11.11 Iowa Hill Habitat Characterization Study Plan

11.11.1 Pertinent issue questions

This study addresses the following terrestrial resource questions for the proposed Iowa Hill Pumped Storage Development Project, as identified by the Upper American River Project (UARP) Relicensing Terrestrial Resources Technical Working Group (TWG):

- What forms of wildlife habitat would be lost due to the land disturbing activities associated with the construction of the upper reservoir, transmission line, intake structure, and appurtenant facilities?
- What wildlife species are likely to utilize these habitats?
- Would the development adversely affect the habitat of special status wildlife species including valley elderberry longhorn beetle (VELB), northern goshawk, California spotted owl, mule deer, and others?

Information pertaining to these questions will also be generated from associated terrestrial resource study plans developed for the Iowa Hill Project.

11.11.2 Background

The proposed Iowa Hill pumped storage project includes over 200 acres of terrestrial habitats in the vicinity of the reservoir, intake structure, and appurtenant facilities, and approximately two linear miles of proposed transmission line corridor. The Iowa Hill Development would permanently alter a majority of these habitats. Site-specific information regarding wildlife habitat and habitat values is lacking for this area. Such information is required in order to assess impacts to wildlife and to develop appropriate resource measures to compensate for impacts of the Iowa Hill pumped storage project.

11.11.3 Study objectives

The primary objectives of the Habitat Characterization study are: 1) to delineate and characterize existing wildlife habitats in the Project Area; and 2) based on these habitat assessments and an analysis using the California Wildlife Habitat Relationships (CWHR) system, generate a list of wildlife species with the potential to occur in the Project Area. In addition, the study will serve as initial reconnaissance for the wetlands, noxious weeds, special-status plants, and valley elderberry longhorn beetle (VELB) studies, scheduled for spring/summer 2004. Information derived from this study will be used to develop resource measures to compensate for impacts of the Project.

11.11.4 Study area

The study area will include the preliminary project boundary as described in Figures 2 and 14 of the Iowa Hill IIP (SMUD 2003), including the area surrounding the proposed reservoir (Figure 2 in IIP), intake structure, and the preferred alternative transmission line route proposed by the Licensee (Figure 14 in IIP).

11.11.5 Information needed from other studies

Information from the vegetation mapping study will be useful in running CWHR models as part of the Habitat Characterization study. CalVeg types described during vegetation mapping will be converted to CWHR habitat types using CDFG's crosswalk between the two systems (CDFG 1998).

11.11.6 Study methods and schedule

Approximately 50 sampling points will be randomly selected within the study area, distributed among vegetation types observable on aerial photos (see attached figure). Dangerously steep slopes will be excluded from this process. UTM coordinates (NAD83 map datum) will be defined for each sample point and for a series of access points along existing roads. Because GPS units are expected to be unreliable under the existing forest canopy,

compass bearings and distance will be defined (using Pathfinder or ArcGIS software) from these known access points to each sampling point. Field biologists will follow these bearing routes to the vicinity of each point, or use handheld GPS units in areas in which a signal is available. CWHR datasheets and Habitat Elements worksheets will be completed at each sampling point.

Additional sampling points may also be subjectively placed in habitats of particular interest (e.g., wetlands) should they be encountered during fieldwork. At a minimum, any such areas will be photographed, briefly described, and subsequently assessed during the 2004 Iowa Hill wetlands study. In addition, any noxious weeds, special-status plants, and elderberry plants observed during study efforts will be flagged, mapped, and (if possible) their coordinates recorded using a handheld GPS. The locations of elderberry (*Sambucus sp.*) plants will be recorded to support the VELB Study Plan. Additional parameters will be recorded as shown on the attached field data sheet (Attachment 1).

11.11.7 Analysis

Data collected during fieldwork will be transcribed and used to run queries using CWHR software (version 8.0) to generate a list of wildlife species expected to occur in the Iowa Hill project area. In addition, estimates of specific habitat parameters (e.g., canopy closure, dbh) will be compared to standards and guidelines, where available, for special status species (e.g., California spotted owl).

11.11.8 Study Output

Initial study results will be presented to the UARP Plenary Group in early 2004. Ultimately, the results of the study will be incorporated into Exhibit E of the Licensee's application to FERC for a new license for the UARP. The final study output will likely include the issues addressed, objectives, study area, methods, analysis, results, discussion, and conclusions.

11.11.9 Technical Working Group Endorsement

This study plan was approved by the Terrestrial TWG via emails and faxes from the following entities: USFS (03/19/04), USFWS (03/19/04), CDFG (03/15/04) and SMUD. There have been no comments received from any Participant that they could not "live with" the study plan.

The study plan was approved by the Plenary Group on April 7, 2004 without modification. There was no one present at the meeting who objected to the study plan going forward for implementation.

11.11.10 Literature Cited

CDFG (California Department of Fish and Game). 1998. CWHR wildlife habitats crosswalked with CalVeg.

SMUD (Sacramento Municipal Utility District). 2003. Iowa Hill Pumped Storage Development Project Initial Information Package, revision 1. Sacramento, CA.

DRAFT-IOWA HILL HABITAT CHARACTERIZATION DATA SHEET

(Adopted from CNPS Vegetation Rapid Assessment Form and CWHRS Wooded Habitat Sampling Data Sheet; October 20, 2003)

Point #: _____ Air/orthophoto #: _____ Date: _____ Initials of surveyors: _____
Photograph #s: _____

Final vegetation type name:
Alliance_____Association_____

LOCATIONAL/ENVIRONMENTAL DESCRIPTION

UTM field reading: UTM zone: _____ UTME _____
UTMN_____
Are GPS coordinates within stand? Yes / No
Distance (note ft/m) and bearing from access point to sample point location_____
_____
Elevation: **_____ ft/m**
Topography: flat____ concave____ convex____ undulating____ | bottom____ lower____ mid____ upper____ top____
Soil Texture: _____ % Large Rock_____ % Small Rock_____ % Bare/Fines_____
Slope exposure (circle one and/or enter actual °): **NE_____ SE_____ SW_____ NW_____ Flat__ Variable__**
Slope steepness (circle one and enter actual °): **0°__ 1-5° _____ 5-25°_____ > 25°_____ Upland** or **Wetland/Riparian** (circle one)
Site history, stand age, and comments (if known):
_____
_____
_____
_____
_____
Type / level of disturbance:
_____

VEGETATION DESCRIPTION

Field-assessed vegetation alliance name:
_____
Size of stand: <1 acre___ 1-5 acres___ >5 acres___ Adjacent alliances:
_____

Trees:

Standards For Tree Size

CWHR Code	CWHR Size Class	Conifer Crown Diameter	Hardwood Crown Diameter	DBH
1	Seedling tree	N/a	N/a	<1.0"
2	Sapling tree	N/a	<15.0'	1.0"-5.9"
3	Pole tree	<12.0'	15.0'-29.9'	6.0"-10.9"
				11.0"-23.9"
4	Small tree	12.0'-23.9'	30.0'-44.9'	
5	Med/large tree	>or =24.0'	>or=45.0'	>or=24.0"
6	Multi-layered tree	***A distinct layer of size class 5 trees over a distinct layer of size class4 and/or 3 trees, and total tree canopy of the layers > 60% (layers must have > 10.0% canopy cover and distinctive height separation)***		

Standards For Canopy Closure

CWHR Code	CWHR Closure Class	Veg. Canopy Closure
S	Sparse Cover	10.0-24.9%
P	Open Cover	25.0-39.9%
M	Mod. Cover	40.0-59.9%
D	Dense Cover	>60.0%

Uneven-structure = >3 CWHR size classes, or if only 2 classes present, then the classes must skip an intervening class (e.g, 5 and 3 present but not 4) with distinctive height separation. Plots are even-structured if they do not meet uneven-structure definition.

If Tree, list 1-3 dominant overstory spp.:

_____

Stem#	Species	Over/ under	Dbh (0.1 in)	Crown diam (ft.)	Ht. (ft.)	Pt-ctr ¼ quad quad	Stem #	Species	Over/ under	Dbh (0.1 in)	Crown diam (ft.)	Ht. (ft.)	Pt-ctr ¼ quad quad
1							14						
2							15						
3							16						
4							17						
5							18						
6							19						
7							20						
8							21						
9							22						
10							23						
11							24						
12							25						
13							26						

Overall point tree canopy cover (%): _____

Are oaks present (explain #, and size):

_____

Shrubs list 1-3 dominant spp (S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)**:**_____

_____

Overall point shrub canopy cover (%): _____
Overall herbaceous canopy cover (%): _____

OTHER POINT HABITAT CHARACTERISTICS

Presence of dead/downed wood? (explain, # and size): >1"_____ 1-2"_____ 2-4"_____ >4"_____

Snags Present? (explain, # and size):_____

Tree cavities present? (explain, # and size):_____

Denning sites available? (explain):_____

Presence of deer browse species (If yes, ID species):_____

Evidence of current browsing activity (explain):_____

Other important point data/information not captured by the data sheet or incidental wildlife observations (direct, tracks, scat):_____