

Study 4.1

SPECIAL-STATUS WILDLIFE - CALIFORNIA WILDLIFE HABITAT RELATIONSHIPS¹

October 2011

1.0 Project Nexus

Yuba County Water Agency's (YCWA or Licensee) continued operation and maintenance (O&M) of the Yuba River Development Project (Project) and recreation has the potential to affect special-status wildlife.²

2.0 Resource Management Goals of Agencies with Jurisdiction Over the Resources to be Studied

YCWA believes that three agencies have jurisdiction over wildlife in the geographic area included in this study proposal: 1) the United States Department of Agriculture, Forest Service (Forest Service) on National Forest System (NFS) land; 2) United States Department of Interior, Fish and Wildlife Service (USFWS); and 3) California Department of Fish and Game (CDFG). Each of these agencies and their jurisdiction and management direction, as understood by YCWA at this time, is discussed below.

Forest Service

The Forest Service's jurisdiction and applicable management goals are described by the Forest Service from page 59 to 76 in the Forest Service's March 2, 2011 letter to FERC providing the Forest Service's comments on YCWA's Pre-Application Document or PAD (YCWA 2010). The Forest Service's jurisdiction and management goals are not repeated here.

USFWS

USFWS's jurisdiction and goals and objectives are described by USFWS on pages 1 through 3 of USFWS's March 7, 2011 letter to FERC that provided USFWS's comments on YCWA's PAD. USFWS's jurisdiction, goals and objectives are not repeated here.

CDFG

CDFG's jurisdiction is described by CDFG on page 1 of CDFG's March 2, 2011 letter to FERC providing CDFG's comments on YCWA's PAD. CDFG's goal, as described on page 2 of

¹ YCWA's included a Special-Status Wildlife – California Wildlife Habitat Relationships Study in its August 2011 Revised Study Plan. FERC's September 30, 2011 Study Determination required modifications to the study. Those modifications have been made in this study plan.

² Special-status wildlife are considered those wildlife species: 1) found on National Forest System (NFS) land and formally listed by the United States Department of Agriculture Forest Service as a Sensitive Species or a Management Indicator Species; 2) listed under the federal Endangered Species Act (ESA) as Proposed or a Candidate for listing as endangered or threatened or proposed for delisting; 3) listed under the California Endangered Species Act (CESA) as Proposed for listing as endangered or threatened or proposed for delisting; 5) formally listed by California Department of Fish and Game as a Species of Special Concern; or species listed as Birds of Conservation Concern under the Migratory Bird Treaty Act. For the purpose of this study proposal, species listed as threatened or endangered under the ESA or CESA are addressed separately.

CDFG's letter is to preserve, protect, and as needed, to restore habitat necessary to support native fish, wildlife and plant species.

3.0 Study Goals and Objectives

The goal of this study is to determine presence and distribution of special-status wildlife in the vicinity of the existing FERC Project Boundary,³ and Project O&M activities that might affect these species. The objective of the study is to query California Department of Fish and Game's (CDFG) California Wildlife Habitat Relationships (CWHR) system and Project Operations' Staff to meet the study goals.

4.0 Existing Information and Need for Additional Information

Existing and relevant information regarding known and potentially occurring special-status wildlife in the Project Vicinity⁴ is available from the California Natural Diversity Database (CNDDDB), CDFG's CWHR program and the United States Department of Agriculture Forest Service (Forest Service) Geographic Information System (GIS) database. Forest Service data also include various biological evaluations addressing special-status wildlife. This information is useful in developing a target list of special-status wildlife species for the study and identifying their potential habitat in the Project Area.

Based on the general vegetation patterns described in the Botanical Resources section of the PAD (Section 7.5), YCWA classified wildlife habitats in the Project Vicinity using the CWHR program (de Becker and Sweet 1988; CDFG 2005, 2009a). The CWHR model predicts wildlife use based on habitat type, age class, size class, canopy closure or cover, and occurrence of specific habitat elements that influence thermal cover, forage, prey availability, nesting, escape cover, and breeding. YCWA assessed upland vegetation with information from the Forest Service's CalVegetation (CalVeg) mapping system, which are publicly available data (USDA 2004a), and the Forest Service's Crosswalk (USFS 2004b) to identify habitats in the Project Vicinity. The Crosswalk converts CalVeg Alliances into the appropriate CWHR habitat type. Using the identified habitat types and CWHR, YCWA identified terrestrial vertebrate wildlife species potentially occurring within the Project Vicinity.⁵

³ For the purposes of this document, the Project Area is defined as the area within the Federal Energy Regulatory Commission (FERC) existing Project Boundary and the land immediately surrounding the FERC Project Boundary (*i.e.*, within about 0.25 mile of the FERC Project Boundary) and includes Project-affected reaches between facilities and downstream to the next major water controlling feature or structure.

⁴ For the purposes of this document, the Project Vicinity is defined as the area surrounding the Project on the order of a United States Geological Survey (USGS) 1:24,000 topographic quadrangle.

⁵ YCWA's Special-Status Wildlife – California Wildlife Habitat Relationships Study in its August 2011 Revised Study Plan did not include bird species listed as Birds of Conservation Concern under the Migratory Bird Treaty Act. However, FERC's September 30, 2011 Study Determination stated "we find that the list of special status wildlife species should be expanded to include BCC located in Bird Conservation Region 15 (Sierra Nevada), consistent with the memorandum of understanding between the Commission and FWS regarding conservation of migratory birds. Although some BCC are addressed in the study, the following BCC are not, and thus should be added to table 4.0-1: flammulated owl, calliope hummingbird, Lewis's woodpecker, Williamson's sapsucker, willow flycatcher, and Cassin's finch." The study plan has been modified accordingly

The results of the CWHR analysis and current lists of special-status wildlife indicate that there are 46 species with potential to occur in the Project Area including 1 reptile, 33 birds and 12 mammals. Table 4.0-1 provides the target list of special-status wildlife for this study including for each species: 1) status; 2) general habitat preference; and 3) CWHR habitats.

Table 4.0-1. Special-status wildlife species known to occur or with the potential to occur within the Project Area for the Yuba River Development Project.

Species	Special Status ¹	Suitable Habitat Type	Temporal and Spatial Distribution ²	References
REPTILES				
Coast horned lizard <i>Phrynosoma coronatum</i>	FSS & CSC	Variety of habitats including scrubland, grassland, coniferous woods, and broadleaf woodlands.	Yearlong-AGS, BOP, BOW, MHC, PPN	NatureServe 2009 Vindum and Koo 1999 CDFG 2008
BIRDS				
American white pelican <i>Pelecanus erythrorhynchos</i>	CSC	Rivers, lakes, reservoirs, estuaries, bays, marshes; sometimes inshore marine habitats.	Summer-BAR, Yearlong & Winter-WAT	NatureServe 2009 CDFG 2008
Redhead <i>Aythya americana</i>	CSC	Open water on lakes, ponds, and reservoirs.	Winter-WAT	NatureServe 2009 CDFG 2008
Northern goshawk <i>Accipiter gentilis</i>	FSS & CSC	Lodgepole Pine, Red Fir, Mountain Hemlock, White Pine and Mixed Conifer dominated forest	Yearlong- DFR, MCP, MHC, MHW, PPN, SMC. Winter-BOP, BOW	TNF 1978 TNF 2006 TNF 2007 CDFG 2008
Blue grouse <i>Dendragapus obscurus</i>	MIS	Mixed forests dominated by Black Oak, Lodgepole Pine, Red Fir, Mountain Hemlock and White Pine dominated forest from 1200 ft to 7500 ft elevation	Yearlong – MHC, SMC, PPN, WFR, SCN	TNF 1978 TNF 2006 CDFG 2008
Oregon vesper sparrow <i>Poocetes gramineus affinis</i>	CSC	Plains, prairie, dry shrublands, savanna, weedy pastures, fields, sagebrush, arid scrub, and woodland clearings.	Winter-AGS, BOP, BOW. Summer-MCP	NatureServe 2009 CDFG 2008
Grasshopper sparrow <i>Ammodramus savannarum</i>	CSC	Prefer grasslands of intermediate height and are often associated with clumped vegetation interspersed with patches of bare ground. Other habitat requirements include moderately deep litter and sparse coverage of woody vegetation.	Summer-AGS	NatureServe 2009 CDFG 2008
Fox sparrow <i>Passerella iliaca</i>	MIS	Dense thickets in coniferous or mixed woodlands, chaparral, along rivers and creeks. Requires dense brushy cover during the nesting season.	Yearlong-MHC, MCH	CDFG 2008
Olive-sided flycatcher <i>Contopus cooperi</i>	CSC & BCC	Forest and woodland, in burned-over areas with standing dead trees, in taiga, subalpine coniferous forest and mixed coniferous-deciduous forest. Also swampy edges of lakes, marshy streams, backwaters of rivers.	Summer-DFR, MHC, MHW, PPN, SMC. Migrant-BOP	NatureServe 2009 CDFG 2008 USFWS 2008
Yellow-headed blackbird <i>Xanthocephalus xanthocephalus</i>	CSC	Fresh-water marshes of cattail, tule, or bulrushes. Nests in wet grasses, reeds, cattails. Also in open cultivated lands, pastures and fields.	Yearlong-WAT. Summer-AGS	NatureServe 2009 CDFG 2008
Tricolored blackbird <i>Agelaius tricolor</i>	CSC	Fresh-water marshes of cattails, tule, bulrushes, and sedges. Nests in vegetation of marshes or thickets, sometimes nests on the ground. Historically strongly tied to emergent marshes; in recent decades much nesting has shifted to non-native vegetation.	Yearlong-AGS	NatureServe 2009 CDFG 2008

with the exception that, willow flycatcher, which is listed as endangered under the CESA is addressed in YCWA's Study 7.6 CESA-Listed and Fully Protected Wildlife – California Wildlife Habitat Relationships.

Table 4.0-1. (continued)

Species	Special Status ¹	Suitable Habitat Type	Temporal and Spatial Distribution ²	References
BIRDS (continued)				
Cassin's finch <i>Carpodacus cassinii</i>	BCC	Common montane resident, breeds in higher mountain ranges. Prefers open coniferous forests in breeding season, most numerous near wet meadows and grassy openings. Irregular in California foothills and lowlands.	Yearlong-DFR, MRI, PPN, SMC, WTM	CDFG 2011 USFWS 2008
Yellow warbler <i>Dendroica petechia</i>	MIS & CSC	Open scrub, second-growth woodland, thickets, farmlands and gardens, especially near water; riparian woodlands, especially of willows, in the West.	Summer-BOP, BOW, MCP, MHC, MHW, PPN, SMC. Migrant-DFR	NatureServe 2009 CDFG 2008 TNF 1978
Hairy woodpecker <i>Picoides villosus</i>	MIS	Mature woods with large old trees suitable for cavity nesting; also common in medium-aged forests; prefers woods with a dense canopy	Yearlong - MHC, MHW	NatureServe 2009 CDFG 2008
Common yellowthroat <i>Geothlypis trichas</i>	CSC	Marshes (especially cattail), thickets near water, bogs, brushy pastures, and old fields. In migration and winter also in brushy and shrubby areas in both moist and arid regions.	Yearlong-AGS, BOP, BOW, DFR, MCP, MHC, MHW, PPN, SMC. Summer-MRI	CDFG 2008
Black-backed woodpecker <i>Picoides arcticus</i>	MIS	Associated with boreal and montane coniferous forests, especially in areas with standing dead trees such as burns, bogs, and windfalls; less frequently in mixed forest	Yearlong - SMC, MHC	NatureServe 2009 CDFG 2008
Lewis woodpecker <i>Melanerpes lewis</i>	BCC	Uncommon, local winter resident occurring in open oak savannahs, broken deciduous and coniferous forests	Yearlong-AGS, BOP, BOW, DFR, MCH, MHC, MHW, MRI, PPN, SMC, VOW, VRI, WTM Winter-MCP	USFWS 2008
Williamson's sapsucker <i>Sphyrapicus thyroideus</i>	BCC	Summer resident in coniferous forests, nesting habitat includes lodgepole pine, but will nest in aspens adjacent to stands of red fir, Jeffrey pine and eastside pine habitats.	Yearlong-MRI, SMC Winter-PPN	USFWS 2008
Mountain quail <i>Oreortyx pictus</i>	MIS	Mixed forests dominated by Black Oak, Lodgepole Pine, Red Fir, Mountain Hemlock and White Pine dominated forest from 1,200 ft to 7,500 ft elevation and mountain chaparral	Yearlong - RFR, MHW, SMC, PPN, WFR, SCN	TNF 1978 TNF 2006
California spotted owl <i>Strix occidentalis occidentalis</i>	FSS, MIS, CSC & BCC	Mixed forests dominated by Black Oak, Lodgepole Pine, Red Fir White Fir, Ponderosa Pine, Sugar Pine, Incense Cedar, Douglas Fir	Yearlong-BOP, MHW. Summer-MRI	TNF 1978 TNF 2006 TNF 2007 USFWS 2008
Common loon <i>Gavia immer</i>	CSC	Lakes containing both shallow and deep water areas	Yearlong - WAT	NatureServe 2009 CDFG 2008 TNF 1978
Flammulated owl <i>Otus flammeolus</i>	BCC	A common summer resident locally in a variety of coniferous habitats including ponderosa pine to red fir forests between 6,000 ft and 10,000ft	Summer-DFR, MCP, MHC, MHW, MRI, PPN, SMC	USFWS 2008
Long-eared owl <i>Asio otus</i>	CSC	Deciduous and evergreen forests, orchards, wooded parks, farm woodlots, river woods, desert oases. Wooded areas with dense vegetation needed for roosting and nesting, open areas for hunting.	Yearlong-AGS, BOP, BOW, MCP, MHC, MHW, PPN, SMC	NatureServe 2009 CDFG 2008
Short-eared owl <i>Asio flammeus</i>	CSC	Broad expanses of open land with low vegetation for nesting and foraging are required.	Yearlong-AGS Winter-BOP, BOW, DFR, NHC, PPN, SMC	NatureServe 2009 CDFG 2008

Table 4.0-1. (continued)

Species	Special Status ¹	Suitable Habitat Type	Temporal and Spatial Distribution ²	References
BIRDS (continued)				
Calliope hummingbird <i>Stellula calliope</i>	BCC	Breeds in wooded habitats from ponderosa pine and montane hardwood-conifer up to lodgepole pine, but favors montane riparian, aspen and other open forests near streams. Forages in open meadows and stands of shrubs.	Migrant-BOP, BOW, MCH, MHW, URB, VOW, VRI Summer-DFR, MCH, MCP, MHC, MRI, PPN, SMC, WTM Yearlong-MCH	USFWS 2008
Purple martin <i>Progne subis</i>	CSC	A wide variety of open and partly open situations, frequently near water or around towns	Summer-AGS, BOP, BOW, DFR, MHC, MHW, PPN, SMC, WAT	NatureServe 2009 CDFG 2008 TNF 1978
Loggerhead shrike <i>Lanius ludovicianus</i>	CSC	Open country with scattered trees and shrubs, savanna, desert scrub, and, occasionally, open woodland; often perches on poles, wires or fence posts.	Yearlong-AGS, BAR, BOP, BOW, MCH, MHC, MHW, PPN	NatureServe 2009 CDFG 2008
Yellow-breasted chat <i>Icteria virens</i>	CSC	Second growth, shrubby old pastures, thickets, bushy areas, scrub, woodland undergrowth, and fence rows, including low wet places near streams, pond edges, or swamps; thickets with few tall trees	Yearlong - WAT	NatureServe 2009 CDFG 2008
Barrow's goldeneye <i>Bucephala islandica</i>	CSC	Winters on lakes, rivers, estuaries, and bays. Usually nests near lake or pond surrounded by dense vegetation.	Yearlong - WAT	NatureServe 2009 CDFG 2008 TNF 1978
Harlequin duck <i>Histrionicus histrionicus</i>	CSC	Historic breeding grounds include west slope of the Sierra Nevada along shores of swift, shallow rivers.	Yearlong - WAT	NatureServe 2009 CDFG 2008
Northern harrier <i>Circus cyaneus</i>	CSC	Marshes, meadows, grasslands, and cultivated fields.	Yearlong-AGS, BAR, BOP, BOW, WAT. Summer-DFR, MCP, MHC, MHW, PPN, SMC	NatureServe 2009 CDFG 2008
Black swift <i>Cypseloides niger</i>	CSC & BCC	Nests in moist crevices or caves, or on cliffs near waterfalls in deep canyons. Forages widely over many habitats	Summer-AGS, BAR, BOP, BOW, DFR, MCP, MHC, MHW, PPN, SMC, WAT	NatureServe 2009 CDFG 2008 TNF 1978 USFWS 2008
Vaux's swift <i>Chaetura vauxi</i>	CSC	Found in mature forests but also forages and migrates over open country.	Summer-BOP, DFR, MCP, MHC, MHW, PPN, SMC, WAT	NatureServe 2009 CDFG 2008
Black tern <i>Chlidonias niger</i>	CSC	Marshes, along sloughs, rivers, lakeshores, and impoundments, or in wet meadows	Summer-WAT	NatureServe 2009 CDFG 2008 TNF 1978
Burrowing owl <i>Athene cucularia</i>	CSC	Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports.	Yearlong-AGS, BAR, BOP, BOW, MCP, PPN	NatureServe 2009 CDFG 2008
MAMMALS				
Western red bat <i>Lasiurus blossevillii</i>	FSS & CSC	Roosts in foliage, forages in open areas (sea level up through mixed conifer forests)	Yearlong-AGS, BOP, BOW, MCP, MHC. Summer-DFR, MHW, PPN, SMC, WAT	SFWPA 2006 TNF 2005 CDFG 2008
Spotted bat <i>Euderma maculatum</i>	CSC	Arid deserts, grasslands, and mixed conifer forests (0-9,800 ft)	Yearlong-AGS, BOP, BOW, MCP, MHC, PPN, SMC, WAT	SFWPA 2006 CDFG 2008
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	FSS & CSC	Roosts in buildings, mines, tunnels, and caves; feeds along habitat edges (0-10,365 ft)	Yearlong-BAR, BOP, BOW, DFR, MCP, MHC, MHW, PPN, SMC. Summer-AGS, WAT	SFWPA 2006 TNF 2006 CDFG 2008

Table 4.0-1. (continued)

Species	Special Status ¹	Suitable Habitat Type	Temporal and Spatial Distribution ²	References
MAMMALS (continued)				
Pallid bat <i>Antrozous pallidus</i>	FSS & CSC	Roosts in caves, crevices, and buildings; feeds in a variety of open habitats (8,000 ft)	Yearlong-AGS, BAR, BOP, BOW, DFR, MCP, MHC, MHW, PPN, SMC. Summer-WAT	SFWPA 2006 TNF 2006 CDFG 2008
Western mastiff bat <i>Eumops perotis</i>	CSC	Open areas with abundant roost locations provided by crevices in rock outcrops and buildings at lower elevations, but as high as 8,700 ft	Yearlong-AGS, BAR, BOP, BOW, MCP, MHC, MHW, PPN	SFWPA 2006 CDFG 2008
American marten <i>Martes americana</i>	FSS & MIS	Late successional forest near streams and meadows	Yearlong-BAR, DFR, MHC, PPN, SMC	SFWPA 2006 TNF 2006 CDFG 2008
Pacific fisher <i>Martes pennanti</i>	FSS, CSC	Late successional forest near streams and meadows	Yearlong-DFR, MHC, PPN, SMC	SFWPA 2006 TNF 2006 CDFG 2008
Northern flying squirrel <i>Glaucomys sabrinus</i>	MIS & FSS	Coniferous and mixed forest, but will utilize deciduous woods and riparian woods	Yearlong-BOP, BOW, DFR, MHC, MHW, PPN, SMC	NatureServe 2009 CDFG 2008
Mule deer <i>Odocoileus hemionus</i>	MIS	Early to intermediate successional stages of most forest, woodland, and brush habitats interspersed with herbaceous openings, dense brush or tree thickets, riparian areas, and abundant edge	Yearlong-AGS, BOP, BOW, DFR, MCP, MHC, MHW. Summer-PPN, SMC	SFWPA 2006 TNF 2006 CDFG 2008
Sierra Nevada snowshoe hare <i>Lepus americanus taioensis</i>	CSC	Riparian communities with thickets of deciduous trees and shrubs such as Willows and Alders. They also frequent dense thickets of young conifers and chaparral	Yearlong-DFR, SMC	NatureServe 2009 CDFG 2008
American badger <i>Taxidea taxus</i>	CSC	Prefers open areas and may also frequent brushlands with little groundcover. When inactive, occupies underground burrow.	Yearlong-AGS, BAR, BOP, BOW, DFR, MCP, MHC, MHW, PPN, SMC	NatureServe 2009 CDFG 2008
Sierra Nevada mountain beaver <i>Aplodontia rufa californica</i>	CSC	Dense riparian-deciduous and open, brushy stages of most forest types	Yearlong – MCH, MHC, SMC	NatureServe 2009 CDFG 2008

¹Status:

- CSC = California Species of Special Concern (CDFG 2009b)
- FSS = United States Forest Service Sensitive Species (USFS 2001)
- MIS = Management Indicator Species (TNF 2006)
- BCC = Birds of Conservation Concern (USFWS 2008)

²Vegetation communities and habitats as defined in the California Wildlife Habitat Relationships system.

- AGS = Annual Grass
- BAR = Barren
- BOP = Blue Oak Foothill Pine
- BOW = Blue Oak Woodland
- DFR = Douglas Fir
- MCH = Mixed Chaparral
- MCP = Montane Chaparral
- MHC = Montane Hardwood Conifer
- MHW = Montane Hardwood
- PPN = Ponderosa Pine
- SMC = Sierran mixed Conifer
- URB = Urban
- WAT = Lacustrine and Riverine (Water)

In order to meet the goals of the study, YCWA has identified the following additional information needs: 1) development of maps identifying CWHR habitat types for each species identified in table 4.0-1; 2) known protected wildlife habitats (e.g., California Spotted Owl

Protected Activity Centers [PACs] and Home Range Core Areas, Northern goshawk PAC), and CNDDDB and USFS species occurrence data for target species; and 3) a list of Project O&M activities that includes location and duration of the activity.

5.0 Study Methods and Analysis

5.1 Study Area

The study area consists of the area within the existing FERC Project Boundary⁶ and an area extending 0.25 mile from the boundary. This includes all Project facilities (e.g., powerhouses, dams, and conduits) as well as Project recreation sites (e.g., reservoirs and campgrounds).

If YCWA proposes an addition to the Project, the study area will be expanded if necessary to include areas potentially affected by the addition.

5.2 General Concepts and Procedures

The following general concepts and practices apply to the study:

- Personal safety is the most important consideration of each fieldwork team.
- Licensee will make a good faith effort to obtain permission to access private property where needed well in advance of entering the property.
- Field crews may make minor variances to the FERC-approved study in the field to accommodate actual field conditions and unforeseen problems. When minor variances are made, Licensee's field crew will follow the protocols in the FERC-approved study.
- When Licensee becomes aware of major variances to the FERC-approved study, Licensee will issue an e-mail to the Relicensing Contact List describing the variance and reason for the variance. Licensee will contact by phone the Forest Service (if the variance is on National Forest System land), USFWS, SWRCB and CDFG to provide an opportunity for input regarding how to address the variance. Licensee will issue an e-mail to the Relicensing Contact List advising them of the resolution of the variance. Licensee will summarize in the final study report all variances and resolutions.
- Licensee's performance of the study does not presume that Licensee is responsible in whole or in part for measures that may arise from the study.
- Global Positioning System (GPS) data will be collected using either a Map Grade Trimble GPS (sub-meter data collection accuracy under ideal conditions), a Recreation Grade Garmin GPS unit (3 meter data collection accuracy under ideal conditions), or similar units. GPS data will be post-processed and exported from the GPS unit into Geographic Information System (GIS) compatible file format in an appropriate coordinate system using desktop software. The resulting GIS file will then be reviewed by both field staff and Licensee's

⁶ The existing FERC Project Boundary is the area that YCWA uses for normal Project operations and maintenance, and is shown on Exhibits G, J, and K of the current license.

relicensing GIS analyst. Metadata will be developed for deliverable GIS data sets. Upon request, GIS maps will be provided to agencies in a form, such as ESRI Shapefiles, GeoDatabases, or Coverage with appropriate metadata, that is useful for interactive data analysis and interpretation. Metadata will be Federal Geographic Data Committee (FGDC) compliant.⁷

- Licensee's field crews will record incidental observations of aquatic and wildlife species observed during the performance of this study. All incidental observations will be reported in the appropriate Licensee report (e.g., incidental observations of special-status fish recorded during fieldwork for the Special-Status Turtles – Western Pond Turtle Study will be reported in Licensee's Stream Fish Populations Study report). The purpose of this effort is not to conduct a focus study (i.e., no effort in addition the specific field tasks identified for the specific study) or to make all field crews experts in identifying all species, but only to opportunistically gather data during the performance of the study.
- Field crews will be trained on and provided with materials (e.g. Quat) for decontaminating their boots, waders, and other equipment between study sites. Major concerns are amphibian chytrid fungus, and invasive invertebrates (e.g. zebra mussel, *Dreissena polymorpha*). This is of primary importance when moving: 1) between tributaries and mainstem reaches; 2) moving between basins (e.g. Middle Yuba River, Yuba River, and North Yuba River); and 3) moving between isolated wetlands or ponds and river or stream environments.

5.3 Study Methods

The study methods consist of the four steps described below.

5.3.1 Step 1 – Create Maps that Include Vegetation Communities, Wildlife Habitats and Project Facilities

YCWA will produce maps at a scale of 1:24,000 that include CWHR habitat types, known protected wildlife habitats (e.g., California spotted owl Protected Activity Centers [PACs] and Home Range Core Areas, northern goshawk PAC) and project facilities. In addition, CNDDDB and USFS species occurrence data for target species will be included.

5.3.2 Step 2 – Compile Project O&M Activities

YCWA will compile a list of Project operations and maintenance activities by facility. In each instance, Project Operations Staff will be consulted to describe the nature and frequency of Project O&M.

5.3.3 Step 3 – Analysis of Habitat and Project O&M

YCWA will use the maps identified in Step 1 to identify areas within the study area in which special-status wildlife habitat and Project O&M overlap.

⁷ The Forest Service and CDFG each have requested that a copy of the GIS maps be provided to them when the maps are available.

5.3.4 Step 4 – Prepare Report

YCWA will prepare a report that includes the following sections: 1) Study Goals and Objectives; 2) Methods and Analysis; 3) Discussion; 4) Conclusions; and 5) Description of Variances from the FERC-approved study proposal, if any.

6.0 Study-Specific Consultation

This study does not require any study-specific consultation.

7.0 Schedule

YCWA anticipates the schedule to complete the study as follows assuming FERC issues its Study Determination by September 16, 2011 and the study is not disputed by a mandatory conditioning agency:

Planning (Step 1)..... November – December 2011
Analysis (Step 2)..... January - July 2012
Report Preparation (Step 3) September 2012

8.0 Consistency of Methodology with Generally Accepted Scientific Practices

The study methods discussed above are consistent with the study methods followed in several other relicensings. The methods presented in this study plan also are consistent with those used in recent relicensings in California.

9.0 Level of Effort and Cost

YCWA estimates the cost to complete this study in 2011 dollars is between \$15,000 and \$20,000.⁸

10.0 References Cited

Bureau of Land Management. 2006. California-BLM Animal Sensitive Species List, Updated September 2006. Available http://www.blm.gov/ca/pdfs/pa_pdfs/biology_pdfs/SensitiveAnimals.pdf. (Accessed: Apr 25, 2007).

California Department of Fish and Game (CDFG). 2005. The Status of Rare, Threatened, and Endangered Animals and Plants of California 2000-2004.

⁸ YCWA's Special-Status Wildlife – California Wildlife Habitat Relationships Study included in its August 2011 Revised Study Plan had an estimate cost range of between \$13,500 and \$18,300. With the modifications required by FERC in its September 30, 2011 Study Determination, the estimated cost range is now \$15,000 to \$20,000.

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