Parapet Wall		X			X	X					X		
Temporary Construction and Staging Areas													
French Meadows Powerhouse Parapet Wall Construction Staging and Work Area		X			X	X					X		

Table TERR 4-6. CWHR Habitats Within ¼ Mile of the Middle Fork American River Project and Potential Project Betterments (continued).

Proposed Betterments	CWHR Wildlife Habitats												
	Annual Grass	Barren	Blue Oak-Foothill Pine	Douglas-Fir	Montane Chaparral	Montane Hardwood	Montane Riparian	Ponderosa Pine	Sierran Mixed Conifer	Developed	Riverine / Lacustrine	Wet Meadow	White Fir
Hell Hole Reservoir Seasonal Storage Increase (continued)													
South Fork Long Canyon Diversion													
Modified Facilities													
South Fork Long Canyon Diversion Dam Crest Gates						X	X		X	X	X		
New Facilities													
South Fork Long Canyon Diversion Dam Crest Gates Generator Building						X	X		X	X	X		
Temporary Construction and Staging Areas													
South Fork Long Canyon Diversion Dam Crest Gates and Generator Building Construction Staging and Work Area						X	X		X	X	X		
French Meadows Powerhouse Capacity Upgrade													
French Meadows Reservoir													
Modified Facilities													
French Meadows – Hell Hole Tunnel Intake Trash Rack							X		X		X		
Temporary Construction and Staging Areas													
French Meadows – Hell Hole Tunnel Intake Trash Rack Construction Staging Area							X		X		X		
French Meadows – Hell Hole Tunnel Intake Trash Rack Construction Work Area							X		X		X		
French Meadows – Hell Hole Tunnel Intake Trash Rack Construction Road							X		X		X		
French Meadows Powerhouse													
Modified Facilities													
French Meadows Powerhouse Switchyard		X			X	X					X		
New Facilities													
French Meadows Powerhouse		X			X	X					X		
French Meadows Powerhouse Penstock		X			X	X					X		
French Meadows – Hell Hole Tunnel Surge Shaft/Tank		X			X	X					X		
French Meadows – Hell Hole Tunnel Surge Pipeline		X			X	X					X		
French Meadows – Hell Hole Tunnel Surge Shaft or Pipeline Road		X			X	X					X		

Table TERR 4-6. CWHR Habitats Within ¼ Mile of the Middle Fork American River Project and Potential Project Betterments (continued).

Proposed Betterments	CWHR Wildlife Habitats												
	Annual Grass	Barren	Blue Oak– Foothill Pine	Douglas-Fir	Montane Chaparral	Montane Hardwood	Montane Riparian	Ponderosa Pine	Sierran Mixed Conifer	Developed	Riverine / Lacustrine	Wet Meadow	White Fir
French Meadows Powerhouse Capacity Upgrade (continued)													
French Meadows Powerhouse (continued)													
Temporary Construction and Staging Areas													
French Meadows Powerhouse/Switchyard Construction Work Area		X			X	X					X		
French Meadows Powerhouse/Switchyard Construction Staging Areas		X			X	X					X		
French Meadows Powerhouse Penstock Construction Work Area		X			X	X					X		
French Meadows Powerhouse Penstock Construction Staging Areas		X			X	X					X		
French Meadows – Hell Hole Tunnel Surge Shaft/Tank or Pipeline Construction Staging Areas		X			X	X					X		
French Meadows – Hell Hole Tunnel Surge Shaft/Tank Construction Work Area		X			X	X					X		
French Meadows – Hell Hole Tunnel Surge Pipeline Construction Work Area		X			X	X					X		
French Meadows – Hell Hole Tunnel Surge Shaft or Pipeline Road Construction Staging and Work Area		X			X	X					X		
Non-Project Facilities Modified During Construction													
Forest Road 14N09A		X			X	X					X		
Forest Road 14N09A Construction Staging and Work Area		X			X	X					X		
Middle Fork Powerhouse													
Modified Facilities													
Middle Fork Powerhouse Upper Switchyard				X	X	X	X		X	X	X		
Ralston Powerhouse Capacity Upgrade													
Ralston Powerhouse													
Modified Facilities													
Ralston Powerhouse		X	X	X	X	X	X			X	X		
Temporary Construction and Staging Areas													
Ralston Powerhouse Construction Staging Area		X	X	X	X	X	X			X	X		

Table TERR 4-7. Special-Status Species Associated with CWHR Wildlife Habitats.

Common Name	Scientific Name	Status		CWHR Wildlife Habitats											
		Federal	State	Annual Grassland	Barren	Blue Oak–Foothill Pine	Douglas-Fir	Montane Chaparral	Montane Hardwood	Montane Riparian	Ponderosa Pine	Sierran Mixed Conifer	Water (Riverine and Lacustrine)	Wet Meadow	White Fir
Birds															
American white pelican	<i>Pelecanus erythrorhynchos</i>	—	CSC		X								X		
sooty (blue) grouse	<i>Dendragapus obscurus</i>	MIS	—	X			X		X	X	X	X			X
mountain quail	<i>Oreortyx pictus</i>	MIS	—	X		X	X	X	X	X	X	X		X	X
harlequin duck	<i>Histrionicus histrionicus</i>	—	CSC										X		
golden eagle	<i>Aquila chrysaetos</i>	—	CFP	X		X	X	X	X	X	X	X		X	X
northern goshawk	<i>Accipiter gentilis</i>	FSS ³	CSC			X	X	X	X	X	X	X			X
osprey ¹	<i>Pandion haliaetus</i> ¹	—	—	X	X	X	X	X	X	X	X	X	X	X	X
bald eagle	<i>Haliaeetus leucocephalus</i>	FD FSS ³	SE CFP	X	X	X	X	X	X	X	X	X	X	X	X
American peregrine falcon	<i>Falco peregrinus anatum</i>	FD	SE CFP	X	X	X	X	X	X	X	X	X		X	X
great gray owl	<i>Strix nebulosa</i>	FSS ³	SE									X		X	X
California spotted owl	<i>Strix occidentalis occidentalis</i>	FSS ³ MIS	CSC			X	X		X	X	X	X			X
Vaux's swift	<i>Chaetura vauxi</i>	—	CSC			X	X	X	X	X	X	X	X	X	X
black swift	<i>Cypseloides niger</i>	—	CSC	X	X	X	X	X	X	X	X	X	X	X	X
hairy woodpecker	<i>Picoides villosus</i>	MIS	—			X	X		X	X	X	X			X
black-backed woodpecker	<i>Picoides arcticus</i>	MIS	—									X			X
olive-sided flycatcher	<i>Contopus cooperi</i>	—	CSC			X	X	X				X	X		X
willow flycatcher	<i>Empidonax traillii (brewsteri)</i>	FSS ³	SE							X				X	
yellow warbler	<i>Dendroica petechia brewsteri</i>	MIS	CSC			X	X	X	X	X	X	X			X
yellow-breasted chat	<i>Icteria virens</i>	—	CSC							X					
fox sparrow	<i>Passerella iliaca</i>	MIS	—			X	X	X	X	X	X	X			X

Table TERR 4-7. Special-Status Species Associated with CWHR Wildlife Habitats (continued).

Common Name	Scientific Name	Status		CWHR Wildlife Habitats											
		Federal	State	Annual Grassland	Barren	Blue Oak-Foothill Pine	Douglas-Fir	Montane Chaparral	Montane Hardwood	Montane Riparian	Ponderosa Pine	Sierran Mixed Conifer	Water (Riverine and Lacustrine)	Wet Meadow	White Fir
Mammals															
Western red bat	<i>Lasiurus blossevillii</i>	FSS ³	—	X		X	X	X	X	X	X	X	X	X	X
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FSS ³	CSC	X		X	X	X	X	X	X	X	X	X	X
pallid bat	<i>Antrozous pallidus</i>	FSS ³	CSC	X	X	X	X	X	X	X	X	X	X	X	X
spotted bat	<i>Euderma maculatum</i>	—	CSC	X		X			X	X	X	X	X		X
greater western mastiff bat	<i>Eumops perotis californicus</i>	—	CSC	X	X	X		X	X	X	X			X	
Sierra Nevada sewellel (mountain beaver)	<i>Aplodontia rufa californica</i>	—	CSC				X		X	X	X			X	X
northern flying squirrel	<i>Glaucomys sabrinus</i>	MIS	—			X	X		X	X	X				X
American marten (Sierra marten)	<i>Martes americana (sierrae)</i>	FSS ³ MIS	—		X		X			X	X	X		X	X
Pacific fisher	<i>Martes pennanti (pacifica)</i>	FC FSS ³	—				X			X	X	X			X
California wolverine	<i>Gulo gulo luteus</i>	FSS ³	ST CFP		X		X	X		X	X	X		X	X
mule deer	<i>Odocoileus hemionus</i>	MIS	—	X		X	X	X	X	X	X	X		X	X

LEGEND:Federal Status

FT = Federal Threatened

FE = Federal Endangered

FC = Federal Candidate

FD = Delisted Species

FSS¹ = Forest Service Sensitive, Eldorado National ForestFSS² = Forest Service Sensitive, Tahoe National ForestFSS³ = Forest Service Sensitive, Eldorado and Tahoe National Forests

MIS = Management Indicator Species (Forest Service)

State Status

SR = California Rare

ST = California Threatened

SE = California Endangered

CFP = California Fully Protected

CSC = California Species of Special Concern

¹At the time the TERR 4 - TSP was developed in 2007, osprey were considered CSC by the CDFG. When CDFG revised the CSC bird list in 2008, ospreys were no longer included. However, because ospreys were included as a special-status species in the TERR 4 - TSP in agreement with the FMP Terrestrial Working Group (TWG), they are regarded as such for the purposes of this report.

Table TERR 4-8. Avian Species Observed at Potential Project Betterments during Avian Point Count and Area Search Surveys.

Common Name	Scientific Name	Hell Hole Reservoir Seasonal Storage Increase			French Meadows Powerhouse Capacity Upgrade		Ralston Powerhouse Capacity Upgrade
		Hell Hole Dam	Hell Hole- Middle Fork Tunnel Gatehouse	South Fork Long Canyon	French Meadows Reservoir	French Meadows Powerhouse	
Special-Status Species							
Blue grouse	<i>Dendragapus obscurus</i>	X	X			X	
Hairy woodpecker	<i>Picoides villosus</i>	X	X	X	X	X	
Mountain quail	<i>Oreortyx pictus</i>	X	X			X	
Osprey	<i>Pandion haliaetus</i>	X	X		X	X	
Yellow warbler	<i>Dendroica petechia</i>	X	X			X	
Common Species							
Acorn woodpecker	<i>Melanerpes formicivorus</i>	X	X			X	
American crow	<i>Corvus brachyrhynchos</i>			X			
American dipper	<i>Cinclus mexicanus</i>			X			
American robin	<i>Turdus migratorius</i>	X	X	X	X	X	
Anna's hummingbird	<i>Calypte anna</i>	X	X			X	X
Band-tailed pigeon	<i>Patagioenas fasciata</i>	X	X			X	
Black phoebe	<i>Sayornis nigricans</i>						X
Black-headed grosbeak	<i>Pheucticus melanocephalus</i>	X	X	X		X	X
Black-throated gray warbler	<i>Dendroica nigrescens</i>	X	X	X		X	
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>						X
Brown creeper	<i>Certhia americana</i>	X	X	X	X	X	
Bullock's oriole	<i>Icterus bullockii</i>	X	X			X	
Cassin's vireo	<i>Vireo cassinii</i>	X	X	X		X	
Common raven	<i>Corvus corax</i>	X	X			X	
Dark-eyed junco	<i>Junco hyemalis</i>	X	X	X	X	X	
Downy woodpecker	<i>Picoides pubescens</i>	X	X	X	X	X	

Table TERR 4-8. Avian Species Observed at Potential Project Betterments during Avian Point Count and Area Search Surveys (continued).

Common Name	Scientific Name	Hell Hole Reservoir Seasonal Storage Increase			French Meadows Powerhouse Capacity Upgrade		Ralston Powerhouse Capacity Upgrade
		Hell Hole Dam	Hell Hole- Middle Fork Tunnel Gatehouse	South Fork Long Canyon	French Meadows Reservoir	French Meadows Powerhouse	
Common Species (continued)							
Dusky flycatcher	<i>Empidonax oberholseri</i>	X	X		X	X	
Golden-crowned kinglet	<i>Regulus satrapa</i>	X	X			X	
Green towhee	<i>Pipilo chlorurus</i>	X	X			X	
Hermit thrush	<i>Catharus guttatus</i>			X			
Lazuli bunting	<i>Passerina amoena</i>	X	X			X	X
Lesser goldfinch	<i>Carduelis psaltria</i>	X	X			X	X
Mountain chickadee	<i>Poecile gambeli</i>	X	X	X	X	X	
Nashville warbler	<i>Vermivora ruficapilla</i>	X	X	X	X	X	X
Northern flicker	<i>Colaptes auratus</i>	X	X	X		X	X
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>						X
Orange-crowned warbler	<i>Vermivora celata</i>	X	X			X	
Pacific-slope flycatcher	<i>Empidonax difficilis</i>		X				
Pileated woodpecker	<i>Dryocopus pileatus</i>	X				X	
Purple finch	<i>Carpodacus purpureus</i>	X			X	X	
Pygmy nuthatch	<i>Sitta pygmaea</i>	X				X	
Red-breasted nuthatch	<i>Sitta canadensis</i>	X	X		X	X	
Red-breasted sapsucker	<i>Sphyrapicus ruber</i>	X				X	
Red-tailed hawk	<i>Buteo jamaicensis</i>	X				X	
Rock wren	<i>Salpinctes obsoletus</i>	X				X	
Spotted towhee	<i>Pipilo maculatus</i>	X	X			X	
Stellar's jay	<i>Cyanocitta stelleri</i>	X	X		X	X	X
Townsend's solitaire	<i>Myadestes townsendi</i>	X				X	
Townsend's warbler	<i>Dendroica townsendi</i>	X				X	

Table TERR 4-8. Avian Species Observed at Potential Project Betterments during Avian Point Count and Area Search Surveys (continued).

Common Name	Scientific Name	Hell Hole Reservoir Seasonal Storage Increase			French Meadows Powerhouse Capacity Upgrade		Ralston Powerhouse Capacity Upgrade
		Hell Hole Dam	Hell Hole- Middle Fork Tunnel Gatehouse	South Fork Long Canyon	French Meadows Reservoir	French Meadows Powerhouse	
Common Species (continued)							
Tree swallow	<i>Tachycineta bicolor</i>	X				X	
Turkey vulture	<i>Cathartes aura</i>	X				X	
Violet-green swallow	<i>Tachycineta thalassina</i>	X				X	
Warbling vireo	<i>Vireo gilvus</i>	X				X	
Western bluebird	<i>Sialia mexicana</i>	X				X	
Western kingbird	<i>Tyrannus verticalis</i>	X				X	
Western meadowlark	<i>Sturnella neglecta</i>				X		
Western tanager	<i>Piranga ludoviciana</i>	X				X	
Western wood-peewee	<i>Contopus sordidulus</i>	X				X	
White-headed woodpecker	<i>Picoides albolarvatus</i>	X	X		X	X	
Williamson's sapsucker	<i>Sphyrapicus thyroideus</i>	X				X	
Wrentit	<i>Chamaea fasciata</i>	X				X	
Yellow-rumped warbler	<i>Dendroica coronata</i>	X	X			X	X

Table TERR 4-9. Wildlife Species Observed at Potential Project Betterments during Terrestrial Visual Encounter Surveys.

Common Name	Scientific Name	Status		Type of Detection				Betterment Location		
		Federal	State	Visual	Scat	Den/ Bedding Area	Tracks/ Feathers	French Meadows Powerhouse Capacity Upgrade	Hell Hole Reservoir Seasonal Storage Increase	Ralston Powerhouse Capacity Upgrade
Reptiles										
California racer	<i>Masticophis lateralis lateralis</i>	—	—	X					X	
lizard species	—	—	—	X					X	
Sierran alligator lizard	<i>Elgaria coerulea palmeri</i>	—	—	X					X	
western fence lizard	<i>Sceloporus occidentalis</i>	—	—	X					X	
Birds										
bald eagle	<i>Haliaeetus leucocephalus</i>	FD FSS	SE CFP	X					X	
Canada goose	<i>Branta canadensis</i>	—	—		X		X		X	X
osprey	<i>Pandion haliaetus</i>	—	—	X					X	
owl species	—	—	—				X		X	
Mammals										
bat species	—	—	—		X					X
black bear	<i>Ursus americanus</i>	—	—	X	X	X	X		X	
coyote	<i>Canis latrans</i>	—	—		X	X			X	
gray fox	<i>Urocyon cinereoargenteus</i>	—	—		X				X	
mountain lion	<i>Felis concolor</i>	—	—	X	X				X	
mule deer	<i>Odocoileus hemionus</i>	MIS	—		X	X	X	X	X	
northern river otter	<i>Lontra canadensis</i>	—	—		X				X	
rodent species	—	—	—		X	X			X	

LEGEND:Federal Status

FD = Delisted Species

FSS = Forest Service Sensitive, Eldorado and Tahoe National Forests

MIS = Management Indicator Species (Forest Service)

State Status

SE = California Endangered

CFP = California Fully Protected

Table TERR 4-10. Special-Status Terrestrial Wildlife Species Known to Occur or Potentially Occurring in the Study Area.

Scientific Name	Common Name	Federal Status	State Status	Habitat	Occurrence Notes
Special-Status Terrestrial Wildlife Known to Occur Within the Study Area					
<i>Pelecanus erythrorhynchos</i>	American white pelican	—	CSC	In California, now nests only at large lakes in Klamath Basin, especially Clear Lake National Wildlife Refuge. It is common to abundant on nesting grounds April to August (sometimes March to September). Migrant flocks pass overhead almost any month, but mainly in spring and fall throughout the state, especially in southern California.	Known to occur within the study area. Seven individuals were detected flying over Hell Hole Reservoir.
<i>Aquila chrysaetos</i>	golden eagle	—	CFP	Grasslands and early successional stages of forest and shrub habitats for foraging up to 11,500 feet. Secluded cliffs with overhanging ledges or large trees in open areas with unobstructed views for nesting.	Known to occur within the study area. Detected during TERR 5 bald eagle surveys approximately 1 mile downstream of Middle Fork Interbay. Known from the Tahoe National Forest.
<i>Accipiter gentilis</i>	northern goshawk	FSS ³	CSC	Prefers middle to high elevation, mature, dense conifer forests for foraging and nesting. Casual in foothills during winter, northern deserts in pinyon-juniper woodland, and low elevation riparian habitats.	Known to occur within the study area. Detected at South Fork Long Canyon Diversion Dam. Northern goshawk nests and associated PACs intersect with FERC Project boundaries at the following locations: French Meadows Reservoir; Duncan Creek Diversion Dam; South Fork Long Canyon Diversion Dam; Brushy Canyon Adit and Access Road; Middle Fork-Ralston Tunnel
<i>Pandion haliaetus</i> ¹	osprey	—	—	Breeds in northern California, associated strictly with large fish-bearing waters, primarily in ponderosa pine and mixed conifer habitats.	Known to occur within the study area. Active nests detected during nest surveys along the north shore of upper and lower Hell Hole Reservoir, south shore Hell Hole Reservoir, north shore French Meadows Reservoir, near French Meadows Dam, and 3 miles downstream of French Meadows Reservoir. Individuals detected at Hell Hole Reservoir, French Meadows Reservoir, and Big Meadows Campground.
<i>Haliaeetus leucocephalus</i>	bald eagle	FSS ³ FD (7/10/08)	SE CFP	Local winter migrant to various California lakes. Most of the breeding population is restricted to more northern counties. Regular winter migrants to the region. Usually not found at high elevations in the Sierra.	Known to occur within the study area. Numerous bald eagle detections were made at Hell Hole Reservoir during TERR 5 bald eagle surveys, including one nest sight at the upper end of Hell Hole Reservoir. Also detected during TERR 5 surveys along the MFAR, the Rubicon River, and Ralston Afterbay. Records for this species include Hell Hole Reservoir; Ralston Afterbay; MFAR approximately 3 miles downstream of the Ralston Afterbay Dam; Gerle Creek Divide Reservoir; Rubicon River approximately 2 miles downstream of the confluence with the South Fork Rubicon River; Pilot Creek near its confluence with the Rubicon River; and Otter Creek near its confluence with the MFAR. In addition, a bald eagle was observed in the summer of 2006 at Hell Hole Reservoir (Ransom pers. comm., 2007)
<i>Dendragapus obscurus</i>	sooty (blue) grouse	MIS	—	Occurs in open, medium to mature-aged stands of fir, Douglas-fir, and other conifer habitats, interspersed with medium to large openings, and available water. Found in the Sierra Nevada up to 11,000 feet in elevation.	Known to occur within the study area. Detected in snag located along the north shore of Hell Hole Reservoir.
<i>Oreortyx pictus</i>	mountain quail	MIS	—	Typically found in most major montane habitats California from mid- to high-elevations. Found seasonally in open, brushy stands of conifer and deciduous forest and woodland, and chaparral.	Known to occur within the study area. Detected at numerous locations along Hell Hole Reservoir.
<i>Strix occidentalis occidentalis</i>	California spotted owl	FSS ³ MIS	CSC	Resides in dense, old growth, multi-layered mixed conifer, redwood, Douglas-fir, and oak woodland habitats, from sea level up to approximately 7,600 feet.	Known to occur within study area. California spotted owl nests and associated PACs intersect with FERC Project boundaries at the following locations: French Meadows Reservoir; North and South Fork Long Canyon Diversion Dams; Middle Fork Interbay; French Meadows- Hell Hole Tunnel; Hell Hole-Middle Fork Tunnel; Interbay Dam Road; Brushy Canyon Adit and Access Road; Middle Fork-Ralston Tunnel.
<i>Chaetura vauxi</i>	Vaux's swift	—	CSC	Prefers redwood and Douglas-fir habitats with nest sites in large, hollow trees and snags, especially tall, burned-out stubs. Forages over moist terrain and habitats, preferring rivers and lakes.	Known to occur within the study area. A large flock was detected at French Meadows Reservoir.
<i>Picoides villosus</i>	hairy woodpecker	MIS	—	Inhabits mixed conifer and riparian deciduous habitats from sea level to 9,000 feet in elevation.	Known to occur within the study area. Detected at Hell Hole Reservoir, South Fork Long Canyon Diversion Dam, and French Meadows Reservoir.
<i>Contopus cooperi</i>	olive-sided flycatcher	—	CSC	Uncommon to common, summer resident in a wide variety of forest and woodland habitats below 9,000 feet throughout California exclusive of the deserts, the Central Valley, and other lowland valleys and basins. Nesting habitats include mixed conifer, montane hardwood-conifer, Douglas-fir, redwood, red fir, and lodgepole pine forests.	Known to occur within the study area. Detected at French Meadows Reservoir.
<i>Dendroica petechia brewsteri</i>	yellow warbler	MIS	CSC	Breeds in riparian woodlands from coastal and desert lowlands up to 8,000 feet in the Sierra Nevada. Also breeds in montane chaparral, open ponderosa pine, and mixed conifer habitats with substantial amounts of brush.	Known to occur within study area. Detected at Hell Hole Reservoir and French Meadows Reservoir.

Table TERR 4-10. Special-Status Terrestrial Wildlife Species Known to Occur or Potentially Occurring in the Study Area (continued).

Scientific Name	Common Name	Federal Status	State Status	Habitat	Occurrence Notes
Special-Status Terrestrial Wildlife Known to Occur Within the Study Area (continued)					
<i>Icteria virens</i>	yellow-breasted chat	—	CSC	Uncommon summer resident and migrant in coastal California and in foothills of the Sierra Nevada, up to approximately 4,800 feet in valley foothill riparian habitat. Also occurs east of the Sierra Nevada in desert riparian habitats, along coast of northern California east to Cascades, locally south of Mendocino Co. In southern California, breeds locally on the coast and very locally inland. Nests in dense shrubs along streams or rivers.	Known to occur within study area. Detected at Ralston Picnic Area.
<i>Lasiurus blossevillii</i>	Western red bat	FSS ³	—	Occurs from British Columbia to South America. In California, occurs from Shasta County to the Mexican border west of the Sierra crest. Roosts solitarily in foliage in forests and woodlands from sea level up through mixed coniferous forest. In California known to roost in cottonwood and willow.	Known to occur within study area. Detected during TERR 6 special-status bat surveys at French Meadows Dam and Outlet Works, Ralston Afterbay Dam, Middle Fork Interbay Dam, North and South Fork Long Canyon Diversion Dams, French Meadows Powerhouse and Penstock and Butterfly Valve House, and the upper end of Hell Hole Reservoir.
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	FSS ³	CSC	Found in all but alpine and subalpine habitats; most abundant in mesic habitats. Requires caves, mines, tunnels, buildings, or other man-made structures for roosting. This species is extremely sensitive to disturbance and may abandon a roost if disturbed.	Known to occur within study area. Detected during TERR 6 special-status bat surveys at French Meadows Dam and Outlet Works, Ralston Afterbay Dam, North Fork Long Canyon Diversion Dam, French Meadows Powerhouse and Penstock and Butterfly Valve House, and the upper end of Hell Hole Reservoir.
<i>Antrozous pallidus</i>	pallid bat	FSS ³	CSC	Inhabits grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests. Typically roosts in caves, crevices, or mines. Requires open habitat for foraging.	Known to occur within study area. Detected during TERR 6 special-status bat surveys at French Meadows Dam and Outlet Works, Ralston Afterbay Dam, Middle Fork Interbay Dam, North Fork Long Canyon Diversion Dam, and French Meadows Powerhouse and Penstock and Butterfly Valve House.. Data from W. Clevenger's 2003 study includes occurrences of this species in the vicinity of French Meadows Reservoir and on Duncan Creek upstream of the Duncan Creek Diversion (Clevenger 2005).
<i>Odocoileus hemionus</i>	mule deer	MIS	—	Common to abundant, yearlong resident or elevational migrant with a widespread distribution through most of California, except in deserts and intensively farmed areas without cover. Prefers a mosaic of various-aged vegetation that provides woody cover, meadow and shrubby openings, and free water.	Known to occur within study area. Detected at Hell Hole Reservoir and French Meadows Reservoir.
Special-Status Terrestrial Wildlife Potentially Occurring Within the Study Area					
<i>Histrionicus histrionicus</i>	harlequin duck	—	CSC	Historic breeding grounds include west slope of the Sierra Nevada along shores of swift, shallow rivers.	Potential (rare) migrant or resident in appropriate habitat. Study area boundaries are within the known geographic and elevational range of this species.
<i>Falco peregrinus anatum</i>	American peregrine falcon	FD	SE CFP	Very uncommon breeding resident and uncommon as a migrant. Breeds in woodlands, forests, coastal habitats, and riparian areas near wetlands, lakes, rivers, or other water on high cliffs, banks, dunes, or mounds. Active nesting sites are known along the coast, in the Sierra Nevada, and in the mountains of northern California. Migrants occur along the coast and the western Sierra Nevada in spring and fall.	Potential resident in appropriate habitat. Study area boundaries are within the known geographic and elevational range of this species.
<i>Strix nebulosa</i>	great gray owl	FSS ³	SE	Nests in old-growth coniferous forests and forages in montane meadows. Distribution includes high elevations of the Sierra Nevada and Cascade Ranges from 4,500 to 7,500 feet.	Potential migrant in appropriate habitat. Great gray owls are not known to breed in the vicinity of study area boundaries. Breeding populations in California are concentrated in Del Norte, Humboldt, Siskiyou, and Modoc counties, with smaller, isolated breeding populations also occurring in the central Sierra Nevada. The nearest CNDDDB record is 30 miles south near Leoni Meadows in the ENF (CNDDDB 2007).
<i>Cypseloides niger</i>	black swift	—	CSC	Nests in moist crevices or caves, or on cliffs near waterfalls in deep canyons. Forages widely over many habitats; seems to avoid arid regions.	Potential summer (breeding) resident in appropriate habitat. Study area boundaries are within the known geographic and elevational range of this species. Known to occur in the watershed. A CNDDDB report for this species includes Grouse Creek, a tributary to the North Fork of the Middle Fork American River (CNDDDB 2007).
<i>Picoides arcticus</i>	black-backed woodpecker	MIS	—	Found predominantly in fir and lodgepole pine forest habitats from 6,000 to 9,500 feet in elevation. Typically forages in snags, dying or insect-infested trees. Prefers relatively large trees for foraging and nest site.	May occur in appropriate habitat. Study area boundaries are within the known geographic and elevational range of this species.
<i>Empidonax traillii (brewsteri)</i>	willow flycatcher	FSS ³	SE	Wet meadow and montane riparian habitats from 2,000 to 8,000 feet. Most often occurs in broad, open river valleys or large mountain meadows with lush growth of shrubby willows.	Potential summer (breeding) resident in appropriate habitat. Study area boundaries are within the known geographic and elevational range of this species.

Table TERR 4-10. Special-Status Terrestrial Wildlife Species Known to Occur or Potentially Occurring in the Study Area (continued).

Scientific Name	Common Name	Federal Status	State Status	Habitat	Occurrence Notes
Special-Status Terrestrial Wildlife Potentially Occurring Within the Study Area (continued)					
<i>Passerella iliaca</i>	fox sparrow	MIS	—	Breeds commonly in mountains of California, in dense montane chaparral and brushy understory of other wooded, montane habitats. Less common in winter east of Cascade Range and Sierra Nevada than elsewhere in state. Found in winter in dense brush habitats, including understories of open forests, throughout foothills and lowlands, except in southern deserts.	May occur in appropriate habitat. Study area boundaries are within the known geographic and elevational range of this species.
<i>Euderma maculatum</i>	spotted bat	—	CSC	Habitats range from arid deserts and grasslands through mixed conifer forests up to 10,600 feet. Prefers sites with adequate roosting habitat, such as cliffs. Often limited by the availability of cliff habitat. Feeds over water and along marshes.	May occur in appropriate habitat. Study area boundaries are within the known geographic and elevational range of this species. Known to occur in the watershed. Data from W. Clevenger's 2003 study includes an occurrence of this species in the TNF. No GPS information is available for this record (Clevenger 2005).
<i>Eumops perotis californicus</i>	greater western mastiff bat	—	CSC	Occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, chaparral, desert scrub, and urban areas. Typically roosts in caves, crevices, or other rock formations. Requires open areas for foraging. Found mostly below 4,000 feet in elevation in the lower and upper desert scrub near cliffs, preferring rugged canyons with abundant crevices.	May occur in appropriate habitat. Study area boundaries are within the known geographic and elevational range of this species.
<i>Aplodontia rufa californica</i>	Sierra Nevada sewellel (mountain beaver)	—	CSC	Occurs in dense riparian and open brushy stages of most forest types. Deep, friable soils are required for burrowing along cool, moist microclimates. Live in burrows located in or near deep soils near streams and springs. Typical habitat in the Sierra is montane riparian.	May occur in appropriate habitat. Study area boundaries are within the known geographic and elevational range of this species. Recorded occurrence east of Duncan Peak.
<i>Bassariscus astutus</i>	ringtail	—	CFP	Found in most forest and shrub habitats in close association with rock and/or riparian areas, usually not more than .6 miles from water. Dens in hollow trees, snags, or other cavities.	May occur in appropriate habitat. Study area boundaries are within the known geographic and elevational range of this species.
<i>Glaucomys sabrinus</i>	northern flying squirrel	MIS	—	Found in coniferous habitats from ponderosa pine through lodgepole pine forests and riparian-deciduous forests of the North Coast, Klamath, Cascade, Sierra Nevada Ranges, and the Warner Mountains from 5,000 to 8,000 feet in elevation.	May occur in appropriate habitat. Study area boundaries are within the known geographic and elevational range of this species.
<i>Martes americana (sierrae)</i>	American marten (Sierra marten)	FSS ³ MIS	—	Optimal habitats are various mixed evergreen forests with more than 40% crown closure and large trees and snags for den sites. Most commonly found in red fir and lodgepole pine forests between 4,000 and 10,600 feet elevation.	May occur in appropriate habitat. Study area boundaries are within the known geographic and elevational range of this species. Known to occur within the watershed. A CNDDDB report (polygon) for this species includes portions of Duncan Creek Diversion Road.
<i>Martes pennanti (pacifica)</i>	Pacific fisher	FC FSS ³	—	Suitable habitat consists of large areas of mature, dense forest such as red fir, lodgepole pine, ponderosa pine, mixed conifer, and Jeffery pine forests with snags and greater than 50% canopy closure. Known from 4,000 to 8,000 ft elevations in the Sierra National Forest.	May occur in appropriate habitat. Study area boundaries are within the known geographic and elevational range of this species. Two recorded occurrences in the vicinity of French Meadows Reservoir, including one occurrence ~ 1 mile east of French Meadows Reservoir, near the Forest Service Station. However, this species is now thought to be absent from the central Sierra Nevada (Zielinski et al. 2005).
<i>Gulo gulo luteus</i>	California wolverine	FSS ³	ST CFP	Mixed conifer, red fir, and lodgepole habitats, and probably sub-alpine conifer, alpine dwarf shrub, wet meadow, and montane riparian habitats. Occurs in the Sierra Nevada from 4,300 to 10,800 feet. Majority of recorded sightings are found above 8,000 feet elevation.	May occur in appropriate habitat. Study area boundaries are within the known geographic and elevational range of this species. However, this species is extremely rare in California.
Special-Status Terrestrial Wildlife Unlikely to Occur Within the Study Area					
<i>Desmocerus californicus dimorphus</i>	valley elderberry longhorn beetle	FT FPD	—	Elderberry shrubs throughout the Central Valley and foothills below 3,000 feet elevation.	Unlikely to occur. Elderberry shrubs were not detected in recent surveys conducted below 3,000 feet in elevation
<i>Centrocercus urophasianus</i>	greater sage-grouse	MIS	CSC	Most commonly occurring in a combination of sagebrush, perennial grassland or wet meadow habitats, and water. Also found in bitterbrush and alkali desert scrub habitats. Found in northeastern California, ranging from the Oregon border along the east side of the Cascade Range and Sierra Nevada to northern Inyo County.	Unlikely to occur. Study area boundaries are outside the known geographic range of this species.
<i>Branta canadensis leucopareia</i>	Aleutian Canada goose	FD	—	(wintering) Winters on lakes and inland prairies. Forages on natural pasture or that cultivated to grain; loafs on lakes, reservoirs, ponds.	Unlikely to occur. Study area boundaries are outside the known geographic and elevational range of this species.

Table TERR 4-10. Special-Status Terrestrial Wildlife Species Known to Occur or Potentially Occurring in the Study Area (continued).

Scientific Name	Common Name	Federal Status	State Status	Habitat	Occurrence Notes
Special-Status Terrestrial Wildlife Unlikely to Occur Within the Study Area (continued)					
<i>Buteo swainsoni</i>	Swainson's hawk	—	ST	Uncommon breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen County, and Mojave Desert. Riparian woodlands, juniper-sage flats, and oak woodlands for nesting. Grasslands and agricultural areas for foraging.	Unlikely to occur. Study area boundaries are outside the known geographic range of this species.
<i>Athene cunicularia hypugaea</i>	western burrowing owl	—	CSC	Year-long resident of open, dry grassland and desert habitats and in grass, forb, and open shrub stages of pinyon-juniper and ponderosa pine habitats up to 5,300 feet.	Unlikely to occur. Study area boundaries are outside the known geographic and elevational range of this species.
<i>Vulpes vulpes necator</i>	Sierra Nevada red fox	—	ST	Occurs throughout the Sierra Nevada at elevations above 7,000 feet in forests interspersed with meadows or alpine forests. Open areas are used for hunting, and forested habitats are used for cover and reproduction. Known from the higher elevations of the Sierra National Forest.	Unlikely to occur. Study area boundaries are outside the known elevational range of this species.

LEGEND:

Federal Status

FT = Federal Threatened

FE = Federal Endangered

FC = Federal Candidate

FPD = Federal Proposed for Delisting

FD = Delisted Species

FSS¹ = Forest Service Sensitive, Eldorado National ForestFSS² = Forest Service Sensitive, Tahoe National ForestFSS³ = Forest Service Sensitive, Eldorado and Tahoe National Forests

State Status

SR = California Rare

ST = California Threatened

SE = California Endangered

CFP = California Fully Protected

CSC = California Species of Special Concern

Other Lists

MIS = Management Indicator Species

¹ At the time the TERR 4 – TSP was developed in 2007, osprey were considered CSC by the CDFG. When CDFG revised the CSC bird list in 2008, osprey were no longer included. However, because osprey were included as a special-status species in the TERR 4 – TSP in agreement with the FMP Terrestrial Working Group (TWG), they are regarded as such for the purposes of this report.

Table TERR 4-11. Raptor Nests and USDA-FS Land Allocations and other Important Habitats in the Vicinity of the Middle Fork American River Project and Proposed Project Betterments.

Project Facilities	Special-Status Bird Species / Occurrence Type					
	Bald Eagle Nest ¹	Bald Eagle Night Roost ¹	Osprey Nest ²	California Spotted Owl PAC ³	California Spotted Owl HRCA ⁴	Northern Goshawk PAC ⁵
Dams, Reservoirs, and Diversion Pools						
Large Dams						
French Meadows Dam and Outlet Works						
Hell Hole Dam and Outlet Works						
Medium Dams						
Middle Fork Interbay Dam						
Ralston Afterbay Dam						
Small Dams						
Duncan Creek Diversion Dam						X
North Fork Long Canyon Diversion Dam						
South Fork Long Canyon Diversion Dam				X	X	X
Large Reservoirs						
French Meadows Reservoir			X			
Hell Hole Reservoir	X	X	X			
Medium Reservoirs						
Middle Fork Interbay						
Ralston Afterbay						
Small Diversion Pools						
Duncan Creek Diversion Pool				X		X
North Fork Long Canyon Diversion Pool						
South Fork Long Canyon Diversion Pool				X	X	X
Water Conveyance Systems						
Tunnels						
Duncan Creek - Middle Fork Tunnel			X			X
French Meadows - Hell Hole Tunnel			X	X	X	
Hell Hole - Middle Fork Tunnel				X	X	X

Table TERR 4-11. Raptor Nests and USDA-FS Land Allocations and other Important Habitats in the Vicinity of the Middle Fork American River Project and Proposed Project Betterments (continued).

Project Facilities	Special-Status Bird Species / Occurrence Type					
	Bald Eagle Nest ¹	Bald Eagle Night Roost ¹	Osprey Nest ²	California Spotted OWI PAC ³	California Spotted OWI HRCA ⁴	Northern Goshawk PAC ⁵
Water Conveyance Systems (continued)						
Tunnels (continued)						
Middle Fork - Ralston Tunnel				X	X	X
Ralston - Oxbow Tunnel						
Removable Sections and Portals						
Duncan Creek - Middle Fork Tunnel Portal			X			
French Meadows - Hell Hole Tunnel Removable Section						
Hell Hole - Middle Fork Tunnel Removable Section						
Middle Fork - Ralston Tunnel Removable Section						
North Fork Long Canyon Crossing Removable Section				X		
Diversion Pipes and Drop Inlets						
North Fork Long Canyon Diversion Pipe and Drop Inlet				X		
South Fork Long Canyon Diversion Pipe and Drop Inlet				X	X	X
Surge Shafts and Adits						
Brushy Canyon Adit				X		
Hell Hole - Middle Fork Tunnel Surge Shaft and Tank				X		
Middle Fork - Ralston Tunnel Surge Shaft and Tank						
Intakes and Gatehouses						
Duncan Creek - Middle Fork Tunnel Intake						X
French Meadows - Hell Hole Tunnel Gatehouse			X		X	
French Meadows - Hell Hole Tunnel Intake						
Hell Hole - Middle Fork Tunnel Gatehouse			X			
Hell Hole - Middle Fork Tunnel Intake			X			
Middle Fork - Ralston Tunnel Intake and Gatehouse						
Ralston - Oxbow Tunnel Intake						
French Meadows Powerhouse Penstock and Butterfly Valve House						

Table TERR 4-11. Raptor Nests and USDA-FS Land Allocations and other Important Habitats in the Vicinity of the Middle Fork American River Project and Proposed Project Betterments (continued).

Project Facilities	Special-Status Bird Species / Occurrence Type					
	Bald Eagle Nest ¹	Bald Eagle Night Roost ¹	Osprey Nest ²	California Spotted Owl PAC ³	California Spotted Owl HRCA ⁴	Northern Goshawk PAC ⁵
Water Conveyance Systems (continued)						
Penstocks and Valve Houses						
Middle Fork Powerhouse Penstock and Butterfly Valve House				X		
Ralston Powerhouse Penstock and Butterfly Valve House						
POWERHOUSES, SWITCHYARDS, AND SUBSTATIONS						
French Meadows Powerhouse and Switchyard						
Hell Hole Powerhouse						
Middle Fork Powerhouse and Upper and Lower Switchyards				X	X	
Ralston Powerhouse and Switchyard						
Oxbow Powerhouse and Switchyard						
Hell Hole Substation						
Gaging Stations and Weirs						
Reservoir Gages						
French Meadows Reservoir Gage (USGS Gage No. 11427400)						
French Meadows Reservoir Staff Gage						
Hell Hole Reservoir Gage (USGS Gage No. 11428700)			X			
Hell Hole Reservoir Staff Gage						
Middle Fork Interbay Reservoir Gage						
Ralston Afterbay Reservoir Gage						
Diversion Gages						
North Fork Long Canyon Gage at Diversion Dam (USGS Gage No. 11433080)						
South Fork Long Canyon Gage at Diversion Dam (USGS Gage No. 11433060)				X	X	X
Stream Gages and Weirs						
Duncan Creek Gage and Weir above Diversion Dam (USGS Gage and Weir No. 11427700)						X
Duncan Creek Gage and Weir below Diversion Dam (USGS Gage and Weir No. 11427750)						
Middle Fork American River Gage and Weir below French Meadows Dam (USGS Gage and Weir No. 11427500)						

Table TERR 4-11. Raptor Nests and USDA-FS Land Allocations and other Important Habitats in the Vicinity of the Middle Fork American River Project and Proposed Project Betterments (continued).

Project Facilities	Special-Status Bird Species / Occurrence Type					
	Bald Eagle Nest ¹	Bald Eagle Night Roost ¹	Osprey Nest ²	California Spotted Owl PAC ³	California Spotted Owl HRCA ⁴	Northern Goshawk PAC ⁵
Gaging Stations and Weirs (continued)						
Stream Gages and Weirs (continued)						
Middle Fork American River Gage at Interbay Dam (USGS Gage No. 11427770)						
Middle Fork American River Gage above Middle Fork Powerhouse (USGS Gage No. 11427760)					X	
Middle Fork American River Gage below Oxbow Powerhouse (USGS Gage No. 11433300)						
North Fork Long Canyon Gage and Weir at Diversion Dam (USGS Gage and Weir No. 11433085)						
South Fork Long Canyon Gage and Weir at Diversion Dam (USGS Gage and Weir No. 11433065)				X	X	X
Rubicon River Gage and Weir below Hell Hole Dam (USGS Gage and Weir No. 11428800)						
Powerhouse Gages						
French Meadows Powerhouse Gage (USGS Gage No. 11427200)						
Middle Fork Powerhouse Gage (USGS Gage No. 11428600)				X	X	
Oxbow Powerhouse Gage (USGS Gage No. 11433212)						
Ralston Powerhouse Gage (USGS Gage No. 11427765)						
Leakage Weirs						
French Meadows Dam Leakage Weirs Nos. 1 -- 6						
Hell Hole Dam Leakage Weir						
Project Communication Lines and Powerlines						
French Meadows Area						
French Meadows Dam Generator Building to French Meadows Dam Outlet Works Powerline						
French Meadows Dam Generator Building to French Meadows Dam Spillway Gates Powerline						
Hell Hole Area						
French Meadows Powerhouse to French Meadows Powerhouse Penstock and Butterfly Valve House Communication Line/Powerline						
French Meadows Powerhouse and Switchyard to Hell Hole - Middle Fork Tunnel Gatehouse, Dormitory Facility, Operator's Cottages, and Hell Hole Powerhouse Communication Line/Powerline			X			
Hell Hole Powerhouse to Rubicon River Gage and Weir below Hell Hole Dam Communication Line/Powerline						
Dormitory and Cottages Water Supply Tank Powerline						

Table TERR 4-11. Raptor Nests and USDA-FS Land Allocations and other Important Habitats in the Vicinity of the Middle Fork American River Project and Proposed Project Betterments (continued).

Project Facilities	Special-Status Bird Species / Occurrence Type					
	Bald Eagle Nest ¹	Bald Eagle Night Roost ¹	Osprey Nest ²	California Spotted Owl PAC ³	California Spotted Owl HRCA ⁴	Northern Goshawk PAC ⁵
Project Communication Lines and Powerlines (continued)						
Middle Fork Interbay Area						
Middle Fork Powerhouse to Middle Fork Powerhouse Butterfly Valve House Communication Line/Powerline				X	X	
Middle Fork Powerhouse Butterfly Valve House to Radio Repeater near Hell Hole - Middle Fork Tunnel Surge Tank (underground) Communication Line/Powerline				X		
Middle Fork Powerhouse to Middle Fork - Ralston Tunnel Intake and Gatehouse Communication Line/Powerline				X		
Middle Fork Powerhouse to Middle Fork American River Gage above Middle Fork Powerhouse Communication Line/Powerline				X	X	
Ralston - Oxbow Area						
Ralston - Oxbow Tunnel Intake to Ralston Powerhouse Communication Line						
Ralston Powerhouse to Ralston Powerhouse Butterfly Valve House Communication Line/Powerline						
Ralston Afterbay Dam Generator Building to Ralston - Oxbow Tunnel Intake Communication Line/Powerline						
Oxbow Powerhouse to Ralston Afterbay Dam Generator Building Communication Line/Powerline						
Photovoltaic Poles and Powerlines						
Photovoltaic Poles and Powerline to Duncan Creek Gage above Diversion Dam						
Photovoltaic Pole and Powerline at Duncan Creek Gage below Diversion Dam						
Photovoltaic Pole and Powerline at Middle Fork American River Gage below French Meadows Dam						
Photovoltaic Pole and Powerline at Middle Fork American River Gage above Middle Fork Powerhouse					X	
Photovoltaic Pole and Powerline at North Fork Long Canyon Gage at Diversion Dam						
Photovoltaic Pole and Powerline at South Fork Long Canyon Gage at Diversion Dam				X	X	X
Photovoltaic Pole at Middle Fork American River Gage below Oxbow Powerhouse						
Ancillary Facilities						
French Meadows Dam Generator Building						
French Meadows Dam Staging Area						
Dormitory Facility						
Dormitory and Cottages Water Supply Tank						
Hell Hole Staging Areas						

Table TERR 4-11. Raptor Nests and USDA-FS Land Allocations and other Important Habitats in the Vicinity of the Middle Fork American River Project and Proposed Project Betterments (continued).

Project Facilities	Special-Status Bird Species / Occurrence Type					
	Bald Eagle Nest ¹	Bald Eagle Night Roost ¹	Osprey Nest ²	California Spotted Owl PAC ³	California Spotted Owl HRCA ⁴	Northern Goshawk PAC ⁵
Project Communication Lines and Powerlines (continued)						
Ralston - Oxbow Area (continued)						
Ancillary Facilities (continued)						
Operator Cottages and Shop						
Ralston Afterbay Dam Generator Building						
Storage Building at Middle Fork - Ralston Tunnel Surge Shaft and Tank						
Wabena Meadows Snow Course						
Miranda Cabin Snow Course						
Diamond Crossing Snow Course						
Talbot Camp Snow Course						
Microwave Reflectors and Radio Towers						
Passive Microwave Reflector Station above Middle Fork Interbay						
Radio Communications Tower near French Meadows - Hell Hole Tunnel Gatehouse			X		X	
Radio Communications Tower and Repeater near Hell Hole - Middle Fork Tunnel Surge Shaft and Tank				X		
Passive Microwave Reflector Station above Ralston Afterbay						
Disposal Sites						
Duncan Diversion Dam Sediment Disposal Area						X
North Fork Long Canyon Crossing Sediment Disposal Area				X		
Middle Fork Interbay Sediment Disposal Area						
Ralston Ridge Sediment Disposal Area						
Indian Bar Sediment Disposal Area						
Project Fences						
Slope Fences						
French Meadows Powerhouse Penstock Rock Fence						
French Meadows Powerhouse Slope Fence						
Long Canyon Crossing Slope Fence				X		
Middle Fork Powerhouse Upper Switchyard Slope Fence				X	X	
Middle Fork Interbay Dam Slope Fence						

Table TERR 4-11. Raptor Nests and USDA-FS Land Allocations and other Important Habitats in the Vicinity of the Middle Fork American River Project and Proposed Project Betterments (continued).

Project Facilities	Special-Status Bird Species / Occurrence Type					
	Bald Eagle Nest ¹	Bald Eagle Night Roost ¹	Osprey Nest ²	California Spotted OWI PAC ³	California Spotted OWI HRCA ⁴	Northern Goshawk PAC ⁵
Project Fences (continued)						
Slope Fences (continued)						
Oxbow Powerhouse Slope Fence						
Ralston Powerhouse Penstock and Butterfly Valve House Slope Fences						
Ralston Powerhouse Slope Fence						
Public Safety Fences						
Dormitory Facility Barrier Fence						
Hell Hole Dam General Parking Area Barrier Fence						
North Fork Long Canyon Crossing Removable Section Barrier Fence				X		
Project Roads and Access Points						
Duncan Creek Area						
Duncan Creek Diversion Intake Road and Diversion Pool Access Point				X		X
Duncan Creek Diversion Dam Road						X
Duncan Creek Diversion Pool Road and Access Point				X		X
French Meadows Area						
Duncan Creek - Middle Fork Tunnel Portal Road and Spillway Access Point			X			
French Meadows - Hell Hole Tunnel Gatehouse Road			X		X	
French Meadows Dam Outlet Works and Leakage Weirs Road						
French Meadows Dam Staging Area Road						
Middle Fork American River Gage and Weir below French Meadows Dam Road						
Hell Hole Area						
Hell Hole Dam and Powerhouse Road and Spillway Southern Access Point						
Rubicon River Gage and Weir below Hell Hole Dam Road						
Hell Hole Dam Leakage Weir Road						
Hell Hole Dam Spillway Northern Access Point						
French Meadows - Hell Hole Tunnel Portal Road						

Table TERR 4-11. Raptor Nests and USDA-FS Land Allocations and other Important Habitats in the Vicinity of the Middle Fork American River Project and Proposed Project Betterments (continued).

Project Facilities	Special-Status Bird Species / Occurrence Type					
	Bald Eagle Nest ¹	Bald Eagle Night Roost ¹	Osprey Nest ²	California Spotted OWI PAC ³	California Spotted OWI HRCA ⁴	Northern Goshawk PAC ⁵
Project Roads and Access Points (continued)						
Hell Hole Area (continued)						
French Meadows Powerhouse Road			X			
Hell Hole - Middle Fork Tunnel Gatehouse Road			X			
Dormitory Facility Road						
Hell Hole Dam Spillway Discharge Channel Road						
Long Canyon Area						
North Fork Long Canyon Diversion North Road						
North Fork Long Canyon Diversion South Road				X		
North Fork Long Canyon Diversion Drop Inlet Road						
South Fork Long Canyon Diversion and Drop Inlet Road						
North Fork Long Canyon Crossing Removable Section North Road and Parking Area				X		
North Fork Long Canyon Crossing Removable Section South Road				X		
Middle Fork Interbay Area						
Middle Fork Powerhouse Butterfly Valve House Road				X		
Middle Fork Powerhouse Penstock and Butterfly Valve House Road					X	
Middle Fork Interbay Dam and Powerhouse Road and Interbay Access Points				X		
Middle Fork Powerhouse Upper Switchyard Road				X	X	
Ralston-Oxbow Area						
Brushy Canyon Adit Road				X		
Oxbow Powerhouse Road						
Ralston Powerhouse Butterfly Valve House Road						
Ralston - Oxbow Tunnel Intake Road						
Ralston Afterbay Road and Boat Ramp						
Ralston Afterbay Dam Road and Afterbay Access Point						
Ralston Afterbay Sediment Removal Access Point						

Table TERR 4-11. Raptor Nests and USDA-FS Land Allocations and other Important Habitats in the Vicinity of the Middle Fork American River Project and Proposed Project Betterments (continued).

Project Facilities	Special-Status Bird Species / Occurrence Type					
	Bald Eagle Nest ¹	Bald Eagle Night Roost ¹	Osprey Nest ²	California Spotted Owl PAC ³	California Spotted Owl HRCA ⁴	Northern Goshawk PAC ⁵
Project Trails						
Duncan Creek Area						
Duncan Creek Diversion Dam North Trail						X
Duncan Creek Diversion Dam South Trail						X
Photovoltaic Poles and Powerline to Duncan Creek Gage above Diversion Dam Trail						X
Duncan Creek Gage and Weir above Diversion Trail						X
Duncan Creek Gage and Weir below Diversion Trail						
French Meadows Area						
Middle Fork American River Gage and Weir below French Meadows Dam Trail						
Middle Fork Interbay Area						
Middle Fork American River Gage above Middle Fork Powerhouse Trail					X	
Passive Microwave Reflector Station above Middle Fork Interbay Trail						
Ralston Afterbay Area						
Passive Microwave Reflector Station above Ralston Afterbay Trail						
Middle Fork American River Gage below Oxbow Powerhouse Trail						
Project Recreation Facilities						
French Meadows Area						
Ahart Campground						
Coyote Group Campground						
Poppy Campground			X	X		
French Meadows Campground						
Gates Group Campground						
Lewis Campground						
French Meadows Picnic Area						
McGuire Picnic Area						

Table TERR 4-11. Raptor Nests and USDA-FS Land Allocations and other Important Habitats in the Vicinity of the Middle Fork American River Project and Proposed Project Betterments (continued).

Project Facilities	Special-Status Bird Species / Occurrence Type					
	Bald Eagle Nest ¹	Bald Eagle Night Roost ¹	Osprey Nest ²	California Spotted OWI PAC ³	California Spotted OWI HRCA ⁴	Northern Goshawk PAC ⁵
Project Recreation Facilities (continued)						
French Meadows Area (continued)						
French Meadows Boat Ramp						
McGuire Boat Ramp						
Hell Hole Area						
Big Meadows Campground						
Hell Hole Campground						
Upper Hell Hole Campground						
Hell Hole Vista						
Hell Hole General Parking Area						
Hell Hole Boat Ramp Parking Area						
Hell Hole Boat Ramp						
Ralston Afterbay Area						
Ralston Picnic Area						
Ralston Picnic Area Cartop Boat Ramp						
Indian Bar Rafting Access and General Parking						
Long Canyon Area						
Middle Meadows Group Campground					X	
Project Recreation Facility Features						
Project Recreation Facility Water Supplies and Associated Maintenance Trails						
Dolly Creek Water Supply						
French Meadows Campground Water Supply and Trail					X	
Big Meadows Campground Water Supply and Trail						
Middle Meadows Group Campground Water Supply and Trail					X	

Table TERR 4-11. Raptor Nests and USDA-FS Land Allocations and other Important Habitats in the Vicinity of the Middle Fork American River Project and Proposed Project Betterments (continued).

Project Betterments	Special-Status Bird Species / Occurrence Type					
	Bald Eagle Nest ¹	Bald Eagle Night Roost ¹	Osprey Nest ²	California Spotted Owl PAC ³	California Spotted Owl HRCA ⁴	Northern Goshawk PAC ⁵
Hell Hole Reservoir Seasonal Storage Increase						
Hell Hole Dam						
Modified Facilities						
Hell Hole Dam Spillway Crest Gates						
Hell Hole Dam Parapet Walls						
New Facilities						
Hell Hole Dam Spillway Crest Gates Control Building						
Hell Hole Dam Spillway Crest Gates Control Building Powerline						
Temporary Construction and Staging Areas						
Hell Hole Dam Spillway Crest Gates Construction Road						
Hell Hole Dam Spillway Crest Gates Construction Work Area						
Hell Hole Dam Spillway Crest Gates and Control Building Construction Staging Area						
Hell Hole Dam Parapet Wall Construction Staging and Work Area						
Hell Hole Dam Spillway Crest Gates Control Building Powerline Construction Staging Area						
Hell Hole-Middle Fork Tunnel Gatehouse						
Modified Facilities						
Hell Hole – Middle Fork Tunnel Gatehouse Parapet Wall			X			
Temporary Construction and Staging Areas						
Hell Hole-Middle Fork Tunnel Gatehouse Parapet Wall Construction Staging and Work Area			X			
French Meadows Powerhouse						
Modified Facilities						
French Meadows Powerhouse Parapet Wall						
Temporary Construction and Staging Areas						
French Meadows Powerhouse Parapet Wall Construction Staging and Work Area						

Table TERR 4-11. Raptor Nests and USDA-FS Land Allocations and other Important Habitats in the Vicinity of the Middle Fork American River Project and Proposed Project Betterments (continued).

Project Betterments	Special-Status Bird Species / Occurrence Type					
	Bald Eagle Nest ¹	Bald Eagle Night Roost ¹	Osprey Nest ²	California Spotted OWI PAC ³	California Spotted OWI HRCA ⁴	Northern Goshawk PAC ⁵
Hell Hole Reservoir Seasonal Storage Increase (continued)						
South Fork Long Canyon Diversion						
Modified Facilities						
South Fork Long Canyon Diversion Dam Crest Gates				X	X	X
New Facilities						
South Fork Long Canyon Diversion Dam Crest Gates Generator Building				X	X	X
Temporary Construction and Staging Areas						
South Fork Long Canyon Diversion Dam Crest Gates and Generator Building Construction Staging and Work Area				X	X	X
French Meadows Powerhouse Capacity Upgrade						
French Meadows Reservoir						
Modified Facilities						
French Meadows – Hell Hole Tunnel Intake Trash Rack			X		X	
Temporary Construction and Staging Areas						
French Meadows – Hell Hole Tunnel Intake Trash Rack Construction Staging Area			X		X	
French Meadows – Hell Hole Tunnel Intake Trash Rack Construction Work Area			X		X	
French Meadows – Hell Hole Tunnel Intake Trash Rack Construction Road			X		X	
French Meadows Powerhouse						
Modified Facilities						
French Meadows Powerhouse Switchyard						
New Facilities						
French Meadows Powerhouse						
French Meadows Powerhouse Penstock						
French Meadows – Hell Hole Tunnel Surge Shaft/Tank						
French Meadows – Hell Hole Tunnel Surge Pipeline						
French Meadows – Hell Hole Tunnel Surge Shaft or Pipeline Road					X	

Table TERR 4-11. Raptor Nests and USDA-FS Land Allocations and other Important Habitats in the Vicinity of the Middle Fork American River Project and Proposed Project Betterments (continued).

Project Betterments	Special-Status Bird Species / Occurrence Type					
	Bald Eagle Nest ¹	Bald Eagle Night Roost ¹	Osprey Nest ²	California Spotted Owl PAC ³	California Spotted Owl HRCA ⁴	Northern Goshawk PAC ⁵
French Meadows Powerhouse Capacity Upgrade (continued)						
French Meadows Powerhouse (continued)						
Temporary Construction and Staging Areas						
French Meadows Powerhouse/Switchyard Construction Work Area						
French Meadows Powerhouse/Switchyard Construction Staging Areas						
French Meadows Powerhouse Penstock Construction Work Area						
French Meadows Powerhouse Penstock Construction Staging Areas						
French Meadows – Hell Hole Tunnel Surge Shaft/Tank or Pipeline Construction Staging Areas						
French Meadows – Hell Hole Tunnel Surge Shaft/Tank Construction Work Area						
French Meadows – Hell Hole Tunnel Surge Pipeline Construction Work Area						
French Meadows – Hell Hole Tunnel Surge Shaft or Pipeline Road Construction Staging and Work Area					X	
Non-Project Facilities Modified During Construction						
Forest Road 14N09A					X	
Forest Road 14N09A Construction Staging and Work Area					X	
Middle Fork Powerhouse						
Modified Facilities						
Middle Fork Powerhouse Upper Switchyard				X	X	
Ralston Powerhouse Capacity Upgrade						
Ralston Powerhouse						
Modified Facilities						
Ralston Powerhouse						
Temporary Construction and Staging Areas						
Ralston Powerhouse Construction Staging Area						

¹Within 660 feet of bald eagle nests or night roosts.
²Within 500 feet of osprey nests.
³Within an established California spotted owl PAC.
⁴Within an established California spotted owl HRCA.
⁵Within an established northern goshawk PAC.

Table TERR 4-12. Consistency of Project Communication Lines and Powerlines with Avian Power Line Interaction Committee (APLIC) Guidelines.

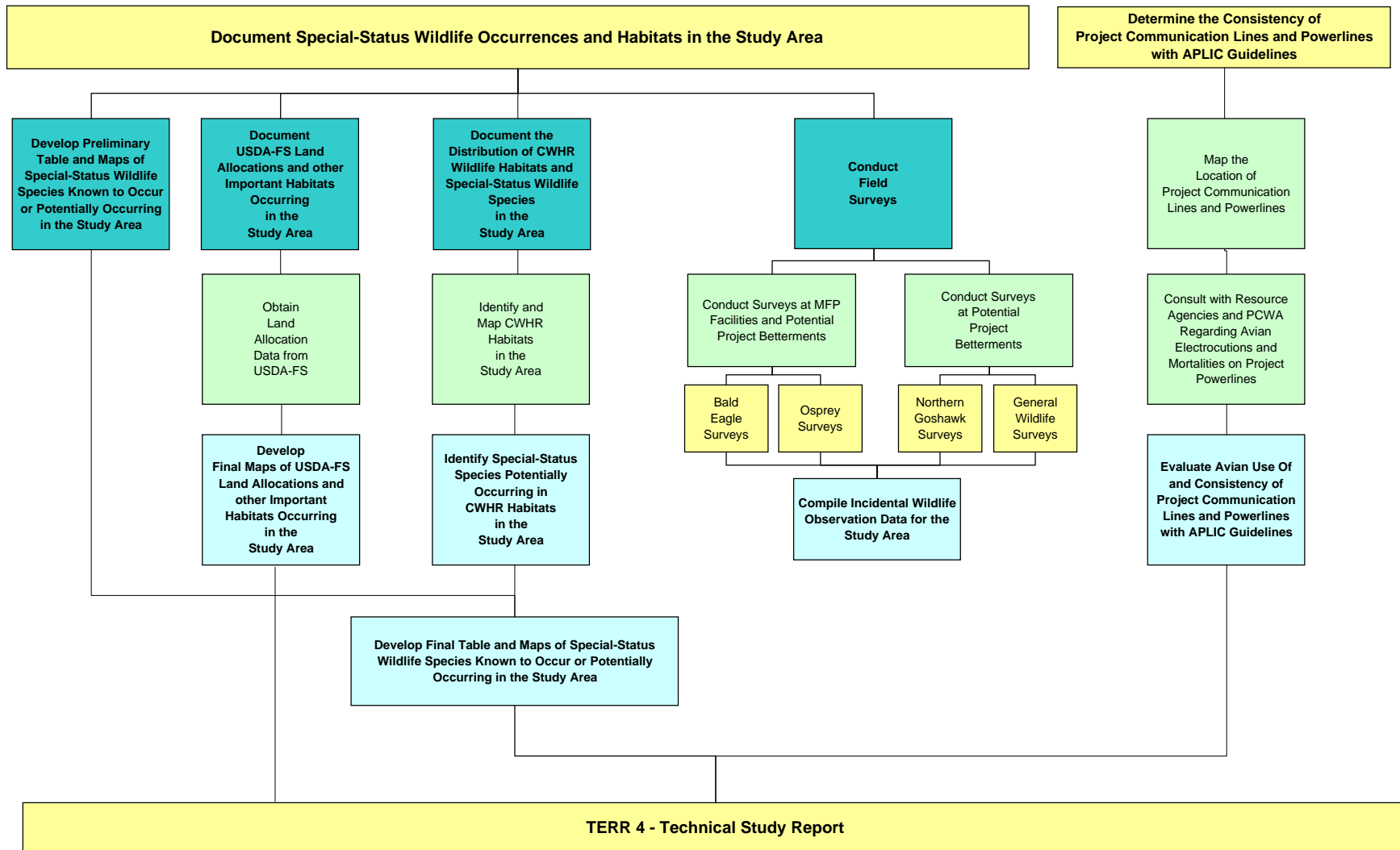
Name	Start	End	Length (Approx)	Voltage	Configuration Notes	Evaluation Criteria					
						No Avian Electrocution Risk			Potential Risk for Avian Electrocution		
						Communication Lines are Insulated	Powerlines are Insulated	Communication/Powerlines are Underground	Distance Between Conductors is Less than 60"	Distance Between Energized and Grounded Equipment on Poles is Less than 60"	Metal Guy Wires in Close Proximity to Energized Wires
Ralston Area											
Ralston - Oxbow Tunnel Intake to Ralston Powerhouse Communication Line	Ralston-Oxbow Tunnel Intake	Ralston Powerhouse	1.5 mi.	2.4 kV	Communication line only (insulated)	X					
Ralston Powerhouse to Ralston Powerhouse Butterfly Valve House Communication Line/Powerline	Ralston Powerhouse	Ralston Powerhouse Butterfly Valve House	0.22 mi.	4.16 kV	<ul style="list-style-type: none"> Three-phase distribution lines on wooden poles, with crossarms. Communication line (insulated) Equipment pole with three transformers 	X			X	X	X
Ralston Afterbay Dam Generator Building to Ralston - Oxbow Tunnel Intake Communication Line/Powerline	Ralston Afterbay Dam Generator Building	Ralston-Oxbow Tunnel Intake Gatehouse	0.15 mi.	2.16 kV	<ul style="list-style-type: none"> Three phase distribution lines on wooden poles, with crossarms. Neutral (ground) wire strung alongside phase wires Communication line (insulated) Equipment pole with three transformers 	X			X	X	X
Oxbow Powerhouse to Ralston Afterbay Dam Generator Building Communication Line/Powerline	Oxbow Powerhouse	Ralston Afterbay Dam Generator Building	0.17 mi.	2.4 kV	<ul style="list-style-type: none"> Three-phase distribution lines on wooden poles and one steel pole. The three phases are insulated and bound together. Equipment pole with three transformers Communication line (insulated) 	X	X			X	X
Middle Fork Interbay Area											
Middle Fork Powerhouse to Middle Fork Powerhouse Butterfly Valve House Communication Line/Powerline	Middle Fork Powerhouse	Middle Fork Powerhouse Butterfly Valve House	0.62 mi.	2.4 kV	<ul style="list-style-type: none"> Three-phase distribution lines on wooden poles, with crossarms. Equipment pole with three transformers Communication line (insulated) 	X			X	X	
Middle Fork Powerhouse Butterfly Valve House to Radio Repeater near Hell Hole - Middle Fork Tunnel Surge Tank (underground) Communication Line/Powerline	Middle Fork Powerhouse	Radio Repeater near Hell Hole-Middle Fork Tunnel Surge Tank	0.34 mi.	2.4 kV	Located underground			X			
Middle Fork Powerhouse to Middle Fork - Ralston Tunnel Intake and Gatehouse Communication Line/Powerline	Middle Fork Powerhouse	Middle Fork-Ralston Tunnel Intake and Gatehouse	0.36 mi.	2.4 kV	<ul style="list-style-type: none"> Three-phase distribution lines on wooden poles. The three phases are insulated and bound together. Equipment pole with three transformers Communication line (insulated) 	X	X			X	
Middle Fork Powerhouse to Middle Fork American River Gage above Middle Fork Powerhouse Communication Line/Powerline	Middle Fork Powerhouse	Middle Fork American River Gage above Middle Fork Powerhouse	0.09 mi.	102 V	<ul style="list-style-type: none"> Single-phase distribution lines on wooden poles Communication line (insulated) 	X					

Table TERR 4-12. Consistency of Project Communication Lines and Powerlines with Avian Power Line Interaction Committee (APLIC) Guidelines (continued).

Name	Start	End	Length (Approx)	Voltage	Configuration Notes	Evaluation Criteria					
						No Avian Electrocution Risk			Potential Risk for Avian Electrocution		
						Communication Lines are Insulated	Powerlines are Insulated	Communication/Powerlines are Underground	Distance Between Conductors is Less than 60"	Distance Between Energized and Grounded Equipment on Poles is Less than 60"	Metal Guy Wires in Close Proximity to Energized Wires
French Meadows Area											
French Meadows Dam Generator Building to French Meadows Dam Outlet Works Powerline	French Meadows Dam Generator Building	French Meadows Dam Outlet Work	0.23 mi.	208 V	<ul style="list-style-type: none"> Three-phase distribution lines. At least one wire is insulated and phases are bound together. 		X				
French Meadows Dam Generator Building to French Meadows Dam Spillway Gates Powerline	French Meadows Dam Generator Building	French Meadows Dam Spillway Gates	69 ft.	208 V	<ul style="list-style-type: none"> Three-phase distribution lines on wooden poles and one steel pole. The three phases are insulated and bound together. 		X				
Hell Hole Area											
French Meadows Powerhouse to French Meadows Powerhouse Penstock and Butterfly Valve House Communication Line/Powerline	French Meadows Powerhouse and switchyard	Butterfly valve house at the top of French Meadows Powerhouse Penstock	0.1 mi	2.4 kV	<ul style="list-style-type: none"> Three-phase distribution lines. At least one wire is insulated and phases are bound together. Communication line (insulated) 	X	X				
French Meadows Powerhouse and Switchyard to Hell Hole-Middle Fork Tunnel Gatehouse, Dormitory Facility, Operator Cottages and Hell Hole Powerhouse Communication Line/Powerline	French Meadows Powerhouse and Switchyard	Hell Hole-Middle Fork Tunnel Gatehouse, Dormitory Facility, Operator Cottages and Hell Hole Powerhouse	2.29 mi.	12 kV	<ul style="list-style-type: none"> Most of the extent consists of three-phase distribution lines on wooden poles with crossarms. A portion of the powerline leading to the Hell Hole Powerhouse has three-phase distribution lines with conductors mounted vertically on the poles (no crossarms). There are several equipment poles and structures throughout the extent of this line, especially large structures at the Hell Hole Substation and the Hell Hole Powerhouse. Communication line (insulated) 	X			X	X	X
Dormitory and Cottages Water Supply Tank Powerline	Water Supply Tank	Dormitory and Cottages	0.08 mi.	2.4 kV	Single-phase distribution lines on wooden poles						X
Hell Hole Powerhouse to Rubicon River Gage and Weir below Hell Hole Dam Communication Line/Powerline	Hell Hole Powerhouse	Rubicon River Gage and Weir below Hell Hole Dam	0.12 mi.	12 kV	<ul style="list-style-type: none"> Three-phase distribution lines on wooden poles, with small crossarms Communication line (insulated) 	X			X		X

FIGURES

Figure TERR 4-1. Study Objectives and Related Study Elements and Reports.



MAPS

APPENDIX A
CNDDDB Forms Submitted for Osprey Nests
and Other Special-Status Species Observations

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 08/08/2007

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Accipiter gentilis

Common Name: northern goshawk

Species Found? Yes No _____ If not, why? _____
Total No. Individuals 2 Subsequent Visit? yes no
Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. # _____
Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Andrew Rogers
Address: 701 University Ave, Sacramento, CA 95825
E-mail Address: _____
Phone: (916) 923-1097

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

2

# adults	# juveniles	# larvae	# egg masses	# unknown
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
breeding	wintering	burrow site	rookery	nesting
other				

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service
Quad Name: Bunker Hill Elevation: 4,710 feet
T 14N R 13E Sec 24, _____ ¼ of _____ ¼, Meridian: H M S
Source of Coordinates (GPS, topo. map & type): GPS
T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S
GPS Make & Model _____
DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)
Coordinates: 4325499/718846

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):
Sierran mixed conifer

Other rare taxa seen at THIS site on THIS date:
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor
Immediate AND surrounding land use: Recreation, hydropower, and forestry
Visible disturbances:
Threats:
Comments: two juveniles circling and calling, then flying to north side of 17NO2 at 1550 hours

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: VISUAL

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

For Office Use Only

Source Code _____ Quad Code _____
 Elm Code _____ Occ. No. _____
 EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 08/08/2007

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Accipiter gentilis

Common Name: northern goshawk

Species Found? Yes No _____ If not, why? _____
 Total No. Individuals 1 Subsequent Visit? yes no
Is this an existing NDDDB occurrence? _____ no unk.
 Yes, Occ. # _____
 Collection? If yes: _____
 Number _____ Museum / Herbarium _____

Reporter: Andrew Rogers
Address: 701 University Ave, Sacramento, CA 95825
E-mail Address: _____
Phone: (916) 923-1097

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1 # adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service
 Quad Name: Bunker Hill Elevation: 4,710 feet
 T 14N R 13E Sec 24, _____ ¼ of _____ ¼, Meridian: H M S
 Source of Coordinates (GPS, topo. map & type): GPS
 T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S
 GPS Make & Model _____
DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)
Coordinates: 4325499/718846

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):
Sierran mixed conifer

Other rare taxa seen at THIS site on THIS date:
 (separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor
 Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:

Threats:

Comments: Single adult detected by paved road, flew in to perch on snag at bottom of drainage at 1545 hours.

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: visual

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

For Office Use Only

Source Code _____ Quad Code _____
 Elm Code _____ Occ. No. _____
 EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 03/25/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Aquila chrysaetos*

Common Name: golden eagle

Species Found? Yes No _____ If not, why? _____
 Total No. Individuals 1 Subsequent Visit? yes no
Is this an existing NDDDB occurrence? _____ no unk.
 Yes, Occ. # _____
 Collection? If yes: _____
 Number _____ Museum / Herbarium _____

Reporter: Ron Jackman
Address: P.O. Box 776, Fall River Mills, CA 96028
E-mail Address: rojack@frontiernet.net
Phone: (530) 336-6592

Plant Information
 Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information
1
 # adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service
 Quad Name: Greek Store Elevation: 3,100 feet
 T 14N R 12E Sec 26, NW ¼ of SW ¼, Meridian: H M S
 Source of Coordinates (GPS, topo. map & type): GPS
 T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S
 GPS Make & Model _____
DATUM: **NAD27** **NAD83** **WGS84**
 Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 **OR** Geographic (Latitude & Longitude)
Coordinates: 4322878/706386

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

 Other rare taxa seen at THIS site on THIS date:
 (separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor
 Immediate AND surrounding land use: Recreation, hydropower, and forestry
 Visible disturbances:
 Threats:
 Comments: Observed soaring 1 mile downstream of Middle Fork Interbay.

Determination: (check one or more, and fill in blanks)
 Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: visual

Photographs: (check one or more) Slide Print Digital
 Plant / animal
 Habitat
 Diagnostic feature
 May we obtain duplicates at our expense? yes no

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/26/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Chaetura vauxi

Common Name: Vaux's swift

Species Found? Yes No _____
If not, why?

Total No. Individuals 200+ Subsequent Visit? yes no

Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. # _____

Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Sara Gillespie

Address: 1130 Iron Point Road Suite 170
Folsom, CA 95630

E-mail Address: sara@robertson-bryan.com

Phone: (916) 405-8919

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

200
adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service

Quad Name: Bunker Hill Elevation: 5,200 feet

T 15N R 13E Sec 36, NW ¼ of NE ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): google earth

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S GPS Make & Model _____

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: 39.111679, -120.469887

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Sierra mixed conifer

Other rare taxa seen at THIS site on THIS date:
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:

Threats:

Comments: large flock of several hundred Vaux's swifts flew up from the west and over the French Meadows Dam while we were standing on the dam

Determination: (check one or more, and fill in blanks)

- Keyed (cite reference): _____
- Compared with specimen housed at: _____
- Compared with photo / drawing in: _____
- By another person (name): _____
- Other: visual

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 08/09/2007

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Contopus cooperi

Common Name: olive-sided flycatcher

Species Found? Yes No _____
If not, why?

Total No. Individuals 1 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. # _____

Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Steve Tucker

Address: 701 University Ave, Sacramento CA 95825

E-mail Address: _____

Phone: (916) 923-1097

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1
adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service

Quad Name: Bunker Hill Elevation: 5,200 feet

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): _____

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S GPS Make & Model _____

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: non-specific

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Other rare taxa seen at THIS site on THIS date:
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances: fire

Threats:

Comments: Adult seen in a burnt snag on Mosquito Ridge Road in the vicinity of French Meadows Reservoir

Determination: (check one or more, and fill in blanks)

- Keyed (cite reference): _____
- Compared with specimen housed at: _____
- Compared with photo / drawing in: _____
- By another person (name): _____
- Other: visual

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 09/19/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Dendragapus obscurus

Common Name: Sooty (blue) grouse

Species Found? Yes No _____ If not, why? _____

Total No. Individuals 1 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. # _____

Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Ann Hendrickson

Address: 1130 Iron Point Road Suite 170
Folsom, CA 95630

E-mail Address: ann@robertson-bryan.com

Phone: (916) 405-8918

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1
adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service

Quad Name: Bunker Hill Elevation: 5,000 feet

T 15N R 13E Sec 36, NW ¼ of NE ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S GPS Make & Model _____

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: 39.0990 / - 120.3751

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

1 individual detected in montane hardwood habitat on the northern shore of Hell Hole Reservoir, near the Grey Horse area

Other rare taxa seen at THIS site on THIS date:
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:

Threats:

Comments: Detected during point count surveys conducted in September 2008

Determination: (check one or more, and fill in blanks)

- Keyed (cite reference): _____
- Compared with specimen housed at: _____
- Compared with photo / drawing in: _____
- By another person (name): _____
- Other: visual

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

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Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/15/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Dendroica petechia

Common Name: Yellow warbler

Species Found? Yes No _____
If not, why?

Total No. Individuals 1 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? _____
Yes, Occ. # no unk.

Collection? If yes: _____
Number Museum / Herbarium

Reporter: Ann Hendrickson

Address: 1130 Iron Point Road Suite 170
Folsom, CA 95630

E-mail Address: ann@robertson-bryan.com

Phone: (916) 405-8918

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1
adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service

Quad Name: Bunker Hill Elevation: 5,000 feet

T 15N R 13E Sec 36, NW ¼ of NE ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S GPS Make & Model _____

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: 724338 E / 4329170 N

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

1 individual detected in montane hardwood habitat on the northern shore of Hell Hole Reservoir

Other rare taxa seen at THIS site on THIS date:
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:

Threats:

Comments: Detected during point count surveys conducted in spring 2008

Determination: (check one or more, and fill in blanks)

- Keyed (cite reference): _____
- Compared with specimen housed at: _____
- Compared with photo / drawing in: _____
- By another person (name): _____
- Other: visual

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

For Office Use Only

Source Code _____ Quad Code _____
 Elm Code _____ Occ. No. _____
 EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/26/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Dendroica petechia

Common Name: Yellow warbler

Species Found? Yes No _____ If not, why? _____
 Total No. Individuals 1 Subsequent Visit? yes no
Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. #
 Collection? If yes: _____
Number Museum / Herbarium

Reporter: Ann Hendrickson
Address: 1130 Iron Point Road Suite 170
Folsom, CA 95630
E-mail Address: ann@robertson-bryan.com
Phone: (916) 405-8918

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1
 # adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service
 Quad Name: Bunker Hill Elevation: 5,200 feet
 T 15N R 13E Sec 36, NW ¼ of NE ¼, Meridian: H M S
 Source of Coordinates (GPS, topo. map & type): google earth
 T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S
 GPS Make & Model _____
DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)
Coordinates: 10 S 723333 E / 4334270 N

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):
Sierra mixed conifer

Other rare taxa seen at THIS site on THIS date:
 (separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:

Threats:

Comments: One individual seen on the northern shore of French Meadows Reservoir

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: visual

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

For Office Use Only

Source Code _____ Quad Code _____
 Elm Code _____ Occ. No. _____
 EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/20/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Icteria virens

Common Name: Yellow-breasted chat

Species Found? Yes No _____ If not, why? _____
 Total No. Individuals _____ Subsequent Visit? yes no
Is this an existing NDDDB occurrence? _____ no unk.
 Yes, Occ. # _____
 Collection? If yes: _____
 Number _____ Museum / Herbarium _____

Reporter: Sara Gillespie
Address: 1130 Iron Point Road Suite 170
Folsom, CA 95630
E-mail Address: sara@robertson-bryan.com
Phone: (916) 405-8919

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1
 # adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service
 Quad Name: Michigan Bluff Elevation: 1,200 feet
 T 13N R 11E Sec 3, SW ¼ of NE ¼, Meridian: H M S
 T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S
DATUM: **NAD27** **NAD83** **WGS84**
 Source of Coordinates (GPS, topo. map & type): google earth
 GPS Make & Model _____
 Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 **OR** Geographic (Latitude & Longitude)
Coordinates: 39.005040, -120.732616

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Montane Hardwood

Other rare taxa seen at THIS site on THIS date:
 (separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:
 Threats:
 Comments: loud and continuous call coming from grape and blackberry brambles along river next to turnoff into Ralston Picnic Area

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: audio

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/15/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Oreortyx pictus

Common Name: Mountain Quail

Species Found? Yes No _____
If not, why? _____

Total No. Individuals 11 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. # _____

Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Ann Hendrickson

Address: 1130 Iron Point Road Suite 170
Folsom, CA 95630

E-mail Address: ann@robertson-bryan.com

Phone: (916) 405-8918

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown 11
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service

Quad Name: Bunker Hill Elevation: 5,000 feet

T 15N R 13E Sec 36, NW ¼ of NE ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): Google earth

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S GPS Make & Model _____

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: 10 S 725609 E / 4329040 N

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

11 individuals detected (by sound) at several separate locations on the perimeter Hell Hole Reservoir. Detected during point count surveys conducted in May 2008.

Other rare taxa seen at THIS site on THIS date:
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:

Threats:

Comments: Detected during point count surveys conducted in May 2008

Determination: (check one or more, and fill in blanks)

- Keyed (cite reference): _____
- Compared with specimen housed at: _____
- Compared with photo / drawing in: _____
- By another person (name): _____
- Other: aural detections

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

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Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 09/19/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Oreortyx pictus

Common Name: Mountain Quail

Species Found? Yes No _____ If not, why? _____
Total No. Individuals 11 Subsequent Visit? yes no
Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. # _____
Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Ann Hendrickson
Address: 1130 Iron Point Road Suite 170
Folsom, CA 95630
E-mail Address: ann@robertson-bryan.com
Phone: (916) 405-8918

Plant Information
Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	<u>11</u>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
breeding	wintering	burrow site	rookery	nesting	other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service
Quad Name: Bunker Hill Elevation: 5,000 feet
T 15N R 13E Sec 36, NW ¼ of NE ¼, Meridian: M S Source of Coordinates (GPS, topo. map & type): GPS
T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: M S GPS Make & Model Garmin III
DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)
Coordinates: 10 S 723259 E / 4327977 N

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

1 individuals detected (by sound) on the southern shore Hell Hole Reservoir, near the Forest Service Ranger Station. Detected during point count surveys conducted in September 2008.

Other rare taxa seen at THIS site on THIS date:
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:
Threats:
Comments: Detected during point count surveys conducted in September 2008

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: aural detection

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

For Office Use Only

Source Code _____ Quad Code _____
 Elm Code _____ Occ. No. _____
 EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/26/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Pandion haliaetus

Common Name: osprey

Species Found? Yes No _____ If not, why? _____
 Total No. Individuals 2 Subsequent Visit? yes no
Is this an existing NDDDB occurrence? _____ no unk.
 Yes, Occ. # _____
 Collection? If yes: _____
 Number _____ Museum / Herbarium _____

Reporter: Sara Gillespie
Address: 1130 Iron Point Road Suite 170
Folsom, CA 95630
E-mail Address: _____
Phone: (916) 405-8919

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

2 # adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service
 Quad Name: Bunker Hill Elevation: 5,200 feet
 T 15N R 14E Sec 32, SW ¼ of NW ¼, Meridian: H M S
 Source of Coordinates (GPS, topo. map & type): GPS
 T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S
 GPS Make & Model Garmin III
DATUM: NAD27 NAD83 WGS84
 Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)
Coordinates: 4331954/722040

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Nest identified on the south shore of French Meadows Reservoir in sierran mixed conifer habitat

Other rare taxa seen at THIS site on THIS date:
 (separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:
 Threats:
 Comments: osprey nest, two adults present

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: nest

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/06/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Pandion haliaetus*

Common Name: Osprey

Species Found? Yes No _____ If not, why? _____

Total No. Individuals 1 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. # _____

Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Ron Jackman

Address: P.O. Box 776, Fall River Mills, CA 96028

E-mail Address: rojack@frontiernet.net

Phone: (530) 336-6592

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1
adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service

Quad Name: Bunker Hill Elevation: 5,330 feet

T 15N R 13E Sec 25, SW ¼ of SE ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S GPS Make & Model _____

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: 4332458/718966

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Nest located on snag in Sierran mixed conifer habitat along north shore of French Meadows Reservoir near dam.

Other rare taxa seen at THIS site on THIS date:
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:

Threats:

Comments: Adult observed in incubation posture on nest.

Determination: (check one or more, and fill in blanks)

- Keyed (cite reference): _____
- Compared with specimen housed at: _____
- Compared with photo / drawing in: _____
- By another person (name): _____
- Other: visual

Photographs: (check one or more) Slide Print Digital

- Plant / animal
- Habitat
- Diagnostic feature

May we obtain duplicates at our expense? yes no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/06/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Pandion haliaetus

Common Name: Osprey

Species Found? Yes No _____
If not, why?

Total No. Individuals 1 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. #

Collection? If yes: _____
Number Museum / Herbarium

Reporter: Ron Jackman

Address: P.O. Box 776, Fall River Mills, CA 96028

E-mail Address: rojack@frontiernet.net

Phone: (530) 336-6592

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1
adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service

Quad Name: Bunker Hill Elevation: 5,360feet

T 15N R 14E Sec 29, NW ¼ of SW ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S GPS Make & Model _____

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 **OR** Geographic (Latitude & Longitude)

Coordinates: 4333036/721321

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Nest located on snag in Sierran mixed conifer habitat along north shore of French Meadows Reservoir.

Other rare taxa seen at THIS site on THIS date:
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:

Threats:

Comments: Adult observed in incubation posture on nest.

Determination: (check one or more, and fill in blanks)

- Keyed (cite reference): _____
- Compared with specimen housed at: _____
- Compared with photo / drawing in: _____
- By another person (name): _____
- Other: visual

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

For Office Use Only

Source Code _____ Quad Code _____
 Elm Code _____ Occ. No. _____
 EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/06/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Pandion haliaetus

Common Name: Osprey

Species Found? Yes No _____ If not, why? _____
 Total No. Individuals 1 Subsequent Visit? yes no
Is this an existing NDDDB occurrence? _____ no unk.
 Yes, Occ. # _____
 Collection? If yes: _____
 Number _____ Museum / Herbarium _____

Reporter: Ron Jackman
Address: P.O. Box 776, Fall River Mills, CA 96028
E-mail Address: rojack@frontiernet.net
Phone: (530) 336-6592

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1
 # adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service
 Quad Name: Bunker Hill Elevation: 4,800 feet
 T 15N R 13E Sec 35, SE ¼ of SW ¼, Meridian: H M S
 Source of Coordinates (GPS, topo. map & type): GPS
 T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S
 GPS Make & Model _____
DATUM: **NAD27** **NAD83** **WGS84**
 Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 **OR** Geographic (Latitude & Longitude)
Coordinates: 4330560/716782

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Nest located on snag in Sierran mixed conifer habitat along Middle Fork American River downstream of French Meadows Reservoir.

Other rare taxa seen at THIS site on THIS date:
 (separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor
 Immediate AND surrounding land use: Recreation, hydropower, and forestry
 Visible disturbances:
 Threats:
 Comments: Adult observed in incubation posture on nest.

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: visual

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/26/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Pandion haliaetus

Common Name: osprey

Species Found? Yes No _____
If not, why? _____

Total No. Individuals 2 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? _____
Yes, Occ. # no unk.

Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Sara Gillespie

Address: 1130 Iron Point Road Suite 170
Folsom, CA 95630

E-mail Address: _____

Phone: (916) 405-8919

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

2
adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service

Quad Name: Bunker Hill Elevation: 5,200 feet

T 15N R 14E Sec 32, SW ¼ of NW ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S GPS Make & Model Garmin III

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: 10 S 719508 E / 4331421 N

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

One of two nests seen on the south shore of French Meadows Reservoir in sierran mixed conifer habitat

Other rare taxa seen at THIS site on THIS date:
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:

Threats:

Comments: osprey nest, two adults present

Determination: (check one or more, and fill in blanks)

- Keyed (cite reference): _____
- Compared with specimen housed at: _____
- Compared with photo / drawing in: _____
- By another person (name): _____
- Other: nest

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

For Office Use Only

Source Code _____ Quad Code _____
 Elm Code _____ Occ. No. _____
 EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/06/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Pandion haliaetus

Common Name: Osprey

Species Found? Yes No _____ If not, why? _____
 Total No. Individuals 1 Subsequent Visit? yes no
Is this an existing NDDDB occurrence? _____ no unk.
 Yes, Occ. # _____
 Collection? If yes: _____
 Number _____ Museum / Herbarium _____

Reporter: Ron Jackman
Address: P.O. Box 776, Fall River Mills, CA 96028
E-mail Address: rojack@frontiernet.net
Phone: (530) 336-6592

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1
 # adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service
 Quad Name: Bunker Hill Elevation: 4,785 feet
 T 14N R 14E Sec 2, NW ¼ of SW ¼, Meridian: H M S
 Source of Coordinates (GPS, topo. map & type): GPS
 T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S
 GPS Make & Model _____
DATUM: **NAD27** **NAD83** **WGS84**
 Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 **OR** Geographic (Latitude & Longitude)
Coordinates: 4329700/726350

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Nest located on snag in Sierran mixed conifer habitat along the north shore of Hell Hole Reservoir.

Other rare taxa seen at THIS site on THIS date: bald eagle
 (separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances: _____
 Threats: _____
 Comments: Adult observed in incubation posture on nest.

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: Visual

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/06/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Pandion haliaetus

Common Name: Osprey

Species Found? Yes No _____ If not, why? _____
Total No. Individuals 1 Subsequent Visit? yes no
Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. # _____
Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Ron Jackman
Address: P.O. Box 776, Fall River Mills, CA 96028
E-mail Address: rojack@frontiernet.net
Phone: (530) 336-6592

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1
adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service
Quad Name: Bunker Hill Elevation: 4,800 feet
T 14N R 14E Sec 10, SW ¼ of SE ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS
T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S GPS Make & Model _____
DATUM: **NAD27** **NAD83** **WGS84** Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 **OR** Geographic (Latitude & Longitude)
Coordinates: 4327836/725600

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Nest located on snag in Sierran mixed conifer habitat along the south shore of Hell Hole Reservoir.

Other rare taxa seen at THIS site on THIS date:
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:
Threats:
Comments: Adult observed in incubation posture on nest.

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: visual

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

For Office Use Only

Source Code _____ Quad Code _____
 Elm Code _____ Occ. No. _____
 EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/06/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Pandion haliaetus

Common Name: Osprey

Species Found? Yes No _____ If not, why? _____
 Total No. Individuals 1 Subsequent Visit? yes no
Is this an existing NDDDB occurrence? _____ no unk.
 Yes, Occ. # _____
 Collection? If yes: _____
 Number _____ Museum / Herbarium _____

Reporter: Ron Jackman
Address: P.O. Box 776, Fall River Mills, CA 96028
E-mail Address: rojack@frontiernet.net
Phone: (530) 336-6592

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1
 # adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service
 Quad Name: Bunker Hill Elevation: 5,000 feet
 T 14N R 14E Sec 16, SE ¼ of NW ¼, Meridian: H M S
 Source of Coordinates (GPS, topo. map & type): GPS
 T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S
 GPS Make & Model _____
DATUM: **NAD27** **NAD83** **WGS84**
 Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 **OR** Geographic (Latitude & Longitude)
Coordinates: 4327204/723581

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Nest located on snag in Sierran mixed conifer habitat along the north shore of Hell Hole Reservoir near dam.

Other rare taxa seen at THIS site on THIS date: bald eagle
 (separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances: _____
 Threats: _____
 Comments: Adult observed in incubation posture on nest.

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: visual

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

For Office Use Only

Source Code _____ Quad Code _____
 Elm Code _____ Occ. No. _____
 EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/26/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Pelecanus erythrorhynchos*

Common Name: American white pelican

Species Found? Yes No _____ If not, why? _____
 Total No. Individuals 7 Subsequent Visit? yes no
Is this an existing NDDDB occurrence? _____ no unk.
 Yes, Occ. # _____
 Collection? If yes: _____
 Number _____ Museum / Herbarium _____

Reporter: Sara Gillespie
Address: 1130 Iron Point Road Suite 170
Folsom, CA 95630
E-mail Address: sara@robertson-bryan.com
Phone: (916) 405-8918

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

7
 # adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service
 Quad Name: Bunker Hill Elevation: 5,000 feet
 T 15N R 13E Sec 36, NW ¼ of NE ¼, Meridian: H M S
 Source of Coordinates (GPS, topo. map & type): google earth
 T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S
 GPS Make & Model _____
DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)
Coordinates: 10 S 725609 E / 4329040 N

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

7 individuals flying in formation over Hell Hole Reservoir

Other rare taxa seen at THIS site on THIS date:
 (separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:
 Threats:
 Comments: 7 individuals flying in formation over Hell Hole Reservoir

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: visual

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

For Office Use Only

Source Code _____ Quad Code _____
 Elm Code _____ Occ. No. _____
 EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 09/20/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Picoides villosus

Common Name: Hairy woodpecker

Species Found? Yes No _____ If not, why? _____
 Total No. Individuals 5 Subsequent Visit? yes no
Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. #
 Collection? If yes: _____
Number Museum / Herbarium

Reporter: Ann Hendrickson
Address: 1130 Iron Point Road Suite 170
Folsom, CA 95630
E-mail Address: ann@robertson-bryan.com
Phone: (916) 405-8918

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown 5
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service
 Quad Name: Bunker Hill Elevation: 5,000 feet
 T 15N R 13E Sec 36, NW ¼ of NE ¼, Meridian: H M S
 Source of Coordinates (GPS, topo. map & type): Google earth
 T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S
 GPS Make & Model _____
DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)
Coordinates: 10 S 725609 E / 4329040 N

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

5 individuals detected at several separate locations on the southern shoreline of Hell Hole Reservoir. Detected during point count surveys conducted in September 2008.

Other rare taxa seen at THIS site on THIS date:
 (separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:

Threats:

Comments: Detected during point count surveys conducted in September 2008

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: visual and aural detections

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Plant / animal
 Habitat
 Diagnostic feature

May we obtain duplicates at our expense? yes no

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 09/20/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Picoides villosus

Common Name: Hairy woodpecker

Species Found? Yes No _____ If not, why? _____

Total No. Individuals 1 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. # _____

Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Ann Hendrickson

Address: 1130 Iron Point Road Suite 170
Folsom, CA 95630

E-mail Address: ann@robertson-bryan.com

Phone: (916) 405-8918

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown 1
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service

Quad Name: Bunker Hill Elevation: 5,000 feet

T 15N R 13E Sec 36, NW ¼ of NE ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): Google earth

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S GPS Make & Model _____

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: _____

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

1 individual detected in the vicinity of the South Fork Long Canyon Diversion Dam

Other rare taxa seen at THIS site on THIS date:
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:

Threats:

Comments: Detected during point count surveys conducted in September 2008

Determination: (check one or more, and fill in blanks)

- Keyed (cite reference): _____
- Compared with specimen housed at: _____
- Compared with photo / drawing in: _____
- By another person (name): _____
- Other: visual and aural detections

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 09/21/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Picooides villosus

Common Name: Hairy woodpecker

Species Found? Yes No _____ If not, why? _____
Total No. Individuals 1 Subsequent Visit? yes no
Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. # _____
Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Ann Hendrickson
Address: 1130 Iron Point Road Suite 170
Folsom, CA 95630
E-mail Address: ann@robertson-bryan.com
Phone: (916) 405-8918

Plant Information
Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	<u>1</u> # unknown
<input type="checkbox"/> breeding	<input checked="" type="checkbox"/> wintering	<input type="checkbox"/> burrow site	<input type="checkbox"/> rookery	<input checked="" type="checkbox"/> other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Placer Landowner / Mgr.: USDA Forest Service
Quad Name: Bunker Hill Elevation: 5,000 feet
T 15N R 13E Sec 36, NW ¼ of NE ¼, Meridian: H M S
Source of Coordinates (GPS, topo. map & type): GPS
T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S
GPS Make & Model Garmin III
DATUM: **NAD27** **NAD83** **WGS84**
Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 **OR** Geographic (Latitude & Longitude)
Coordinates: 4331954/722040

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):
1 individual detected in sierran mixed conifer forest on the south shore of French Meadows Reservoir.

Other rare taxa seen at THIS site on THIS date:
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor
Immediate AND surrounding land use: Recreation, hydropower, and forestry

Visible disturbances:
Threats:
Comments: Detected during point count surveys conducted in September 2008

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: aural detections

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

APPENDIX B
Northern Goshawk Data Sheets

Northern Goshawk Survey Data Form			
Site: Hell Hole Reservoir/French Meadows Reservoir			
Date: 7/23/2008	Visit Number: 1	Survey Method: Intensive Search	
Team: Steve Tucker (crew leader), Katie Simpson, and Chelsea Murphy			
Wind Code: 1	Cloud Cover: 1	Temperature (Start): 67°F	Temperature (End): 74°F
Survey Time (Start): 1011		Survey Time (End): 1725	
Intensive Nest Search Time (Start): N/A		Intensive Nest Search Time (End): N/A	
Response Data (Including type of response (visual or auditory) description of response (age, sex, behavior, and locations of goshawk), observation of sign (molted feathers, whitewash, prey remains, and old nests) and GPS coordinates):			
No northern goshawk (NOGO) detections during survey			
Survey Notes:			
Start survey (broadcast acoustical calls) at northeastern block of habitat along Hell Hole Reservoir, past end of Jeep Trail.			
After surveying this area, walked back (west) along Jeep Trail; surveyed appropriate habitat along and downslope of Jeep Trail.			
French Meadows surveyed upon completion of northern Hell Hole Reservoir surveys. Raptor primary (unknown species) located and collected in suitable northern goshawk habitat. Later determined not to be NOGO. Active raptor nest (osprey) detected ~200 meters northwest of this location.			
Habitat along western portion of French Meadows—along FR 14N09A (Ranger Station)—surveyed from south to north end.			
End survey on FR 14N09A.			

Northern Goshawk Survey Data Form			
Site: Hell Hole Reservoir			
Date: 7/24/2008	Visit Number: 1	Survey Method: Intensive Search	
Team: Steve Tucker (crew leader), Katie Simpson, and Chelsea Murphy			
Wind Code: 1	Cloud Cover: 1	Temperature (Start): 66 °F	Temperature (End): 76°F
Survey Time (Start): 0905		Survey Time (End): 1745	
Intensive Nest Search Time (Start): N/A		Intensive Nest Search Time (End): N/A	
Response Data (Including type of response (visual or auditory) description of response (age, sex, behavior, and locations of goshawk), observation of sign (molted feathers, whitewash, prey remains, and old nests) and GPS coordinates):			
No NOGO detections during survey			
Survey Notes:			
<p>Start survey (broadcast acoustical calls) in suitable habitat along Hell Hole Reservoir, east of campground. Survey continued east and then north in suitable habitat. Remains of Stellar's jay found in dense second-growth conifers. Unable to identify predator to species. Team looped back west to continue survey. Barred feather collected.</p> <p>Some shoreline habitat was surveyed from boat. Two bald eagles observed near shore of Hell Hole Reservoir; several osprey nests observed from boat.</p> <p>Continued survey in suitable habitat at south end of Hell Hole-Middle Fork Tunnel, west of Hell Hole dormitory facility.</p> <p>End survey west of water supply tank.</p>			

Northern Goshawk Survey Data Form			
Site: Hell Hole Reservoir			
Date: 7/25/2008	Visit Number: 1	Survey Method: Intensive Search	
Team: Steve Tucker (crew leader), Katie Simpson, and Chelsea Murphy			
Wind Code: 1	Cloud Cover: 1	Temperature (Start): 66 °F	Temperature (End): 76°F
Survey Time (Start): 0905		Survey Time (End): 1745	
Intensive Nest Search Time (Start): N/A		Intensive Nest Search Time (End): N/A	
Response Data (Including type of response (visual or auditory) description of response (age, sex, behavior, and locations of goshawk), observation of sign (molted feathers, whitewash, prey remains, and old nests) and GPS coordinates):			
No NOGO detections during survey			
Survey Notes:			
Start survey (broadcast acoustical calls) in suitable habitat along hiking trail on south shore of Hell Hole Reservoir. Surveyed upslope of trail and east of this location.			
Surveyed habitat north and south of Hell Hole Campground in thin patch of habitat along trail.			
End survey at south end of habitat at Hell Hole Campground.			

APPENDIX C
Incidental Wildlife Observations 2006–2008

Appendix C. Incidental Wildlife Observations 2006–2008.

<u>Date</u>	<u>Location</u>	<u>Species (Common Name)</u>	<u>Species (Scientific Name)</u>	<u>Status</u>	<u>Type of Sign</u>	<u>Observer</u>	<u>Affiliation</u>
Confluence							
9/1/2006	Middle Fork American River at North Fork American River Confluence	river otter	<i>Lontra canadensis</i>	None	visual	C. Addley (aquatics crew)	Biologist, Entrix
Ralston Afterbay							
5/6/2008	Ralston Afterbay	great blue heron	<i>Ardea herodias</i>	None	visual	R Jackman	Bald eagle biologist
5/20/2008	Ralston Picnic Area	yellow-breasted chat	<i>Icteria virens</i>	CSC	audio	S. Gillespie	Biologist, RBI
5/13/2008	Ralston Powerhouse	American robin	<i>Turdus migratorius</i>	None	audio	A Hendrickson	Biologist, RBI
5/13/2008	Ralston Powerhouse	black-headed grosbeak	<i>Pheucticus melanocephalus</i>	None	audio	A Hendrickson	Biologist, RBI
5/13/2008	Ralston Powerhouse	Cassin's vireo	<i>Vireo cassinii</i>	None	audio	A Hendrickson	Biologist, RBI
5/13/2008	Ralston Powerhouse	rough-winged swallow	<i>Stelgidopteryx ruficollis</i>	None	audio	A Hendrickson	Biologist, RBI
5/13/2008	Ralston Powerhouse	yellow-rumped warbler	<i>Dendroica coronata</i>	None	audio	A Hendrickson	Biologist, RBI
Middle Fork Interbay							
3/25/2008	Middle Fork Interbay	golden eagle	<i>Aquila chrysaetos</i>	CSC, CFP	visual	R Jackman	Bald eagle biologist
8/7/2007	Middle Fork Interbay	grey fox	<i>Urocyon cinereoargenteus</i>	None	visual	S. Gillespie, S. Tucker	Biologists, Entrix and RBI
5/13/2008	Middle Fork Interbay Powerhouse	whiptail	<i>Cnemidophorus tigris</i>	None	visual	A. Hendrickson, S. Gillespie	Biologists, RBI
South Fork Long Canyon Creek							
8/8/2007	South Fork Long Canyon Diversion	northern goshawk	<i>Accipiter gentilis</i>	FSS, CSC	visual	Andrew Rogers	Biologist, Entrix
8/8/2007	South Fork Long Canyon Diversion	northern goshawk	<i>Accipiter gentilis</i>	FSS, CSC	visual	Andrew Rogers	Biologist, Entrix
Duncan Creek							
8/13/2007	Duncan Creek Diversion Pool	American dipper	<i>Cinclus mexicanus</i>	None	visual	S. Gillespie, S. Tucker	Biologists, Entrix and RBI
8/13/2007	Duncan Creek Diversion Pool	spotted sandpiper	<i>Actitis macularia</i>	None	visual	S. Gillespie, S. Tucker	Biologists, Entrix and RBI
5/25/2008	Dolly Creek Water Supply	western toad	<i>Bufo boreas</i>	None	visual	I. Parr	Biologist, Entrix
French Meadows							
5/26/2008	French Meadows Dam Road	Vaux's swift	<i>Chaetura vauxi</i>	CSC	visual	I. Parr, S. Gillespie	Biologists, Entrix and RBI
5/13/2008	French Meadows Reservoir	American robin	<i>Turdus migratorius</i>	None	audio	A Hendrickson	Biologist, RBI
5/13/2008	French Meadows Reservoir	dusky flycatcher	<i>Empidonax oberholseri</i>	None	audio	A Hendrickson	Biologist, RBI
5/13/2008	French Meadows Reservoir	mountain chickadee	<i>Poecile gambeli</i>	None	audio	A Hendrickson	Biologist, RBI
5/25/2008	French Meadows Reservoir	osprey	<i>Pandion haliaetus</i>	None	visual	A Hendrickson	Biologist, RBI
5/26/2008	French Meadows Reservoir (north shore)	American robin	<i>Turdus migratorius</i>	None	visual	A Hendrickson	Biologist, RBI
5/26/2008	French Meadows Reservoir (north shore)	dark-eyed junco	<i>Junco hyemalis</i>	None	visual	A Hendrickson	Biologist, RBI
5/26/2008	French Meadows Reservoir (north shore)	green towhee	<i>Pipilo chlorurus</i>	None	visual	A Hendrickson	Biologist, RBI
5/26/2008	French Meadows Reservoir (north shore)	killdeer	<i>Charadrius vociferus</i>	None	visual	A Hendrickson	Biologist, RBI
5/26/2008	French Meadows Reservoir (north shore)	mountain chickadee	<i>Poecile gambeli</i>	None	visual	A Hendrickson	Biologist, RBI
5/26/2008	French Meadows Reservoir (north shore)	western bluebird	<i>Sialia mexicana</i>	None	visual	A Hendrickson	Biologist, RBI
5/26/2008	French Meadows Reservoir (north shore)	yellow warbler	<i>Dendroica petechia</i>	MIS, CSC	visual	A Hendrickson	Biologist, RBI
5/25/2008	Gates Group Campground	green towhee	<i>Pipilo chlorurus</i>	None	visual	S. Gillespie, I. Parr	Biologists, Entrix and RBI
8/9/2007	Mosquito Ridge Road approaching French Meadows	olive-sided flycatcher	<i>Contopus cooperi</i>	CSC	visual	S. Tucker	Biologist, Entrix
5/26/2008	French Meadows (south shore)	osprey	<i>Pandion haliaetus</i>	None	visual	S. Gillespie	Biologist, RBI
5/26/2008	French Meadows (south shore - at trash rack betterment site)	osprey	<i>Pandion haliaetus</i>	None	visual	S. Gillespie	Biologist, RBI
5/26/2008	French Meadows (south shore - east end)	mountain bluebird	<i>Sialia currucoides</i>	None	visual	S. Gillespie	Biologist, RBI
5/26/2008	French Meadows (south shore - east end)	western bluebird	<i>Sialia mexicana</i>	None	visual	S. Gillespie	Biologist, RBI

Appendix C. Incidental Wildlife Observations 2006–2008 (continued).

<u>Date</u>	<u>Location</u>	<u>Species (Common Name)</u>	<u>Species (Scientific Name)</u>	<u>Status</u>	<u>Type of Sign</u>	<u>Observer</u>	<u>Affiliation</u>
Hell Hole							
5/27/2008	Big Meadows Campground	black-throated gray warbler	<i>Dendroica nigrescens</i>	None	visual	A Hendrickson	Biologist, RBI
5/27/2008	Big Meadows Campground	california towhee	<i>Pipilo crissalis</i>	None	visual	A Hendrickson	Biologist, RBI
5/27/2008	Big Meadows Campground	nashville warbler	<i>Vermivora ruficapilla</i>	None	visual	A Hendrickson	Biologist, RBI
5/27/2008	Big Meadows Campground	northern mockingbird	<i>Mimus polyglottos</i>	None	visual	A Hendrickson	Biologist, RBI
5/27/2008	Big Meadows Campground	osprey	<i>Pandion haliaetus</i>	None	visual	A Hendrickson	Biologist, RBI
5/27/2008	Big Meadows Campground	Steller's jay	<i>Cyanocitta stelleri</i>	None	visual	A Hendrickson	Biologist, RBI
5/27/2008	Big Meadows Campground	western tanager	<i>Piranga ludoviciana</i>	None	visual	A Hendrickson	Biologist, RBI
5/27/2008	Big Meadows Campground	western wood-peewee	<i>Contopus sordidulus</i>	None	visual	A Hendrickson	Biologist, RBI
7/29/2008	Five Lakes Creek	American dipper	<i>Cinclus mexicanus</i>	None	visual	S. Gillespie	Biologist, RBI
6/5/2008	Five Lakes Creek	killdeer	<i>Charadrius vociferus</i>	None	visual	S. Gillespie	Biologist, RBI
8/21/2008	Hell Hole Boat Ramp	osprey	<i>Pandion haliaetus</i>	None	visual	Sandy Perry	Project Manager, Entrix
6/5/2008	Hell Hole Campground	common merganser	<i>Mergus merganser</i>	None	visual	S. Gillespie, A. Hendrickson	Biologists, RBI
6/5/2008	Hell Hole Campground	killdeer	<i>Charadrius vociferus</i>	None	visual	S. Gillespie, A. Hendrickson	Biologists, RBI
6/5/2008	Hell Hole Campground	mallard	<i>Anas platyrhynchos</i>	None	visual	S. Gillespie, A. Hendrickson	Biologists, RBI
6/5/2008	Hell Hole Campground	osprey	<i>Pandion haliaetus</i>	None	visual	S. Gillespie, A. Hendrickson	Biologists, RBI
6/5/2008	Hell Hole Campground	osprey	<i>Pandion haliaetus</i>	None	visual	S. Gillespie, A. Hendrickson	Biologists, RBI
6/5/2008	Hell Hole Campground	swift (species unknown)		None	visual	S. Gillespie, A. Hendrickson	Biologists, RBI
8/14/2007	Hell Hole Dam	osprey	<i>Pandion haliaetus</i>	None	visual	S. Gillespie, S. Tucker	Biologists, Entrix and RBI
7/30/2008	Hell Hole Reservoir	bald eagle	<i>Haliaeetus leucocephalus</i>	FD, FSS, SE, CFP	visual	S. Gillespie, I. Parr, A. Hendrickson, K. Colgate	Biologists, Entrix and RBI
6/5/2008	Hell Hole Reservoir	bald eagle	<i>Haliaeetus leucocephalus</i>	FD, FSS, SE, CFP	visual	S. Gillespie, A. Hendrickson	Biologists, RBI
6/5/2008	Hell Hole Reservoir	bald eagle	<i>Haliaeetus leucocephalus</i>	FD, FSS, SE, CFP	visual	S. Gillespie, A. Hendrickson	Biologists, RBI
2/12/2008	Hell Hole Reservoir	tundra swan	<i>Cygnus columbianus</i>	None	visual	R Jackman	Bald eagle biologist
5/29/2008	Hell Hole Reservoir (north shore)	American robin	<i>Turdus migratorius</i>	None	visual	S. Gillespie	Biologist, RBI
5/29/2008	Hell Hole Reservoir (north shore)	black-headed grosbeak	<i>Pheucticus melanocephalus</i>	None	audio	S. Gillespie	Biologist, RBI
5/29/2008	Hell Hole Reservoir (north shore)	Cassin's vireo	<i>Vireo cassinii</i>	None	audio	S. Gillespie	Biologist, RBI
5/29/2008	Hell Hole Reservoir (north shore)	killdeer	<i>Charadrius vociferus</i>	None	visual	S. Gillespie	Biologist, RBI
5/29/2008	Hell Hole Reservoir (north shore)	gull species	<i>Larus spp.</i>	None	visual	S. Gillespie	Biologist, RBI
5/29/2008	Hell Hole Reservoir (north shore)	savannah sparrow	<i>Passerculus sandwichensis</i>	None	audio	S. Gillespie	Biologist, RBI
5/29/2008	Hell Hole Reservoir (north shore)	Steller's jay	<i>Cyanocitta stelleri</i>	None	audio	S. Gillespie	Biologist, RBI
6/5/2008	Hell Hole Reservoir (south shore)	band-tailed pigeon	<i>Patagioenas fasciata</i>	None	visual	S. Gillespie, A. Hendrickson	Biologists, RBI
6/5/2008	Hell Hole Reservoir (south shore)	spotted sandpiper	<i>Actitis macularia</i>	None	visual	S. Gillespie, A. Hendrickson	Biologists, RBI
6/4/2008	Hell Hole Trail	lazuli bunting	<i>Passerina amoena</i>	None	visual	S. Gillespie, A. Hendrickson	Biologists, RBI
5/29/2008	Hell Hole, Grey Horse vicinity	American white pelican	<i>Pelecanus erythrorhynchos</i>	CSC	visual	S. Gillespie, K. Colgate	Biologists, RBI and Entrix
5/29/2008	Hell Hole, Grey Horse vicinity	Cassin's finch	<i>Carpodacus cassinii</i>	None	visual	S. Gillespie	Biologist, RBI
5/29/2008	Hell Hole, Grey Horse vicinity	Cassin's vireo	<i>Vireo cassinii</i>	None	audio	S. Gillespie	Biologist, RBI
5/29/2008	Hell Hole, Grey Horse vicinity	dusky flycatcher	<i>Empidonax oberholseri</i>	None	visual	S. Gillespie	Biologist, RBI
6/7/2008	Hell Hole, Grey Horse vicinity	dusky-footed woodrat	<i>Neotoma fuscipes</i>	None	visual	S. Gillespie	Biologist, RBI
5/29/2008	Hell Hole, Grey Horse vicinity	lesser goldfinch	<i>Carduelis psaltria</i>	None	audio	S. Gillespie	Biologist, RBI
5/29/2008	Hell Hole, Grey Horse vicinity	rock wren	<i>Salpinctes obsoletus</i>	None	audio	S. Gillespie	Biologist, RBI
5/29/2008	Hell Hole, Grey Horse vicinity	western wood-peewee	<i>Contopus sordidulus</i>	None	audio	S. Gillespie	Biologist, RBI
7/29/2008	Rubicon River	American dipper	<i>Cinclus mexicanus</i>	None	visual	S. Gillespie	Biologist, RBI
5/1/2006	Upper Hell Hole Reservoir	bald eagle	<i>Haliaeetus leucocephalus</i>	FD, FSS, SE, CFP	visual	B. Ransom	Biologist, PCWA

Appendix C. Incidental Wildlife Observations 2006–2008 (continued).

<u>Date</u>	<u>Location</u>	<u>Species (Common Name)</u>	<u>Species (Scientific Name)</u>	<u>Status</u>	<u>Type of Sign</u>	<u>Observer</u>	<u>Affiliation</u>
Hell Hole (continued)							
10/25/2007	Upper Hell Hole Reservoir	bald eagle	<i>Haliaeetus leucocephalus</i>	FD, FSS, SE, CFP	visual	C. Addley (aquatics crew)	Biologist, Entrix
6/6/2008	Forest Road 14NO9A	band-tailed pigeon	<i>Patagioenas fasciata</i>	None	visual	S. Gillespie, A. Hendrickson	Biologists, RBI
6/6/2008	Forest Road 14NO9A	black bear	<i>Ursus americanus</i>	None	scat	S. Gillespie, A. Hendrickson	Biologists, RBI
6/7/2008	Forest Road 14NO9A	mountain quail	<i>Oreortyx pictus</i>	None	audio	S. Gillespie, A. Hendrickson	Biologists, RBI
Snow Courses							
5/23/2008	Diamond Crossing Snow Course	American robin	<i>Turdus migratorius</i>	None	visual	A Hendrickson	Biologist, RBI
5/23/2008	Diamond Crossing Snow Course	black bear	<i>Ursus americanus</i>	None	visual	A Hendrickson	Biologist, RBI
5/23/2008	Diamond Crossing Snow Course	mountain chickadee	<i>Poecile gambeli</i>	None	visual	A Hendrickson	Biologist, RBI
5/23/2008	Diamond Crossing Snow Course	mule deer	<i>Odocoileus hemionus</i>	MIS	scat	A Hendrickson	Biologist, RBI
5/23/2008	Diamond Crossing Snow Course	Steller's jay	<i>Cyanocitta stelleri</i>	None	visual	A Hendrickson	Biologist, RBI
5/23/2008	Talbot Camp Snow Course	American robin	<i>Turdus migratorius</i>	None	visual	A Hendrickson	Biologist, RBI
5/23/2008	Talbot Camp Snow Course	mule deer	<i>Odocoileus hemionus</i>	MIS	tracks	A Hendrickson	Biologist, RBI
5/23/2008	Talbot Camp Snow Course	red-breasted nuthatch	<i>Sitta canadensis</i>	None	visual	A Hendrickson	Biologist, RBI
5/23/2008	Wabena Meadows Snow Course	mountain chickadee	<i>Poecile gambeli</i>	None	visual	A Hendrickson	Biologist, RBI
5/23/2008	Wabena Meadows Snow Course	mule deer	<i>Odocoileus hemionus</i>	MIS	tracks	A Hendrickson	Biologist, RBI

APPENDIX D
Powerline Evaluation Photos

Examples of Communication Line and Powerline Configurations



Oxbow Powerhouse to Ralston Afterbay Dam Generator Building Communication Line/Power Line:

This photograph shows both insulated communication lines and an insulated and bundled three-phase powerline mounted on the same pole. This configuration does not represent a risk for avian electrocution.



French Meadows Powerhouse and Switchyard to Hell Hole-Middle Fork Tunnel Gatehouse, Dormitory Facility, Operator Cottages and Hell Hole Powerhouse Communication Line/Powerline:

This photograph shows a portion of the powerline leading to the Hell Hole Powerhouse with uninsulated three-phase distribution lines and conductors mounted vertically on the poles (no crossarms). This configuration poses a potential risk for avian electrocution.



French Meadows Powerhouse and Switchyard to Hell Hole-Middle Fork Tunnel Gatehouse, Dormitory Facility, Operator Cottages and Hell Hole Powerhouse Communication Line/Powerline:

This photograph shows a portion of the powerline leading to the French Meadows Powerhouse that has uninsulated three-phase distribution lines with conductors mounted horizontally on crossbars. Note also the guy wires located in proximity to the phases. This configuration poses a potential risk for avian electrocution.



Hell Hole Powerhouse to Rubicon River Gage and Weir below Hell Hole Dam Communication Line/Powerline:

This photograph shows another uninsulated three-phase distribution line with conductors mounted horizontally on crossbars. This configuration poses a potential risk for avian electrocution. (Insulated communication lines are also mounted on the pole below the cross bars.)

Examples of Equipment Poles and Structures



French Meadows Powerhouse and Switchyard to Hell Hole-Middle Fork Tunnel Gatehouse, Dormitory Facility, Operator Cottages and Hell Hole Powerhouse Communication Line/Powerline: This photograph shows an equipment pole with three metal transformers near the Hell Hole-Middle Fork Tunnel Gatehouse. This equipment pole design poses a potential risk for avian electrocution.



Ralston Afterbay Dam Generator Building to Ralston - Oxbow Tunnel Intake Communication Line/Powerline: This photograph shows an equipment pole with three metal transformers near the Hell Hole-Middle Fork Tunnel Gatehouse. This equipment pole design poses a potential risk for avian electrocution.



French Meadows Powerhouse and Switchyard to Hell Hole-Middle Fork Tunnel Gatehouse, Dormitory Facility, Operator Cottages and Hell Hole Powerhouse Communication Line/Powerline: This photograph shows a large equipment structure at the Hell Hole Substation. This equipment pole design poses a potential risk for avian electrocution.



French Meadows Powerhouse and Switchyard to Hell Hole-Middle Fork Tunnel Gatehouse, Dormitory Facility, Operator Cottages and Hell Hole Powerhouse Communication Line/Powerline: This photograph shows a large equipment structure at the Hell Hole Powerhouse. This equipment pole design poses a potential risk for avian electrocution.