YUBA COUNTY WATER AGENCY

Yuba River Development Project
FERC Project No. 2246

New Bullards Bar Dam and Reservoir – North Yuba River

Proposed Study Plan

[SECURITY LEVEL: PUBLIC]

April 2011

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Public Information

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April 2011

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GLOSSARY
DEFINITION OF COMMONLY USED TERMS, ACRONYMS, AND ABBREVIATIONS

Term	Definition
A	
A	Ampere
AA	Federal Antiquities Act
ac	acre
ac-ft	acre-feet or acre-foot, the amount of water needed to cover one acre to a depth of one foot (43,560 cubic feet or 325,900 gallons)
ac-ft/yr	acre-feet per year
accretion flow	The incremental flow between two points. Also known as local inflow.
ACHP	Advisory Council on Historic Preservation
ACSR	aluminum conductors steel reinforced
ADA	Americans with Disabilities Act
adit	An almost vertical pipe or short horizontal passage entering a tunnel, either to add water from a conduit, sluice or other water source, or as a maintenance access tunnel (also referred to as a portal)
aestivation	Similar to hibernation, where an animal is dormant during unfavorable summer-like conditions. For example, to survive long periods of drought, some reptiles and amphibians become inactive or "aestivate."
AFRP	Anadromous Fish Restoration Program
afterbay	A reservoir located immediately downstream from a powerhouse, sometimes used to re-regulate flows to the river or stream
AGC	Automatic Generation Control used to support California electric regulation system
AIR	Additional Information Request issued by the Federal Energy Regulatory Commission
AIRFA	American Indian Religious Freedom Act
anabat	An electronic instrument used to detect and record high frequency vocalization of bats
anadromous	Anadromous fish live most of their lives in saltwater and return to freshwater to spawn.
ancillary	Provides added support
APE	Area of Potential Effect, as pertaining to Section 106 of the National Historic Preservation Act
AR	American Rivers
AUM	animal unit months
AW	American Whitewater
B	
BA	Biological Assessment
BAOT	boats at one time
baseload	Generation around-the-clock
Basin Plan	Basin Plans provide the basis for protecting water quality in California. Basin Plans are mandated by both the Federal Clean Water Act and the State Porter-Cologne Water Quality Act. Sections 13240-13247 of Porter-Cologne specify the required contents of a regional basin plan. For a given region, each plan contains 1) water quality objectives to ensure the reasonable protection of beneficial uses and 2) a program of implementation for achieving those objectives.
Bay-Delta	The San Francisco Bay-San Joaquin Delta Estuary
BBS	Breeding Bird Survey
BC	Before Christ
BDAC	Bay-Delta Advisory Committee
BDCP	Bay-Delta Conservation Plan
BEPA	Bald Eagle Protection Act
BLM	United States Department of the Interior, Bureau of Land Management
BLM-S	Bureau of Land Management, sensitive species
BMI	benthic macroinvertebrates
BMP	Best Management Practice
BO	Biological Opinion
BOD	biological oxygen demand
BOR	United States Department of the Interior, Bureau of Reclamation

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Glossary (continued)

Term	Definition
B (continued)	
BP	before present
BVID	Browns Valley Irrigation District
BWD	Brophy Water District
bypass flow	Bypass flows are those flows that are required to be released into a stream, and do not flow through the powerhouse
C	
°C	Centigrade
CAISO	California Independent System Operator
CALFED	Interagency committee with management and regulatory responsibility for Bay-Delta Estuary
CalVeg	Classification and Assessment with Landsat of Visible Ecological Groupings. The Forest Service's classification system of California's existing vegetation communities. Original information was collected using remote sensing techniques along with field verification.
CAS	California Academy of Sciences
CRLF	California red-legged frog
Cal-IPC	California Invasive Plant Council
CalTrans	California Department of Transportation
capital improvement	The construction, installation, or assembly of a new fixed asset, or the significant alteration, expansion, or extension of an existing fixed asset to accommodate a change of purpose.
CCWD	Contra Costa Water District
CD	Compact Disc
CDBAW	California Department of Boating and Waterways
CDEC	California Data Exchange Center
CDF	California Department of Forestry and Fire Protection
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CDPR	California Department of Parks and Recreation
CD-ROM	Compact Disc-Read-Only Memory
CDSOD	California Department of Water Resources, California Division of Safety of Dams
CDWR	California Department of Water Resources
CE	Federal Candidate Endangered Species. A species or subspecies listed as endangered under the California Endangered Species Act
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFBF	California Farm Bureau Federation
CFR	Code of Federal Regulations
cf or ft^3	cubic feet
cfs	cubic feet per second. One cfs equals approximately 1.98 acre-feet per day.
CHRIS	California Historical Resources Information Center
CID	Cordua Irrigation District
CIPS	Commission Issuance Posting System
CL	carapace length
cm	centimeter
CMARP	Comprehensive Monitoring, Assessment, and Research Program
CNDDB	California Natural Diversity Data Base
CNPPA	California Native Plant Protection Act
CNPS	California Native Plant Society
CNPS-1A	Plant presumed by the CNPS to be extinct in California
CNPS-1B	Plant considered by the CNPS as rare or endangered in California and elsewhere
CNPS-2	Plant considered by the CNPS as rare or endangered in California but more common elsewhere
CNPS-3	Plant that requires more information by the CNPS before assigning to other lists – A review list
CNPS-4	Plant considered by the CNPS as plants of limited distribution
Commission	Federal Energy Regulatory Commission; also referred to as FERC
Comprehensive Plans	A comprehensive plan is a plan for the development or generation or other beneficial uses of a river recognized under the Federal Power Act section 10(a)(2)(a).
component	A named data set in an operation model that is a building block for a condition.
Conjunctive use	Conjunctive use of surface and groundwater consists of combining the use of both water sources in order to (1) minimize the undesirable physical, environmental and economical effects of using each and (2) optimize the water demand/supply balance.

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Glossary (continued)

Term	Definition
C (continued)	
Consumptive use of water	Water no longer available for use because it has evaporated, transpired, or has been incorporated into products and crops.
Conceptual design for recreation facilities	A conceptual design is the designer's initial communication to convey proposed design solutions. Conceptual designs for a facility may consist of diagrammatic sketches, bubble diagrams, line diagrams, preliminary floor plans, or renderings. A conceptual design is prepared prior to a site development plan. (Forest Service Handbook 7309.11, Chapter 30.)
condition	The main building block of a scenario, containing the data used by the operation model to simulate the system. At this time, the only condition that is defined by components is 'Turbine Generator'.
Conduit	A pipe, flume or canal used for diverting or moving water from one point to another, usually used when there is no existing streambed or waterway.
Contact List	List of Interested Parties that have provided an e-mail address to the Licensee for distribution of information regarding the Relicensing. Also referred to as Relicensing Contact List.
Control Area	An electric system bounded by interconnection metering and telemetry, capable of controlling generation to maintain its interchange schedule with other control areas and contributing to frequency regulation of the interconnection. A control area operates its AGC on tie-line frequency bias.
CORP	California Outdoor Recreation Plan
CP	California Protected Species. Species designated as protected under the CDFG sport fishing regulations as authorized by the California Code of Regulations, Title 14
CPUC	California Public Utility Commission
CR	California Rare Species. A species or subspecies listed as rare under the California Endangered Species Act
Critical Habitat	Areas of land or water that the United States Fish and Wildlife Service or National Marine Fisheries Service has designated to have the physical or biological features essential to the conservation of a species listed under the federal Endangered Species Act.
CRMP	Cultural Resource Management Plan
CSBP	California Stream Bioassessment Procedure
CSPA	California Sportfishing Protection Alliance
CSC	California Special Concern Species, an administrative designation by CDFG
CT	Federal Candidate Threatened Species. A species or subspecies listed as threatened under the California Endangered Species Act
cu yd	cubic yard
CVHJV	The California Central Valley Habitat Joint Venture
CVP	Federal Central Valley Project
CVPIA	Central Valley Project Improvement Act
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Federal Clean Water Act
CWHR	California Wildlife Habitat Relationships System
CWSC	California Water Services Company
CWT	coded wire tags
D	
DBW	Dam Base Width. The width of the dam at its widest point along the foundation.
DCE	Dam Crest Elevation. The elevation of the lowest point along the crest.
DCW	Dam Crest Width. The width of the dam at the crest.
Dam fish release requirement	The flow that must be released to the stream downstream of the dam; also known as minimum streamflow release requirement or bypass flow.
DH	Dam Height. The height of the dam from the crest (see below) to the stream channel at the downstream toe.
Dam Low Level Outlet Control	The type of gate and/or valve that controls the release from the low level outlet.
Dam Low Level Outlet Type	A description of the low level outlet facilities.
Dam Max Low Level Outlet Capacity	The flow that can be discharged through the low level outlet at the NMWS.
Dam Max Spillway Discharge	The maximum flow the spillway can pass with the water surface at the crest of the dam.
Dam Slope – Upstream Face	The slope of the upstream face of the dam.
Dam Slope – Downstream Face	The slope of the downstream face of the dam.
Dam Spillway Control	The type of device that controls the spillway.
Dam Spillway Crest Elevation	The elevation of the lowest point of the spillway.
Dam Spillway Type	The type of spillway.
Dam Type	A description of the type of dam.
Dam Year Placed in Service	The first calendar year water was impounded behind the dam.

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Glossary (continued)

Term	Definition
D (continued)	
dbh	diameter at breast height
DCMWC	Dry Creek Mutual Water Company
de novo	From the beginning: start fresh.
Decommission	Demolition, dismantling, removal, obliteration and/or disposal of a deteriorated or otherwise unneeded asset or component, including necessary cleanup work. This action eliminates the deferred maintenance needs for the fixed asset. Portions of an asset or component may remain if they do not cause problems nor require maintenance.
DEIR	Draft Environmental Impact Report
DEIS	Draft Environmental Impact Statement
DEM	Digital Elevation Model – The format of the USGS digital elevation data sets containing elevation values that have been primarily derived from the United States Geological Survey topographic map series.
Dependable capacity	The maximum dependable output (in units of power, e.g., MW) of a generator or a group of generators under a combination of adverse hydrologic conditions and high electrical demand.
Development	The Project facilities situated immediately upstream of a powerhouse, which are not part of another development.
Discharge	water released from a dam
distribution system	The substations, transformers and lines that convey electricity from high-power transmission lines to the consumer. Usually 115 kV and lower voltage.
Diversion dam	Generally a small dam with minimal storage and a primary purpose of routing a portion of upstream flow into a diversion conduit.
DLA	Draft License Application
DO	dissolved oxygen
DOC	dissolved organic carbon
DPS	distinct population segment
Draft EA	Draft Environmental Assessment
DEIR	Draft Environmental Impact Report
DRP	Dispute Review Panel
DSS	The United States Army Corps of Engineers' Hydrologic Engineering Center Data Storage System is a database system designed to store and retrieve scientific data.
DVD	Digital Versatile Disk
E	
EA	Environmental Assessment
EAP	Emergency Action Plan
ECPA	Electric Consumers Protection Act
EDD	California Employment Development Department
EDR	Englebright Dam Reach
EFH	Essential Fish Habitat
EIA	Energy Information Administration
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
El.	Elevation
endemic (adj.) endemism (noun)	Restricted to a certain locality or region. Indigenous. Native.
EPA	United States Environmental Protection Agency
EPT	Orders of benthic insects: Ephemeroptera, Plecoptera, and Tricoptera.
ESA	Federal Endangered Species Act
ESU	evolutionarily significant unit
EVC	existing visual condition
F	
°F	Fahrenheit
FAC	Federal Advisory Committee
FACA	Federal Advisory Committee Act
FARM	Framework for Archaeological Research and Management of Forests of the North Central Sierra Nevada
FC	Federal Candidate Species. A species or subspecies currently proposed as a candidate for listing under the ESA
FE	Federal Endangered Species. A species or subspecies listed as endangered under the Federal Endangered Species Act
FEA	Final Environmental Assessment

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Glossary (continued)

Term	Definition
F (continued)	
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FEPD	A federally-listed endangered species currently proposed for delisting from the ESA
FERC	Federal Energy Regulatory Commission
FERC determination	A binding decision made by FERC during the relicensing process
FERC Project Boundary	The area Licensee uses for normal Project operations and maintenance, and is shown on Exhibits G, J, and K of the current license.
FGDC	Federal Geographic Data Committee: promotes the coordinated development, use, sharing, and dissemination of geographic data.
FHSA	Federal Historic Sites Act
FHWA	Federal Highway Administration
fishway	A structure on or around natural or artificial barriers to facilitate fish migration, such as a fish ladder.
fixed asset	A constructed feature such as a building, road, campground, trail, or other item of infrastructure.
fixed asset component	A subsystem, major item of equipment, or other portion of a fixed asset. Examples of components include: roof for a building, deck for a bridge, pavement for a road, interpretive kiosk at a viewing area, site furnishings (tables, grills, etc.) at a campground.
flashboards	Removable boards installed seasonally in reservoir spillways to temporarily increase storage capacity
flood elevation	The reservoir elevation at which the plant's reservoir spills.
FLPMA	Federal Land Policy and Management Act
flume	A lined structure, commonly made of wood, metal or concrete, used for conveyance of water, usually where no streambed exists or the topography is not suitable for a canal or tunnel.
FMP	Fire Management Plan
FMU	Fire Management Unit
FODC	Friends of Deer Creek
forebay	A reservoir upstream from the powerhouse from which water is drawn into a tunnel or penstock for delivery to the powerhouse
Forest Service	United States Department of Agriculture, Forest Service
FOW	forced oil and water cooled
FP	Fully Protected. A species or subspecies designated as "fully protected" under the California Department of Fish and Game Code
FPA	Federal Power Act
FPD	Federal Proposed Delisting. A species or subspecies proposed for listing as endangered under the federal Endangered Species Act.
FPE	Federal Proposed Endangered. A species proposed for listing as "endangered" under the federal Endangered Species Act.
Fps	feet per second
FPT	Federal Proposed Threatened. A species or subspecies proposed for listing as threatened under the federal Endangered Species Act.
Frequency Regulation	The ability of a Control Area to assist the interconnected system in maintaining scheduled frequency.
FRRRPA	The Forest and Rangeland Renewable Resources Planning Act
FSC	Federal Species of Concern. An administrative designation by United States Fish and Wildlife Service (former category 2 species)
FSM	Forest Service Manual
FSS	Forest Service Sensitive. A species or subspecies designated as "sensitive" by the Forest Service
FSV	Species designated by the Sierra Nevada Framework as moderate to high vulnerability and species of concern.
FT	Federal Threatened Species. A species or subspecies listed as threatened under the Federal Endangered Species Act
Ft	foot or feet
FWCA	Fish and Wildlife Coordination Act
G	
G	Giga
g	Gram
GAP	Gap Analysis Program. United States Geological Survey and UC Santa Barbara's vegetation, land cover, and potential wildlife habitat map(s) for California.
Generator	A machine, powered by a turbine, that converts the rotating mechanical energy into electrical energy.

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Glossary (continued)

Term	Definition
G (continued)	
GIS	Geographic Information System
GMP	General Management Plan
gpd	gallons per day
gpm	gallons per minute
GPS	Global Positioning System
GRCD	Grasslands Resource Conservation District
grizzly	A wide-opening grating across the entry to a water conduit, for screening of large objects such as logs.
Gross head	The difference between the headwater elevation and the tailwater elevation.
GWh	gigawatt hour (equals one million kilowatt hours)
H	
H	Horizontal
"H"-frame structure	A wood pole transmission structure that consists of two wood poles with a horizontal cross arm above the conductor
HA	Commercially or recreationally harvested species; non-protected species.
HABS	Historic American Building Survey
HABTAT	United States Fish and Wildlife Service Instream Flow Incremental Methodology simulation model
HAER	Historic American Engineering Record
HCP	Habitat Conservation Plan
head	The vertical height of water that represents potential energy.
Headwater	The upper tributaries that form the source of a stream
head loss	The amount of head that is lost (to friction, etc.) between the headwater (reservoir/forebay/intake) and the tailwater.
HEC	Hydrologic Engineering Center of the United States Army Corps of Engineers
HEC-ResSim	United States Army Corps of Engineers – Hydrologic Engineering Center Reservoir Simulation model, Version 3.0. Also referred to as ResSim.
HEP	Habitat Evaluation Procedures
HIC	Hallwood Irrigation Company
HLCTS	Hydropower License Compliance Tracking System
hp	Horsepower
HPMP	Historic Properties Management Plan
hr	Hour
HREZ	Heritage Resource Emphasis Zones
HRMA	Heritage Resource Management Area
HSC	Habitat Suitability Criteria
HSI	Habitat Suitability Indices
HSPH	Hydrologic Simulation Program—Fortran
HU	Hydro unit, numbers assigned by California's regional water quality control boards.
HUC	Hydrologic unit codes developed by the Water Resources Council corresponding to hierarchal classification of hydrologic drainage basins in the United States. Each hydrologic unit is identified by a unique HUC.
HVAC	Heating Ventilation and Air Conditioning System
Hz	Hertz (cycles per second)
I	
ICD	Initial Consultation Document, also known as Pre-Application Document
IFIM	United States Fish and Wildlife Service, Instream Flow Incremental Methodology
IHA	Indicators of Hydrologic Alteration
ILP	Integrated Licensing Process
in	Inch
inflow	The water entering a reservoir.
Initial License	The first license for a Project issued by Federal Energy Regulatory Commission.
Installed capacity	Installed capacity refers to the maximum amount of electric energy, in megawatts, that can be produced by all of a dam's turbines operating to their maximum capacity for a given time. No power station ever produces at maximum capacity over a sustained period of time due to maintenance needs, lack of demand or, in the case of hydro dams, lack of water. Also called nameplate capacity or maximum capacity.
Interchange	Electric power that flows from one entity to another.

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Glossary (continued)

Term	Definition
I (continued)	
Interested Parties	All governmental agencies, non-governmental organizations, Native American tribes, and unaffiliated members of the public who either (1) routinely participate in Federal Energy Regulatory Commission relicensings in California or (2) have advised the Licensee that they wish to become involved in one or more of the relicensing proceedings. The Licensee is considered to be an Interested Party.
introgression	The introduction of genes from one species into the gene pool of another species.
Inverted siphon	A pressurized pipe section of conduit that crosses a stream channel or ravine.
ISO	Independent System Operator
ITA	Indian Trust Asset
J	
JPS	Jimmerson-Gasper-Surface association, a soils classification
K	
kg	kilogram: 1,000 grams
kg/day	kilograms per day
kg/ha	kilograms per hectare
kg/yr	kilograms per year
km	kilometer: 1,000 meters
kV	kilovolt: 1,000 volts
kVA	kilovolt amperes
KVP	Key View Point
kW	kilowatt: 1,000 watts
kWh	kilowatt-hour: 1,000 watt hours
L	
L	liter
lb	pound
LCMMP	Land Coordinated Mapping and Monitoring Program
Lead Agency	A lead agency is the agency responsible for ensuring that a course-of-action, i.e., project, complies with the California Environmental Quality Act and/or the National Environmental Policy Act.
Lentic	Related to or living in standing water.
LEO	Law Enforcement Officer
License Application	Application for a new license; submitted to the Federal Energy Regulatory Commission no less than two years in advance of expiration of an existing license.
Licensee	Yuba County Water Agency
license term	The period for which a license is issued by the Federal Energy Regulatory Commission. Usually between 30 and 50 years.
LiDAR	Light Detection and Ranging. An optical remote sensing technology that measures properties of scattered light to find range and/or other information of a distant target.
load shapes	The daily schedule of power pricing and the hour duration of each price.
local inflow	The incremental inflow between two plants (also known as accretion flows).
LOP	limited operating periods
lotic	Related to or living in flowing water.
LRMP	Land and Resource Management Plan
LWD	large woody debris
M	
µ	micro
µg	microgram
µg/L	micrograms per liter (equals parts per billion, or ppb)
µmho/cm	micromhos per centimeter, a measurement of electrical conductivity
µS	microsiemens, a measurement of electrical conductivity
M	mega
m	meter (if the letter is used as a unit on its own)
m	milli (if the letter is placed in front of another unit)
mainstem powerhouse	A plant located on the main stream that runs through the system. Not a plant on a side or tributary stream.
maximum penstock velocity	The maximum velocity in the penstock at the "installed capacity" as defined above. This will occur at the smallest penstock diameter.

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Glossary (continued)

Term	Definition
M (continued)	
mbf	million board feet
MBTA	Migratory Bird Treaty Act
MCA/T	mandatory conditioning agencies/tribes
MCE	maximum credible earthquake
MCL	maximum contaminant level
Meeting Participant	A Relicensing Participant who attends a specific meeting. Meeting Participants are different for each meeting.
Member Unit	One of eight water users who participated in the Yuba Accord with YCWA.
metadata	"Data about data" - Describe the content, quality, condition, purpose and other characteristics of data.
mg	milligram
mg/L	milligrams per liter (equals parts per million, or ppm)
mgC/m^2	milligrams of carbon per square meter
mi	mile
mills/kWh	0.1 cent per kilowatt hour
minimum daily average flow	A requirement indicating the minimum flow of water that must be maintained at a measurement location when instantaneous flow measurements are averaged on a daily basis.
minimum instantaneous flow	A requirement indicating the minimum flow of water that must be maintained at a measurement location at any point in time.
minimum instream flow	A requirement indicating the minimum flow within a Project-affected reach, at a fixed measurement location. A minimum instream flow can be defined as an instantaneous flow or a time period-averaged flow.
MIR	minimal implementation requirement, a Forest Service system
MIS	A Forest Service Management Indicator Species
mm	millimeters
MNBMC	Migratory Bird of Management Concern, a Forest Service classification
MOA	memorandum of agreement
morphometric	measurement of the external form (size and shape) of an object
MOU	memorandum of understanding
MPN	most probable number
mps	meters per second
MSCS	Multi-Species Conservation Strategy
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
must-run	Energy or ancillary services necessary to maintain system reliability
MVA	megavolt-ampere
MVZ	Museum of Vertebrate Zoology
MW	megawatt: 1,000 killowatts
MWh	megawatt-hours: 1,000 killowatt-hours
mya	million years ago
MYR	Middle Yuba River
N	
n	nano
NAD 83	North American Datum 1983 – Based on a definition of the size and shape of the earth. It is the datum for map projections and coordinates within the United States and throughout North America.
NAGPRA	Native American Graves Protection and Reparation Act
NADV	North American Vertical Datum
NAHC	California Native American Heritage Commission
NAIP	National Agriculture Imagery Program
Narrows 1 Powerhouse	PG&E's powerhouse located on the south side of the Yuba River below Englebright Dam.
Narrows 2 Powerhouse	YCWA's powerhouse located on the north side of the Yuba River below Englebright Dam.
natal	Of, relating to, or present at birth.
natural inflow	The flow that a point in the system would have received if there were no upstream flow regulation in the system. This flow is equal to the sum of all upstream accretion inflows. Also known as unimpaired or unregulated flows.
NCCP	Natural Conservation Plan
NCIC	North Central Information Center
NDA	no data available
NEPA	National Environmental Policy Act
NEPAct	National Energy Policy Act

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Glossary (continued)

Term	Definition
N (continued)	
new construction	The erection, construction, installation, or assembly of a new fixed asset.
New License	A license issued for a Project for which the Federal Energy Regulatory Commission has issued an initial license
NFMA	National Forest Management Act
NFS	National Forest Service
ng	nanogram
NGO	Non-Governmental Organizations
NGVD	National Geodetic Vertical Datum
NHA	National Hydropower Association
NHI	Natural Heritage Institute
NHPA	National Historic Preservation Act
NID	Nevada Irrigation District
NJE	Nanny-Jacksback-Esro association, a soil classification
NLT	No later than
NMFS	Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NMWS	Normal Maximum Water Surface elevation (applies to reservoirs and impoundments)
NOAA	Department of Commerce, National Oceanic and Atmospheric Administration
normal operating capacity	The maximum MW output of a generator or group of generators under normal maximum head and flow conditions
NOI	Notice of Intent
NPDES	National Pollution Discharge Elimination System
NPN	Neuns-Ponto-Neer association, a soils classification
NPS	National Park Service
NRCS	Natural Resource Conservation Act
NRHP	National Register of Historical Places
NRI	Nationwide Rivers Inventory
NTU	nephelometric turbidity unit
NWI	National Wetlands Inventory
NWIS	United States Geological Survey's National Water Information System
NWS	National Weather Service
NYI	North Yuba Index
NYR	North Yuba River
O	
O&M	Operation and maintenance
OEHHA	California's Office of Environmental Health Hazard Assessment
OEP	Federal Energy Regulatory Commission Office of Energy Projects (Formerly Office of Hydropower Licensing)
OGM	Obie-Goulder-Mounthat association, a soils classification
OHP	State Office of Historic Preservation
OHV	Off Highway Vehicle
Operation and maintenance	The utilization of fixed Project assets for their intended use, as well as any ongoing, repetitive tasks associated with keeping fixed Project assets in acceptable condition, including safety inspections.
ORV	Off-road vehicle ***or*** Outstanding Remarkable Views
oz	ounce
P	
P	phosphorus
PA	Programmatic Agreement
PAC	Protected activity center
PAD	Pre-Application Document
PAD Questionnaire	Questionnaire developed and circulated by Yuba County Water Agency to gather existing, relevant and reasonably available information for inclusion in the Yuba River Development Project Pre-Application Document.
PAOT	people at one time
PCT	Pacific Crest Trail
PDF	Portable document format
peaking	Operation of generating facilities to meet maximum instantaneous electrical demands
penstock	An inclined pipe through which water flows from a forebay or tunnel to the powerhouse turbine

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Glossary (continued)

Term	Definition
P (continued)	
penstock capacity	The maximum design flow in the penstock.
penstock connections	The type of connections in the penstock both within the cans themselves and between cans.
penstock diameter	The nominal diameter of the penstock.
penstock length	The length of the penstock (see definition for penstock, above) from the tunnel or upstream inlet to the turbine shut off valve
penstock supports	The type of supports for the penstock.
penstock type	A description of the type of pipe and whether the pipe is surface or buried.
pf	power factor
PFMC	Pacific Fishery Management Council
PG&E	Pacific Gas and Electric Company
PH	Powerhouse
pH	The measure of the acidity or alkalinity of a substance or liquid
Powerhouse operation type	A reference to the manner in which water is scheduled though a powerhouse. At this time there are six operating types: Diversion Powerhouse – A powerhouse that utilizes upstream diversions with minimal storage. Fill and Spill – A powerhouse that peaks with the loadshape but gives priority to the upstream powerhouse and will spill in order for the upstream powerhouse to follow the loadshape as closely as possible. Strictly Peaking - A powerhouse that peaks its discharge. Attempts to schedule water in highest value periods of day. Can instantaneously (in a 15-minute increment) change load. Peaking with Ramp Rates – A powerhouse where the water discharge still closely follows the load shape (powerhouse will Peak); however, the powerhouse is constrained by ramping rates. Pure Run of River – A powerhouse where inflows are equal to outflows on an instantaneous basis. Re-regulating – A powerhouse designed to regulate peaked discharge from upstream powerhouses into smoother discharges. This powerhouse releases constant outflows for the whole day. Re-regulating powerhouses may or may not be constrained by ramping rates.
powerhouse maximum capability	Maximum megawatt output generated by the specific powerhouse. For powerhouses with two or more units, this value is the maximum simultaneous total output generated.
PHABSIM	Physical Habitat Simulation Models
Plan	A common term for a County's general plan.
PLP	Preliminary Licensing Proposal
PM&E	Protection, Mitigation & Enhancement
PM&E measure	A Project facility, operation or management activity undertaken for the purpose of protecting or mitigating impacts that would result from continued Project operation and maintenance, or for the purpose of enhancing resources that would be affected by continued Project operation and maintenance.
PMF	Probable Maximum Flood
PMP	Probable Maximum Precipitation
PNF	Plumas National Forest
POAOR	California Public Opinion and Attitudes in Outdoor Recreation Survey
Posted File	A file placed on the Licensee's Relicensing Website.
power development	See "development"
Power Factor	The ratio of actual power to apparent power. Power factor is the cosine of the phase angle difference between the current and voltage of a given phase. Unity power factor exists when the voltage and current are in phase
ppb	parts per billion
PPL	Pit-Pastolla-Lasvar association, a soils classification
ppm	parts per million, equals mg/L
Program	CALFED Bay-Delta Program
Project	YCWA's Yuba River Development Project, FERC Project No. 2246. Specifically, the Project facilities and features identified in the existing FERC license.
Project Area	The area within the FERC Project Boundary and the land immediately surrounding the FERC Project Boundary (i.e., within about 0.25 mile of the FERC Project Boundary) and including Project-affected reaches between facilities and downstream to the next major water controlling feature or structure.
Project Drainage Basins	Combination of the Middle Yuba River, North Yuba River and Yuba River drainage basins.
Project Region	The area surrounding the Project in the order of a county or national forest.
Project Roads	Roads within Project boundary and constructed for Project purposes and necessary for Project operation and maintenance

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Glossary (continued)

Term	Definition
P (continued)	
Project Vicinity	The area surrounding the Project on the order of a United States Geological Survey 1:24,000 topographic quadrangle.
Project Viewshed	The area from which Project features are visible. The land base from which the Project may be seen.
Project Works	All of the infrastructure associated with the operations of the Project
PSEA	Pacific Service Employees Association
psi	pounds per square inch
PSR	Pacific Southwest Region of the Forest Service
PURPA	Public Utilities Regulatory Policies Act
PWC	Personal water craft
PWD	Persons with Disabilities
PX	California Power Exchange
Q	
QA/QC	Quality Assurance/Quality Control
QF	A qualifying facility, a cogenerator or small power producer that sells its excess power to a utility
quad	Quadrangle
Qualifying Plans	A specific list of comprehensive plans submitted to FERC by California agencies.
R	
ramping	The act of increasing or decreasing stream flows from a powerhouse, dam or diversion structure
ramping rates	The rate of water discharge from a powerhouse, dam or diversion structure, prescribed by the License or other regulatory-driven rule.
ramping rate curve	The river flow vs. stage curve relationship at the point where ramping rate compliance is measured.
RCA	Riparian Conservation Areas as defined by Tahoe National Forest
RCO	Riparian Conservation Objectives as defined by Tahoe National Forest
RD	Recreation Day, which equals a visit by a person to a site for recreation purposes during any portion of a 24-hour period
Reach	A stretch of stream defined for the purposes of communication, usually defined between readily identifiable endpoints (such as structures or stream confluence).
REC	Sierra Foothill Research and Extension Center
Regulated hydrology	The hydrology of Project-affected streams subsequent to construction of the Project. The hydrology of any stream that is augmented, constrained, or otherwise manipulated by upstream man-made structures.
Relicensing	The process of acquiring a new license for a Project that has an existing license from the Federal Energy Regulatory Commission.
Relicensing Contact List	List of Interested Parties that have provided to YCWA an e-mail address to which YCWA may forward information regarding the Relicensing. Also referred to as Contact List.
Relicensing Participants	Interested Parties, which includes YCWA, that routinely actively take part (i.e., attend meetings/workshops and make filings) in the Relicensing proceedings
relicensing proceeding	Relicensing of YCWA's Yuba River Development. Sometimes referred to as the Relicensing.
reservoir	The water retained by a dam. Also referred to as headwater, storage, forebay, or headpond.
reservoir drainage area	The area that drains into the reservoir.
reservoir elevation	The water surface elevation of a reservoir at a given point in time
reservoir gross storage	Reservoir storage at maximum normal water surface elevation.
reservoir length	The distance between the two most distant points on the reservoir shore at normal maximum water surface elevation.
reservoir maximum storage capacity	The gross volume of water that can be stored in the reservoir.
reservoir NMWS elevation	Normal Maximum Water Surface - The elevation of the lowest spill crest if uncontrolled, the top of the gates for gates at the top of the dam.
reservoir surface area	The surface area of the reservoir at the normal maximum water surface elevation.
reservoir storage curve	A curve that defines a reservoir's volume in acre-ft at various surface elevations.
reservoir usable capacity	A volume measurement of the amount of water that can be stored for generation, down to a minimum level
reservoir width	The maximum distance between the two most distant points on the reservoir shore at normal maximum water surface elevation taken at a right angle to the line at reservoir length.
residence time	The period of time water remains in a reservoir.
ResSim	United States Army Corps of Engineers - Hydrologic Engineering Center (USACE-HEC) Reservoir Simulation model, Version 3.0. Also known as HEC-ResSim.
Responsible Agency	A responsible agency is a public agency with discretionary approval authority over a portion of a project that is subject to the California Environmental Quality Act.

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Glossary (continued)

Term	Definition
R (continued)	
RIMS	Records & Information Management System
riparian	Riparian applies to the vegetation zone and other biological resources adjacent to and hydrologically affected by neighboring riverine (lotic) and reservoir (lentic) water bodies.
RM	River mile as measured along the river course, from downstream to upstream, often beginning at a downstream confluence with another river reach.
RMA	Resource Management Area, a Bureau of Land Management term
RMP	Resource Management Plan, a Bureau of Land Management term
RMT	Yuba Accord's River Management Team
RNA/ACEC	Research Natural Area/Area of Critical Environmental Concern
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
Rosgen classification	The Rosgen classification system is a widely-used method for classifying streams and rivers based on common patterns of channel formation (morphology). The patterns are preferably observed from physical measurements.
ROW	Right-of-way
rpm	revolutions per minute
RST	Rotary Screw Traps
RTD	resistance temperature detector
run-of-the-river	A hydro project that uses the flow of a stream with little or no reservoir capacity for storing water
RV	recreational vehicle
RVD	Recreation Visitor Days
RWD	Ramirez Water District
RWQCB	Regional Water Quality Control Board
S	
salmonids	Any member of the taxonomic family Salmonidae, which includes all species of salmon, trout, char, whitefish, and grayling.
SCE	State candidate endangered. Species is a candidate for listing under the California Endangered Species Act, as endangered.
SCT	State candidate threatened. Species is a candidate for listing under the California Endangered Species Act, as threatened.
SCD	State candidate for delisting. Species is a candidate for delisting under the California Endangered Species Act.
SCADA	Supervisory Control And Data Acquisition system
scenario	A collection of settings that constitutes a HEC-ResSim operation model run. Output data for a run are referenced by the scenario name.
SCORP	State Comprehensive Outdoor Recreation Plan
SD1	Scoping Document 1: A document issued by the Federal Energy Regulatory Commission summarizing the relicensing process for a Project; generally issued following the first public meeting after the NOI.
SD2	Scoping Document 2: Within 45 days following the deadline for filing of comments on Scoping Document 1, the Federal Energy Regulatory Commission staff shall, if necessary, issue Scoping Document 2 to address comments received regarding Scoping Document 1.
SE	State Endangered. A species or subspecies listed as endangered under the California Endangered Species Act.
Secchi Disc	A method of measuring surface water transparency in a reservoir
Section 106	Refers to section 106 of the National Historic Preservation Act
Section 401 Certification	Water quality certification issued by the State Water Resource Control Board, the California agency responsible for administering Section 401 of the Clean Water Act
Section 7 Consultation	The required formal consultation required under the Endangered Species Act between the Licensee and the United States Fish and Wildlife Service and/or the National Marine Fisheries Service.
SFP	State fully protected
SFPP	South Feather Power Project
SFREC	Sierra Foothill Research and Extension Center
SFWPA	South Feather Water and Power Agency
SHPO	California Department of Parks and Recreation, Office of Historic Preservation, State Historic Preservation Officer
SL	standard length
Smartville	In 2008, the people of this community petitioned to have the name changed to Smartsville, with an 's" in the middle of the name. However, the USGS gage refers to the former spelling of the community name. Therefore in this document, the community is referred to as such.

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Glossary (continued)

Term	Definition
S (continued)	
SMS	United States Fish and Wildlife Service, Scenery Management System
SMZ	Streamside Management Zone as defined by Tahoe National Forest
SNEP	Sierra Nevada Ecosystem Project
SNFMISA	Sierra Nevada Forest Management Indicator Species Amendment
SNFPA	Sierra Nevada Forest Plan Amendment
SNTEMP	The United States Fish and Wildlife Service's Stream Network Temperature Model
SNYLF	Sierra Nevada yellow-legged frog
SOHA	spotted owl habitat areas
Special-Status Species	Special status species or subspecies are listed under the California Endangered Species Act, federal Endangered Species Act, resource agency, or resource trustee, as candidates for endangered or threatened status, species of special concern, sensitive species, watch list species, management indicator species, or rare species.
Spill	Water that passes over a spillway or dam without being utilized for power generation.
Spillway	A constructed passage for releasing surplus water from a reservoir or release water, not used for power generation, as otherwise necessary for safe project operation
spillway capacity curve	A curve that defines the magnitude of spill, in cubic feet per second, for the spillway at given reservoir elevations.
SPT	sediment pass-through
sq ft or ft^2	square foot
sq mi or mi^2	square mile
SR	State Rare. A species or subspecies listed as rare under the California Environmental Quality Act.
SRMA	Sierra Resource Management Area
SRMP	Sierra Resource Management Plan
SRWP	Sacramento River Watershed Program
ST	State Threatened. A species or subspecies listed as threatened under the California Environmental Quality Act.
Stage	A water surface elevation based on a local datum
State	State of California
station use	Energy used to operate the generating facility's auxiliary equipment
STATSGO	State Soil Geographic Database
stoplogs	Removable logs installed seasonally in reservoir spillways to temporarily increase storage capacity. Also known as "flashboards".
Storage-area-elevation curve	A rating curve that defines reservoir storage and water surface area as a function of the water surface elevation
STORET	The United States Environmental Protection Agency's computerized water quality data storage and retrieval system.
Study Area	The geographic area covered by a specific study
Study Plan	The aggregate of all study descriptions
Study Proposal	A single study, as well as the aggregate of all studies performed in support of the relicensing.
su	Standard units; units of measuring PH
sub-basin	An area drained by a stream and all its tributaries that is contained within a larger basin or watershed
SUP	Special Use Permit issued by the Forest Service
SWDU	Statement of Water Diversion and Use
switching center	The main control center for the development. The switching center is responsible for operation of the development's automatic, semiautomatic and manual powerhouses.
switchyard	A facility where electricity from the electrical generator is transferred to the electric grid
SWP	State Water Project
SWRCB	State Water Resources Control Board
synthesized hydrology	The calculated estimate of flow (not measured).
SYR	South Yuba River
SYRCL	South Yuba River Citizens League
system operational losses	The water power lost during regular operation of the reservoir and hydropower system.
SYWD	South Yuba Water District
T	
tailrace	Channel through which water is discharged from the powerhouse turbines
tailwater curve	A curve that defines the tailwater elevation at the range of powerhouse flows.
tailwater elevation	The elevation where all energy from the water passing the turbine had been extracted. (Can be the turbine centerline or the river surface elevation at the point of powerhouse discharge)

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Glossary (continued)

Term	Definition
T (continued)	
taxa	Plural form of taxon.
taxon	A term used in animal and plant classification. One or more organisms that are classified as being members of the same group, related to each other.
TCP	Traditional Cultural Property
TDS	total dissolved solids
T&E	Threatened and Endangered species as listed by either the Federal Endangered Species Act or the California Endangered Species Act.
thalweg	The lowest elevation within the cross-section of a natural or artificial water conveyance channel
THP	Timber Harvest Plan
TLP	Traditional Licensing Procedure as defined by Federal Energy Regulatory Commission regulations
TMDL	total maximum daily load
TN	total nitrogen
TNC	The Nature Conservancy
TNF	Tahoe National Forest
TOC	total organic carbon
transformer	An electrical device which modifies the voltage and current relationship of a power source.
trash rack	A mechanism, found on a dam or intake structure, which clears the water of debris before the water passes through the structure
TRP	Traditional Relicensing Procedure as defined by Federal Energy Regulatory Commission regulations
TSS	total suspended solids
tunnel	An underground or underwater passageway
tunnel capacity	The maximum design flow in the tunnel.
tunnel diameter	The nominal design size of the tunnel.
tunnel length	The length of the tunnel from the upstream portal to the downstream portal.
tunnel lining	The type of lining in the tunnel, if any.
tunnel type	Either pressure or free flow.
turbine	A machine that converts the energy of moving water into the mechanical energy of rotation. This energy is then used to turn an electrical generator or other device.
TWD	tailwater depression unit
U	
UC Davis	University of California, Davis
unimpaired hydrology	Synthesized hydrology of Project-affected streams with no developments. An estimate.
Unit	A term referring to the combined turbine-generator machine.
US	United States
USACE	United States Department of Defense, Army Corps of Engineers
USBIA	United States Department of Interior, Bureau of Indian Affairs
USBLM	United States Department of Interior, Bureau of Land Management
USBR	United States Department of Interior, Bureau of Reclamation
USC	United States Code
USDA	United States Department of Agriculture
USDOC	United States Department of Commerce
USDOD	United States Department of Defense
USDOI	United States Department of Interior
USFWS	United States Department of Interior, Fish and Wildlife Service
USGS	United States Department of Interior, Geological Survey
UTM	Universal Transverse Mercator – The map projection upon which the UTM Coordinate System is based.
UYRSP	The Upper Yuba River Studies Program
V	
V	volts
VELB	valley elderberry longhorn beetle
VFW	Veterans of Foreign Wars
VMS	A Forest Service Visual Management System
VQO	Visual Quality Objectives, a Forest Service visual classification system
VRM	Visual Resource Management
W	
W	watt

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Glossary (continued)

Term	Definition
W (continued)	
Watch List	A list prepared by an individual National Forest Land Resource Management Plan of plants and animal species that are locally rare (as opposed to declining throughout their range) and are of public concern, occur as disjunct populations, are newly described taxa, or lacking sufficient information on population size, treats, trends or distribution. These species are not on the federal special status species list.
Water quality certification	Issued by the State Water Resources Control Board in California, but required by the federal Clean Water Act, Section 401 water quality certification is required for any permit or license issued by a federal agency for any activity that may result in a discharge into waters of the state to ensure that the proposed project will not violate state water quality standards.
water withdrawals	Water that is withdrawn from the reservoir, not available for energy generation, which is lost from the system. Withdrawals can be either positive or negative.
WBWG	Bat species designated by the Western Bat Working Group as High Priority because they are imperiled or at high risk of imperilment
Whitewater Classification System	**Class I:** (Easy) Moving water with small disturbances on the surface and a few small waves. There is little to no danger to swimmers. **Class II:** (Novice/Beginner) Faster moving water with easily avoided rocks, holes, and waves. Danger to swimmers is still slight but care must be taken. **Class III:** (Intermediate) Fast moving water containing various rocks, holes, currents, and waves that require skillful maneuvering to avoid. Swimmers could be at risk and may require help. **Class IV:** (Advanced) Strong rapids, large waves, big holes, unpredictable currents, and dangerous obstructions requiring multiple maneuvers to get through or around. Swimmers are at risk and will require help to be rescued. **Class V:** (Expert) All of the characteristics of Class IV with the added danger of being longer and containing more continuous features that may not be avoided. There is serious risk to swimmers and others may be of no help. **Class VI:** (Unrunnable) Only a team of experts who carefully plan every aspect of this expedition would have hope of surviving these rivers and rapids.
WPT	western pond turtle
WSEL	water surface elevation
WSRA	Wild and Scenic Rivers Act
WUA	Weighted Usable Area
WWD	Wheatland Water District
WY	water year
X	
Y	
y^3	Cubic yard
ya	years ago
YCWA	Yuba County Water Agency
yd	yard
YOY	young-of-the-year
Yuba Accord	Adopted in 2008, the Yuba Accord consists of three agreements between Yuba County Water Agency and others to 1) increase Yuba County Water Agency's contribution to flows in the Lower Yuba River for fishery enhancement; 2) formalize conjunctive use practices in the Yuba County Water Agency's service area to help increase the volume of water available to increase the flows; 3) authorizes Yuba County Water Agency to sell the water, once it's downstream, to the CALFED Environmental Water Account and others; and 4) amends the YCWA and PG&E's power purchase contract.
Z	

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SECTION 1
INTRODUCTION

On November 5, 2010, pursuant to Section (§) 5.6 of Title 18 of the Code of Federal Regulations (CFR) and 18 CFR § 5.5, the Yuba County Water Agency's (YCWA or Licensee) filed with the Federal Energy Regulatory Commission (FERC) a Notice of Intent (NOI) to file an application (Major Project – Existing Dam) for a new license for the Yuba River Development Project, FERC Project No. 2246 (Project). YCWA is the existing licensee, current owner and operator of the Project. The initial license for the Project was issued by the Federal Power Commission, FERC's predecessor, to YCWA on May 16, 1963, effective on May 1, 1963. The Federal Power Commission's May 6, 1966, Order Amending License changed the license's effective date to May 1, 1966, for a term ending on April 30, 2016.

The NOI stated YCWA's intent to file the application in conformance with 18 CFR, Chapter 1, Subchapter B, Part 5, which is commonly referred to as FERC's Integrated Licensing Process, or ILP.

YCWA files with FERC this Proposed Study Plan pursuant to 18 CFR § 5.11.

This section of the Proposed Study Plan provides: 1) a brief description of YCWA's Project; 2) a summary of activities YCWA and others have taken to date to develop an application for a new license for the Project (relicensing); and 3) a description of the contents of this Proposed Study Plan.

1.1 Project Description

The Project is located in Yuba, Sierra, and Nevada counties, California, on the main stems of the Yuba River, the North Yuba River, and the Middle Yuba River, and on Oregon Creek, a tributary to the Middle Yuba River. A portion of the FERC Project Boundary[1] is located on public land managed by the United States Department of Agriculture, Forest Service, as part of the Plumas and Tahoe national forests. The Project consists of three developments - New Colgate, New Bullards Minimum Flow, and Narrows 2 - whose principal works include:

- 1 dam and associated storage reservoir - New Bullards Bar
- 2 diversion dams - Our House and Log Cabin
- 2 diversion tunnels - Lohman Ridge and Camptonville
- 2 underground power tunnels - New Colgate and Narrows 2
- 1 aboveground penstock - New Colgate
- 3 powerhouses - New Colgate, New Bullards Minimum Flow, and Narrows 2

[1] The existing FERC Project Boundary encompasses all Project facilities and features as well as all land needed by YCWA for the normal operation and maintenance of the Project. The boundary is shown in Exhibit J and K, Project Maps, of the existing FERC license for the Project.

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- 7 recreation areas - Emerald Cove Marina, Hornswoggle Group Camp, Schoolhouse Family Camp, Dark Day Campground, Dark Day Boat Ramp, Garden Point Campground, and Madrone Cove Campground – all located on New Bullards Bar Reservoir
- Associated roads and other facilities

The Project does not include any aboveground water conveyance facilities (e.g., canals and flumes), any active spoil or borrow areas, or any transmission line facilities.[2, 3]

YCWA operates New Bullards Bar Reservoir by capturing winter and spring runoff from rain and snowmelt. Consequently, New Bullards Bar Reservoir normally reaches its annual peak storage at the end of the spring runoff season, and then is gradually drawn down until its lowest elevation is reached in mid-winter. The reservoir does not undergo substantial daily changes in elevation due to Project operations. Storage in Above Normal and Wet water years can also be affected by New Bullards Bar Reservoir mandatory flood pool criteria established by the United States Army Corps of Engineers (USACE) from October through April.

Our House and Log Cabin diversion dam impoundments do not store water and YCWA operates them to divert water to New Bullards Bar Reservoir in spring during high flow periods.

YCWA operates New Colgate Powerhouse for peaking and ancillary services, and operates New Bullards Minimum Flow and Narrows 2 powerhouses as base load facilities.

The Project passes water through the federally-owned Englebright Reservoir, which is located on the Yuba River near the City of Marysville and managed by the USACE. Englebright Dam is not part of the Project, nor is it under FERC's jurisdiction. None of the Yuba River Development Project facilities are integral parts of Englebright Dam: the Project's Narrows 2 Power Conduit and Narrows 2 Powerhouse, the lowermost elevation Project facilities, are not connected or attached to Englebright Dam in any way, nor do they intersect the dam in any way (e.g., the powerhouse power tunnel and penstock does not pass through the dam).

A uniquely important set of agreements regarding Project operations is the Lower Yuba River Accord (Yuba Accord). In 2005, YCWA and 16 other interested parties signed memoranda of understanding that specified terms of the Yuba Accord. The Yuba Accord is a comprehensive, consensus-based program to protect and enhance aquatic habitat in the Yuba River downstream of Englebright Dam. Following environmental review, YCWA executed four agreements in 2007, which together comprise the Yuba Accord. The four agreements are: 1) the Lower Yuba River Fisheries Agreement, which specifies the Yuba Accord's Lower Yuba River minimum streamflows and creates a detailed fisheries monitoring and evaluation program; 2) the Water Purchase Agreement, under which the California Department of Water Resources (CDWR)

[2] Project powerhouse switchyards are connected to the California Transmission Grid via non-Project transmission lines. Of note, the 60 kilovolt (kv) transmission line that extends from the Project's Narrows 2 Powerhouse Switchyard to the Grid is owned and operated by PG&E, and is part of a FERC Minor-Part License (FERC Project No. 2678) held by PG&E. The license for Project 2678 expires on April 30, 2016.

[3] The Project does not include the Narrows Powerhouse, which is located on the south side of the Yuba River, about 0.5 mile downstream of the USACE's Englebright Dam. Narrows Powerhouse is part of PG&E's Narrows Project (FERC Project No. 1403).

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purchases water, some of which is provided by the Yuba Accord's minimum streamflows, from YCWA for CALFED's Environmental Water Account[4] and for State Water Project and Central Valley Project contractors; 3) the Conjunctive Use Agreements with seven of YCWA's member units, which specify the terms of the Yuba Accord's groundwater conjunctive use program; and 4) amendments to the 1966 Power Purchase Contract between YCWA and PG&E.[5]

The Yuba Accord was developed by a multi-agency resource team, including representatives from NMFS, the United States Department of Interior, Fish and Wildlife Service (USFWS), the California Department of Fish and Game (CDFG), and a group of non-governmental organizations. The Yuba Accord flow schedules were developed to essentially optimize fisheries habitat conditions during high flow years for this regulated river system. Subsequently, additional flow schedules were developed by the resources team for drier conditions which included a "balancing of resources" approach.

Together, this package of agreements commits more water to minimum instream flows and provides greater reliability for both instream and consumptive uses than would be possible without the agreements. YCWA has been operating the Project in conformance with the Yuba Accord since 2006.[6] On May 20, 2008, the State Water Resources Control Board (SWRCB) adopted its Corrected Order WR 2008-0014, which approved the long-term amendments to YCWA's water-right permits that were necessary so that YCWA may continue to implement the Yuba Accord.

1.2 Relicensing Activities to Date

1.2.1 YCWA's Pre-Filing Meetings

From July 2009 through the filing of its NOI on November 5, 2010, YCWA held approximately 30 meetings with federal (including FERC), state and local agencies; Native American tribes; non-governmental organizations; local businesses; and unaffiliated members of the public which are collectively referred to as "Relicensing Participants" in this Proposed Study Plan. The meetings included both one-on-one meetings, joint meetings, tours of the Project on October 1 and November 30, 2009, and an issues/effects identification meeting on January 13, 2010.

Since March 2010, the primary purpose of many of YCWA's meetings was the collaborative development of study proposals. The goal of these meetings was to reach agreement on as many study proposals as possible with as many Relicensing Participants as possible prior to YCWA's filing of its NOI. To facilitate this process, YCWA took the following actions:

- On September 29, 2009, YCWA distributed a Preliminary Information Package that was formatted similar to and contained much of the information included in an FERC Pre-

[4] The purchase of water through the Yuba Accord Water Purchase Agreement was the first long-term acquisition of water by CDWR that protects Bay/Delta fish and wildlife.
[5] The 1966 Power Purchase Agreement between YCWA and PG&E expires on April 30, 2016, the same day the existing FERC license expires.
[6] The 2006, 2007, and early 2008 operations were under 1-year pilot programs that were approved by the SWRCB.

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Application Document (PAD), which YCWA intended to file, and did file, concurrently with filing of the NOI.

- YCWA developed and posted to the Relicensing Website 41 "straw man" study proposals. The purpose of these "straw man" study proposals was to facilitate open discussion regarding additional data needs. YCWA stated that its "straw man" study proposals did not preclude the development of additional study proposals. Each "straw man" study proposal was posted in Microsoft© Word format to facilitate red-lining by Relicensing Participants, and was modified during meetings. YCWA posted red-lined versions of the study proposals on the Relicensing Website as they were provided to YCWA by Relicensing Participants and following the meetings during which the study proposal was discussed.

Further, YCWA stated that if collaborative agreement was reached on a study proposal and YCWA had funds available to perform the study, YCWA would consider beginning the study in 2011, at its own risk, prior to FERC's issuance of a Study Determination.

At the time YCWA filed its PAD, YCWA and Relicensing Participants had reviewed each of YCWA's "straw man" study proposals, but had not reached collaborative agreement on any. The preliminary study proposals included in YCWA's PAD were prepared considering many of the comments made by Relicensing Participants during the pre-filing meetings.

1.2.2 YCWA's Filing of Its NOI and PAD

YCWA filed with FERC its NOI on November 5, 2010. At the same time, YCWA filed its PAD with FERC and distributed the PAD to Relicensing Participants. The PAD provided existing, relevant, and reasonably available information regarding the Project and the resources potentially affected by continued operation and maintenance of the Project.

The PAD included 41 detailed preliminary study proposals (Table 1.2.2-1).[7] YCWA stated in the PAD and at subsequent Relicensing Participant meetings that it considered the detailed study proposals as preliminary: YCWA included them in the PAD to facilitate early and efficient discussion regarding study proposal development. Also, YCWA stated in the PAD that, based on continuing discussions with Relicensing Participants and comments on the PAD, YCWA may choose not to include in its Proposed Study Plan one or more of the preliminary study proposals included in the PAD or to include in the Proposed Study Plan modified versions of the study proposals that were included in the PAD.

[7] Licensee divided some resources studies (e.g., channel morphology, riparian habitat, stream fish populations and instream flow) into two separate studies: one for upstream of USACE's Englebright Dam and one for downstream of Englebright Dam. In most cases, the reason for this is that the study methods used upstream and downstream of Englebright Dam are different due to different channel conditions and availability of existing information. In addition, some Relicensing Participant's interests differ for the areas upstream and downstream of the dam. For example, the Forest Service manages federal land upstream of Englebright Dam, but not downstream of the dam.

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Table 1.2.2-1. List of YCWA's preliminary proposed study proposals included in YCWA's Pre-Application Document.

Study Number	Study Name
GEOLOGY AND SOILS	
1.1	Channel Morphology Upstream of Englebright Reservoir
1.2	Channel Morphology Downstream of Englebright Dam
WATER RESOURCES	
2.1	Hydrologic Alteration
2.2	Water Balance/Operations Model
2.3	Water Quality
2.4	Bioaccumulation
2.5	Water Temperature Monitoring
2.6	Water Temperature Model
AQUATIC RESOURCES	
3.1	Aquatic Macroinvertebrates Upstream of Englebright Reservoir
3.2	Aquatic Macroinvertebrates Downstream of Englebright Dam
3.3	Special-Status Aquatic Mollusks
3.4	Special-Status Amphibians – Foothill Yellow-Legged Frog Surveys
3.5	Special-Status Amphibians – Foothill Yellow-Legged Frog Habitat Modeling
3.6	Special-Status Turtles – Western Pond Turtle
3.7	Reservoir Fish Populations
3.8	Stream Fish Populations Upstream of Englebright Reservoir
3.9	Stream Fish Populations Downstream of Englebright Dam
3.10	Instream Flow Upstream of Englebright Reservoir
3.11	Fish Entrainment
WILDLIFE RESOURCES	
4.1	Special-Status Wildlife – California Wildlife Habitat Relationships
4.2	Special-Status Wildlife – Bats
BOTANICAL RESOURCES	
5.1	Special-Status Plants
WETLAND, RIPARIAN AND LITTORAL HABITATS	
6.1	Riparian Habitat Upstream of Englebright Reservoir
6.2	Riparian Habitat Downstream of Englebright Dam
6.3	Wetlands
THREATENED, ENDANGERED AND FULLY PROTECTED SPECIES	
7.1	ESA-Listed Plants
7.2	Narrows 2 Powerhouse Intake
7.3	ESA-Listed Amphibians – California Red-Legged Frog
7.4	ESA-Listed Wildlife – Valley Elderberry Longhorn Beetle
7.5	CESA-Listed Plants
7.6	CESA-Listed and Fully Protected Wildlife – California Wildlife Habitat Relationships
7.7	CESA-Listed and Fully Protected Wildlife – Bald Eagle
7.8	ESA/CESA-Listed Salmonids Downstream of Englebright Dam
7.9	North American Green Sturgeon Downstream of Englebright Dam
7.10	Instream Flow for Steelhead and Chinook Salmon Downstream of Englebright Dam
RECREATIONAL RESOURCES	
8.1	Recreation Use and Visitor Surveys
8.2	Recreational Flow
LAND USE	
9.1	Primary Project Roads and Trails
SOCIO-ECONOMIC RESOURCES	
--	None
AESTHETIC RESOURCES	
11.1	Visual Quality
CULTURAL RESOURCES	
12.1	Historic Properties
TRIBAL RESOURCES	
13.1	Native American Traditional Cultural Properties

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1.2.3 FERC's Issuance of Scoping Document 1

On January 4, 2011, FERC issued Scoping Document 1 (SD1) for the Yuba River Development Project relicensing in accordance with 18 CFR § 5.8. SD1 provided YCWA and Relicensing Participants with FERC's preliminary list of issues and alternatives to be addressed in an environmental assessment for analyzing conditions of new Project licenses. FERC requested that comments on SD1 and YCWA's PAD be provided to FERC no later than March 7, 2011.

1.2.4 FERC's Site Visit and NEPA Scoping Meetings

FERC conducted a site visit for the Project on February 1, 2011, and held two National Environmental Policy Act public scoping meetings for the Project in Marysville, California, on February 2, 2011. The meetings were transcribed and the transcripts have been made available on FERC's ELibrary.

1.2.5 YCWA's Study Proposal Development Meetings Prior to the Deadline for Filing PAD Comments

To further facilitate study proposal development, YCWA and Relicensing Participant scheduled a series of meetings beginning in November 2010 and continuing through filing of the Revised Study Plan by August 17, 2011 to discuss study proposals. The goal of these meetings is to reach agreement on as many study proposals as possible with as many Relicensing Participants and YCWA as possible.

Between the time the PAD was filed in November 2010 and the deadline for filing comments on the PAD on March 7, 2011, 11 study proposal development meetings were held, in which 17 of YCWA's study proposals were discussed. The studies discussed focused primarily on those studies Relicensing Participants believed should begin in 2011 prior to FERC's Study Determination.

1.2.6 YCWA's Filing of Redlined Study Proposals

In an attempt to ease the burden of the PAD comment process for Relicensing Participants, on February 11, 2011, YCWA filed with FERC a letter that included redlines of 10 preliminary study proposals included in Table 1.2.2-1. Each of the study proposals had been included in the PAD and had been discussed and revised at one of the 11 study proposal development meetings described in Section 1.2.5. In its letter, YCWA committed to include each of the study proposals in the letter, excluding editorial changes, in its Proposed Study Plan. YCWA reserved its right to further modify each of the study proposals for inclusion in the Proposed Study Plan based on comments on the PAD and additional discussions with Relicensing Participants.

YCWA expressly stated in its letter that YCWA did not intend that the letter would amend its PAD, which might result in some stakeholders requesting an extension to the PAD comment filing deadline. Rather, the letter expressed YCWA's intention that providing the latest version of certain study plans might be useful for Relicensing Participants as they prepared their comments on the PAD.

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YCWA expressly stated that, by filing the letter, YCWA did not imply in any way that agencies and other Relicensing Participants might not have additional comments on each of the redlined study proposals included in the letter or on other preliminary study proposals included in the PAD, or that they might not request new studies.

The redlined study proposals included in YCWA's February 11, 2011 letter were:

1. Study 1.1: Channel Morphology Upstream of Englebright Reservoir
2. Study 2.3: Water Quality
3. Study 2.4: Bioaccumulation
4. Study 2.5: Water Temperature Monitoring
5. Study 3.3: Special-Status Amphibians - Foothill Yellow-Legged Frog Surveys
6. Study 3.8: Stream Fish Populations Upstream of Englebright Reservoir
7. Study 5.1: Special-Status Plants
8. Study 6.1: Riparian Habitat Upstream of Englebright Reservoir
9. Study 12.1: Historic Properties
10. Study 13.1: Native American Traditional Cultural Properties

1.2.7 Comments on FERC's SD1

By the March 7, 2011 filing deadline, eight comment letters on FERC's SD1 were filed with FERC. Table 1.2.7-1 lists the identity of the commenter and the date of the comment letter.

Table 1.2.7-1. Comment letters filed with FERC on FERC's Scoping Document 1.

Commenter	Date of Comment Letter
Cordua Irrigation District	2/17/11
United States Department of Agriculture, Forest Service	3/2/11
California Department of Fish and Game	3/2/11
Foothills Water Network	3/5/11
United State Department of Interior, Fish and Wildlife Service	3/7/11
State Water Resources Control Board	3/7/11
Yuba County Water Agency	3/7/11
United States Department of Commerce, National Marine Fisheries Service	3/7/11
Total	**8**

1.2.8 Comments on YCWA's PAD

Thirty comment letters on YCWA's PAD were filed with FERC. Table 1.2.8-1 below lists the identity of the commenter and the date the comment letter was filed.

Table 1.2.8-1. Comment letters filed with FERC on YCWA's Pre-Application Document.

Commenter	Date of Comment Letter
United Auburn Indian Community	2/1/11
Gold Country Fly Fishers	2/9/11

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Table 1.2.8-1. (continued)

Commenter	Date of Comment Letter
Emerald Cove Marina	2/28/11
Gardner	2/28/11
Billings	2/28/11
Byers	2/28/11
Collier	2/28/11
United States Department of Agriculture, Forest Service	3/2/11
California Department of Fish and Game	3/2/11
Burton	3/2/11
Myles and Scott	3/2/11
Gandy	3/3/11
United States Department of Interior, National Parks Service	3/4/11
Phillipson	3/5/11
Foothills Water Network	3/5/11
Bodhaine	3/6/11
Dixon	3/6/11
Hansen	3/7/11
Watts	3/7/11
Fye	3/7/11
Kurashewich	3/7/11
Hatfield	3/7/11
Camptonville Community Service District	3/7/11
Federal Energy Regulatory Commission	3/7/11
State Water Resources Control Board	3/7/11
United State Department of Interior, Fish and Wildlife Service	3/7/11
United States Department of Commerce, National Marine Fisheries Service	3/7/11
Yuba County Fish and Game Commission	3/7/11
Camptonville Community Partnership	7/29/09[1]
Feather River Chapter of Trout Unlimited	3/10/11
Total	**30**

[1] FERC posted Camptonville Community Partnership's July 29, 2009, to the docket on March 7, 2011. Therefore, YCWA is treating the July 2009 letter as a comment on its PAD.

1.2.9 YCWA's Study Proposal Development Meetings Between Filing of PAD Comments and Filing of Proposed Study Plan

Between the times that Relicensing Participants filed comments on the PAD on March 7, 2011 and YCWA filed this Proposed Study Plan on April 19, 2011, YCWA and Relicensing Participants held two meetings. The first was a conference call on March 9, 2011 to discuss scheduling of meetings in 2011 to try to reach agreement on as many studies as possible with as many Relicensing Participants as possible. The second meeting was a Web call to review YCWA's proposed Water Temperature Model Study Proposal (Study 2.6) and the development of unimpaired and regulated hydrology.

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1.2.10 YCWA's Initiation of Selected Studies in 2011

YCWA initiated five studies in 2011 prior to FERC's Study Determination.[8] These studies are listed below.

1. Channel Morphology Upstream of Englebright Reservoir (Study 1.1)
2. Bioaccumulation (Study 2.4)
3. Water Temperature Monitoring (Study 2.5)
4. Special-Status Amphibians - Foothill Yellow-Legged Frog Surveys (Study 3.4)
5. Riparian Habitat Upstream of Englebright Reservoir (Study 6.1)

Assuming that FERC includes these studies in its Study Determination, YCWA intends to treat work performed to date for each of the studies as "ahead of schedule" for ILP purposes since the work will have been initiated prior to the time FERC issues its Study Determination.

1.3 Content of This Proposed Study Plan

This Proposed Study Plan includes the following sections:

- Section 1. Introduction – This section describes the Project, relicensing activities to date, and the content of the Proposed Study Plan.

- Section 2. Licensee's Proposed Studies - This section discusses YCWA's detailed study proposals that may be needed to gather additional information for the Project. The actual study proposals are included in Appendix 1 to this Proposed Study Plan.

- Section 3. Licensee's Reply to Study Requests - This section provides YCWA's reply to study requests that were filed with FERC on YCWA's PAD. Specifically, for any requested study modification or new study that was not adopted by YCWA in this Proposed Study Plan, Section 3.2 provides an explanation of why the request was not adopted with reference to the criteria set forth in 18 CFR § 5.9(b). YCWA has not provided in this Proposed Study Plan specific replies to non-study request comments (e.g., editorial or general comments, or comments on the PAD that are not study requests) or to comments on FERC's SD1.[9, 10]

- Section 4. Meetings, Data Availability and Reports – This section describes YCWA's plan to hold study plan meetings during the 90-day review period for the Project and sets out provisions for YCWA's periodic progress reporting. This section also describes other study proposal development meetings that have been collaboratively scheduled by YCWA and Relicensing Participants for the purpose of resolving differences regarding study proposals.

[8] Prior to filing of comments on the PAD, YCWA agreed to begin a sixth study: Instream Flow Upstream of Englebright Reservoir Study (Study 3.10), which included development of one-dimensional (1D) hydraulic models. Following receipt of the PAD comments, YCWA advised Relicensing Participants it would cease performance of this study until FERC resolved the comment by USFWS requesting that this study develop two-dimensional, rather than 1D, models.

[9] YCWA understands that FERC will reply to comments on SD1 when, and if, FERC issues Scoping Document 2, which may occur on or before April 19, 2011.

[10] On April 12, 2011, YCWA filed with FERC replies to comments on SD1.

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- Section 5. Status of Enhancements – This section describes the status of YCWA's evaluation of potential generation enhancements to the existing Project.

- Section 6. References Cited – This section includes a list of references cited in the Proposed Study Plan.

- Appendix 1. Detailed Study Proposals – This appendix includes YCWA's detailed study proposals.

1.4 List of Attachments to This Section

None.

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SECTION 2
LICENSEE'S PROPOSED STUDIES

This section of the Proposed Study Plan provides YCWA's proposed studies that may be needed to gather additional information for environmental analysis of the Project. YCWA believes the information developed by these studies, when combined with existing information as summarized in YCWA's PAD and other ongoing data gathering efforts for other proceedings in the Yuba River Basin, will provide the information needed to evaluate issues that may arise from continued Project operations and maintenance (O&M), and may later inform the development of license requirements.

For the purpose of this Proposed Study Plan, a "study" is considered to be any data gathering or analysis effort. A study may or may not include fieldwork.

Table 2.0-1, which is organized into major resource areas, provides a summary of YCWA's study proposals. For ease of reference, each study proposal in Table 2.0-1 is placed into one of three categories:

- Included in YCWA's PAD and Unchanged Version Included in the Proposed Study Plan. YCWA proposed this study in its PAD, and has not revised the study in the PAD (i.e., comments may not have been filed on the specific study proposal, or comments were filed but not adopted by YCWA), other than footers, the date of the study proposal, inclusion of a cost estimate in Section 8, and general editorial corrections for inclusion in the Proposed Study Plan.

- Included in YCWA's PAD and Revised Version Included in the Proposed Study Plan. The revisions are based on comments at study proposal development meetings, comments on the PAD, comments on FERC's SD1, comments at FERC's NEPA scoping meetings, or a combination of the above. For the purpose of the Proposed Study Plan, the 10 redlined study proposals YCWA filed with FERC on February 11, 2011 are considered revised study proposals.

- Not Included in YCWA's PAD but Included in the Proposed Study Plan. This is a new study (i.e., not included in the PAD) proposed by YCWA in its Proposed Study Plan.

Table 2.0-1. Studies proposed by YCWA for the Yuba River Development Project.

Study Number	Study Description	Proposed by YCWA's Proposed Study Plan		
		Included in PAD & Unchanged Version Included in Proposed Study Plan	Included in PAD & Revised Version Included in Proposed Study Plan	Not Included in PAD & New Study Included in Proposed Study Plan
GEOLOGY AND SOILS				
1.1	Channel Morphology Upstream of Englebright Reservoir	--	X	--
1.2	Channel Morphology Downstream of Englebright Dam	--	X	--

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Table 2.0-1. (continued)

Study Number	Study Description	Proposed by YCWA in Proposed Study Plan		
		Included in PAD & Unchanged Version Included in Proposed Study Plan	Included in PAD & Revised Version Included in Proposed Study Plan	Not Included in PAD & New Study Included in Proposed Study Plan
WATER RESOURCES				
2.1	Hydrologic Alteration	--	X	--
2.2	Water Balance/Operations Model	--	X	--
2.3	Water Quality	--	X	--
2.4	Bioaccumulation	--	X	--
2.5	Water Temperature Monitoring	--	X	--
2.6	Water Temperature Model	--	X	--
AQUATIC RESOURCES				
3.1	Aquatic Macroinvertebrates Upstream of Englebright Reservoir	--	X	--
3.2	Aquatic Macroinvertebrates Downstream of Englebright Dam	--	X	--
3.3	Special-Status Aquatic Mollusks	--	X	--
3.4	Special-Status Amphibians – Foothill Yellow-Legged Frog Surveys	--	X	--
3.5	Special-Status Amphibians – Foothill Yellow-Legged Frog Habitat Modeling	--	X	--
3.6	Special-Status Turtles – Western Pond Turtle	--	X	--
3.7	Reservoir Fish Populations	--	X	--
3.8	Stream Fish Populations Upstream of Englebright Reservoir	--	X	--
3.9	Stream Fish Populations Downstream of Englebright Dam	--	X	--
3.10	Fish Instream Flow Upstream of Englebright Reservoir	--	X	--
3.11	Fish Entrainment	--	X	--
WILDLIFE RESOURCES				
4.1	Special-Status Wildlife – California Wildlife Habitat Relationships	--	X	--
4.2	Special-Status Wildlife – Bats	--	X	--
BOTANICAL RESOURCES				
5.1	Special-Status Plants	--	X	--
WETLANDS, RIPARIAN AND LITTORAL HABITATS				
6.1	Riparian Habitat Upstream of Englebright Reservoir	--	X	--
6.2	Riparian Habitat Downstream of Englebright Dam	--	X	--
6.3	Wetlands	--	X	--
THREATENED, ENDANGERED AND FULLY PROTECTED SPECIES				
7.1	ESA-Listed Plants	--	X	--
7.2	Narrows 2 Powerhouse Intake	--	X	--
7.3	ESA-Listed Amphibians – California Red-Legged Frog	--	X	--

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Table 2.0-1. (continued)

Study Number	Study Description	Proposed by YCWA in Proposed Study Plan		
		Included in PAD; Unchanged Study Included in Proposed Study Plan	Included in PAD; Revised Study Included in Proposed Study Plan	Not Included in PAD; New Study Included in Proposed Study Plan
THREATENED, ENDANGERED AND FULLY PROTECTED SPECIES (continued)				
7.4	ESA-Listed Wildlife – Valley Elderberry Longhorn Beetle	--	X	--
7.5	CESA-Listed Plants	--	X	--
7.6	CESA-Listed and Fully Protected Wildlife – California Wildlife Habitat Relationships	--	X	--
7.7	CESA-Listed and Fully Protected Wildlife – Bald Eagle	--	X	--
7.8	ESA/CESA-Listed Salmonids Downstream of Englebright Dam	--	X	--
7.9	North American Green Sturgeon Downstream of Englebright Dam	--	X	--
7.10	Instream Flow for Steelhead and Chinook Salmon Downstream of Englebright Dam	--	X	--
RECREATION RESOURCES				
8.1	Recreation Use and Visitor Surveys	--	X	--
8.2	Recreational Flow	--	X	--
LAND USE				
9.1	Primary Project Roads and Trails	--	X	--
SOCIO-ECONOMIC RESOURCES				
None	--	--	--	--
AESTHETIC RESOURCES				
11.1	Visual Quality	--	X	--
CULTURAL RESOURCES				
12.1	Historic Properties	--	X	--
TRIBAL INTERESTS				
13.1	Native American Traditional Cultural Properties	--	X	--
	Subtotal	*0*	*41*	*0*
	TOTAL	**41**		

A number of YCWA's study proposals provide that YCWA and Relicensing Participants will "collaborate" or "consult" with Relicensing Participants (or subset of Relicensing Participants, such as key agencies) regarding one or more items in the study proposal and, if YCWA and Relicensing Participants agree on a course of action, YCWA will implement the course of action. Although not expressly stated in each study proposal, in those cases where "collaboration" is required, this shall mean YCWA and the Relicensing Participants will make a reasonable effort to reach a consensus decision using the "can you live with it" threshold described in Section 2.3.6.8 of YCWA's PAD, and such decisions will be final to the extent required in the study proposal. Failure to reach consensus after YCWA makes a reasonable effort to collaborate will

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complete YCWA's and the Relicensing Participants' requirement for "collaboration" (i.e., collaboration can result in an agreement to disagree).

Where a study proposal or plan requires "consultation," this shall mean that YCWA will make a reasonable effort to seek out the opinions and input of Relicensing Participants prior to YCWA making a decision. Consultation does not require that YCWA and Relicensing Participants reach consensus, though YCWA's goal in all cases is to do so.

Appendix 1 to this Proposed Study Plan includes YCWA's 41 proposed studies by resource area.

2.1 List of Attachments to This Section

None.

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SECTION 3
LICENSEE'S REPLY TO STUDY REQUESTS

This section provides YCWA's reply to requests for modifications to the studies proposed by YCWA in its PAD, and to requests for "new" studies (i.e., studies not proposed by YCWA in its PAD). This section contains three main subsections. Section 3.1 describes comment letters filed on the PAD. Section 3.2 provides, for each study modification or new study request not adopted by YCWA, an explanation of why the request was not adopted. Section 3.3 addresses general comments in the PAD comment letters.

As required by § 5.11(b)(4) of 18 CFR, if YCWA has not adopted a request for modification to a proposed study or a request for a new study, YCWA has provided an explanation of why the request was not adopted with reference to the study request criteria set forth in 18 CFR § 5.9(b).[11] These study request criteria are:

1. Describe the goals and objectives of each study proposal and the information to be obtained;
2. If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied;
3. If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study;
4. Describe existing information concerning the subject of the study proposal, and the need for additional information;
5. Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements;
6. Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate filed season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge; and
7. Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

For the purpose of requested modifications to YCWA's study proposals and requests for new studies, YCWA has focused primarily on requests to change Section 5.1 (Study Area) and Section 5.3 (Study Methods) of YCWA's study proposals in its PAD. Requested changes in

[11] For clarity, YCWA has highlighted the major criteria that YCWA believes are relevant to its reply on each request for a study modification or new study. It should not be inferred by YCWA's lack of addressing other study criteria that YCWA believes the criteria have been adequately addressed by the party who requested the study – only that YCWA believes the criteria it references are particularly important to understanding YCWA's reply to the request.

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other sections of YCWA's study proposals are not specifically addressed unless they affect the specific scope of a particular proposed study.[12]

YCWA expressly states that it is committed to seeking resolution to all differences between YCWA's study proposals and study modifications and new study requests filed by Relicensing Participants. YCWA views the information provided in this section as facilitating, not inhibiting, continued open and frank discussions with Relicensing Participants to efficiently resolve study differences to the satisfaction of all Relicensing Participants and YCWA. Further, YCWA does not view the filing of comments on the PAD as precluding additional discussion – if a specific subject was not raised when a Relicensing Participant filed its comments, the participant should not feel it cannot raise that topic during this next phase in the ILP. YCWA encourages full discussion.

3.1 Comments on YCWA's PAD Studies

As described in Section 1.2.5 of this Proposed Study Plan, 30 letters from Relicensing Participants providing comments on YCWA's PAD were filed with FERC.

3.1.1 Comment Letters That Did Not Request a Study Modification or New Study

Upon review, YCWA found that 20 of the 30 comment letters did not request a modification to any YCWA proposed study or a new study. These included: 1) 15 letters from recreationists who use houseboats on New Bullards Bar Reservoir; 2) one letter from YCWA's Emerald Cove Marina concessionaire; 3) a letter from the Camptonville Community Partnership; and 4) the letters from Feather River Chapter of Trout Unlimited and the Gold County Fly Fishers. In addition, the letter from the SWRCB did not make any specific study requests, but expressed support for CDFG's requests. Since these comment letters did not request any specific study modifications or new studies, YCWA does not address these letters any further in this Proposed Study Plan, but acknowledges the letters and will be mindful of the content and intent of the letters as relicensing proceeds.

3.1.2 Comment Letters That Requested Study Modifications or New Studies for Anadromous Fish Upstream of Englebright Dam

Collectively, NMFS, USFWS and FWN requested modifications to three of YCWA's proposed studies and 10 new studies that would pertain to, at least in part, anadromous fish upstream of USACE's Englebright Dam. These requests for study modifications and new studies are listed in Table 3.1.2-1.

[12] It should not be inferred by YCWA's lack of reply to requested modifications to other sections of YCWA's study proposal in the PAD that YCWA agrees with the comment or agrees to make the modification in the study request – only that YCWA has focused its replies on the specific requests that affect study performance (i.e., study area and methods).

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Table 3.1.2-1. Requested modifications to YCWA's proposed studies in PAD and requested new studies that would deal with anadromous fish upstream of Englebright Dam.

Requested Study Modification and New Study		USFWS	NMFS	FWN	Comment
#	Description				
REQUEST FOR STUDY MODIFICATION					
1.1	Channel Morphology Upstream of Englebright Reservoir	--	--	X	FWN requested that steelhead and Chinook salmon be designated "target species" for each of the three studies, but did not request any specific modifications to the methodology of YCWA's proposed studies.
3.10	Instream Flow Upstream of Englebright Reservoir	--	--	X	
6.1	Riparian Habitat Upstream of Englebright Reservoir	--	--	X	
REQUEST FOR NEW STUDY					
--	Anadromous Fish Passage	--	--	X	USFWS's, NMFS's and FWN's requested new studies that pertain to both upstream and downstream of Englebright Dam.
--	Determination of Anadromy in Yuba River *O. mykiss*	X	--	--	
--	Effects of the Project and Related Activities on Fish Passage for Anadromous Fish	--	X	--	
--	Effects of the Project and Related Activities on Hydrology for Anadromous Fish	--	X	--	
--	Effects of the Project and Related Activities on Water Temperatures for Anadromous Fish	--	X	--	
--	Effects of the Project and Related Activities on Coarse Substrate for Anadromous Fish	--	X	--	
--	Effects of the Project and Related Activities on Large Wood and Riparian Habitat for Anadromous Fish	--	X	--	
--	Effects of the Project and Related Activities on the Loss of Marine-derived Nutrients in the Yuba River	--	X	--	
--	Effects of the Project and Related Activities on Aquatic Benthic Macroinvertebrates for Anadromous Fish	--	X	--	
--	Anadromous Fish Ecosystem Effects Analysis	--	X	--	
	Subtotal	*1*	*8*	*4*	--
	Total	**13**			

NMFS, USFWS and FWN did not base their study requests on evidence that anadromous fish occur upstream of Englebright Dam now. It is undisputed that anadromous fish have not occurred upstream of Englebright Dam for at least the past 70 years - since 1941 when Englebright Dam, which completely blocks upstream fish passage, was constructed by the California Debris Commission. Nor did the commenters base their requests on evidence that Englebright Dam is part of the existing FERC Project now. Again, it is undisputed that Englebright Dam is not now, and never has been, a Project facility as defined in YCWA's existing FERC license.

Rather, NMFS, USFWS and FWN base their requests on the proposition that anadromous fish may utilize the Yuba River and its forks upstream of Englebright Dam in the reasonably foreseeable future. Each commenter based its proposition on this point on one or more of four arguments, each of which is discussed below.

YCWA has not adopted NMFS's, USFWS's or FWN's requests for new studies, or the portions of the requests for new studies, that would apply to anadromous fish upstream of Englebright Dam, because NMFS, USFWS and FWN have not met FERC's study request Criterion 5, which requires that there be a nexus between the resource to be studied (i.e., in this case, anadromous fish upstream of Englebright Dam) and Project operations, or that the requested study develop

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information necessary to inform license requirements. YCWA's rationale for not adopting these requested study modifications and new studies is described below.[13]

3.1.2.1 Argument #1: It Is Reasonably Foreseeable That Anadromous Fish Will Be Upstream of Englebright Dam in the Near Future Because FERC Will Make Englebright Dam Part of the Project, and YCWA Under Relicensing Will Be Responsible for Providing Fish Passage at Englebright Dam

The first argument made by some of the commenters to support their requests is that FERC in the future will include Englebright Dam in the Yuba River Development Project FERC license, and that FERC then will direct YCWA to implement fish passage at the dam, which will result in anadromous fish occurring upstream of Englebright Dam in the reasonably foreseeable future.

However, the commenters have provided no evidence demonstrating that FERC will include Englebright Dam in YCWA's FERC-licensed Project, nor have they provided any compelling evidence why FERC should include Englebright Dam in this Project.

Also, regardless of the commenters' arguments on why they believe FERC should include Englebright Dam in YCWA's FERC-licensed Project, FERC has not ordered that Englebright Dam be included in this Project. Nor does FERC have jurisdiction to include a federal facility like Englebright Dam within a FERC license.[14] The commenters' argument, therefore, does not constitute evidence of a nexus between Project operations and the resource to be studied, as required by FERC's study request Criterion 5.

3.1.2.2 Argument #2: It Is Reasonably Foreseeable That Anadromous Fish Will Be Upstream of Englebright Dam in the Near Future Because FERC Will Order YCWA to Provide Fish Passage Past Englebright Dam Because the Project's Narrows 2 Powerhouse, in Combination with PG&E's Narrows 1 Powerhouse and Englebright Dam, Block Upstream Fish Passage

The second argument, which is made by NMFS, is that FERC should order YCWA to perform the requested studies because the Project's "... hydropower facilities are also hydraulic and mechanical barriers to fish passage. Regardless of the mode of blockage, the result is that all facilities are fish passage barriers in their own right." (NMFS, Enclosure F, p. 3). NMFS appears to be arguing that the blockage of upstream fish movement at Englebright Dam should not be assigned to any single facility, but instead is collectively the result of all three facilities at this location (i.e., YCWA's Narrows 2 Powerhouse, PG&E's Narrows Powerhouse and USACE's Englebright Dam).

However, as NMFS concedes, it is Englebright Dam that is the "physical barrier to fish passage" at this location (see NMFS, Enclosure F, p. 2). Englebright Dam has been this physical barrier

[13] Since these requests are addressed in this section, YCWA does not address them any further in this Proposed Study Plan. However, YCWA replies to the new study requests in Table 3.1.3-1 as they pertain to the Yuba River downstream of Englebright Dam, as compared to upstream of the dam, in Section 3.1.4.

[14] See YCWA response to comments on SD 1, dated April 12, 2011, pages 9 and 10.

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since it was constructed in 1941, which was over 25 years before YCWA built the Narrows 2 Powerhouse.

Although NMFS argues that PG&E's Narrows Powerhouse and YCWA's Narrows 2 Powerhouse are "hydraulic and mechanical barriers to fish passage" (see NMFS, Enclosure F, p. 3), the simple facts are:

- YCWA's construction of the Project's Narrows 2 Powerhouse did not change the complete physical barrier to passage that Englebright Dam already had created at this location

- Even if the Narrows 2 Powerhouse were completed removed or otherwise decommissioned, Englebright Dam would still completely block upstream fish passage at this location

- Fish migrate past the tailrace of the Narrows 2 Powerhouse, which is located about 400 feet downstream of Englebright Dam, and on upstream to the base of Englebright Dam, where their upstream passage is completely blocked, and fish migrate downstream from the base of Englebright Dam past this tailrace.

For these reasons, NMFS's argument that the Narrows 2 Powerhouse should have some share of a collective responsibility for the blockage of fish passage at this location should be rejected.

Also, NMFS's request that YCWA perform studies to try to find some way in which operations of Narrows 2 Powerhouse, in and of itself, blocks upstream fish passage is unsupported, and would not provide any useful information about the resource or inform the development of license requirements, as required by FERC study request Criterion 5.

3.1.2.3 Argument #3: It Is Reasonably Foreseeable That Anadromous Fish Will Be Upstream of Englebright Dam in the Near Future Because, Even If Englebright Dam Is Not Made Part of the Project, YCWA Under Relicensing Will Be Responsible for Providing Fish Passage at Englebright Dam

The third argument made by some of the commenters is that, even if FERC does not make Englebright Dam a part of YCWA's FERC-licensed Project, FERC nevertheless will direct YCWA to implement fish passage at the dam, which will result in anadromous fish occurring upstream of Englebright Dam in the reasonably foreseeable future.

The commenters have provided no evidence that FERC is planning to direct YCWA to include, as part of relicensing, fish passage at Englebright Dam. YCWA has stated the many reasons why fish passage at Englebright Dam should not be addressed as a direct or indirect Project effect in the relicensing. Some of these reasons are:

- USACE's Englebright Dam was constructed in 1941, almost 20 years before the formation of YCWA and more than 25 years before construction of the Yuba River Development Project.

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- USACE's Englebright Dam was built by the California Debris Commission. YCWA had not been formed at that time, and Yuba County did not contribute to or participate in the construction of Englebright Dam.
- Since its construction in 1941, Englebright Dam has completely blocked anadromous fish passage to upstream habitat. The dam does not now, and never has, included any low-level outlets or fish ladders that would permit volitional upstream fish passage, nor has the USACE ever had in place a program, such as capture and haul, to pass anadromous fish upstream of Englebright Dam in a non-volitional manner.
- Englebright Dam is not, and never has been, a part of YCWA's Yuba River Development Project.
- YCWA does not own, operate or maintain any portion of Englebright Dam or Reservoir. This authority resides exclusively with the USACE by act of the United States Congress.[15]
- None of the Yuba River Development Project facilities are integral parts of Englebright Dam: YCWA's Narrows 2 Power Conduit and Narrows 2 Powerhouse, the lowermost Project facilities, are not connected or attached to Englebright Dam in any way, nor do they intersect (e.g., pass through) the dam in any way (i.e., the Narrows 2 Power Tunnel goes through the hillside, not through Englebright Dam).
- Operations of the Narrows 2 Powerhouse, the only Project facility downstream of Englebright Dam, does not block upstream passage of anadromous fish. Fish can and do pass the powerhouse tailrace and migrate to and from the base of Englebright Dam.

3.1.2.4 Argument #4: It Is Reasonably Foreseeable That Anadromous Fish Will Be Upstream Of Englebright Dam in the Near Future Because Other, Non-Relicensing Proceedings Will Provide Fish Passage at Englebright Dam

The fourth argument made by some of the commenters to support their requests for new studies is that, even if FERC does not make Englebright Dam a part of the Project or direct that YCWA is responsible for fish passage at the dam, another party will provide for fish passage at the dam, which will result, in the reasonably foreseeable future, in anadromous fish occurring upstream of Englebright Dam.

This argument was made, but not supported, during FERC's February 2, 2011, NEPA scoping meeting in Marysville, California. When asked by FERC staff about when NMFS expected anadromous fish to be introduced upstream of Englebright Dam, NMFS representatives described various discussions regarding potential introduction, but could not provide a schedule. In fact, NMFS staff stated *"…the Service has not pre-decided the reintroduction of anadromous fish into the waters above Englebright…"*(Meeting Transcript, page 44, Lines 23 – 25), which would certainly imply that NMFS does not believe the introduction of anadromous fish above Englebright Dam is a reasonably foreseeable future action.

[15] River and Harbor Act of 30 August 1935 (P. L. 409, 74th Congress, 1st Session, 49 Stat. p. 1028-1049), and Public Law 716, 75th Congress, 3rd Session, approved 25 June 1938.

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Nor is this argument supported by reference to NMFS's proceeding for its Public Draft Recovery Plan for Sacramento River Winter-Run Chinook Salmon, Central Valley Spring-Run Chinook Salmon and Central Valley Steelhead (Draft Plan). When directly questioned regarding the timing for finalization of this Draft Plan by FERC staff, NMFS representatives would not speculate or give a date when the Draft Plan would become final.

Further, even if the Draft Plan is finalized without alteration, it will not provide concrete measures for introduction of anadromous fish above Englebright Dam, but only calls for further work at some future time to "*Develop and implement a phased approach to salmon reintroduction planning to recolonize historic habitats above Englebright Dam.*"[16] The Draft Plan goes on to state:

> The spring-run Chinook salmon/steelhead conceptual recovery scenario also includes reintroduction of spring-run Chinook salmon/steelhead to the candidate areas of the North Fork, Middle Fork and South Fork Yuba rivers. Reintroduction of anadromous salmonids above Englebright Dam has been the subject of recent and current investigations. Evaluation of habitat suitability for anadromous salmonids upstream of Englebright Dam was recently undertaken (DWR 2007), but those evaluations have yet to be finalized as part of the Upper Yuba River Watershed Studies Program. Currently, NMFS is evaluating the feasibility of providing passage for anadromous salmonids at Englebright Dam. Hence, the conceptual recovery scenario does not further discuss specific restoration actions associated with reintroduction.[17]

The Draft Plan states the following disclaimer:

> Recovery plans do not necessarily represent the views, official positions or approval of any individuals or agencies involved in the plan formation, other than NMFS. They represent the official position of NMFS only after they have been signed by the Assistant Administrator. Recovery plans are guidance documents only; identification of an action to be implemented by any public or private party does not create a legal obligation beyond existing legal requirements…Approved recovery plans are subject to modification as dictated by new findings, changes in species status, and the completion of recovery actions.[18]

In the Draft Recovery Plan, NMFS describes the timeframe and cost estimates for its proposed recovery action (See Draft Recovery Plan, Section 1.9.6.1: Develop and implement a salmon reintroduction plan to re-colonize historic habitats above Englebright Dam in Table 8-2, Implementation table for priority 1 recovery actions). The Draft Plan proposes to begin

[16] National Marine Fisheries Service. 2009. Public Draft Recovery Plan for Sacramento River Winter-Run Chinook Salmon, Central Valley Spring-Run Chinook Salmon and Central Valley Steelhead. Sacramento Protected Resources Division. October 2009. Page 161.
[17] *IBID*. Page 115, 140.
[18] IBID. Page 2.

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evaluations in year 1, with pilot testing in years 2 through 5,[19] and to begin a long-term passage program in year 10, although the table is unclear whether the listed years are counted after the Final Plan is formally adopted or after finalization of a subsequent specific salmon reintroduction plan. The minimum cost for the feasibility study and other associated recovery actions is estimated by NMFS to be $50 million. The USACE, as the owner and operator of Englebright Dam, is not listed as an involved party to this particular recovery action.[20]

Some parties also have argued that anadromous fish soon will be upstream of Englebright Dam because USACE included in its 2011/12 budget $100,000 to study potential fish passage at Englebright Dam. However, this action only was a request for funding, which may or may not be approved, and, if it is approved, is only to examine the possibility of reintroduction. This action cannot be construed as evidence of a reasonably foreseeable future physical condition.

Given the fact that upstream anadromous fish passage in the Yuba River at USACE's Englebright Dam is not blocked by any Yuba River Development Project facility now, the uncertain timing for finalization of the Draft Recovery Plan, and the even more distant achievement of any approved salmon reintroduction plan for habitats upstream of Englebright Dam or of other recovery actions after that, it would not be appropriate for FERC to order YCWA to perform the requested new studies or requests for modifications of proposed studies as they pertain to anadromous fish upstream of Englebright Dam.

If there ever is fish passage upstream of Englebright Dam in the future and there is a biological justification for considering additional measures in YCWA's license to address this condition, then NMFS or some other party may ask FERC to order such measures pursuant to FERC's standard license reservations of authority.

3.1.3 Replies to Comment Letters That Requested Study Modifications

YCWA's review of the remaining eleven comment letters found that seven of the letters each requested a modification to a total of 28 of the studies proposed by YCWA in its PAD. Table 3.1.3-1 lists the commenters and the YCWA study on which the commenter requested one or more modifications.

[19] At page 13 of Enclosure F of NMFS's letter, NMFS stated that it has filed a preliminary ESA § 10(a)1(a) permit application necessary to conduct field pilot experiment studies using adult and juvenile Chinook salmon and steelhead for research purposes, and lists the types of pilot programs envisioned. NMFS requests that, as a part of a new study (Effects of the Project and related Activities on Fish Passage for Anadromous Fish), FERC direct YCWA to "conduct these experiments" under the oversight of NMFS. On March 26, 2011, YCWA performed a search of the Federal Register for the past year and found that no such permit application for the Yuba River or Sacramento River has been noticed (a requirement of the application process), though NMFS has filed such an application for the San Joaquin River, which is specific to the San Joaquin River. Therefore, it is not clear that YCWA could legally perform the requested studies, if ordered, without undertaking a new permitting requirement that could extend the normal ILP timeline for studies.

[20] National Marine Fisheries Service. 2009. Page 200.

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Table 3.1.3-1. YCWA proposed studies on which one or more modifications are requested and the commenters who requested the modifications.

YCWA Proposed Study on Which One or More Modifications Are Requested		Forest Service	USFWS	NPS	NMFS	CDFG[1]	UAIC	FWN	FERC
#	Description								
1.1	Channel Morphology Upstream of Englebright Reservoir	--	--	--	--	X	--	X	--
1.2	Channel Morphology Downstream of Englebright Dam	--	--	--	X	--	--	--	--
2.1	Hydrologic Alteration	--	--	--	--	--	--	X	--
2.2	Water Balance/Operations Model	--	--	--	--	X	--	--	--
2.3	Water Quality	--	--	--	--	X	--	--	--
2.4	Bioaccumulation	--	--	--	--	X	--	--	--
2.5	Water Temperature Monitoring	--	--	--	--	--	--	X	--
3.1	Aquatic Macroinvertebrates Upstream of Englebright Reservoir	--	--	--	--	X	--	--	--
3.5	Special-Status Amphibians – Foothill Yellow-Legged Frog Habitat Modeling	X	--	--	--	X	--	--	--
3.6	Special-Status Turtles – Western Pond Turtle	X	--	--	--	--	--	--	--
3.7	Reservoir Fish Populations	--	--	--	--	X	--	--	--
3.8	Stream Fish Populations Upstream of Englebright Reservoir	X	--	--	--	X	--	--	--
3.9	Stream Fish Populations Downstream of Englebright Dam	--	--	--	--	X	--	--	--
3.10	Instream Flow Upstream of Englebright Reservoir	--	X	--	--	X	--	--	--
3.11	Fish Entrainment	--	--	--	--	X	--	--	--
4.2	Special-Status Wildlife – Bats	--	--	--	--	X	--	--	--
5.1	Special-Status Plants	X	--	--	--	--	--	--	--
6.1	Riparian Habitat Upstream of Englebright Reservoir	X	--	--	--	--	--	--	--
6.2	Riparian Habitat Downstream of Englebright Dam	--	X	--	--	--	--	X	--
7.2	Narrows 2 Powerhouse Intake	--	--	--	--	X	--	--	--
7.8	ESA/CESA-Listed Salmonids Downstream of Englebright Dam	--	--	--	--	--	--	X	--
7.9	North American Green Sturgeon Downstream of Englebright Dam	--	X	--	--	X	--	--	--
7.10	Instream Flow for Steelhead and Chinook Salmon Downstream of Englebright Dam	--	X	--	--	X	--	--	--
8.1	Recreation Use and Visitor Surveys	X	--	X	--	--	--	--	--
8.2	Recreational Flow	X		X	--	--	--	X	--
11.1	Visual Quality	X		X	--	--	--	--	--
12.1	Historic Properties	--	--	--	--	--	X	--	X
13.1	Native American Traditional Cultural Properties	--	--	--	--	--	X	--	X
	Subtotal	*7*	*4*	*3*	*1*	*15*	*2*	*6*	*2*
	Total	**28**							

[1] SWRCB expressed support for study modifications and new requests made by CDFG, although it did not provide any additional arguments or evidence satisfying ILP requirements that would justify CDFG's study requests.

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YCWA replies to each of the requested study modifications below by study. In general, for each request, YCWA has adopted the request, adopted the request with modification, or not adopted the request. For requests, adopted with modification or not adopted, YCWA explains the reason why it did not adopt the request in the context of FERC's seven study criteria.

3.1.3.1 Study 1.1 - Channel Morphology Upstream of Englebright Reservoir (Request for 4 Modifications)

CDFG and FWN requested modifications to YCWA's Channel Morphology Upstream of Englebright Reservoir Study (Study 1.1) as included in the PAD.

YCWA has not adopted the portions of the requested modification that pertain to anadromous fish upstream of Englebright Dam for the reasons described in Section 3.1.2.

The portions of the requested modifications that do not pertain to anadromous fish upstream of Englebright Dam and YCWA's reply to each request are provided below.

Requested Modifications	YCWA's Reply
1 – CDFG requested that the study include targeting 2 mm and 128 mm particle sizes. (CDFG, p. 11)	**ADOPTED** - Section 5.3.6 has been changed to include particles from 2 mm to 128 mm in size.
2 – CDFG requested that field crews be provided with specific life history awareness and a requirement for incidental reporting of the great gray owl. (CDFG, p. 23)	**NOT ADOPTED** -YCWA's proposed Channel Morphology Upstream of Englebright Reservoir provides that field crews will make incidental observations of any species "incidentally observed," which would include great gray owl. CDFG has not shown why, as compared to any other species that might be incidentally observed, Licensee should provide its field crews with specific life history awareness training of the great gray owl (Criterion 6).
3 - FWN requested that the study consider impacts to geomorphic functions. (FWN, p. 13)	**NOT ADOPTED** - Licensee has developed a study that does consider impacts of the Project to geomorphic function. FWN has not addressed why YCWA's study is insufficient to provide the necessary information (Criterion 7). Additionally, FWN has not provided sufficient detail for YCWA to perform an in depth analysis of another unspecified study, or for YCWA to estimate the cost associated with implementing the study. There were no goals and objectives stated (Criterion 1), no explanation of relevant public interest considerations (Criterion 2), no discussion of existing information nor need for additional information (Criterion 4), no discussion of how the study results would inform the development of license conditions, no methods or schedule (Criterion 6), and no discussion of level of effort and cost (Criterion 7).
4 – FWN requested that YCWA provide information in its geomorphology study, or supplemental information submissions, on past measures for managing cobble and sediment deposits behind New Bullards Bar Dam, Our House Dam and Englebright Dam, and describe future plans for managing the deposits. (FWN, p. 33)	**NOT ADOPTED** - The request is for information on a PM&E measure and not a request for a study modification. If the request were to be considered a study modification, FWN has not provided goals and objectives (Criterion 1), no explanation of relevant public interest considerations (Criterion 2), no discussion of the need for additional information (Criterion 4), no discussion of how the study results would inform the development of license conditions, no methods or schedule (Criterion 6), and no discussion of level of effort and cost (Criterion 7).

3.1.3.2 Study 1.2 - Channel Morphology Downstream of Englebright Dam *(Request for 1 Modification)*

NMFS requested a modification to YCWA's Channel Morphology Downstream of Englebright Dam Study (Study 1.2) as included in the PAD. The requested modification and YCWA's reply is provided below.

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Requested Modification	YCWA's Reply
1 - NMFS and FWN requested that the study area be expanded downstream to and including the San Francisco Bay. (NMFS, Enclosure E, p. 2; FWN, p. 12)	**NOT ADOPTED** - NMFS has not shown why extending the study area beyond that in YCWA's study plan is necessary or how the study results would better inform the development of license requirements (Criterion 5).

3.1.3.3 Study 2.1 – Hydrologic Alteration *(Request for 3 Modifications)*

FWN requested modifications to YCWA's Hydrologic Alteration Study (Study 2.1) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

Requested Modifications	YCWA's Reply
1- FWN requested an evaluation of existing outlet works and options for modifications that would enable the project to meet instream flows or recreate the snowmelt recession (FWN, p. 30)	**NOT ADOPTED** – FWN has not requested a study, but a PM&E – evaluation/modification of outlet works. FWN has not met the conditions of FERC study criterion 5 as they did not explain how the requested information would inform the development of potential license conditions. Therefore, the request has not been adopted
2- FWN requested the study include analysis of ramping rates effects on fish. (FWN, p. 30)	**NOT ADOPTED** – This study does characterize project effects on ramping rates, and is intended to provide information that will inform other studies, however the effects of ramping rates on fish are part of other studies. FWN has not provided any information on the methodology to examine ramping rates on fish (Criterion 6) and has not described how the existing studies are inadequate to provide sufficient information (Criterion 7).
3- FWN requested the study include historical operations and effects of ramping rates below Project facilities. (FWN, p. 32)	**NOT ADOPTED** – YCWA's proposed study includes an analysis of Project operations effects on rates of change of flow and ramping rates. The request is for study elements that are already included in the study plan as written, and FWN does not show how the existing study plan is inadequate (Criterion 7).

3.1.3.4 Study 2.2 – Water Balance/Operations Model *(Request for 3 Modifications)*

CDFG requested modifications to YCWA's Water Balance/Operations Model Study (Study 2.2) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

Requested Modifications	YCWA's Reply
1 - CDFG requested changes to stage storage curves for two reservoirs. (CDFG, p. 10)	**ADOPTED** - Stage storage curves will be extended as requested
2 - CDFG requested additional meetings to review the model during development and prior to completing the validation report. (CDFG, p. 21)	**ADOPTED** - The study plan will be modified to include additional meetings to review model development and preliminary validation results prior to drafting the validation report or finalizing the model report.
3 – CDFG requested extending the period of simulation to at least 2010 and possibly 2012 (CDFG, p. 21)	**ADOPTED WITH MODIFICATION** - The period of simulation will be extended through 2010, but not 2012, because finalized USGS data would not be available for 2011 and 2012 until late 2012 and 2013, respectively, and this would delay completion of the study beyond the time when model runs must be provided for inclusion in other studies. CDFG has not provided information that would explain the need for the additional information (Criterion 4) or how extending the period of simulation to 2012 would be appropriately scheduled as required by FERC criterion 6, therefore this additional extension has not been adopted.

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3.1.3.5 Study 2.3 – Water Quality *(Request for 4 Modifications)*

CDFG requested modifications to YCWA's Water Quality Study (Study 2.3) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

Requested Modifications	YCWA's Reply
1 – CDFG requested a new general water quality sampling location on the Middle Yuba River near the Oregon Creek Day Use Area (CDFG, p. 41).	**NOT ADOPTED** - The need for this information is not provided (Criterion 4). The nexus to the Project and how the information would inform license conditions is not provided (Criterion 5). The proposed site at TNF's Oregon Creek Day Use Area is 7.5 miles downstream of Our House Dam on the Middle Yuba River, 4 miles downstream of Log Cabin Diversion Dam on Oregon Creek, and 4.5 miles upstream of the confluence with the North Yuba River. Each of these locations is a sample location under the proposed Water Quality Study (Study 2.3). CDFG does not state why the proposed Water Quality Study (Study 2.3) and would be insufficient to meet the stated information needs (Criterion 7).
2 – CDFG requested 5 new bacteria sampling locations: Moran Cove Day Use Area on New Bullards Bar, Our House Dam Diversion Pool, Oregon Creek Day Use Area, Log Cabin Diversion Pool and the Yuba River near Lake Francis Rd. (CDFG, p. 42).	**ADOPTED WITH MODIFICATION** - YCWA has added Moran Cove Day Use Area to Recreation Study component of the Water Quality Study. With respect to the other four sites, the need for this information is not provided (Criterion 4), the nexus to the project is unclear and/or how the information would inform license conditions is not provided (Criterion 5).Without a continuous source, such as a leaking septic system or an out-of-compliance wastewater treatment plant, human-related bacteria would not be discernable in flowing water. Our House Dam Diversion Dam impoundment and Log Cabin Diversion Dam impoundment do not store water; the impoundments create headwaters for Project diversions and water is flowing within these areas at all times (See Section 7.2 of PAD). The site TNF's Oregon Creek Day Use Area and "Yuba River near Lake Francis Rd." are outside of the FERC Project Boundary and water is also always flowing at these locations Should additional information become available, YCWA would consider adding the proposed locations. In Section 5.3.2.2 page the study plan states: "If Licensee and Relicensing Participants collaboratively identify additional locations of concern regarding Project-related bacteria during the Recreation Use and Visitor Surveys Study (Study 8.1), additional recreation-related bacteria sampling will be performed at those locations."
3 – CDFG requested if data from the spring or summer sampling shows elevated levels for any of the parameters, the Licensee will consult with Relicensing Participants and determine the need for additional fall sampling (CDFG, p.42).	**ADOPTED** - YCWA has added to the study plan that it will consult with Relicensing Participants about the need for additional fall sampling and will proceed with sampling, if collaboratively agreed to.
4 – CDFG requested that if the Licensee and Relicensing Participants collaboratively identify additional locations of concern regarding Project-related bacteria during the Recreation Use Surveys additional recreation related bacteria surveys will be performed (CDFG, p 51).	**ADOPTED** - YCWA has added this language to the Water Quality Study Plan (Section 5.3.2.2).

3.1.3.6 Study 2.4 - Bioaccumulation *(Request for 3 Modifications)*

CDFG requested modifications to YCWA's Bioaccumulation Study (Study 2.4) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

Requested Modifications	YCWA's Reply
1 – CDFG requested sampling at both Our House and Log Cabin diversion impoundments for rainbow trout and brown trout (CDFG, p. 60).	**ADOPTED** - YCWA has added sampling at the two diversion impoundments.

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Requested Modifications	YCWA's Reply
2 – CDFG requested collecting nine individuals of each targeted game species (CDFG, p.63)	**ADOPTED** - YCWA has added this text to the Bioaccumulation Study Plan and will make an effort to collect nine individuals of each targeted game species.
3 – CDFG requested that all samples also be analyzed for arsenic, copper, selenium and silver (CDFG, p. 64)	**ADOPTED** - YCWA has added this text to the Study Plan and will have all samples also analyzed for arsenic, copper, selenium and silver.

3.1.3.7 Study 2.5 – Water Temperature Monitoring *(Request for 1 Modification)*

FWN requested a modification to YCWA's Water Temperature Monitoring Study (Study 2.5) as included in the PAD. The requested modification and YCWA's reply is provided below.

Requested Modification	YCWA's Reply
1 – FWN requested that enough additional water temperature profile sites should be added in Englebright and New Bullards Bar to thoroughly characterize cold-water pool dynamics (FWN, p. 34)	**NOT ADOPTED** - YCWA believes the current reservoir profile sampling scheme of one profile in New Bullards Bar Reservoir and two in Englebright Reservoir is sufficient to characterize the coldwater pool dynamics in each reservoir. FWN did not provide specific information regarding the location or sampling period of the new reservoir profile locations. The water temperature model will be calibrated using approximately 10 years of vertical profile data collected near the dam of each reservoir. The water temperature model and related Operations Model and Hydrology will allow YCWA to effectively characterize cold-water pool dynamics in the reservoirs as well as effects on downstream temperatures. FWN did not provide justification for why data to be collected in YCWA's proposed Studies 2.2 and 2.5 will not adequately meet the objective of characterizing the cold-water pool dynamics (Criterion 7).

3.1.3.8 Study 3.1 – Aquatic Macroinvertebrates Upstream of Englebright Reservoir *(Request for 1 Modification)*

CDFG requested a modification to YCWA's Aquatic Macroinvertebrates Upstream of Englebright Reservoir Study (Study 3.1) as included in the PAD. The requested modification and YCWA's reply is provided below.

Requested Modification	YCWA's Reply
1 – CDFG requested YCWA add 9 sampling sites. (CDFG, p. 99)	**NOT ADOPTED** - The additional sites are proposed by CDFG as reference reach sites. These sites are not affected by the Project and therefore do not have a Project nexus (Criterion 5). Further, they are not necessary and would provide no useful information to the study. The SWAMP method relies upon indices to assess the health and quality of a site and does not use reference sites to make an assessment. The additional sites are unnecessary and will not add value to the study (Criterion 7).

3.1.3.9 Study 3.5 – Special-Status Amphibians – Foothill Yellow-Legged Frog Habitat Modeling *(Request for 5 Modifications)*

CDFG and Forest Service requested modifications to YCWA's Special-Status Amphibians – Foothill Yellow-Legged Frog Habitat Modeling Study (Study 3.5) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

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Requested Modifications	YCWA's Reply
1 – CDFG and Forest Service requested two additional model sites on the Middle Yuba River/Yuba River: one below the confluence with Oregon Creek, and one below the confluence with the North Yuba River. (CDFG, p. 18, and Forest Service, p. 8)	**NOT ADOPTED** - The Forest Service and CDFG have not met the requirements of Criterion 7 to consider the cost of the proposed modification and have not shown why alternative approaches are not sufficient to assess Project effects. YCWA notes as precedent, the FYLF Habitat Modeling Study recently performed for the relicensings of the Yuba-Bear Hydroelectric Project and Drum-Spaulding Project in which no more than one modeling site was placed below any facility, even if the flow regime at some point downstream was also influenced by another facility. Analogous to the Middle Yuba River/Yuba River, the South Yuba River is affected by the Drum-Spaulding Project's Spaulding Dam on the South Yuba River and by the Yuba-Bear Hydroelectric Project's Bowman-Spaulding Diversion Dam, a facility on a tributary to the South Yuba River, Canyon Creek. FERC directed that a single study site be situated on the South Yuba River below Spaulding Dam and one site be placed on Canyon Creek, the primary reach below Bowman Dam. FERC did not direct that a second site be placed in the South Yuba River below the confluence of Canyon Creek and South Yuba River. A 2D site on the Middle Yuba River below the confluence of Oregon Creek or on the Yuba River below the confluence of the North and Middle Yuba Rivers would be duplicative of sites on the primary reaches. **NOT ADOPTED** – (continued) Other factors YCWA considered in determining where 2D study sites should be located were the scarcity of suitable habitat for FYLF on the Yuba River downstream of the confluence of the North and Middle Yuba Rivers, and the relatively small contribution of Oregon Creek to Middle Yuba River flow regimes that may affect FYLF. Hydrology records for Oregon Creek below Log Cabin Diversion Dam indicate that large, uncontrolled spills are typically limited to periods when Our House Diversion Dam is also spilling and rarely occur during the FYLF breeding and rearing seasons (May through September). YCWA will assess the effects of Project flows on FYLF habitat in secondary reaches (Middle Yuba River below Oregon Creek, and Yuba River below Middle Yuba and North Yuba confluence) using data developed by Study 2-02, Water Balance/Operations Model, which will provide estimates of accretion further downstream of flow controlling facilities. Accretion from unregulated tributaries represents a large variable outside of Project control. Assessments of regulated hydrology at nodes within these secondary reaches will provide the supplemental data necessary to understand the potential effects to FYLF habitat well downstream of Project facilities.
2 – CDFG and Forest Service requested that any FYLF egg masses or groups of tadpoles seen during survey and mapping field work should be 'surveyed in' at the highest resolution possible." (CDFG, p. 18, and Forest Service, p. 8)	**ADOPTED** - YCWA has referenced language in Study 3-4 FYLF Habitat Surveys that details how FYLF egg masses and tadpoles will be accurately mapped.
3 – CDFG and Forest Service requested further discussion regarding the methods to be used for substrate mapping. (CDFG, p. 18, and Forest Service, p. 9)	**ADOPTED** - YCWA has expanded description of "polygons" to include delineation of substrate polygons based on dominant, subdominant categorization.
4 – CDFG and Forest Service requested YCWA develop Oregon Creek-specific FYLF DHSC's by collecting appropriate FYLF egg mass and tadpole habitat data during the YCWA's Special-Status Amphibians - Foothill Yellow-Legged Frog Surveys Study. (CDFG, p. 18, and Forest Service, p. 9)	**ADOPTED WITH MODIFICATION** - As stated in Study 3-4, YCWA will collect HSC data for FYLF egg masses and tadpoles in Oregon Creek as a part of VES studies. Those data will be compared with existing data from similar sized stream systems ("creeks") and if compatible, will be incorporated to adjust HSC criteria. If data from Oregon Creek are substantially different from existing data and are based on an ample number of observations, unique criteria for Oregon Creek would be developed.
5 – CDFG and Forest Service requested YCWA move text from Section 5.3.4.1.4 into a new section under section 5.3.4 and adding analysis methods. (CDFG, p. 19, and Forest Service, p. 9)	**ADOPTED** - As requested, YCWA has provided text regarding detailed habitat and modeling analysis within section 5.3.6.

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3.1.3.10 Study 3.6 - Special-Status Turtles – Western Pond Turtle *(Request for 2 Modifications)*

Forest Service requested modifications to YCWA's Special-Status Turtles – Western Pond Turtle Study (Study 3.6) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

Requested Modifications	YCWA's Reply
1 – Forest Service requested the study be modified to include an assessment of WPT entrainment into Project diversion tunnels. Specific steps would include: 1) determine the distribution, relative abundance, and size class structure of WPT upstream/downstream and within the two reservoirs; 2) attempt to document the local use of areas around the tunnel inlet gates and at tunnel outlets, through direct observation or radio telemetry of WPT; and 3) determine entrainment rate of WPT by season and size class, using collaboratively agreed upon methods. (Forest Service, pp. 18 & 19)	**NOT ADOPTED** – Forest Service does not specify specific methods to perform the study, but suggests a wide variety of potential approaches including direct observation of WPT, radio-telemetry, and collection of demographic information from upstream and downstream of Project diversion impoundments as well as within the diversion impoundments. The Forest Service has provided a general objective for the requested study modification, but no specific goals, and thus has not met the requirements of FERC's Study Request Criterion 2. The Forest Service has not presented a specific methodology for determining the risk of entrainment or determining rates of entrainment. YCWA is unaware of comparable studies that have been implemented for WPT or similar organisms. It is unclear how methods used for fish would be adapted for WPT. Accordingly, YCWA believes that the requested study methodology is not consistent with generally accepted practices for study of WPT, and does not comply with FERC's Study Request Criterion 6. The Forest Service has also not met Criterion 7 – methods were not described except generally and the level of effort and cost are unknown. The Forest Service has provided no evidence to suggest that WPT is measurably affected by entrainment and have not demonstrated that YCWA's study approach is insufficient. The demographic study requested by the Forest Service for upstream and downstream of the diversions is not clearly related to an assessment of entrainment and is not warranted. Ashton et al. (1997) indicate that individual WPT "exhibit a high degree of site fidelity, in both aquatic and terrestrial environments…[with occasional] sporadic long-distance aquatic movements outside their home range (Holland 1994)." This suggests that exposure to the risk of entrainment would be largely localized to the areas of the diversions and that studies of more distant areas are not justified. A comparative demographic study further supposes that any differences in demography would be related to entrainment or other possible effects of the Project. However, as detailed below in response to Study Request 2, such an approach is fraught with difficulties. Furthermore, a review of the scientific literature suggests that WPT behavior substantially limits potential exposure to entrainment. First, stream-dwelling WPT typically leave stream environments in the autumn and over-winter on land (Reese 1996, Goodman 1997), which may be an adaptation to escape or avoid high flow conditions (Ashton et al. 1997). Thus, entrainment risk is reduced during high flow periods when the Project diversions are in operation. Second, WPT habitat use in streams is generally associated with areas near the banks in backwaters and slow-moving water, particularly where suitable basking substrates and closely associated underwater hiding places, such as under rocks, logs, or undercut banks, are present. A preliminary evaluation of the Project diversion impoundments suggests that WPT would avoid areas around the tunnel intake gates because of faster flowing water and an absence of suitable habitat for basking and hiding. Entrainment of juvenile WPT is particularly unlikely because juveniles do not occur in deep, open water areas, such as the intake gate areas, and instead occupy shallow (less than 30 cm deep), still-water habitats with ample cover, such as emergent or aquatic vegetation, or rocks under which they can hide. YCWA's proposed study of WPT includes surveys for WPT which will be performed in areas of suitable habitat to be determined based on a review of existing information and a field reconnaissance, as needed, to supplement existing information. If the diversion impoundments are determined to be suitable habitat, WPT surveys will be performed in these areas. The results of the surveys will be used to assess the risk of entrainment.

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Requested Modifications	YCWA's Reply
2 – Forest Service requested the expansion of the survey area to include three non-Project reaches: 1) Oregon Creek upstream of the Log Cabin Diversion Dam Impoundment; 2) Middle Yuba River upstream of Our House Reservoir; and 3) a yet to be determined site in the Yuba River watershed with comparable geomorphic attributes to at least some of the larger Project-affected stream reaches. (Forest Service, p. 18)	**NOT ADOPTED** - The Forest Service provides no justification for expanding the study to a third area, other than to state that "information is needed from areas upstream of the affected project reaches." The Forest Service has previously suggested that surveys of non-Project areas will be used to "provide context (reference conditions) for evaluating the results of surveys in the project-affected reaches." The Forest Service has not met the requirements of FERC's Study Request Criterion 5. The Forest Service has not established a Project nexus to the area upstream of the Project facilities or how the information from studies outside Project-affected areas would inform license requirements. Although general comparisons to WPT populations in other locations may be informative, YCWA disagrees that collecting data from "reference sites" should be part of this study. Interpretation of data from areas outside of Project influence is confounded by differences in stream geomorphology within Project-affected areas and in comparison to potential reference sites, and similar site-specific variability in historical and current anthropogenic factors such as mining, recreation, residential development, and introduced species. It is unclear how project effects could be isolated and apportioned relative to these other factors.

3.1.3.11 Study 3.7 - Reservoir Fish Populations *(Request for 6 Modifications)*

CDFG requested modifications to YCWA's Reservoir Fish Populations Study (Study 3.7) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

Requested Modifications	YCWA's Reply
1 – CDFG requested that prior to boat electrofishing sampling, YCWA consult with CDFG to develop details of the approach and schedule for e-fishing; and obtain authorizations for special equipment use and/or CDFG assistance in on-reservoir sampling. (CDFG, p. 128)	**ADOPTED WITH MODIFICATION** - The approach to electrofishing sampling is addressed in the study plan. YCWA will obtain a Scientific Collection Permit, which is required by CDFG. Any specific stipulations required by the district biologist to obtain that permit will be followed, as has been done in previous FERC relicensings. However, YCWA does not agree to an open-ended scope, approach and schedule details should be clearly identified per FERC Study Request Criterion 1. Also, YCWA has no issue with CDFG attending any sampling events utilizing their own resources, but does not intend to conduct sampling with the assistance of CDFG. The text of Study 3.7 has been modified to reflect the change.
2 – CDFG requested that an attempt be made to sample around the warmwater fish species spawning activities in the spring at night and again in late fall or winter during the day when the fish have moved up. (CDFG, p. 129)	**NOT ADOPTED** - CDFG does not provide sufficient detail for YCWA to perform an in depth analysis of the recommended study, or for YCWA to estimate the cost associated with implementing the study. The comment by CDFG does not identify how many sites, where, or what reservoirs the additional effort would be applied to. This information, as required under FERC Study Request Criterion 1 is not provided. Additionally, CDFG does not identify how the collection of this information will inform the development of license requirements as required under FERC Study Request Criterion 5.
3 – CDFG requested that when taking measurements of captured fish, total length be used for warm water species and fork length for all others. (CDFG, p. 129)	**ADOPTED WITH MODIFICATION** - YCWA agrees to measure total length of all fish species without forked caudle fins and fork length for all species with forked caudle fins. The text of Study 3.7 has been modified to reflect the change.
4 – CDFG requested that during barrier attribute collection, a brief description of barrier substrate or structural composition be recorded. (CDFG, p. 131)	**ADOPTED** - YCWA agrees to record a brief description of substrate or structural composition at identified barriers and have made the update in Study 3.7.
5 – CDFG requested that during electrofishing in tributaries, all fish be returned to waters in the immediate vicinity where they were collected. (CDFG, p. 131)	**ADOPTED** - YCWA agrees to return all fish from electrofished tributaries to the immediate vicinity they were collected and have made the update in Study 3.7.

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Requested Modifications	YCWA's Reply
6 – CDFG requested that historical sampling and stocking assessment include more recent data available from CDFG fisheries files and all other fisheries data available be reviewed. (CDFG, p. 132)	**ADOPTED** - YCWA will review new fisheries data provided by CDFG and other fisheries data available prior to report development and include it within the report as pertinent. The text of Study 3.7 has been modified to reflect the change.

3.1.3.12 Study 3.8 – Stream Fish Populations Upstream of Englebright Reservoir *(Request for 9 Modifications)*

The Forest Service and CDFG requested modifications to YCWA's Stream Fish Populations Upstream of Englebright Reservoir Study (Study 3.8) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

Requested Modifications	YCWA's Reply
1 – Forest Service requested that YCWA electrofish in the Our House Diversion Dam Reach (Middle Yuba River - RM 4.5) three times during each year of sampling with sampling taking place one week apart. (Forest Service, p. 13)	**NOT ADOPTED** – The Forest Service does not provide any justification for its request. YCWA's proposed study seeks to document the number of fish within the fish population at representative sites. It does not have a seasonal component and is not designed to address any questions of that effect. The Forest Service proposed effort offers no further support and will provide minimal additional information (FERC Study Request Criterion 7). YCWA has not made any modification to this section of Study 3.8.
2 – Forest Service requested a one-time estimate of capture efficiency of the 3-pass electrofishing removal method for estimating fish abundance will take place using 300 marked Middle Yuba River origin wild fish during the third sample period of the second year of sampling. (Forest Service, p. 13)	**NOT ADOPTED** - YCWA does not agree with the use of a one-time estimate of capture efficiency of the 3-pass electrofishing removal method because information gained from the effort will be negligible and the effort and price to include this component to the study is unreasonable (FERC Study Request Criterion 7). The practice of using a one-time estimate of capture efficiency of the 3-pass electrofishing removal method has not been used in other recent FERC relicensing studies and is not consistent with generally accepted practices of the scientific community (FERC Study Request Criterion 6). YCWA has not made any modification to this section of Study 3.8.
3 – CDFG requested that YCWA obtain an MOU if handling species listed as threatened or endangered under the Endangered Species Act is anticipated. (CDFG, p. 140)	**ADOPTED** - If handling_species listed as threatened or endangered under the Endangered Species Act, YCWA will obtain an MOU. The text of Study 3.8 has been modified to reflect the change.
4 – CDFG requested inserting the length of each reach to be sampled in Table 5.3.1-1. (CDFG, p. 140)	**ADOPTED** - YCWA agrees to the modification to the table and has incorporated the length of the reaches into Table 5.3.1-1 of Study 3.8.
5 – CDFG requested that additional parameters be collected at each sample site by the use of a YSI meter to record all water quality parameters and flow during each sampling event using a flow meter. (CDFG, p. 142)	**ADOPTED WITH MODIFICATION** - YCWA agrees to collect the additional parameters, but will use a YSI or similar water quality instrument and defines all water quality parameters collected by said instrument as DO, conductivity, and temperature as these are the parameters collected in other stream fish population relicensing studies and are the generally accepted practice (FERC Study Request Criterion 6). YCWA will use a flow meter to collect discharge if a nearby stream gage is not available. The text of Study 3.8 has been modified to reflect the change.
6 – CDFG requests that all fish removed from the reach be held in live cars downstream of the sampling site and be redistributed evenly across the sampling reach following completion of the final pass for the survey. (CDFG, p. 142)	**ADOPTED** - YCWA agrees to hold all captured fish in live cars downstream of the sampling site and redistribute them evenly across the sampling reach following completion of the final pass of a survey. The text of Study 3.8 has been modified to reflect the change.
7 – CDFG requested that qualitative electrofishing occur on the margins of snorkeled sites to provide length and weight data. Data will be used to develop a condition factor. (CDFG, p. 143)	**ADOPTED WITH MODIFICATION** - YCWA agrees to electrofish the margins of quantitatively snorkeled sites. A single pass qualitative approach will be utilized to provide length and weight data that will be used to develop a condition factor and included in the report. YCWA expects that this additional data collection will not significantly increase cost. The text of Study 3.8 has been modified to reflect the change.

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Requested Modifications	YCWA's Reply
8 – CDFG requested snorkeling crews be equipped with mask-integrated digital cameras to video along all snorkeling lanes. If more than 3 replicate snorkel surveys are required, to decrease variance or if a species identification is in question, use the video for species confirmation and data corroboration (CDFG p. 143).	**NOT ADOPTED** - YCWA disagrees with the use of mask-integrated digital cameras because the benefit of information gained will be negligible, the expense significant, and the practice is not consistent with recent studies or with generally accepted practices of the scientific community (FERC Study Request Criterion 6).
9 – CDFG and the Forest Service requested YCWA add a fry emergence component to the study that would qualitatively assess fry emergence and timing upstream of Log Cabin Diversion Dam and Our House Diversion Dam. Methods would include electrofishing and seining bi-weekly over mid March-June including lab analysis plus three qualitative electrofishing events in April, May, and June. (CDFG, p. 138 and 145 and Forest Service, p. 13)	**NOT ADOPTED** - CDFG's and Forest Service's proposed study deviates from other suggested studies similar to this in relicensing meetings. The proposed study will require significant effort for minimal return (FERC Study Request Criterion 7). There are numerous environmental factors creating significant variation in fry emergence from year to year and this one-time study will provide little information towards informing the development of license requirements (FERC Study Request Criterion 5). YCWA has not made any modification to this section of Study 3.8.

3.1.3.13 Study 3.9 – Non-ESA Fish Populations Downstream of Englebright Dam *(Request for 4 Modifications)*

CDFG requested modifications to YCWA's Stream Fish Populations Downstream of Englebright Dam Study (Study 3.9) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

Requested Modifications	YCWA's Reply
1 – CDFG recognizes the Yuba Accord River Management Team (RMT)'s on-going monitoring and data collection activities as a "valuable program which will advance understanding of aquatic life in this system". However, CDFG "cautions that data from these studies will not be available until 2016, well beyond the timeline for the YRDP relicensing study process." CDFG requests that "provisions for a 2012 assessment of RMT data should be included, allowing for the collaborative determination on the level of additional study necessary for the 2012-2013 field seasons. In the absence of sufficient data by early 2012, studies should precede independent of the RMT…to collect all data necessary for regulatory decision making." (CDFG p.16).	**ADOPTED WITH MODIFICATION –** On page 17 of Study 3.9, YCWA states Licensee anticipates that the RMT will complete a draft M&E Program report by October 2012 with the completion of a final M&E Program report prior to 2016. Study 3.9 (p. 17) presently states that "in the event that it becomes apparent that the RMT will not complete the draft report by October 2012, the Licensee will undertake the completion of the relevant components of the draft report." As currently presented in Study 3.9, the M&E Program results will satisfy the need for additional information regarding the non-ESA fish community downstream of Englebright Dam, and complies with FERC Study Criteria 4. Nonetheless, Licensee recognizes the potential for some of the data collection activities to still be outstanding at the time of analysis. Therefore, Licensee agrees to collaboratively review the data collected as of October 2012, and consider the need for additional data collection during the 2012-2013 field seasons.

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Requested Modifications	YCWA's Reply
2 - CDFG states that "The RMT stopped rotary screw trap (RST) operations on the Lower Yuba in August of 2009. There are currently no plans to start up RST data collection again. This is one of the primary means of collecting juvenile production and abundance data. Project dictated flows directly affect water temperatures and habitat availability as well as quality throughout the entire river, and the Department staff request that this information be developed" (CDFG p.16).	**NOT ADOPTED –** CDFG requested YCWA develop information to assess the potential effects of flows related to the Project on water temperature, habitat availability and quality. Study 3.9 addresses such potential relationships. Methodology in YCWA's study incorporates existing information from several years of RST sampling that have been conducted seasonally on the Yuba River between 1999 to 2005, and year-round from 2006 to 2009. YCWA's use of existing RST data to characterize the non-ESA fish community in the lower Yuba River is one component of the methodology to evaluate species composition, diversity, abundance, spatial and temporal distribution, and habitat utilization and characterization. These additional methods include VAKI Riverwatcher, carcass surveys, redd surveys, and snorkel surveys. Snorkel surveys conducted by the RMT are expected to provide information that is more suitable for understanding community structure and spatial dynamics of the entire non-ESA fish community in the lower Yuba River than RST surveys, which primarily analyze relative abundance, and temporal distribution of emigrating juvenile anadromous salmonids. YCWA has not adopted the request because CDFG does not identify how the further development of information will inform the development of license requirements as required under Criterion 5, nor does CDFG specify or suggest any preferred data collection and analysis techniques consistent with generally accepted practice in the scientific community as required under FERC Study Request Criterion 6. Additionally, the Licensee believes that the results of current RMT data collection activities sufficiently meet the information needs for assessment of the non-ESA populations downstream of Englebright Dam. Without a discussion of why the proposed studies do not sufficiently meet the stated information needs, CDFG has not satisfied the requirements of FERC Study Request Criterion 7.
3 – CDFG states that the "Redd survey protocols for data collection on the lower Yuba were designed by the RMT primarily to obtain spatial, temporal, and microhabitat utilization information for Anadromous salmonids in the Yuba River downstream of Daguerre Point Dam. (SP section 4.2.1.2). The redds of other non-ESA species may go undetected due to smaller size and different shape. Consequently this shouldn't be relied upon to estimate abundance." (CDFG p.16)	**ADOPTED WITH MODIFICATION** – Licensee has modified Study 3.9 section 4.2.1.2 to read "…downstream of Englebright Dam" rather than "…downstream of Daguerre Point Dam." Licensee does not adopt other components of this comment because Study 3.9 specifically and clearly describes observation methodology of non-salmonid redds, and because CDFG's request does not explain why the methodology included in Study 3.9 is not appropriate or consistent with current scientific practice or relicensing projects (FERC Study Request Criterion 6).
4 – CDFG replaced the original statement that "RST sampling has been temporarily suspended until the logistics associated with implementing a trapping device at or upstream of Daguerre Point Dam have been resolved, in order to obtain comparable data between upstream and downstream locations for focused evaluations. It is anticipated that additional sampling will be conducted commencing in 2011, and may be conducted in subsequent years pending results, as evaluated by the RMT" with text that states "RST sampling was suspended in August of 2009 and currently there are no plans to resume RST operations" (CDFG p. 161 – 162).	**ADOPTED** – Licensee accepts the suggested change in the description of sampling methodology and evaluation of collected information to assess the potential need, if any, for additional information consistent with FERC Study Request Criterion 4.

3.1.3.14 Study 3.10 – Instream Flow Upstream of Englebright Reservoir *(Request for 2 Modifications)*

CDFG and USFWS each requested a modification to YCWA's Instream Flow Upstream of Englebright Reservoir Study (Study 3.10) as included in the PAD.

YCWA has not adopted the portions of the requested modification that pertain to anadromous fish upstream of Englebright Dam for the reasons described in Section 3.1.2.

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The portions of the requested modifications that do not pertain to anadromous fish upstream of Englebright Dam and YCWA's reply to each of those requests are provided below.

Requested Modifications	YCWA's Reply
1 – CDFG requested that Step 8 of YCWA's study proposal (habitat duration analysis) focus solely on, and be limited to, an evaluation of habitat bottlenecks. (CDFG, p. 9)	**ADOPTED WITH MODIFICATION** – First, YCWA notes that CDFG has not defined what it means by "bottleneck," does not explain the methodology for conducting such an analysis or how the analysis is consistent with a generally accepted in the scientific community ((FERC Study Request Criterion 6). In addition, CDFG does not describe the level of effort or cost needed to conduct the analysis (FERC Study Request Criterion 7). Second, YCWA believes that restricting the habitat duration analysis component of the study to a single narrow use, such as a "bottleneck analysis." limits the use of a scientifically developed and widely accepted tool. The scientific literature does not support using the habitat exceedance analysis (HEA) exclusively for determining habitat bottlenecks. While not negating the application of the HEA as one means of identifying possible habitat bottlenecks the literature does present cautions in such a use (Bovee et al. 1998 and Stalnaker et al. 1995). Bovee (1998) defines a habitat bottleneck as "*a limitation of a key habitat type that affects the population dynamics of one or more important life stages of a species such that the limitation is evident at the adult population level.*" Therefore, a habitat limitation must affect or be assumed to affect the adult population in order to be considered a habitat bottleneck. YCWA supports the use of the habitat duration analysis for helping identify possible habitat bottlenecks (once it is defined what a "bottleneck means in terms of the analysis), but also agrees with the literature that a causative link between a perceived habitat bottleneck (e.g., low habitat as defined by a weighted usable area, or WUA, function) and an actual limitation in the adult population cannot be assumed. In other words, a low WUA does not necessarily translate to population bottleneck. The link between a habitat event and a bottleneck in the population is extremely difficult to detect or measure. The primary reason is that 'habitat events' that are actually bottlenecks usually affect recruitment via habitat types directly related to the production and survival of eggs, larvae, and fry (Stalnaker et a. 1995). These habitat bottlenecks typically occur 1-3 years prior to maturation, when their effects are detectable in the adult population (Nehring and Anderson 1993; Bovee et al. 1994; as cited by Stalnaker 1995). Habitat bottlenecks are not usually associated with the juvenile and adult life stages.
2 – USFWS requested YCWA modify the study by placing study sites for modeling spawning in high spawning use areas, performing habitat modeling using a two-dimensional (2-D) model rather than 1-D PHABSIM, and developing HCS using a logistic regression. (USFWS, pp. 4 - 5 and 9)	**NOT ADOPTED** - YCWA believes that methodologies described in its study are consistent with accepted scientific practices for instream flow studies. Moreover, the USFWS request does not explain why the methodology included in YCWA's study plan is not appropriate or consistent with current scientific practice or relicensing projects (Criterion 6). In addition, the USFWS request does not describe the level of effort or cost needed to conduct the analysis (Criterion 7). As stated in YCWA's study plan, physical habitat and hydraulic parameters are to be measured using a combination of standard techniques of the USFWS methodology (Trihey and Wegner 1981; Bovee 1982), the United States Geological Survey (USGS) (Bovee 1997, Bovee et al. 1998, and Rantz 1982) and also includes many elements from the SFWO standards; Enclosure 2 – Section 4 – B 1D PHABSIM QA/QC, an attachment to the USFWS letter. Hydraulic and habitat modeling methodologies are to follow standard procedures and guidelines as outlined in the PHABSIM Reference Manual Version II, Instream Flow Information Paper No.26 (Milhous, R.T., M.A. Updike, and D.M. Schneider 1989). The modeling methods also include many elements from PHABSIM for Windows Users Manual and Exercises, USGS, Fort Collins (Waddle, T.J., ed., 2001) and the SFWO standards Enclosure 2 – Section 4 – B 1D PHABSIM QA/QC, an attachment to the USFWS letter. Though minor differences due to site specific conditions exist, these methods have been used in recent and ongoing, relevant FERC relicensing projects including Sacramento Municipal Utility District's Upper American River Project (FERC Project No. 2101), South Feather Water Power Agency's South Feather Power Project (FERC Project No. 2088), PG&E's DeSabla-Centerville Project (FERC Project No. 803), Nevada Irrigation District's (NID) Yuba-Bear Hydroelectric Project (FERC Project No. 2266), PG&E's Drum-Spaulding Project (FERC Project No. 2310) and Merced Irrigation District's Merced River Hydroelectric Project (FERC No. 2179).

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Requested Modifications	YCWA's Reply
2 – (continued)	**NOT ADOPTED** – (continued) YCWA believes that habitat suitability criteria in its study plan represent the most current and relevant information available for this Project. In fact, these curves were recently developed for Instream flow studies on the Middle Yuba River above Our House Diversion Dam and on the entire South Yuba River on NID's Yuba-Bear Hydroelectric Project (FERC Project No. 2266) and PG&E's Drum-Spaulding Project (FERC Project No. 2310). The USFWS request to develop HSC does not explain why the existing HSC included in YCWA's study plan are not appropriate or consistent with current scientific practice or relicensing projects (Criterion 6). Also, the USFWS request does not describe the level of effort or cost needed to develop HSC (Criterion 7).

3.1.3.15 Study 3.11 – Fish Entrainment *(Request for 6 Modifications)*

CDFG requested modifications to YCWA's Fish Entrainment Study (Study 3.11) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

Requested Modifications	YCWA's Reply
1 – CDFG requested extending the study area to include New Bullards Bar Reservoir in the vicinity of New Colgate Power Intake and Englebright Reservoir in the vicinity of Narrows 2 Power Intake. (CDFG, p. 214)	**NOT ADOPTED** - YCWA does not propose to study entrainment in the vicinity of New Colgate Power Intake or Narrows 2 Power Intake. The New Colgate Power Intake at New Bullards Bar Reservoir is over 300 feet in depth and has a minimal potential for entrainment. Scientific literature shows deepwater intakes do not pose high-risk areas for reservoir fish populations. The Narrows 2 Powerhouse is also near 100 feet in depth. This depth significantly limits the potential for species to be present and reduces the potential for entrainment. CDFG identifies that hardhead were a species that was of concern for entrainment. Hardhead are not a deepwater species and their life history describes them being in much shallower depths. There are no other special status deepwater species near the Narrows 2 Intake. Based on the existing information identified in the PAD, the need for additional information is not warranted and CDFG does not provide evidence to support the need for the study as required under Criterion 4. Additionally, CDFG has not adequately addressed Criterion 5, how the study results would inform the development of license requirements. YCWA has not made any modification to this section of Study 3.11.
2 – CDFG requested that YCWA characterize entrainment rates at the Narrows 2 Intake structure (Englebright Reservoir). (CDFG, p. 211)	**NOT ADOPTED** - The Narrows 2 Powerhouse is near 100 feet in depth. This depth significantly limits the potential for species to be present and reduces the potential for entrainment. CDFG identifies that hardhead were a species that was of concern for entrainment. Hardhead are not a deepwater species and their life history describes them being in much shallower depths. There are no other special status deepwater species near the Narrows 2 Intake. Based on the existing information available in the PAD, the need for additional information is not warranted and CDFG does not provide evidence to support the need for the additional information requested in the study as required under FERC Study Request Criterion 4. Additionally, CDFG has not adequately addressed Criterion 5, how the study results would inform the development of license requirements. YCWA has not made any modification to this section of Study 3.11.
3 – CDFG requested that YCWA assess the Narrows 2 Power Intake (Englebright Reservoir) entrainment risks using acoustic sonar or other similar methodology, developed in collaboration with Relicensing Parties. (CDFG, p. 216)	**NOT ADOPTED** - The proposed study method has been used with minimal success in prior relicensing efforts requested by agencies and has been found to provide minimal information at a high cost. The study method has led to studies being repeated with alternative sampling applications. Study results from other recent FERC relicensings have shown highly variable results with unsupportable population estimates. Even when successfully implemented, the study method does not allow for species identification, which would be necessary to assess any issues related to hardhead—the proposed species of concern, therefore the proposed study methodology would not be sufficient to meet the stated information needs as required under FERC study request Criterion 7. Regardless, this study is not adopted due to low potential for entrainment at the diversion. YCWA has not made any modification to this section of Study 3.11.
4 – CDFG requested that YCWA assess Lohman Ridge Tunnel and Camptonville Tunnel Intakes using radio-tagging and fyke netting, and that the use of these devices be developed in collaboration with Relicensing Parties. (CDFG, p. 216)	**NOT ADOPTED** – YCWA's study proposal includes, as a first phase, the use of radio tagging to assess how fish behave (e.g., are they entrained into the intakes) near the intakes under different operational conditions. YCWA believes this is the best alternative and does not require fyke netting. The combination of radio tagging and fyke netting is an excessive level of effort (Criterion 7). Further, the diversions facilities have been addressed by technical staff and the high operational variability makes fyke netting logistically infeasible (i.e., would not to able to sample 100% of the diverted flow).

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Requested Modifications	YCWA's Reply
5 – CDFG requested that acoustic monitoring data be analyzed in combination with the results of Licensee's Stream Fish Populations Study data to assess the potential for effects to rainbow trout stream populations due to entrainment. (CDFG, p. 217)	**NOT ADOPTED** - YCWA has not added the proposed study methods due to the FERC Study Request Criterion shortcomings stated above, but will consider all information collected from other relicensing studies that is relevant to inform a study discussion in the technical reports produced for entrainment monitoring. YCWA has not made any modification to this section of Study 3.11.
6 – CDFG requested that monitoring at Englebright Reservoir occur in summer 2012. (CDFG, p. 218)	**NOT ADOPTED** - CDFG does not provide sufficient detail for YCWA to perform the recommended monitoring, or for YCWA to estimate the cost associated with implementing the study as required by FERC Relicensing Criterion 7. There were no specific objectives, methods, geographic scope, analysis, nor deliverables. Additionally, CDFG does not show how the existing study plan is insufficient. YCWA has not made any modification to this section of Study 3.11.

3.1.3.16 Study 4.2 – Special-Status Wildlife - Bats *(Request for 1 Modification)*

CDFG requested a modification to YCWA's Special-Status Wildlife - Bats Study (Study 4.2) as included in the PAD. The requested modification and YCWA's reply is provided below.

Requested Modification	YCWA's Reply
1 - CDFG stated "In general the Department agrees with this proposed study plan. However, we do not agree with language in Section 3.0 and 5.3.5." (CDFG, p. 24) The requested modifications were presented in the CDFG Proposed Special Status Wildlife – Bats (SP 4.2), and are as follows: Section 3.0 Study Goals and Objectives "… provide the Federal Energy Regulatory Commission, and the Resource Agencies with jurisdiction, the data necessary to perform an analysis of how special-status bats would be affected by the no-action alternative and the Licensee's proposed project." Section 5.3.5 Step 5 – Prepare Report "Maps shall be provided to the resource agencies in a form that is useful for interactive data analysis and interpretation, and ESRI Shapefile, GeoDatabase, or Coverage with appropriate metadata. Metadata should be FGDC (Federal Geographic Data Committee) compliant. Prior to submission, the Licensee will consult with the Department of Fish & Game to ensure that the metadata is provided to the Department in an appropriate format."	**ADOPTED WITH MODIFICATION** - YCWA adopted the CDFG's changes to Section 5.3.5 with modifications. YCWA did not adopt the final sentence included by the CDFG for Section 5.3.5, which read: "Prior to submission, the Licensee will consult with the Department of Fish & Game to ensure that the metadata is provided to the Department in an appropriate format." YCWA feels that since GIS data will be provided in the requested format (FGDC compliant) then there is no need for further consultation on appropriate format.

3.1.3.17 Study 5.1 – Special-Status Plants *(Request for 4 Modifications)*

Forest Service requested modifications to YCWA's Special-Status Plants Study (Study 5.1) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

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Requested Modifications	YCWA's Reply
1 - Forest Service requested that fungi be recognized as special-status plants known or with the potential to occur in the Project Vicinity" (Forest Service, p. 34)	**ADOPTED –** YCWA has included all Forest-listed fungi in Table 4.1-1 Special-status plants known or with the potential to occur in the Project Vicinity. For the purposes of the Relicensing, "Special-status Plants" is inclusive of formally listed Tahoe and Plumas Forest Sensitive bryophytes, fungi and lichen located on Forest Service Lands and identified on the 2010 Tahoe Forest Service Sensitive Plants and Fungi list, the Tahoe National Forest Watchlist of Plants and Plant Communities, or the Plumas Forest Service Sensitive and Watchlist Plants list.
2 - Forest Service requested YCWA indicate that no surveys for fungi are necessary, but the location of known occurrences provided by the Tahoe Forest will be included in Licensee's mapping and reporting efforts (Forest Service, p. 34)	**ADOPTED –** YCWA has included language to the study plan that indicates that no surveys for fungi are necessary, but the location of known occurrences provided by the Tahoe Forest or Plumas Forest will be included in YCWA's mapping and reporting efforts.
3 - Forest Service requested that noxious weeds information be recorded, reported, and mapped as incidental occurrences" (Forest Service, p. 34)	**ADOPTED** – YCWA has added language to the study plan to indicate that noxious weeds information will be recorded, reported, and mapped as incidental occurrences.
4 – Forest Service requested that sections 5.3.3, 5.3.4, and 5.3.5 not be modified to specifically include weeds although the language in these sections will not exclude mapped occurrences of weeds or forest sensitive fungi "(Forest Service, p. 34)	**ADOPTED –** YCWA has added language to indicate in sections 5.3.3, 5.3.4, and 5.3.5 YCWA will not specifically include weeds although the language in these sections will not exclude mapped occurrences of weeds or forest sensitive fungi.

3.1.3.18 Study 6.1 – Riparian Habitat Upstream of Englebright Reservoir *(Request for 1 Modification)*

The Forest Service requested modifications to YCWA's Riparian Habitat Upstream of Englebright Reservoir Study (Study 6.1) as included in the PAD.

YCWA has not adopted the portions of the requested modification that pertain to anadromous fish upstream of Englebright Dam for the reasons described in Section 3.1.2.

The request that does not pertain to anadromous fish upstream of Englebright Dam and YCWA's reply is provided below.

Requested Modification	YCWA's Reply
1 – Forest Service requested that historical aerial photograph analysis and mapping be restricted to study sites and that language to this effect be added to Sections 5.3.4 and 8.0" (Forest Service, p. 34)	**ADOPTED** - The modification has been incorporated in the study plan as requested.

3.1.3.19 Study 6.2 – Riparian Habitat Downstream of Englebright Dam *(Request for 5 Modifications)*

USFWS and FWN requested modifications to YCWA's Riparian Habitat Downstream of Englebright Dam Study (Study 6.2) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

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Requested Modifications	YCWA's Reply
1 – USFWS requested the study area be expanded to the confluence with the Feather River. (p. 71).	**ADOPTED WITH MODIFICATION** - The study area has been identified in the study plan as the Yuba River between Englebright Dam (RM24) and the Marysville Gage. The study area does not extend farther downstream because the backwater effects of the Feather river may confound project effects.
2 – USFWS requests YCWA conduct an age structure analysis of existing riparian vegetation and assess seedling survival to examine recruitment patterns and gain insight to limiting factors. (p. 73).	**ADOPTED WITH MODIFICATION** - The study includes a description of age class structure and will include the occurrence of seedlings and/or recruits. The study provides an assessment of the current condition of riparian habitat, including any apparent associated limiting factors.
3 – USFWS requested YCWA conduct experiments assessing the effects of potential limiting factors such as depth to groundwater, substrate composition, etc. on the seed or pole-cutting survival. (p. 73).	**NOT ADOPTED** - The experiments suggested by USFWS are a research project that do not have strong nexus to the Project and are more related to potential mitigation measures. The study's field assessment will indicate the occurrence of seed germination and/or recruitment and an assessment of the current condition of riparian habitat, including any apparent associated limiting factors.
4 – USFWS requested the study report include a limiting factors analysis. (p. 73).	**NOT ADOPTED** - The study includes an assessment of the current condition of riparian habitat, including any apparent associated limiting factors.
5 – USFWS requested the study report include riparian vegetation maps. (p. 73).	**ADOPTED** - The study report will include vegetation maps to the extent necessary to understand the current condition of the riparian vegetation in the study area.

3.1.3.20 Study 7.2 – Narrows 2 Powerhouse Intake *(Request for 1 Modification)*

CDFG requested a modification to YCWA's Narrows 2 Powerhouse Intake Study (Study 7.2) as included in the PAD. The requested modification and YCWA's reply is provided below.

Requested Modification	YCWA's Reply
1 – CDFG requested that since SWRCB Order D-1644 has already directed YCWA to "diligently pursue" funding for the intake extension Step 1 and Step 2 of the study should be conducted concurrently in order for the data collected to be used with the Operations and Water Temperature models to best meet temperature objectives in the Lower Yuba. (CDFG, p. 11)	**NOT ADOPTED –** YCWA has not adopted CDFG's request for several reasons. First, the Lower Yuba River Management Team (RMT, of which CDFG is a member) has concluded that based on current information, "*the RMT concludes that implementation of the Yuba Accord provides a suitable thermal regime for target species in the lower Yuba River, and does not recommend water temperature-related operational or infrastructure modifications at this time.*"[21] Further, the RMT recommended that the conclusions be further validated and confirmed using the Water Balance/Operations Model (Study 2.2) in combination with the relicensing Water Temperature Model (Study 2.6), which is precisely what YCWA's study proposal describes. Given that initial analysis has indicated that additional temperature control infrastructure does not appear to be warranted, and pending additional confirmation and validation of that conclusion, CDFG has not adequately described the benefit of preparing a conceptual design, which is costly and partially dependant on the results, before: 1) it has been determined that the existing intake is inadequate; and 2) target temperatures for the new intake are established. YCWA believes that CDFG's request is not justified, and does not satisfy Criteria 4, 6 and 7.

3.1.3.21 Study 7.8 – ESA/CESA-Listed Salmonids Downstream of Englebright Dam *(Request for 2 Modifications)*

FWN requested modifications to YCWA's ESA/CESA-Listed Salmonids Downstream of Englebright Dam Study (Study 7.8) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

[21] Lower Yuba River Water Temperature Objectives Technical Memorandum, November 2010, Lower Yuba River Management Team. www.yubaaccordrmt.com.

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Requested Modifications	YCWA's Reply
1 – FWN requests that the study be further developed to address project effects on the anadromous portion of *O. mykiss* in relation to the resident form. Specifically FWN requests an evaluation of the lower Yuba River's thermal regime to address potential relationships between the water temperature regime and the issue of anadromy vs. residency of *O. mykiss* in the lower Yuba River (FWN p.29).	**NOT ADOPTED –** Licensee acknowledges that Study 7.8 includes evaluation of information, including water temperature, pertaining to anadromy vs. residency of *O. mykiss.* Modifications to Study 7.8 are not being made because FWN did not propose any specific methodological changes or additions to the study plan. Specifically, FWN has not provided or suggested methodology that is consistent with generally accepted practice in the scientific community for addressing project effects on the expression of anadromous life history characteristics in *O. mykiss*, and therefore has not satisfied Criterion 6. Additionally, FWN has not provided an estimated level of effort and cost that would be associated with further developing and implementing methodologies to address the issue of anadromy in *O.mykiss*, and therefore has not satisfied the requirements of Criterion 7.
2 – FWN requests that YCWA conduct studies that address the role of project-related flows and water temperature influencing hatchery Chinook salmon and steelhead strays into the Yuba River (FWN p.29). FWN requests that the "geographic scope of this relicensing must include the confluence with the Feather River" (FWN p.29).	**NOT ADOPTED** – The Yuba Accord RMT has been and continues to collect data and conduct several analyses (e.g., genetic analyses and escapement surveys) to assess the potential contribution of hatchery-origin salmonids to the total populations in the lower Yuba River, and potential relationships between straying rates and proportionate Yuba River flows and water temperatures relative to the lower Feather River. Study 7.9 presently includes an analysis of these data, existing information and ongoing data collection by the RMT and other agencies. Licensee has determined that these analyses comply with the requirements in Criterion 4. Moreover, the study area has been identified in the study plan as the Yuba River between Englebright Dam (RM 24) and the confluence with the Feather River (Study 7.8 p.4).

3.1.3.22 Study 7.9 – North American Green Sturgeon Downstream of Englebright Dam *(Request for 8 Modifications)*

USFWS and CDFG requested modifications to YCWA's North American Green Sturgeon Downstream of Englebright Dam Study (Study 7.9) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

Requested Modifications	YCWA's Reply
1 – CDFG requests that the "study goals clearly state a purpose and objective that emphasize the need to define Green sturgeon habitat quality and quantity under existing (and alternative) project flows, and to provide information necessary for development of measures to protect potential habitat for use by this species. (SP section 3.0)" (CDFG p.17). CDFG provides an example of their proposed modification to the goals statement on p.238 of the comment letter. CDFG recommends additional study goals and objectives "identify[ing] the availability of habitat for adult holding and spawning under different project related flow conditions" (CDFG p.238).	**ADOPTED WITH MODIFICATION** – Since the 1970's, only one confirmed report of an adult North American green sturgeon has been documented to date in the lower Yuba River. However, On October 9, 2009, NMFS (74 FR 52300) designated critical habitat for the Southern DPS of the North American green sturgeon, which includes the lower Yuba River extending from its confluence with the Feather River upstream to Daguerre Point Dam. Therefore, the licensee agrees with CDFG and has restated the Goals and Objectives section of Study 7.9 to include the identification of habitat availability under variable flow and water temperature regimes, in compliance with FERC's Study Request Criterion 1.
2 - CDFG indicates that the Yuba Accord RMT currently has no planned studies "specifically designed to detect green sturgeon eggs or larvae." CDFG also states that "there are currently no plans to start RST data collection in which juveniles might be captured and old RST data only covers a portion of the available spawning habitat. These data sources cannot be relied upon to detect presence or absence of green sturgeon" (CDFG p.17).	**NOT ADOPTED** – As stated in Study 7.9, since the 1970s numerous surveys of the Yuba River downstream of Englebright Dam have been conducted including annual salmon carcass surveys, snorkel surveys, beach seining, electrofishing, rotary screw trapping, redd surveys, and other monitoring and evaluation activities (see Attachment 1 to Study Plan 7.8 ESA-listed Salmonids Downstream of Englebright Dam). Additional ongoing field data collection activities are being conducted by the RMT and other agencies and programs. In addition, Study 7.9 states that based upon evaluation of existing and ongoing data collection efforts, specific deep water surveys would be conducted. Additionally, CDFG does not make any recommendation to improve methodology of the present Study Plan, nor does CDFG specifically request that RST data collection be reinitiated. Therefore, CDFG does not recommend or suggest any methodology consistent with generally accepted practice in the scientific community and does not comply with FERC's Study Request Criterion 6.

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Requested Modifications	YCWA's Reply
3 - CDFG states that the "California Department of Water Resources (DWR) is currently conducting a green sturgeon study with fixed-station hydrophones located throughout the Yuba and Feather Rivers; this study effort corresponds to the activities to be conducted in Phase 1 of the proposed YRDP study plan. To increase the potential for green sturgeon detection, Department staff recommends incorporating data from the fixed arrays currently in place on the Feather River and operated by DWR (specifically those receivers and arrays downstream from the mouth of the Yuba River). (SP section 5.1)" (CDFG p.17). CDFG specifically suggests that the study area be expanded to include the Feather River downstream to it's confluence with the Sacramento River (CDFG p. 247).	**NOT ADOPTED** – First, the Licensee is not aware that DWR is conducting a green sturgeon study with fixed hydrophone stations located throughout the lower Yuba River, as indicated in CDFG's comment. Second, the study plan clearly indicates that coordination among agencies (i.e., YCWA and CDFG) actually conducting monitoring in the lower Yuba River would be undertaken to document the presence of green sturgeon in the lower Yuba River. If DWR is monitoring with fixed station hydrophones or by roving surveys in the lower Yuba River, then the results of such surveys will be incorporated into Phase 1 of the study plan. The Licensee does not agree that information from DWR's acoustic monitoring activities on the Feather River is relevant or indicates the presence of green sturgeon in the lower Yuba River. CDFG has not shown why extending the study area beyond that contained within the existing study plan would provide a nexus between Project operations, how the study results would better inform the development of license requirements (Criterion 5) nor consideration of level of effort and cost (Criterion 7).
4 – CDFG suggested removing the section of the study plan which states that "if two or more discreet individual acoustically-tagged green sturgeon are detected in the Yuba River downstream of Daguerre Point Dam prior to January 31, 2012, then Licensee will assume that green sturgeon utilize this portion of the river, including spawning in addition to adult foraging"(CDFG p.250) as well as, the section which states "alternatively, if one or no discreet individual acoustically-tagged green sturgeon is detected in the Yuba River from Daguerre Point Dam to the mouth prior to January 31, 2012, then Licensee will obtain any requisite permits and subsequently conduct deepwater habitat surveys for North American green sturgeon." (CDFG p.250)	**NOT ADOPTED** - Licensee does not agree with the suggestion to remove the referenced section of the study plan. This section of the study plan was intended to simply determine whether or not field studies would be conducted to document the spatial and temporal distribution of green sturgeon in the lower Yuba River, not whether to assess adult holding and spawning habitat availability. CDFG has not shown why the suggestion changes the need for additional information and therefore does not comply with FERC Study Request Criterion 4, nor does CDFG provide additional consideration of level of effort and cost (Criterion 7) associated with this suggestion.
5 – CDFG requests Licensee include a cost estimate for implementation of Study 7.9 (CDFG p.256).	**ADOPTED** – In the study plan, Licensee has specified that the estimated cost to complete this study in 2011 dollars is between $200,000 and $235,000.
6 – USFWS requests a combination of DIDSON sonar and underwater videography to examine areas of the lower Yuba River likely to support holding or spawning sturgeon (USFWS p.65). .	**NOT ADOPTED** - Study 7.9 presently includes a description of methods employed by the Yuba Accord RMT that have the potential to obtain information on sturgeon presence, spatial and temporal distribution, and habitat utilization, including Acoustic Tagging and Tracking, Snorkel Surveys, Redd Surveys (including deepwater videographic habitat surveys), and Rotary Screw Trapping (discontinued operation in August 2009). Although none of the aforementioned studies is specifically designed to collect data on sturgeon, any observations of sturgeon during the implementation of these data collection activities will be incorporated into the database of information prepared for this study plan. In addition, Study 7.9 specifically describes sturgeon habitat survey methods to be employed pending the outcomes of Phase 1 of the study plan (acoustic monitoring). Licensee disagrees with USFWS' request that additional sampling is necessary. Also, USFWS' comment does not describe why the proposed study would not be sufficient to meet the stated information needs, and therefore does not comply with FERC Study Request Criterion 7.
7 – USFWS requests that the goals of the study be revised to include the examination of white sturgeon in addition to the Southern DPS of North American green sturgeon.	**NOT ADOPTED** – As stated in the PAD, study plans have been developed for the evaluation of fish species downstream of Englebright Dam categorized as ESA/CESA listed species, non listed special-status species, and the community of non-ESA fish species. White sturgeon is not an ESA/CESA listed species, nor is white sturgeon a special-status species. Therefore, they will be examined in the study addressing the non-ESA fish community downstream of Englebright Dam (Study 3.9). Additionally, assuming that green sturgeon habitat is indicative of white sturgeon habitat, then inferences regarding white sturgeon habitat availability will be made based upon the green sturgeon habitat availability assessment as presented in Study 7.9.

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Requested Modifications	YCWA's Reply
8 – USFWS states that the goals of Study 7.9 should, in part be to determine if the lower Yuba River is used by sturgeon for spawning.	**NOT ADOPTED** – Study 7.9 presently states that numerous data collection activities conducted by several agencies and programs will be examined to ascertain the presence/absence of any lifestage of green sturgeon in the lower Yuba River downstream of Daguerre Point Dam, including any evidence of spawning. The USFWS request is to simply assess whether the lower Yuba River is used by sturgeon for spawning, and therefore does not explain how the study results would inform the development of license requirements as specified in FERC Study Request Criterion 5. Further, the methodology presently proposed in Study 7.9 includes the examination of the potential availability of green sturgeon spawning and holding habitat under variable flow and water temperature regimes which exceeds the USFWS request, and complies with FERC Study Request Criterion 5.

3.1.3.23 Study 7.10 – Instream Flow for Steelhead and Chinook Salmon Downstream of Englebright Dam *(Request for 3 Modifications)*

USFWS and CDFG requested modifications to YCWA's Instream Flow Downstream of Englebright Dam Study (Study 7.10) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

Requested Modifications	YCWA's Reply
1 – CDFG requested YCWA should plan to conduct a full instream flow study below Englebright Dam, unless Relicensing Participants agree that adequate information exists to use for development of flow alternatives. (CDFG, p. 9)	**ADOPTED WITH MODIFICATION** - YCWA is in agreement with CDFG regarding the need for an instream flow study below Englebright Dam. As stated in YCWA's PAD, YCWA believes that sufficient information generally exists to develop flow-habitat relationships for the Yuba River downstream of Englebright Dam without the undertaking of a complete new hydraulic and habitat model development study effort. If additional new data gathering may be useful, it has been identified. In review, instream flow studies have been conducted on the lower Yuba River - Beak (1989), USFWS (2010a, b, c) and YARMT (2009) – which are publically available and described in YCWA's proposed study. Further, YCWA plans to work with Relicensing Participants so that a fully-developed instream flow study proposal for the lower Yuba River is included in YCWA's Revised Study Plan. YCWA can not agree here to only include in its Revised Study Plan a study proposal that is fully agreed to by Relicensing Participants.
2 - USFWS requested that habitat modeling be conducted using a two-dimensional (2-D) model rather than 1-D PHABSIM, and that logistic regression be used to develop habitat suitability criteria (USFWS, pp. 4 - 5).	**NOT ADOPTED –** YCWA did not include a proposal to solely use a 1-D PHABSIM in the Instream Flow Below Englebright study plan. Rather, YCWA stated that they are willing to work in collaboration with Relicensing Participants to evaluate existing information and past study work, identify the strongest elements of the existing work, and develop flow-habitat relationships for Chinook salmon and steelhead/rainbow trout based on the existing information in the Yuba River downstream of Englebright Dam to the extent necessary to support Relicensing, and intends to discuss methods and analysis with Relicensing Participants. The aforementioned existing information includes Instream flow studies conducted by USFWS (2010a, b, and c) as well as Beak (1989) and YARMT (2009). The USFWS studies as cited in the USFWS request and YARMT were conducted using two-dimensional (2-D) models. YCWA plans to present the YARMT model results and will include a brief overview of the YARMT model methods in the forthcoming redlined Instream Flow Below Englebright study plan. The USFWS request does not explain why the evaluation of all relevant data, including the USFWS studies as cited in the USFWS request, is not appropriate or consistent with current scientific practice (FERC Study Request Criterion 6). The USFWS request to develop HSC does not explain why the HSC from the Yuba Accord M&E Program referenced in the Study Plan are not appropriate or consistent with current scientific (FERC Study Request Criterion 6). Also, the USFWS request does not describe the level of effort or cost needed to develop HSC (FERC Study Request Criterion 7).

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Requested Modifications	YCWA's Reply
3 - In addition, the level of cost and effort is not appropriate, since the information in USFWS (2010a, b and c) is sufficient to meet the stated information needs." (USFWS, pp. 4 - 5 and 9)	**NOT ADOPTED –** First, YCWA did not include a level of effort or cost in the Instream Flow Below Englebright study plan from which the USWFS could evaluate appropriateness. YCWA stated that a cost range would be developed (once methods had been collaboratively determined). Second, immediately after requesting that habitat modeling be conducted using a 2-D model and that HSC be developed (see request 2 above), USFWS states that the USFWS (2010a, b, and c) are sufficient to meet the stated information needs. It is unclear why USFWS would in one instance request specific modeling methods while stating that none are necessary in the next. Nor, does the USFWS state why the evaluation of existing information including Instream flow studies conducted by USFWS (2010a, b, and c) as well as Beak (1989) and YARMT (2009), is not sufficient or consistent with generally accepted scientific practice (FERC Study Request Criterion 6). Evaluation of existing and relevant information is necessary to address the goals of the study and to properly assess any additional information needs.

3.1.3.24 Study 8.1 – Recreation Use and Visitor Surveys *(Request for 38 Modifications)*

NPS and the Forest Service requested modifications to YCWA's Recreation Use and Visitor Surveys Study (Study 8.1) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

Requested Modifications	YCWA's Reply
1 – NPS requested YCWA expand the study area beyond the FERC Boundary and Project Area stating potential recreational opportunities exist throughout the Project components (reservoirs, forebays, and powerhouses) and dispersed recreation use on bypassed reaches with year-round flow and trails can provide public recreation opportunities given suitable access.' (NPS, p. 3)	**NOT ADOPTED** - The comment letter requested that YCWA expand the study area to include areas outside the FERC Project Boundary, including reservoirs, forebays, powerhouses, and by-pass reaches. YCWA's study (8.1) includes the Project reservoir (New Bullards Bar Reservoir) and the Project diversion impoundments (Our House and Log Cabin diversion); however, YCWA does not propose to study the by-pass reaches, non-project forebays (Project does not include a forebay) or powerhouses. Recreation use would exist along the reaches regardless of the Project. These sites are not affected by the project and therefore do not have a Project nexus (FERC Criterion 5). The comment letter does not contain elements that will provide information towards altering YCWA's operations or practices (FERC Study Criterion 7).
2- NPS requested that in Section 4, Goal 1, YCWA use the term "study area" so that the more limited "Project Area" does not apply. (NPS, p.4)	**ADOPTED WITH MODIFICATON** - YCWA did not adopt this recommendation to change Project Area to Study Area under Goal 1. However, YCWA did add additional language to the Study Plan which defines the term Project Area, in addition to the term Study Area (see Section 5.1). The study plan now describes both terms; Project Area and Study Area have different meanings, both of which have use within the Study Plan methods description.
3- NPS recommend re-titling a table as "Study Areas for the Recreation Use, Facility Condition Survey and Visitor Survey Studies." And updating the table in consultation with the Forest Service to include numerous day-use areas which are excluded. (NPS, p. 5)	**ADOPTED** - YCWA modified the study plan Table 5.1-1 to read: "Study areas for Recreation Use, Facility Condition, and Visitor Survey Studies." YCWA will consult with the forest Service to discuss the inclusion of additional locations during three agreed upon scheduled study plan meetings with relicensing participants: May 5, June 10 & 23.
4 – NPS requested that "Goal 1" should be expanded to include local residents, with the distinction of local residents being broken out by east and west sides of the Study Area, at a minimum. This description should include a description of how each population could access the Project Area, describing the distance, road surface, and maintenance level of those routes. (NPS, p. 4)	**ADOPTED WITH MODIFICATION** - YCWA did not adopt this recommendation to add specific objectives regarding resident recreation use to Goal 1 of the Study Plan 8.1. The study plan already has an objective to "describe area residents' recreation use in the Project Area," which adequately captures the overall objective. However, YCWA did add additional language to the resident focus group (examples of types of topics to discuss at focus group) and data analysis (resident vs. non-resident analysis) steps of Study Plan 8.1 that provides more detail related to topics for the resident focus groups regarding recreation at the Project.

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Requested Modifications	YCWA's Reply
5 – NPS requested a separate, more focused survey instruments for contact (on-site) and mail-back surveys. (NPS, p. 6)	**NOT ADOPTED** -YCWA did not adopt this recommendation. It is unclear what the NPS is recommending specifically. YCWA will meet and consult with the Forest Service and other Relicensing Participants (currently scheduled for May and June, 2011) with respect to the survey and its implementation. YCWA recommends having one survey for consistency in data collection and to provide all respondents with the same opportunity to comment on Project facilities and their experience at New Bullards Bar Reservoir and other Project areas, consistent with practice in the scientific community (FERC Study Criterion 6).
6 – NPS requested that YCWA utilize on-site surveys primarily and not mailback surveys at the large boat launch facilities. (NPS, p. 7)	**ADOPTED WITH MODIFICATON** - YCWA adopted this suggestion with modification. YCWA will always use the on-site survey as the primary survey method. However, employing on-site surveys at boat launches is problematic since users are transitioning from vehicles to their boats and often do not have time to complete on-site/contact visitor surveys or refuse to do the surveys altogether, due to the time constraints to launch one's boat and move away from the ramp and dock to allow other users to launch their boats. As such, mailback surveys are often a necessity to get more input from boat launch users and reduce the refusal rate. YCWA understands the downsides to mailback surveys including a lower response rate than on-site surveys, and proposes three solutions to increase response rates. First, YCWA will attempt to contact visitors' face-to-face, offering the opportunity to take a mailback survey with them, this increases responses. Second, YCWA proposes to place mailback surveys on 25% of the observed parked vehicles in the boat launch parking lots to ensure YCWA receives an adequate response rate for the mailback surveys at these locations. Third, YCWA will offer all those returning the survey the opportunity to be part of a drawing for a gift certificate to REI for recreational equipment, again increasing the potential response rate. YCWA will monitor data collection progress and consider modifications in consultation with relicensing participants, should survey response rates lag behind expected returns. These items will be drafted into a survey protocol and shared with relicensing participants during the consultation meetings (May and June, 2011.
7 – NPS requested that the survey methodology for the boat-in campgrounds using mailback surveys at parking areas be changed to on-site surveys by visiting the boat-in campgrounds to survey visitors in person. (NPS, p. 7)	**ADOPTED WITH MODIFICATON** - YCWA adopted this suggestion with modification. YCWA will visit the boat-in campgrounds where the primary survey method will be on-site surveys. However, there may be instances where the boat-in campers are not at their campsites; in these instances, YCWA will then utilize the mailback survey method. In addition, in an attempt to reduce the refusal rate, YCWA will offer a mailback survey as an alternative only when visitors refuse the on-site survey method - at all survey sites not just boat-in campgrounds (FERC Study Criterion 6).
8 – NPS requested that on-site surveys be regarded as the primary survey method and that it also be utilized for surveying visitors at the boat-in campsites, the dispersed shoreline campers, and visitors camping on their pontoon boats while anchored (floating, not beached on the shoreline)." (NPS, p. 7)	**ADOPTED WITH MODIFICATION** - YCWA will always use the on-site survey method as the primary survey method; however, the mailback survey method will be used as the secondary method at locations that YCWA observes vehicles but does not readily observe users or where users cannot be accessed safely by YCWA staff to conduct an on-site interview. Furthermore, YCWA will utilize the on-site survey as the primary method for boat-in campsites and shoreline campers, but will not approach watercraft on the reservoir due to safety and liability concerns. As noted above, in some instances, users at the boat-in campgrounds and shoreline campsites may not be available to conduct an on-site survey and YCWA will employ a mailback survey in an attempt to get these users input. This is consistent with methods utilized in other relicensing efforts (i.e., Yuba-Bear/Drum-Spaulding; DeSabla-Centerville; South Feather) and recreation research (FERC Study Criterion 6).
9 – NPS requested that the houseboat surveys be sent to houseboat owners throughout the summer rather than at the end of the peak recreation season. (NPS, p. 7)	**ADOPTED** - YCWA adopted this suggestion without modification.
10 – NPS requested that at potential YCWA public meetings in adjacent communities, that focus group topics be shared and YCWA solicit the local residents for their participation in recreation focus groups. (NPS, p. 8)	**ADOPTED** - YCWA adopted this suggestion without modification.

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Requested Modifications	YCWA's Reply
11 - NPS stated "NBBR has a massive shoreline with semi-limited access, but reportedly high use, especially on weekends. Use data is limited to permitted camping, does not estimate unpermitted use. This use should be better quantified." (NPS, p. 8)	**ADOPTED** - YCWA adopted this recommendation without modification. YCWA will address the use estimate through on-site observations of shoreline users at NBBR.
12 – NPS requested that in Section 5.3.3.2 (Estimating Current Use) at Project Diversion Dams, recreation user contact/on-site survey methods rather than mailback/non-contact survey methods to break out the amount and types of use at the diversions. (NPS, p. 8)	**NOT ADOPTED** - YCWA proposed in Study Plan 8.1 to use on-site direct observation surveys at the Project diversions to estimate the recreation use; and not visitor surveys as the NPS comment suggests. However, regarding administering visitor surveys to diversion visitors, YCWA proposes to use the on-site survey as the primary method, but YCWA does anticipate often recreationists are not present, therefore requiring the secondary survey method (mailback). This is consistent with methods utilized in many other relicensing efforts (i.e., Yuba-Bear/ Drum-Spaulding; DeSabla-Centerville; South Feather) and recreation research (FERC Study Criterion 6).
13 – NPS requested that YCWA conduct, in place of using the SCORP data, a direct mail survey to an appropriate sample size of target metropolitan areas (Sacramento and San Francisco Bay Area) to query a population of people known to frequent the study area, but likely to be missed during the on-sight survey effort. (NPS, p. 8)	**NOT ADOPTED** - YCWA's visitor survey methodology (sample size and frequency) will capture the on-site users from these metropolitan areas throughout the survey season, particularly if these users are a significant component of the recreation user population. NPS's request is problematic. First, how does one know who the "population of people known to frequent the area but likely to be missed" are? Furthermore, YCWA disagrees that such a proposed survey effort would be "at a relatively low cost." In order to achieve statistically valid survey results, YCWA would have to send out many thousands of surveys or conduct phone surveys (equally very expensive) in order to get a valid number of completed surveys representative of a population at large. In addition, accepted methodologies for such survey efforts require substantial cost and effort and it is unclear to YCWA as to: 1) the nexus between this unknown population and the Project's visitor use (FERC Study Criterion 5); 2) why the current proposed methods are not sufficient (FERC Study Criterion 6); and 3) how this method is consistent with generally accepted practice in other relicensing data collection practices, and level of effort with respect to information to be gained specific to this relicensing effort (FERC Study Criteria 6 & 7).
14- Forest Service requested YCWA engage in a multi-pronged approach to outreach to, communicate with, and collect substantial and significant data in regard to adjacent communities to the study area. Suggested communication venues included public meetings (2, one for east side, one for west side), small group discussions (different approach than what is described in the current generic design), and increased sampling during the low, and shoulder seasons, when most local visitors are assumed to recreate at the New Bullards Bar Reservoir. (Forest Service, p. 6)	**ADOPTED WITH MODIFCATION** - YCWA adopted these suggestions with modification. YCWA acknowledged adjacent communities through its interest in addressing residents' concerns through two accepted methods: 1) specified focus groups scheduled as part of the study plan; and 2) residents information collected as part of the recreation use and visitor survey effort, as they are typically identified as part of the diversity of users that frequents project facilities and/or resources. This is consistent with methods utilized in many other relicensing efforts (i.e., Yuba-Bear/Drum-Spaulding; South Feather) and recreation research (FERC Study Criterion 6). The suggestion to include small group discussions is already anticipated as part of the study process through focus groups. YCWA does not see the need to increase sampling during the low and off peak or shoulder seasons, as it is anticipated that due to lower use levels YCWA will be able to secure ample surveys representative of these times of year. This is consistent with methods utilized in other relicensing efforts (i.e., Yuba-Bear/Drum-Spaulding; South Feather) and recreation research (FERC Study Criterion 6).
15 – NPS requested that the length of the survey period be expanded to include the shoulder seasons. (NPS, p. 6)	**ADOPTED** – YCWA's proposed study includes surveying into the "shoulder season" or off-peak season (as described within the study plan).
16 – NPS requested that there be three sampling frequency categories – peak, shoulder and low seasons and that these be: peak season for all recreation use and activities in the study area is from Memorial Day to Labor Day; shoulder season extends from April 15 to Memorial Day, and from Labor Day to October 15; low season extends from October 16 to April 14." (NPS, p. 7)	**ADOPTED** – YCWA's proposed study includes a survey schedule with the requested seasons.

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Requested Modifications	YCWA's Reply
17 – NPS requested that the visitor and observation survey frequencies be increased considerably, including temporal considerations (surveying campgrounds in the early evening, fishermen early in the morning, etc.) and that the season be expanded. (NPS, p. 6)	**ADOPTED WITH MODIFICATION** - YCWA agrees it will be necessary to consider time of day in survey data collection. YCWA will create a survey schedule to address a range of times during the day to ensure an adequate sample of varying recreational uses throughout daylight hours. YCWA will also monitor survey collection rates to ensure adequate collection on varying days to meet the survey targets outlined within the study plan.
18 – NPS requested "User Characteristics" should include an element of seasonality, an assessment of public access, and type of use (i.e. fishing (reservoir surface and shoreline), waterskiing, camping, hiking, mountain biking, etc.) by Project site. (NPS, p. 4)	**ADOPTED** - YCWA adopted this recommendation. In response, YCWA added seasonality to the objectives describing visitors' trip characteristics; language to include public access; and expanded the description of visitors' activity objectives by Project site.
19 –NPS requested YCWA include as an objective the description of recreation visitors' preferences and opinions based on recreation survey responses. (NPS, p. 4)	**NOT ADOPTED** - The objectives listed under Goal 1 (Describe the Preferences, Attitudes, and Characteristics of the Project's Recreation Users) in Study Plan 8.1 already state this general objective, but with more detail; and, the recreation survey responses will be the basis for describing visitor preferences.
20 – NPS requested YCWA add the following objectives: the level and quality of interpretation and information, an assessment of the condition of recreation facilities, and instances of wildlife/human interactions. (NPS, p. 4)	**ADOPTED** - YCWA added these specific items to the objectives in Goal 1 of the study plan.
21 – NPS requested three new goals and corresponding methods be added to the study. These included: 1) collecting ecological impact information at developed recreation sites and areas outside of developed recreation sites; 2) collecting information about land and water trails; and 3) collecting information about the effectiveness of recreation area management. (NPS, p. 4-5)	**ADOPTED WTH MODIFICATION** - YCWA added an additional study Goal to address resource impacts and inventories along the shoreline of New Bullards Bar Reservoir, which includes user-created trails as observed via a boat survey. Impact information was added as an objective under Goal 3. However, it is unclear exactly what specific "information" NPS requests. In addition, with respect to addressing "the effectiveness of recreation area management," this is a broad statement that YCWA believes is covered through various mechanisms described within the study plan, including but not limited to: visitor use survey, inventory of impacts and recreation facilities.
22 – NPS requested the mail-back questionnaire be designed in a way that moves the subject effectively through the process. The mail-back survey should be carefully developed to allow respondents to quickly and efficiently fill out the sections appropriate for their experience at NBBR and campgrounds, and be able to skip those that do not apply." (NPS, p. 6)	**ADOPTED** - YCWA will consult with Relicensing Participants to develop an effective and efficient visitor survey questionnaire. YCWA added language to the study plan that states the visitor survey questionnaire will be developed "in collaboration with Relicensing Participants."
23 – NPS requested that the perception of "crowding" be addressed including the element of wait times at motorized boat launch. (NPS, p. 6)	**ADOPTED WITH MODIFICATION** - YCWA addressed perception of wait times within the objectives and ultimately will address this topic within the survey, but not necessarily as part of the crowding question. How to address issues of crowding is well-established with specific scales and wording based on several studies and recreation literature (FERC Study Criterion 6).
24 – NPS requested that the study research sub-populations such as flat-water fishermen, water-skiers, power boaters, personal watercraft (PWC) users, house boaters, sail boaters, canoe/kayakers, trail (hiking and mountain biking) users, shore-based fishing, and visitors driving for scenery and pleasure. (NPS, p. 6-7)	**ADOPTED** - YCWA believes this matter is addressed in the study plan. Based on the survey questions, sample schedule, sampling locations, and temporal variation, YCWA will secure a range and representative sample of all recreation user groups. This is consistent with methods utilized in other relicensing efforts (i.e., Yuba-Bear/Drum-Spaulding; DeSabla-Centerville; South Feather) and recreation research (FERC Study Criterion 6).

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Requested Modifications	YCWA's Reply
25 – Forest Service requested the study describe in detail sub-populations recreating at New Bullards Bar Reservoir, and identify for each current activities, expectations, preferences, and responses to possible future management actions of flat-water fisherpersons, water skiers, and personal watercraft operators, visitors boating for pleasure, overnight campers, and day users recreating at Study area trails and viewing areas. (Forest Service, p. 4)	**ADOPTED WITH MODIFCATION** - YCWA adopted this recommendation with modification. YCWA added seasonality to the objectives describing visitors' trip characteristics; language to include public access; and expanded the description of visitors' activities objective by project site. In addition, where surveys are obtained or left as a mailback survey, the location of the survey will be documented, therefore adding to the data, the specific location of the user. The variance between groups can be determined through data analysis procedures. The question of management actions would then be determined during PM&E discussions, after data is analyzed and reports are drafted. This is consistent with methods utilized in other relicensing efforts (i.e., Yuba-Bear/Drum-Spaulding; DeSabla-Centerville; South Feather) and recreation research (FERC Study Criterion 6).
26 – NPS requested that YCWA add zip code to the information requested on the visitor survey questionnaire. (NPS, p. 7)	**ADOPTED** - YCWA adopted this suggestion without modification. Zip code is question #20 on the sample survey.
27 - Forest Service requested the study explore and document how local residents currently access the study area, including distance and level of road maintenance along that access, and examine what activities local residents do/would enjoy at the New Bullards Bar Reservoir, and any potential barriers to realizing that enjoyment." (Forest Service, p. 4)	**ADOPTED WITH MODIFCATION** - YCWA addresses residents' preferences and user information in two ways: 1) through the recreation visitor survey, which based on the sampling frame, will likely include residents as well as visitors from outside the area; 2) and, through resident focus groups. Through the visitor survey (which will include residents as well as visitors from outside the area) questions regarding activities, barriers, and many other subjects will be addressed. In addition, YCWA has committed to conducting resident focus group discussions, and in consultation with relicensing participants, will develop focus group questions to address specific issues relative to residents. This is consistent with methods utilized in other relicensing efforts (i.e., Yuba-Bear/Drum-Spaulding; South Feather) and recreation research (FERC Study Criterion 6).
28 – Forest Service stated it believes understanding the current activities, expectations, preferences, and supportiveness of different management actions of these recreation sub populations is critical to sound, long-term management of recreation in the Study Area. (Forest Service, p. 5)	**ADOPTED WITH MODIFICATION** –YCWA has adopted this recommendation with modification. First, YCWA anticipates collecting information about the diversity of sub-populations based on the sampling strategy and approach utilized and substantiated on other relicensing efforts (i.e., Yuba-Bear/Drum Spaulding; DeSabla-Centerville; South Feather) and recreation research (FERC Criterion 6). Through the effort of identifying what primary activity the recreationist or respondent is engaged in, YCWA will have useful data to determine/analyze various sub-populations within the visitor population to the BBR. The level of detail identified with sub-populations is addressed ultimately in the analysis phase of the study effort. To clarify this approach, YCWA has added additional language to the analysis section of the study plan which states additional steps to understand the various user groups within the overall visitor population.
29 – NPS requested effects on water level fluctuation on boat ramps be included in the study. (NPS, p. 4)	**ADOPTED** - YCWA added a task to the Study 8.1 that includes an operational evaluation of the two Project boat ramps and visitor attitudes towards reservoir water levels at access areas. This task will evaluate for what period of the year that both boat ramps are useable based on the median reservoir level by water year type.
30 – NPS requested that YCWA include trails, trailheads, and associated parking areas in the "Inventory and Evaluate the Existing Recreation Facilities for Condition, ADA compliance, and Use Impacts". (NPS, p. 5)	**ADOPTED WITH MODIFICATION** - YCWA has adopted this recommendation with modification. YCWA has included trailheads and parking areas. In addition, YCWA addresses trails through an inventory of trails under the added Goal 3 within the study plan.
31 – NPS requested that in Section 5.3.2, Step 1, Facility Condition Assessment, scale categories be adjusted to include a scale/category of 0-2 = Needs replacement, with the variable being imminence. The remainder of the categories would be adjusted accordingly. (NPS, p. 5)	**ADOPTED WITH MODIFICATION** - YCWA adopted this recommendation with modification. YCWA modified the existing "Poor condition" category rating (score of 0 to 2) to read "requires immediate rehabilitation or replacement". The remainder of the categories remained the same.
32 – Forest Service requested that YCWA use the e-study to conform with the Forest Service Forest Service methodology and instrument, including h4 Forest Service corporate database INFRA, and the indicators and standards utilized in that database. (Forest Service, p. 5)	**ADOPTED WITH MODIFICATION** - YCWA is unable to identify a relicensing project whereby this database was utilized to evaluate building structures. However, YCWA is willing to explore alternative indicators and standards currently utilized by the Forest Service during meetings currently scheduled (May-June, 2011) to discuss the study plan. However, YCWA employed the proposed methods which have been utilized in relicensing efforts involving Forest Service managed lands in the past (i.e., Yuba-Bear/DrumSpaulding; DeSabla-Centerville; South Feather) and recreation research (FERC Study Criterion 6).

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Requested Modifications	YCWA's Reply
33 – Forest Service requested YCWA inventory, document, and analyze the above and below ground recreation facilities within the study area. (Forest Service, p. 5-6)	**ADOPTED WITH MODIFICATION** - YCWA will inventory, document, and analyze the above ground facilities; in addition, a replacement / rehabilitation plan will be submitted with the Draft and Final License Application which includes infrastructure for Project facilities. This is consistent with methods utilized in many other relicensing efforts (i.e., Yuba-Bear/Drum-Spaulding; DeSabla-Centerville; South Feather; Beardsley-Donnells) and recreation research (FERC Study Criterion 6).
34 – NPS requested the target survey population (n = 415) be increased (or at least not limiting). (NPS, p. 6)	**ADOPTED WITH MODIFICATION** - YCWA based the sample size on the population of Project recreation users which ultimately guides the target number of surveys. The proposed target of 415 surveys adequately addresses a sample representative of the estimated visitor population which was 104,194 Recreation Days in 2008. The sample was calculated based on a 95 percent confidence interval with a sampling error no more than ± 5 percent, which is a conservative calculation at 383. YCWA will not necessarily limit the number of surveys, and will welcome additional surveys within the timeframe allotted and number of survey days scheduled. However, YCWA believes the number of targeted surveys is sufficient based on well-established sample guidelines by Salant and Dillman as referenced within the study plan (FERC Study Criterion 6).
35 – NPS requested a more robust sample size due to the lack of information and various subpopulation types that exist. (NPS, p. 7)	**ADOPTED WITH MODIFICATION** - YCWA's sample population is based on a long-standing, accepted method for surveying a known user population by Salant and Dillman. The comment does not specifically address what type of information within subpopulations is needed. Based on the current proposed methodology the sample size will yield a representative sample for the population of recreationists to New Bullards Bar Reservoir and associated study sites (FERC Study Criterion 6).
36 – NPS requested that the visitor and observation survey frequencies be increased considerably, including temporal considerations (surveying campgrounds in the early evening, fishermen early in the morning, etc.) and that the season be expanded. (NPS, p. 6)	**ADOPTED WITH MODIFICATION** - YCWA agrees it will be necessary to consider time of day in survey data collection. YCWA will create a survey schedule to address a range of times during the day to ensure an adequate sample of varying recreational uses throughout daylight hours. YCWA will also monitor survey collection rates to ensure adequate collection on varying days to meet the survey targets outlined within the study plan (FERC Study Criterion 6).
37 – NPS requested that sampling frequency be identical for both types of surveys (contact and mail-back) having one for campgrounds, and one for day use." (NPS, p. 7)	**ADOPTED WITH MODIFICATION** - YCWA adopted this recommendation with modification. The sampling frequency is identical, as survey dates will address both types of user groups. However, it is not necessary to have two separate surveys, as sometimes campground users are found in other recreation areas, therefore in developing the survey, questions not applicable to the user will be designed so they can "opt out" and move along to the next applicable question. This is consistent with methods utilized in many other relicensing efforts (i.e., Yuba-Bear/Drum-Spaulding; DeSabla-Centerville; South Feather; Beardsley-Donnells) and recreation research (FERC Study Criterion 6).
38 – NPS requested that there be three sampling frequency categories – peak, shoulder and low seasons and that these be: peak season for all recreation use and activities in the study area is from Memorial Day to Labor Day; shoulder season extends from April 15 to Memorial Day, and from Labor Day to October 15; low season extends from October 16 to April 14." (NPS, p. 7)	**ADOPTED** - YCWA adopted this suggestion without modification.

3.1.3.25 Study 8.2 – Recreational Flow *(Request for 20 Modifications)*

NPS, Forest Service and FWN requested modifications to YCWA's Recreation Flow Study (Study 8.2) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

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Requested Modifications	YCWA's Reply
1 - NPS requested other instream recreation be added to whitewater boating and angling. (NPS, p. 8)	**NOT ADOPTED** - YCWA did not adopt this recommendation since the suggested modification does not provide adequate detail as to what "other instream recreation" needs YCWA should be studying. YCWA believes operational considerations for instream flows will be made based on several factors other than recreational waterplay. For example, priority may be given to habitat protection, operations for flood control. Whitewater boating is a flow dependent activity and therefore is identified as a key recreational study effort. Angling will be addressed through focus groups. Studying populations of waterplay users, who generally adjust their recreation through factors such as weather, temperature of the water and air, and flows based on swimming ability, does not appear to add to useful information that would inform project operations. Further, providing real time flow information for the areas identified does allow various user groups to determine their own skill/ability, and evaluate the conditions relevant to the activity they wish to engage in. It is unclear how this recommendation or the study results would inform the development of the license requirements (FERC Study Criterion 5). YCWA does plan to implement on-site observations however, to get information regarding types of waterplay, number of vehicles, and parking etc. for these areas. In addition, YCWA will secure information on these locations through focus groups and observations throughout the recreation season. (FERC Study Criterion 6).
2 - NPS and FWN requested that the same river reaches be included in the angling component of the study as in the whitewater boating component of the study. (NPS, p. 10; FWN, p. 34)	**ADOPTED WITH MODIFICATION** - YCWA adopted this recommendation with modification. YCWA proposes to conduct an angling component (focus groups and comparison of regulated/unimpaired opportunity) on each of the following reaches: 1) North Yuba River (NYR) below New Bullards Bar Dam downstream to the confluence with the mainstem Yuba River; 2) Middle Yuba River (MYR) below Our House Diversion Dam downstream to Highway 49; 3) MYR below Highway 49 downstream to mainstem Yuba River; 4) mainstem Yuba River downstream to Rice's Crossing; and 5) Oregon Creek below Log Cabin Diversion Dam (RM 4.1) downstream to the confluence with the MYR (RM 0.0). (FERC Study Criteria 5 & 6). YCWA does not propose to conduct whitewater boating evaluations on 3 reaches requested by FWN: NYR below NBBR, mainstem Yuba River below NYR confluence, and Oregon Creek below Log Cabin Div. Dam since YCWA conducted a whitewater boating study on the NYR below NBBR and mainstem Yuba below NYR reaches in 2008); and Oregon Creek below Log Cabin Div. Dam since YCWA does not believe this reach has whitewater boating potential due to heavy riparian vegetation and a very narrow streambed along the upper half of the reach. Therefore, this recommendation for Oregon Creek was not adopted consistent with FERC Study Criterion 4. These are consistent with methods utilized in many other relicensing projects (i.e., Yuba-Bear/Drum-Spaulding; DeSabla Centerville; South Feather) and recreation research (FERC Study Criterion 6) and in terms of identifying a project nexus (FERC Study Criterion 5).
3 - NPS requested YCWA include the North Yuba River from Indian Valley Campground to New Bullards Bar Reservoir in the whitewater boating study component. (NPS, p. 9-10)	**NOT ADOPTED** - YCWA did not adopt this modification. NPS has not established a nexus between whitewater boating upstream of the Project and the Project (FERC Study Criterion 5). NPS states that the relationship is for mitigation due to initial Project construction, but this is not consistent with FERC's policy that baseline conditions are those that exist now. The Project does not affect whitewater boating upstream of the Project.
4 - NPS and the Forest Service requested YCWA include the North Yuba from New Bullards Bar Dam to confluence with Middle Fork Yuba reach in the whitewater boating study component. (NPS, pp. 9 & 10; Forest Service, pp. 25 & 26)	**NOT ADOPTED** - YCWA conducted a whitewater boating study with American Whitewater on this reach in 2008. No additional information is needed on this reach for whitewater boating. The results of this study were included in the PAD (Section 7.8). NPS has not described why existing information is inadequate or why additional information is needed (FERC Study Criterion 4).

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Requested Modifications	YCWA's Reply
5 - NPS and the Forest Service recommended that YCWA include the Middle Yuba from Our House Dam to Oregon Creek Day Use Area/Hwy 49 reach in the whitewater boating study component. (NPS, pp. 9 & 10; Forest Service, pp. 25 & 26)	**ADOPTED** - YCWA adopted this recommendation and has included this reach in the Proposed Study Plan.
6 – NPS, FWN and the Forest Service recommended that YCWA include the Middle Yuba from Oregon Creek Day Use Area/Highway 49 to confluence with North Yuba reach in the whitewater boating study component. And, that this reach should be studied concurrently with the study flows from upstream with a 2nd team of boaters. (NPS, p. 9 & 10; FWN, p. 34; Forest Service, p. 34)	**ADOPTED** - YCWA adopted this recommendation and will study the MYR reach from Highway 49 downstream to the mainstem Yuba River concurrent with the study flows on the upstream MYR reach from Our House Diversion Dam to Highway 49 by using 2 teams of boaters per reach.
7 – NPS, FWN and the Forest Service recommended that YCWA include the Oregon Creek from Log Cabin Dam to Oregon Creek Day Use Area/Highway 49 reach in the whitewater boating study component. (NPS, pp. 9 & 10; FWN, p. 34; Forest Service pp. 25 & 26)	**NOT ADOPTED** - YCWA did not adopt this study modification since YCWA does not believe the reach has the potential for whitewater boating. Based on visits to key access locations along Oregon Creek and reviewing photographs along the entirety of the reach, YCWA does not believe this reach provides adequate opportunity for whitewater boating opportunities given the substantial riparian vegetation encroaching on the stream channel and the very narrow stream channel, particularly along the upper half of the reach. Therefore, consistent with FERC Study Criterion 4, YCWA does not see a need for this level of additional data gathering.
8 - NPS and the Forest Service requested that YCWA include the mainstem Yuba River from confluence with North Yuba to Englebright Reservoir reach in the whitewater boating study component. (NPS, pp. 9 & 10; Forest Service, pp. 25 & 26)	**NOT ADOPTED** - YCWA conducted a whitewater boating study with American Whitewater on this reach in 2008. No additional information is needed on this reach for whitewater boating. The results of this study were included in the PAD (Section 7.8). NPS has not described why existing information is inadequate or why additional information is needed (FERC Study Criterion 4).
9 - NPS requested the study objectives include the determination of optimal and unacceptable flows, not just acceptable for both whitewater boating and angling." (NPS, p. 9)	**ADOPTED WITH MODIFICATION** - YCWA adopted this recommendation with modification to include identifying the acceptable and optimal flows for whitewater boating and angling. However, YCWA did not adopt the suggestion to identify the "unacceptable" flows since flows outside the "acceptable" flows are implicitly "unacceptable." Furthermore, YCWA has followed the protocols outlined by several other relicensing efforts (i.e., Yuba-Bear/Drum-Spaulding; DeSabla-Centerville; South Feather) and years of research (Whittaker, D., B. Shelby, and J. Gangemi. 2005. *Flows and recreation: a guide to studies for river professionals.* U.S. Department of the Interior, National Park Service, Washington, DC.). (FERC Study Criterion 6).
10 - NPS requested YCWA add an objective to examine the feasibility of providing live flow data via internet for affected reaches, including the main stem below Englebright Reservoir. (NPS, p. 9)	**ADOPTED WITH MODIFICATION** - YCWA adopted this recommendation with modification to add the objective to examine the feasibility of providing online flow data in real time only for the study reaches outlined in the Proposed Study Plan. These include: 1) North Yuba River (NYR) below New Bullards Bar Dam downstream to the confluence with the mainstem Yuba River; 2) Middle Yuba River (MYR) below Our House Diversion Dam downstream to Highway 49; 3) MYR below Highway 49 downstream to mainstem Yuba River; 4) mainstem Yuba River downstream to Rice's Crossing; 5) Oregon Creek below Log Cabin Diversion Dam (RM 4.1) downstream to the confluence with the MYR (RM 0.0), and the mainstem below Englebright Reservoir (USGS 11418000). This is consistent with methods utilized in many other relicensing efforts (i.e., Yuba-Bear/Drum-Spaulding; DeSabla-Centerville; South Feather) and recreation research (FERC Study Criterion 6). .
11 - NPS requested that YCWS define the term "unimpaired" in this study. (NPS, p. 10)	**ADOPTED** - YCWA adopted this recommendation without modification.
12 - NPS requested that the focus group process include describing existing and desired angling opportunities on the study reaches. (NPS, p. 10)	**ADOPTED WITH MODIFICATION** - YCWA adopted this recommendation with modification. YCWA added "desired angling opportunities on study reaches" to the angling component steps in Section 5.3.2 of the proposed Recreation Flow study plan. Describing the existing opportunities is already included in the current proposed plan.

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Requested Modifications	YCWA's Reply
13 - NPS requested that the study methods for the angling component should consist of four steps (Steps 2A through 2C). These include: 1) conducting angling and resident focus groups; 2) facilitating responses from anglers who participated in the recreation survey 3) comparing the regulated and unimpaired angling opportunity for the study reaches; and 4) describing the existing angling opportunities on the study reaches." Further, NPS suggested that both anglers and local residents should be included in the focus groups. (NPS, p. 10)	**ADOPTED** - YCWA adopted this recommendation. YCWA will utilize local expertise and relicensing participants to help define focus group participants.
14 - NPS requested YCWA ensure that it reaches out to and include as many organizations in the focus groups as possible. (NPS, p. 10)	**ADOPTED** - YCWA adopted this recommendation. YCWA will reach out to all potential organizations as suggested.
15 - FWN requested YCWA conduct an angler survey to determine the value, health and use of the fishery and how the Project affects angling, such as late spring and early summer Project flows that make angling difficult. The study should also address fishing guides on the lower Yuba, the number of angler days associated with fishing guides, and the amount of annual revenue generated by fish guiding. (FWN, pp. 34 & 35)	**ADOPTED WITH MODIFICATION** - YCWA adopted this recommendation with modification. YCWA does not propose to study the "value" and "health." First, the "value" is a vague term and the suggestion does not provide adequate detail/methods to understand what or how YCWA would study or determine the "value" of the fishery. Second, the "health" of the fishery will be studied in YCWA's proposed Reservoir Fish Populations study (Study 3-7) and Stream Fish Populations Above Englebright study (Study 3-8). Regarding fishing guides, YCWA does not propose to specifically study fishing guides on these reaches, but does propose to include fishing guides and local fly fishing clubs, to the extent they are willing to participate, in the proposed focus group step to address angling on the proposed study reaches. The focus groups aim to reach a range of angling stakeholders that will aim to include members of flyfishing clubs, guides, recreational anglers, etc. YCWA encourages use of contact lists and potential organizations to reach out to when forming the focus groups for consultation. These are consistent with methods utilized in many other relicensing projects (i.e., Yuba-Bear/Drum-Spaulding; South Feather; DeSabla-Centerville) (FERC Study Criterion 6).
16 - Forest Service provided detailed study methodology for the whitewater boating component including three steps. In summary, these three steps include: 1) conducting controlled flow releases on the Middle Yuba River Study Reach; 2) comparing the regulated and unimpaired whitewater boating opportunity for the Study Reach; and 3) describing the existing or potential whitewater boating opportunities on the Study Reach. Each of these steps is detailed below. (Forest Service, pp. 26 - 28)	**ADOPTED** - YCWA adopted these recommendations, as they are identical to the current proposed study plan.

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Requested Modifications	YCWA's Reply
17 - Forest Service suggested the following angling component methodology: "The study methods for the angling component consist of four steps (Steps 2A through 2C). These include: 1) conducting angling and resident focus groups; 2) facilitating responses from anglers who participated in the recreation survey 3) comparing the regulated and unimpaired angling opportunity for the six Study Reaches; and 4) describing the existing angling opportunities on the six Study Reaches. Each of these steps is detailed below. (Forest Service, p. 28) Step 2 Description of existing and desired angling opportunities on the six Study Reaches. In the recreation survey, anglers will potentially be asked about their fishing experiences on the North Yuba River above Bullards Bar Reservoir, on the Middle Fork of the Yuba below Our House Dam, and on Oregon Creek, below Log Cabin Dam. Step 2A-Focus Group (angling and resident) Interviews In Step 2A, anglers/residents will be selected through consultation with the Relicensing Participants. Subjects for angling questions will likely include: 1) access considerations, 2) target species, 3) types of fishing (wade/boat-based/shore-based; spin/bait/fly), 4) flow ranges for each type of opportunity by Study Reach, and, 5) angling quality relative to regional opportunities.	**ADOPTED WITH MODIFICATION** - YCWA adopted these recommendations with modification. For the angling component study reaches, YCWA did not include the North Yuba River above New Bullards Bar Reservoir, as the project has no effect on flow, and no project nexus. However, YCWA did include the Middle Yuba River below Our House Div. Dam to Englebright, and Oregon Creek below Log Cabin Dam. These are consistent with methods utilized in many other relicensing projects (i.e., Yuba-Bear/Drum-Spaulding; DeSabla-Centerville; South Feather) (FERC Study Criterion 6); and, have an identified project nexus (FERC Study Criterion 5). YCWA will describe the existing and desired angling opportunities based on the focus groups and survey data from visitors surveyed at the Project diversion dams (see Step 2C of YCWA's proposed Recreation Flow Study). YCWA will also include a mix of anglers (resident and non-resident) through a consultation process with Relicensing Participants; and will not single out resident focus groups for the angling study.
18 - Step 2B-Comparison of Regulated and Unimpaired Angler Flows for the Study Reach. In Step 2B, Licensee will estimate the annual number of angling usable days that occur based on regulated and unimpaired flows for the Study Reach. For the purpose of this study, a usable day is defined as a day when a recreationist would have reasonable access to the river and the mean daily flow in the Study Reach is within the acceptable flow range as determined through angler and resident focus groups (Step 1) and using the hydrology data (once approved by Licensee and Relicensing Participants)."	**ADOPTED:** YCWA adopted this recommendation, as it is identical to that of the proposed recreation flow study plan.

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Requested Modifications	YCWA's Reply
19 – Forest Service requests "Focus groups and interviews will be semi-structured, with specific topic areas and questions developed for anglers. Initial questions will focus on how people use the river. The goal is to describe the character of angling recreation opportunities and identify flow-dependent attributes. A second series of questions will focus on the effects of flows on those attributes and whether interviewees can identify specific flows that affect the quality of angling opportunities. Focus groups will ideally range in size from four to seven study participants, and one or two facilitators. The researcher/discussion-leader will pose open-ended questions to guide discussion, but will draw out participants with follow-up questions as needed. The focus groups would ideally be scheduled after researchers have conducted fieldwork to increase opportunities for shared understanding about the places and issues under discussion. As with any research methodology, interviews/focus groups have strengths and weaknesses. They are most useful for describing consensus opinion of homogenous groups, and they allow participants to brainstorm collectively to improve the number or accuracy of ideas. However, generalizing from small groups is more challenging, particularly if there is diversity within a group. The extent of agreement within groups is one input into decisions about whether additional flow evaluation studies would prove useful. Licensee will develop an initial list of participants for the focus groups with Relicensing Participants. Researchers will make a good faith effort to reach identified individuals to conduct interviews." (Forest Service, p. 28)	**ADOPTED:** YCWA adopted this recommendation, as it is identical to that of the proposed recreation flow study plan.

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Requested Modifications	YCWA's Reply
20 - Forest Service suggested the following methodology for the study: "Step 2C – Description of the Existing Angling Opportunities on six Study Reaches In Step 2C, Licensee will document the angling opportunities on each Study reach, including: 1) popular angling locations; 2) access; 3) types of angling (species, seasonality, shore, wade, etc.); 4) range of useable flows for angling on each Study Reach; and 5) the annual number of usable days that occur based on regulated and unimpaired flows. Step 3 - Data Analysis and Study Report Preparation In Step 3, Licensee will synthesize the data collected/analyzed into a study report at the conclusion of the study, and will include summary data in tables, attachments and/or appendices. Specifically, the report will include the following sections: 1) Study Goals and Objectives; 2) Methods; 3) Results; 4) Discussion; and 5) Description of Variances from the FERC-approved study proposal, if any. Study-Specific Consultation Licensee will engage in the following study specific consultation: Licensee, in consultation with Relicensing Participants, will identify the team of boaters to run the controlled flow releases at a specified time on the Middle Yuba River Study Reach. Licensee, in consultation with Relicensing Participants, will identify anglers to participate in focus groups." (USFS, p. 29)	**ADOPTED** - YCWA adopted these recommendations. YCWA added angling types as suggested (species, seasonality, shore, wade, etc.), to the study plan.

3.1.3.26 Study 10.1 – Visual Quality *(Request for 2 Modifications)*

The Forest Service requested modifications to YCWA's Visual Quality Study (Study 10.1) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

Requested Modifications	YCWA's Reply
1 – Forest Service requested the study area include Project facilities on NFS land, and associated viewsheds. The viewsheds include travel routes, recreation areas, and water bodies from which the Project facilities on NFS land are visible. The Project facility to be assessed is New Bullards Bar Dam and facilities associated with the dam. Our House Diversion and Log Cabin dams will be assessed only to the degree they are visible from sensitivity level 1 and 2 routes and recreation use areas." (Forest Service, p. 31)	**ADOPTED WITH MODIFICATION –** The study area includes Project facilities on NFS land and the locations on NFS from which Project facilities, either on NFS or private land, can be viewed. The study takes this approach because the Forest Service has guidelines related to visual quality on NFS land and the study can assess consistency with Forest Service guidelines. YCWA has not adopted the Forest Service's request to expand the study area to include locations on private land that view Project facilities on NFS land. Forest Service visual quality criteria do not apply to private land, so assessing consistency with Forest Service criteria on private land is inappropriate. Visual quality on private land is subject to county plans, which do not include any specific visual quality guidelines for which consistency can be assessed. Therefore, the information to be derived form expanding the study area would not inform license requirements on NFS land (Criterion 5).

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Requested Modifications	YCWA's Reply
2 – Forest Service requested YCWA modify the methods described in YCWA's study, Refer to pages 32 and 33 of Forest Service's letter for a description of the requested methods. (Forest Service, pp. 32-33)	**NOT ADOPTED** – YCWA, in general, does not necessarily object to the Forest Service's proposed methods. However, Forest Service has not described why YCWA's proposed study, which includes most of the Forest Service components, is not adequate to develop the necessary information. YCWA believes that its proposed methods provide greater detail (e.g., YCWA's study provides a list of facilities to be examined, and the Forest Service's requested modifications state that YCWA will consult with the Forest Service to develop a list of facilities) and is less open-ended than the methods proposed by the Forest Service, and would welcome detailed comments on its detailed methods. Further, the Forest Service has not identified why existing information (e.g., YCWA's PAD summarizes Forest Service Visual Quality Objectives, or VQOs, in the area, and YCWA's PAD includes this summary) is not adequate in some areas (e.g., why does the effort need to be done in a study if it is already done?). Nor has the Forest Service described the level of effort and cost associated with its requested modification. Therefore, the Forest Service has not adequately addressed study criterion 7.

3.1.3.27 Study 12.1 – Historic Properties *(Request for 8 Modifications)*

The UAIC requested modifications and FERC requested one modification to YCWA's Historic Properties Study (Study 12.1) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

Requested Modifications	YCWA's Reply
1 – UAIC requested YCWA consider qualified Native American surveyors to participate in paid surveys. (UAIC, p. 2)	**ADOPTED WITH MODIFICATION** - If YCWA needs additional surveyors to perform the study, it will consider all qualified candidates, including those recommended by UAIC. All surveyors will be retained by YCWA's cultural surveyor consultant. However, at this time, YCWA does not agree carte blanche to retain UAIC recommended surveyors (Criterion 6).
2 – UAIC requests that there be no collection of any Native American cultural resources or human remains. (UAIC, p. 2)	**NOT ADOPTED** - Per the request of Plumas National Forest, chronologically-sensitive artifacts will be collected. Also refer to Section 5.3.2.3 on the Discovery and Treatment of Human Remains. The comment was not adopted as the methods include in YCWA's proposed study are consistent with generally accepted practice in the scientific community and with federal and state laws protecting human remains (Criterion 6).
3 – UAIC requests YCWA consult with and submit evaluations to tribes and SHPO. UAIC contends tribes should be allowed to be consulting and concurring parties to a cultural programmatic agreement, as well as signatories on any documents. UAIC requests YCWA submit any evaluation to tribes at the same time they are submitted to agencies. (UAIC, p. 2)	**ADOPTED WITH MODIFICATION** - YCWA agrees evaluations of prehistoric and Tribal cultural resources will be submitted to tribes for their review and comments at the same time as the evaluations are provided to agencies, and prior to the time the final report is submitted to SHPO, as provided under Section 106 of the NHPA (Criteria 2, 3, and 6). As provided for under Section 106, YCWA will continue to consult with the Tribe and to consider any input provided by the Tribe in a timely fashion (Criterion 6). YCWA does not control decision on agreement documents signatories. That would be a decision at the federal level (FERC). That portion of this comment is not adopted as it is out of scope of the goals and objectives of the proposed study (Criterion 1).
4 – UAIC requests YCWA include districts and landscape studies. (UAIC, p. 2)	**ADOPTED WITH MODIFICATION** - YCWA agrees to assess the results of the cultural resources inventory to be implemented under the Study Plan for the potential identification of cultural landscapes or districts within the APE, and to document any cultural landscapes or districts for the purpose of identifying and managing potential historic properties in accordance with Section 106 of the NHPA (Criterion 6). Additional, follow-up studies that may be required to assess the significance of a cultural landscape or district for the NRHP, or to determine appropriate management measures, will not be known until the study plan is completed and, thus, may be conducted outside of study plan implementation, for example as part of a Historic Properties Management Plan (Criterion 7).
5 – UAIC requests that any time SHPO's office, agencies, or YCWA meet or discuss to concur on the identification, evaluation, treatment, or disposition of cultural resources, UAIC be invited to participate. (UAIC, p. 1)	**ADOPTED WITH MODIFICATION** - YCWA agrees to invite and consult with UAIC and other participating tribes to discuss the identification, evaluation, treatment, or disposition of prehistoric archaeological sites or other Tribal cultural resources within the Project APE. Consultation with Tribes regarding non-prehistoric or other non-Tribal cultural resources may not be appropriate and will be at the discretion of YCWA (Criteria 3 and 6).

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Requested Modifications	YCWA's Reply
6 – UAIC requests to be signatories on agreements or memorandums written for the Project, including being a concurring and consulting party on any PA, MOA, or MOU. (UAIC, p. 1)	**NOT ADOPTED** - YCWA does not control decisions on agreement document signatories. That would be a decision at the federal level (FERC). Comment is not adopted as it is out of scope of the goals and objectives of the proposed study (Criterion 1).
7 – UAIC requests YCWA submit evaluation to the UAIC for review prior to SHPO review. (UAIC, p. 2)	**ADOPTED** - See response to Comment 3 above.
8 – FERC requests YCWA include provisions for future cultural resource investigations into river reaches outside the present project boundaries where future project-related effects could affect cultural resources. (FERC, Appendix B, p. 4)	**ADOPTED** - If YCWA proposes an addition to the Project, the study area will be expanded, if necessary, to include areas potentially affected by the addition (Criteria 4, 5, 6, and 7).

3.1.3.28 Study 13.1 – Native American Traditional Cultural Properties *(Request for 8 Modifications)*

The UAIC requested nine modifications and FERC requested one modification to YCWA's Native American Traditional Cultural Properties Study (Study 13.1) as included in the PAD. The requested modifications and YCWA's reply to each request are provided below.

Requested Modifications	YCWA's Reply
1 – UAIC requested YCWA consider Preservation Brief 36, which addresses cultural landscapes. The study plan should also include appendices that focus on the ethnohistorical and ethnobotanical importance of the area. (UAIC, p. 2)	**ADOPTED WITH MODIFICATION** - YCWA agrees to assess the results of the TCP study for the potential identification of cultural landscapes within the APE, and to document any cultural landscapes for the purpose of identifying and managing potential historic properties in accordance with Section 106 of the NHPA (Criterion 6). Additional, follow-up studies that may be required to assess the significance of a cultural landscape for the NRHP, or to determine appropriate management measures, will not be known until the study plan is completed and, thus, may be conducted outside of the study plan implementation, for example as part of a Historic Properties Management Plan (Criterion 7). Additionally, background research conducted by YCWA to date, in preparation of the PAD, did not result in the identification of any reports focused on ethnohistorical or ethnobotanical importance of the Project area, thus this portion of the comment is not adopted as YCWA has no reports to append to the Study Plan (Criteria 6 and 7).
2 – UAIC requests YCWA include review of Riddle, Town and Wilson, Sheri Tastch, and Littlejohn as references in the study proposal. (UAIC, p. 2)	**ADOPTED** - YCWA will add the references to the list of sources to be reviewed as part of the Study Plan archival research (Criterion 6).
3 – UAIC requests YCWA include in its study proposal that UAIC could not make the meetings due to scheduling conflicts (Sec. 4.2). (UAIC, p. 2)	**ADOPTED** - YCWA will add that UAIC was unable to attend scheduled meetings due to scheduling conflicts (Criterion 6).
4 – UAIC requests YCWA please provide contact names of informants or representatives. Please identify or remove. (Table 4.2-1). (UAIC, p. 2)	**ADOPTED** - YCWA will remove information from Table 4.2-2 (Criterion 2).
5 – UAIC requests the study proposal include discussion of Preservation Brief 36 and landscapes. (UAIC, p. 3)	**ADOPTED:** See Comment 1 above.

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Requested Modifications	YCWA's Reply
6 – UAIC requests YCWA submit evaluation to the UAIC for review prior to SHPO review (Sec. 5.3.7, Step 7). (UAIC, p. 3)	**ADOPTED** - YCWA agrees to submit evaluations of prehistoric and Tribal cultural resources to participating Tribes for their review and comments at the same time as the evaluations are provided to agencies, and prior to the time the final report is submitted to SHPO, as provided under Section 106 of the NHPA (Criteria 2, 3, and 6).
7 – UAIC states that tribes should be allowed to conduct their own interviews (Sec. 6.0, Bullet 4). (UAIC, p. 3)	**NOT ADOPTED** - YCWA plans to retain a qualified, professional ethnographer who meets the standards for ethnography as defined in Appendix II of National Register Bulletin No. 38, to facilitate interviews with the multiple participating Tribes, and to develop the results of the interviews and study into a professional report. As indicated in YCWA's proposed study plan, the ethnographer will coordinate with Tribes to determine the scope and breadth of the interviews, which does not preclude Tribal chairs or designated Tribal representatives from assisting the ethnographer in obtaining relevant data from interviewees (Criterion 6).
8 – In section 5.1, you should include provisions for future cultural resource investigations into river reaches outside the present project boundaries where future project-related effects could affect cultural resources. (FERC, Appendix B, p. 4)	**ADOPTED** - If YCWA proposes an addition to the Project, the study area will be expanded, if necessary, to include areas potentially affected by the addition (Criteria 4, 5, 6, and 7).

3.1.4 Replies to Comment Letters That Requested New Studies

YCWA found that six of the letters each requested one or more new studies for a total of 18 new studies. Table 3.1.4-1 lists the commenters and the new studies they requested.

Table 3.1.4-1. YCWA proposed studies on which one or more modifications are requested and the commenters who requested the modifications.

Requested New Study		Forest Service	USFWS	NMFS	YCFG	CCSD	FWN
#	Description						
--	Water Distribution Use and Efficiency Study	--	--	--	--	--	X
--	Hydropower Operations Impacts on Flood Control	--	--	--	--	--	X
--	Exports from the Upper Yuba River Watershed	--	--	--	--	--	X
--	Mercury Methylation and Transport	--	--	--	--	--	X
--	Aquatic Invasive Species	X	--	--	--	--	X
--	Mule Deer	--	--	--	X	--	
--	Anadromous Fish Passage	--	--	--	--	--	X
--	Determination of Anadromy in Yuba River *O. mykiss*	--	X	--	--	--	--
--	Salmonid Floodplain Rearing	--	X	--	--	--	--
--	Effects of the Project and Related Activities on Fish Passage for Anadromous Fish	--	--	X	--	--	--
--	Effects of the Project and Related Activities on Hydrology for Anadromous Fish	--	--	X	--	--	--
--	Effects of the Project and Related Activities on Water Temperatures for Anadromous Fish	--	--	X	--	--	--
--	Effects of the Project and Related Activities on Coarse Substrate for Anadromous Fish	--	--	X	--	--	--
--	Effects of the Project and Related Activities on Large Wood and Riparian Habitat for Anadromous Fish	--	--	X	--	--	--
--	Effects of the Project and Related Activities on the Loss of Marine-derived Nutrients in the Yuba River	--	--	X	--	--	--
--	Effects of the Project and Related Activities on Aquatic Benthic Macroinvertebrates for Anadromous Fish	--	--	X	--	--	--

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Table 3.1.4-1. (continued)

Requested New Study		Forest Service	USFWS	NMFS	YCFG	CCSD	FWN
#	Description						
--	Anadromous Fish Ecosystem Effects Analysis	--	--	X	--	--	--
--	Impacts in the Area of Recreation on the CCSD	--	--	--	--	X	--
--	Impacts of Recreation on Camptonville Volunteer Fire Department Study	--	--	--	--	--	--
	Subtotal	*1*	*2*	*8*	*1*	*1*	*6*
	Total	**18**					

YCWA's reply to each requested new study (except where it pertains to upstream of Englebright Dam, which is addressed in Section 3.1.2) is provided below by study. YCWA has indicated whether it has adopted the request for new study, adopted the request with modification or not adopted the request. For requests, adopted with modification or not adopted, YCWA explains the reason why it modified or did not adopt the request in the context of FERC's seven study criteria.

3.1.4.1 Water Distribution and Use Efficiency Study (*Request for a New Study*)

FWN requested a new study named Water Distribution and Efficiency (FWN, pp. 12, 13 and 21 – 23). According to FWN, the purpose of the study would be to provide an overview and details of consumptive water deliveries and sales of water by YCWA. Specifically, FWN requests the study provide a comprehensive description of magnitudes, timing, and ultimate destination of water that is diverted at the Project's Our House and Log Cabin diversion dams, and stored in New Bullards Bar Reservoir. The objectives of the study would be to: 1) describe the water rights, water sales, purchases, seasonality of deliveries and description of distribution and ownership of water; and 2) study demands on the system including to agriculture, human consumption and the environmental water account. FWN's study would include all water conveyance facilities dependent on and affected by operations of the Project.

NOT ADOPTED - YCWA has not adopted FWN's request for a new Water Distribution and Efficiency Study because FWN has not adequately addressed FERC's study Criteria 4, 5, and 7. With regard to criterion 4, FWN has not described why the detailed information provided by YCWA in its PAD regarding water rights and water deliveries (Section 6.3.1.8, Water Supply Deliveries, and Section 7.2.8, Existing or Proposed Water Rights Potentially Affecting or Affected by the Project) is not adequate to meet the information needs for relicensing. While it is true that the information in the PAD does not describe the condition of YCWA's or other's water delivery canals (note that the Project does not include any water delivery canals, and there are no diversions of water for consumptive purposes from any Project facility or feature except for recreation use from New Bullards Bar Reservoir), FWN has not described why this information regarding non-Project canals is needed for relicensing.

With regards to study criterion 5, Project nexus and development of license requirements, FWN has not described how the information that would be developed by its requested study would inform license requirements, especially in light of YCWA's proposed Water Balance/Operations Model Study proposal that would develop an operations model for the Project. This model

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would consider all demands on Project operations. Further, water delivery canals are not Project facilities used for power generation, and therefore are not under FERC's jurisdiction to condition.

Last, FWN has not provided any specific methods or an estimate of level of effort or cost to perform the study, so YCWA is unable to address FERC's criterion 7 in detail. YCWA can assume, but it cannot know the level of effort and cost FWN believed to be associated with its requested study. However, YCWA questions whether the study would have any value given existing information and YCWA's proposed Water Balance/Operations Model Study described above.

3.1.4.2 Hydropower Operations Impacts on Flood Control Study (*Request for a New Study*)

FWN requested a new study named Hydropower Operations Impacts on Flood Control (FWN pp. 23 and 24). FWN states that this should be a "Study of flood control requirements, efforts and plans" and is requesting an analysis of flood control requirements and needs. FWN requested a "Study of various elevation scenarios of Englebright's dam face and lake surface elevation" with regard to "Englebrights function as a Forebay for Narrows 2 and Afterbay for Colgate." This portion of the requested study is to examine changes to the physical configuration of Englebright Dam as it relates to potential effects on Project hydropower operations.

NOT ADOPTED - FWN stated that this should be a "Study of flood control requirements, efforts and plans." but does not state why this should be studied (FERC study criterion 1) and what resources should be examined (FERC study criterion 5). As stated in YCWA's PAD, the flood control requirements for the Project are under the jurisdiction of the USACE and part of an agreement between YCWA and the USACE as detailed in the flood control manual for the Project. As part of YCWA's proposed Water Balance-Operations Model Study (Study 2.2), the flood control manual requirements and constraints will be included in the coding of the model and the effects of flood control criteria on Project operations will be included in modeling simulation results. FWN has not stated why this inclusion of the current flood control criteria as required in the USACE flood manual in the Water Balance/Operations Model Study is inadequate.

In the second bulleted item at the top of page 24 of FWN's comment letter, FWN stated that there should be a "Study of various elevation scenarios of Englebright Dam's face and lake surface elevation" with regard to "Englebrights function as a Forebay for Narrows 2 and Afterbay for Colgate." For this element of the requested study, FWN asked for a study of alterations to the physical configuration of a non-Project facility that is neither owned nor operated by YCWA. FWN has not stated what resources potentially affected are to be examined in the study (FERC study criterion 5), and how this would inform the development of license requirements.

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3.1.4.3 Exports from Upper Yuba River Watershed Study (*Request for a New Study*)

FWN requested a new study named Exports from Upper Yuba River Watershed (FWN, pp. 24 and 25). FWN states that YCWA should conduct a study of how the Project must react to significant water exports by the Yuba-Bear (FERC Project No. 2266 and Drum-Spaulding (FERC Project No. 2310) projects.

FWN requests YCWA study the effects of the Yuba-Bear and Drum-Spaulding Projects on flows to the lower Yuba River watershed and subsequent effects on YRDP operations to meet required flows in the lower Yuba River.

NOT ADOPTED - With regard to how the YCWA Project reacts to the existing operations of the upstream Yuba-Bear and Drum Spaulding projects, YCWA Water Balance-Operations Model Study (Study 2.2) already includes these operations in the analysis of Project operations that is requested by FWN because these upper basin project effects are part of the existing condition hydrology, and will be part of the input hydrology for modeling. Therefore, the FWN request already is part of an existing study, and FWN has not stated why YCWA's existing study proposal is inadequate to analyze these effects.

As stated in YCWA's letter to FERC dated January, 31, 2011, which commented on the draft license applications for these other projects, YCWA believes the these projects do affect lower Yuba River flows, and that the effects of these project's operations and diversions of water out of the Yuba watershed on lower Yuba River flows should be studied in the relicensing processes for those projects. Because the amounts of water that from these other projects that flow down the Middle and South Yuba Rivers to the lower Yuba River are affected by these other projects' operations, it is appropriate for the relicensing processes for these other projects to analyze these impacts. On the other hand, the impacts of these other projects are not impacts of the Yuba River Development Project and FWN has not stated how an analysis of these other projects' operations would provide any information that would inform the development of potential license requirements for the YRDP, as required by FERC study request Criterion 5.

3.1.4.4 Mercury Methylation and Transport Study (*Request for a New Study*)

FWN requested a new study named Mercury Methylation and Transport (FWN p. 26). The objective of FWN's proposed study is "…to study the potential for turbines at the New Bullards Bar Minimum Flow, New Colgate, and Narrows II powerhouses to increase the downstream yield of biologically active mercury." To meet this objective, FWN requested YCWA determine the concentrations and forms of mercury in water, sediment and biota through time (include seasonal changes) in the following locations: 1) upstream of New Bullards Bar Reservoir, 2) in New Bullards Bar Reservoir, 3) in New Colgate Powerhouse intake water, 4) in New Colgate Powerhouse tailrace water, 5) in the Middle Yuba River, 6) in USACE's Englebright Reservoir, 7) in Narrows 2 Intake, 8) in Narrows 2 Powerhouse effluent, 9) in Englebright Dam spill, and 10) in the Lower Yuba River."

NOT ADOPTED - YCWA has not adopted FWN's request for a new Mercury Methylation and Transport Study because FWN has not adequately addressed FERC's study Criteria 4, 5, 6, and

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7. With regard to criterion 4, describe existing information concerning the subject of the study proposal, YCWA's PAD includes a considerable amount of water quality information upstream, downstream, and within the Project Area. The data includes 17 different locations where fish tissue was collected and analyzed for mercury (See PAD Section 7.2.9.3, Table 7.2.9-5); California's Office of Environmental Health Hazard Assessment's (OEHHA) evaluation of each location's data for fish ingestion risks (OEHHA 2003; OEHHA 2009); and the CVRWQCB's evaluation of each reach for TMDL listing (CVRWQCB 2009). YCWA's PAD also contains a considerable amount of peer-reviewed work, specific to the Yuba River, documenting mercury concentrations in biota upstream, downstream and within the Project Area (May et al. 2000; Slotton et al. 1995, 1997; and others). In addition, mercury in surface water will be further studied through YCWA's proposed Water Quality Study (Study 2.3) and Bioaccumulation Study (2.4). FWN does not identify the gaps in this dataset that would be filled by implementing their proposal.

With regards to study criterion 5, the relationship between the Project nexus and effects and how the information would inform development of license requirements, YCWA does not follow FWN's linkage between turbines and mercury reactivity; YCWA's literature search performed in support of the PAD did not yield any documented cases of this relationship. YCWA does not follow how license requirements would be informed. YCWA does not propose any activities associated with the mobilization of mercury-laden sediments, especially sediment dredging. There are already OEHHA fish advisories for mercury at various locations in the Project Area and surrounds, and a sufficient amount of data was available for OEHHA to make a determination in many areas where they have not issued an advisory (OEHHA 2009). Further, YCWA has proposed a Bioaccumulation Study (Study 2.4) that conforms to OEHHA's data requirements for fish ingestion advisories.

With regards to study criterion 6, how methodology is consistent with generally accepted practice in the scientific community, FWN provides no framework or methodology for connecting concentrations and forms of mercury in water, sediment and biota through time (include seasonal changes) and turbine operations. YCWA's own literature search performed in support of the PAD did not yield any documented cases of this relationship or examples of a generally accepted evaluation methodology.

With regards to study criterion 7, consideration of level of effort and cost, FWN has not provided any specific methods or an estimate of level of effort or cost to perform the study, so YCWA is unable to address FERC's criterion 7 in detail. YCWA can assume, but it cannot know the level of effort and cost FWN believed to be associated with its requested study. FWN does not identify why data collected to date and the proposed Water Quality Study (Study 2.3) and Bioaccumulation Study (Study 2.4) would be insufficient to meet the stated information needs, nor does FWN describe the methodology by which the proposed data collected would meet stated information needs.

3.1.4.5 Aquatic Invasives Study (*Request for a New Study*)

FWN requested a new study named Aquatic Invasives (p. 25). FWN requested study would develop a thorough inventory of aquatic invasive species.

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NOT ADOPTED - YCWA has not adopted FWN's request for a new an Aquatic Invasives Study because FWN has not adequately addressed FERC's study Criterion 7, consideration of level of effort and cost. FWN has not provided any specific methods or an estimate of level of effort or cost to perform the study, so YCWA is unable to address FERC's criterion 7 in detail. YCWA can assume, but it cannot know the level of effort and cost FWN believed to be associated with its requested study. YCWA believes that providing incidental information regarding the occurrence of invasive aquatic species is adequate to inform the development of license conditions. Field staff will be trained to identify aquatic invasive species (i.e., *Didymosphenia geminate*) and will record all incidental sightings. A brief summary of all incidental sightings of aquatic invasive species will be reported.

3.1.4.6 Mule Deer Study (*Request for a New Study*)

YCFG requested a new study named Mule Deer (YCFG Attachment 1). According to YCFG, the purpose of the study would be to provide the necessary data to determine the effects and/or cumulative effects on mule deer. The objectives of the study would be to determine: 1) migratory routes that may be in the Project Area and if the Project impacts those migratory routes, 2) impacts of the Project on the mule deer winter range and 3) impacts of the Project (if any) with respect to deer mortality related to drowning in reservoirs. YCFG states the data will aid CDFG in determining the effect of the deer herd management plan(s). In order to achieve the objectives of the study, YCFG included the following methodology:

- The proposed study should coincide with current CDFG spring and fall deer count study.
- Radio tracking, which was a method previously used during the 1986 D3 Deer Telemetry Study, or use of a more advanced technology that would allow collection of better data by having a more statistically significant sample size.
- Use raking and dusting of soil to determine how many deer may feel compelled to swim the reservoir (and therefore potentially succumb to drowning).

NOT ADOPTED - YCWA has not adopted YCFG's request for a new Mule Deer Study because YCFG has not adequately addressed FERC's study Criteria 4, 5, 6 and 7; and because the CDFG, the agency with jurisdiction over the management of mule deer in California, did not request any studies specific to mule deer. With regards to criterion 4, YCFG has not described why the information provided by YCWA in its PAD regarding mule deer (Section 7.4.5.2, Wildlife Resources in Project Area) is not adequate to meet the information needs for relicensing. Furthermore YCFG indicates that "anecdotal evidence regarding deer seen swimming the reservoir" suggests "an impact on migratory routes and possible impacts from deer mortality due to drowning." YCWA believes that mule deer have integrated Project facilities into their seasonal movement patterns, which is supported by the information presented in the PAD. YCWA also believes that if mule deer were in fact drowning in New Bullards Bar Reservoir it would have been documented and reported during the CDFG's annual spring and fall deer count study or by Project staff. Also, mule deer are known to swim across water bodies and anecdotal evidence does not require the need for additional information.

With regards to study criterion 5, Project nexus and development of license requirements, YCFG has not adequately explained the nexus between Project operations and effects beyond

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acknowledging the presence of winter range and migratory routes in the Project Area. The presence of something does not necessarily constitute an effect. Furthermore, YCFG has not identified any Project activities that have the potential to effect mule deer migration routes or winter range under current baseline conditions.

The YCFG requested study identifies development of conservation easements on privately owned property as potential license requirements. The requested study only identifies the presence of winter range and/or migratory routes as the means to inform their suggested license requirements. However, this description does not describe in detail how information collected by its requested study would be evaluated in order to inform such requirements. For example, the requested study does not describe how migration routes would be defined. Without such metrics YCWA would be unable to apply the information from the requested study to development of license conditions

With regards to study criterion 6 and 7, proposed study methodology and consideration of level of effort and cost, YCFG identifies radio tracking of mule deer and "raking and dusting" reservoir shorelines as potential methods. While radio tracking is a generally accepted practice to monitor wildlife movement, YCFG has not provided the necessary detail that would allow YCWA to evaluate the effort and cost of such a study. YCFG only states that "effort and cost may not be significant" if the study is performed as part of the spring and fall surveys conducted by the CDFG. However, the availability of CDFG staff to take on the additional responsibility was not identified, which leads to additional uncertainty with respect to study costs. The described methods do not provide specific detail as to the number of mule deer required for tracking. Furthermore, performing the requested study as part of CDFG's fall and spring surveys only covers the migration periods and does not provide any information on mule deer while occupying their winter range. Finally, it is difficult to understand how such rare incidents (which YCFG states are only "theorized but not documented in the Project area") would have significance to a local deer population which CDFG has determined is healthy enough to warrant an annual public hunting season.

YCFG indicates that raking and dusting would be suitable for determining the number of deer that may swim across Project reservoirs and therefore have the potential to drown. While raking or dusting areas is a generally accepted practice to determine wildlife presence, it is best applied in small defined areas such as engineered wildlife crossings at roads. This method is not practical for use over large areas like New Bullards Bar Reservoir shoreline.

3.1.4.7 Anadromous Fish Passage Study (*Request for a New Study*)

FWN requested a new study named Anadromous Fish Passage (FWN, pp. 18 – 21). According to FWN, the purpose of the study would be to identify the most effective strategies to provide fish passage over Project facilities (i.e., Our House, Log Cabin and New Bullards Bar dams) and over USACE's Englebright Dam. The study would address fish passage options at dams, attraction flows for fishways at dams, and passage at natural barriers upstream of Englebright Dam, and flows for various life stages of anadromous fishes upstream of Englebright Reservoir.

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NOT ADOPTED - YCWA has not adopted the requested new study, which only pertains to fish passage at Englebright Dam and upstream of the dam, for the reasons described in Section 3.1.2.

3.1.4.8 Determination of Anadromy in *O. mykiss* Study (*Request for a New Study*)

USFWS requested a new study named Determination of Anadromy in *O. mykiss* (USFWS, Enclosure 1, pp. 1 – 15).

NOT ADOPTED - YCWA has not adopted the portions of the requested new study that pertain to anadromous fish upstream of Englebright Dam for the reasons described in Section 3.1.2.

YCWA has not adopted the portions of the requested new study that pertain to anadromous fish downstream of Englebright Dam for the reasons described below.

The USFWS study request states that one of the reasons showing good cause of why their proposed new study plan should be approved includes *"The existing [O. mykiss] population information and the coarse-level habitat assessment are not sufficient to fully inform ESA consultation or the ILP record for this proceeding."* However, USFWS does not provide any support for this statement.

The USFWS study request states that one of the reasons showing good cause of why their proposed new study plan should be approved includes *"New information on o. mykiss [sic] anadromy has become available."* However, the USFWS does not describe, make reference to, or provide any "new information."

The objective of the USFWS study request is primarily focused on the passage of anadromous *O. mykiss* upstream of Englebright Dam. The USFWS states that *"The objective of the Study Request is to determine the extent of anadromous O. mykiss presence in the reaches upstream and downstream of Englebright Dam, using non-lethal techniques to inform Project operations that may affect passage upstream of Englebright Dam during high flows…"* (USFWS p.18). The USFWS study request identifies "study elements" as sub-components to be used for the evaluation of the primary objective of anadromous *O. mykiss* passage upstream of Englebright Dam (see Section 3.1.2).

USFWS study request (p.18) states the *"The goal of the study is to determine…the extent of potential impact, from Project operations, on the Northern Sierra Nevada Steelhead Diversity Group of the ESU [sic]."* First, Licensee notes that USFWS incorrectly refers to an ESU, and that the correct reference regarding Central Valley Steelhead is to a Distinct Population Segment (DPS). Second, USFWS has not shown why extending the study area beyond that contained within the Study 7.8 - ESA and CESA Listed Salmonids Below Englebright Dam - would provide a nexus between Project operations, or how the study results would better inform the development of license requirements, as specified in FERC Study Request Criterion 5, nor has the USFWS explained the nexus between project operations and the entire Northern Sierra Nevada Diversity Group, as specified in FERC Study Request Criterion 5.

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The USFWS study request states that one of the study elements will evaluate *"Timing of adult migration (both upstream and downstream) of O. mykiss in and from the Yuba River using trap/weir technologies."* The USFWS does not describe existing information relative to *O. mykiss* movement, in particular the VAKI Riverwatcher system that has been operated since 2004 (included in the Study 7.8 - ESA and CESA Listed Salmonids Below Englebright Dam), and the need for additional information consistent with FERC Study Request Criterion 4. In addition, the USFWS does not describe existing information relative to *O. mykiss* movement, in particular the CDFG's Wild and Heritage Trout Acoustic Monitoring Program (included in the Study 7.8 - ESA and CESA Listed Salmonids Below Englebright Dam), and the need for additional information consistent with FERC Study Request Criterion 4.

The USFWS study request states that one of the study elements will evaluate *"Movement information on O. mykiss from the Yuba River through the Feather River between Yuba Rural (Wilke Avenue) and Verona, the Sacramento-San Joaquin River Delta, and the San Francisco Bay Estuary…"* (USFWS p.18). USFWS has not shown why extending the study area beyond that contained within the Study 7.8 - ESA and CESA Listed Salmonids Below Englebright Dam - would provide a nexus between Project operations, or how the study results would better inform the development of license requirements (Criterion 5).

The USFWS study request states that one of the study elements will include a *"Length at age analysis of O. mykiss in the Yuba River through scale analysis."* However, the USFWS does not describe existing information relative to *O. mykiss* length-at-age scale analysis, in particular the study titled "Age, Growth, and Life History of Steelhead Rainbow Trout (*Oncorhynchus mykiss*) in the Lower Yuba River, California" (Mitchell 2010) that described results from analysis of scales taken from 787 juvenile and adult steelhead/rainbow trout collected in the lower Yuba River from 1998 to 2007 (included in the Study 7.8 - ESA and CESA Listed Salmonids Below Englebright Dam), and the need for additional information consistent with FERC Study Request Criterion 4.

The USFWS study request states that one of the study elements will include "*Collection of tissue samples to provide genetic information from the Yuba River consistent to that available for other Central Valley Rivers (Garza and Pearse 2008)."* However, the USFWS study request later acknowledges that the Yuba River was studied in the report titled **"**Population Genetic Structure of *Oncorhynchus mykiss* in the California Central Valley" (Garza and Pearse, undated) the analysis focused on 17 initial "population" samples, comprised of fish sampled from the Kings, Tuolumne, Stanislaus, Calaveras, American, Yuba, Feather, Butte, Deer, Battle, and McCloud river sub-basins. This report, and results contained therein, are incorporated in Study 7.8 - ESA and CESA Listed Salmonids Below Englebright Dam. The USFWS has not shown the need for additional information consistent with FERC Study Request Criterion 4.

The USFWS study request states that one of the study elements will evaluate the *"Number of anadromous O. mykiss detected in relation to Yuba River flows."* As explained and incorporated in Study 7.8 - ESA and CESA Listed Salmonids Below Englebright Dam – the Yuba Accord RMT has collected data on the number of *O. mykiss* observed passing the VAKI Riverwatcher system beginning in 2004 through the present, and is in the process of evaluating potential relationships between *O. mykiss* movement and the flows in the lower Yuba River that will be

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presented in an interim report by October 2012. The USFWS does not sufficiently describe existing information regarding the subject of the study proposal and the need for additional information consistent with FERC Study Request Criterion 4.

3.1.4.9 Salmonid Floodplain Rearing Study (*Request for a New Study*)

USFWS requested a new study named Salmonid Floodplain Rearing (USFWS, Enclosure 3, pp. 1 – 11).

NOT ADOPTED - Extensive existing information is available addressing the goals and methods included in the USFWS new study request named Salmonid Floodplain Rearing, and this information has been described and incorporated in Study 7.8 - ESA and CESA Listed Salmonids Below Englebright Dam. However, in the new study request, the USFWS does not describe existing information pertinent to the new study request, and has not explained or justified the need for additional information consistent with FERC Study Request Criterion 4, as described below.

Extensive existing information is included in Study 7.8 - ESA and CESA Listed Salmonids Below Englebright Dam. Some of the information describes previous studies in the lower Yuba River that utilized beach seining, RST sampling, electrofishing, angling, and snorkel surveys (see Study 7.8). For example, the information contained in Study 7.8 includes SWRI et al. (2000) which summarized several previously conducted field data collection efforts assessing annual and seasonal patterns of abundance and distribution of juvenile Chinook salmon and steelhead during the spring and summer rearing periods. This document also describes growth rates, size at time of emigration, potential relationship between growth and water temperature, condition factors, outward signs of stress (i.e., physical abnormalities, lesions, parasites), and relationships between emigration timing and flow and water temperature.

As another example, more recently the report titled "Age, Growth, and Life History of Steelhead Rainbow Trout (*Oncorhynchus mykiss*) in the Lower Yuba River, California" (Mitchell 2010) described results from analysis of scales taken from 787 juvenile and adult steelhead/rainbow trout collected in the lower Yuba River from 1998 to 2007 (also included in the Study 7.8 - ESA and CESA Listed Salmonids Below Englebright Dam). This report specifically addresses growth rates of *O. mykiss* in the lower Yuba River, which is one of the primary goals of the USFWS new study request.

The USFWS new study request suggests sampling over a range of flows varying from 1,000 to 4,000 cfs from February through spring months. Previous sampling was conducted during flows encompassing, and exceeding this specified range of flows. Study 7.8 - ESA and CESA Listed Salmonids Below Englebright Dam presently incorporates an analysis of available existing information and ongoing data collection activities addressing juvenile salmonid habitat utilization, temporal and spatial distribution, timing, size and condition of outmigrant juveniles, and potential relationships with flow and water temperatures.

The general study methods for the new study request presented on page 57 of USFWS' comment letter clearly emphasizes the importance of sampling using Rotary Screw Traps (RSTs),

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including "calibration tests." As described in Study 7.8 - ESA and CESA Listed Salmonids Below Englebright Dam – several years of RST sampling have been conducted seasonally on the lower Yuba River between 1999 to 2005, and year-round from 2006 to 2009. The USFWS new study request does not describe how one or two additional years of RST sampling would add to the multiple years of information already available. Moreover, mark-recapture tests have been performed approximately weekly for juvenile steelhead/rainbow trout and juvenile Chinook salmon during recent years of RST sampling. Capture efficiency tests were performed throughout the year whenever catch of juvenile Chinook salmon or steelhead/rainbow trout in the RST was sufficient to perform the capture efficiency tests.

The USFWS new study request also suggests the conduct of a juvenile salmonid predator study. However, it is not clear how this suggestion is consistent or would contribute to accomplishing the stated goal of USFWS' new study request.

3.1.4.10 Effects of the Project and Related Activities on Fish Passage for Anadromous Fish (*Request for a New Study*)

NMFS requested a new study named Effects of the Project and Related Activities on Fish Passage for Anadromous Fish (NMFS, Enclosure F, NMFS Request #1). According to NMFS, the purpose of the study would be to develop information regarding fish passage requirements for both juvenile and adult life stages of fall-run Chinook salmon, spring-run Chinook salmon, steelhead, North American green sturgeon and Pacific lamprey. The geographic scope of the study would be both upstream and downstream of the river's major dams and reservoirs, as provided in a list by NMFS and which includes non-Project facilities (e.g., Daguerre Point Dam, Hallwood-Cordua Diversion, South Yuba-Brophy Diversion, Brown's Valley Diversions, Narrows Powerhouse and Englebright Dam). NMFS's requested study includes 13 elements:

- Request Element 1 - Information about hydraulic conditions near Project facilities.
- Request Element 2 - Information about fish presence and migration behavior from downstream to upstream of Project facilities. In particular, NMFS requests fish surveys in the Narrows 2 and New Colgate powerhouse areas using DIDSON cameras and diving/snorkeling.
- Request Element 3 - Specific fish passage information/study request at Daguerre Point Dam. In particular, regarding the condition and efficiency of fish ladders and screens at Daguerre Point Dam.
- Request Element 4 - Hydraulic mapping and bathymetric studies at Narrows, Narrows 2 and New Colgate powerhouses and at Englebright, New Bullards Bar, Our House and Log Cabin dams, including an analysis of the need for tailrace barriers at Narrows 2 and New Colgate powerhouses and bypass outfalls.
- Request Element 5 – None listed.
- Request Element 6 - "Fill in the gaps" in the existing MWH Fish Passage Study contracted by NMFS.

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- Request Element 7 - Study reservoir fish passage conditions upstream of each project dam, including temperature profiles and conditions near powerhouse intakes; 2) bathymetry profiles in vicinity of Project intakes and New Colgate, Narrows 1 and 2 powerhouses; and 3) collect hydraulic profiles in similar areas.
- Request Element 8 - Study fish passage at Daguerre, Englebright, and New Bullards Bar, and their tailwater pools; general conditions throughout the reservoirs and their tailwater pools, including collecting temperature profiles, bathymetry profiles and hydraulic profiles.
- Request Element 9 – Assess fish passage conditions in the South Yuba River.
- Request Element 10 – Assess fish passage conditions in the vicinity and upstream of New Colgate powerhouse to New Bullard's Bar Dam.
- Request Element 11 – Assess fish Passage conditions in the Middle Yuba River.
- Request Element12 – Assess fish passage conditions in the Upper North Yuba River.
- Request Element 13 – Participate in pilot field experiments for anadromous fish reintroduction, including adult tracking and migration; 2) smolt outmigration and reservoir transit studies, hydroacoustic mark/re-capture studies; and 3) using fertilized hatchery eggs to establish "founder" populations in upstream reaches.

NOT ADOPTED - YCWA has not adopted the portions of the requested new study that pertain to anadromous fish passage at Englebright Dam or anadromous fish upstream of Englebright Dam for the reasons described in Section 3.1.2.

The portions of the requested new study that do not pertain to anadromous fish passage at Englebright Dam and anadromous fish upstream of Englebright Dam and YCWA's reply to each request is provided below.

With regards to FERC's study criteria, NMFS has not adequately addressed FERC's study Criteria 4, 5 and 7. NMFS has requested that YCWA develop a tremendous amount of detailed information (e.g., hydraulic models, local bathymetry and water temperature at numerous sites), while providing only general reasons why NMFS believes the detailed information is needed. NMFS has not explained why existing information and the information to be gathered by YCWA's proposed studies and the RMT regarding the distribution of anadromous fish below Englebright Dam is not adequate to address license requirements.

With respect to criterion 5, project nexus and how the information would inform license requirements, NMFS has included in its request dams and diversions (e.g., Daguerre Point Dam, Hallwood-Cordua and South Yuba-Brophy, to name a few) and powerhouses (e.g., PG&E's Narrows Powerhouse) that are not Project facilities and located downstream of Project facilities. NMFS's has provided no evidence concerning Project nexus or how information from the requested study would be used to inform license requirements, because FERC does not have jurisdiction over these non-Project and federal facilities.

With respect to criterion 7, NMFS has provided few details regarding methods but estimates that the entire study may cost up to $850,000. Without proposed specific details, YCWA cannot

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assess methods or costs, though YCWA anticipates that the cost to perform the study NMFS describes, once the details are provided, is at least 2-3 times the cost estimated by NMFS. Because anadromous fish are not present at New Bullards Bar Reservoir, Our House Diversion Dam, or Log Cabin Diversion Dam, and anadromous fish passage is completely blocked by a non-Project federal facility, the studies requested by NMFS are too costly and not necessary to fulfill the information needs for environmental analysis, or to inform FPA §18 decisions or FPA §10(j) recommendations regarding this Project.

3.1.4.11 Effects of the Project and Related Activities on Hydrology for Anadromous Fish (*Request for a New Study*)

NMFS requested a new study named Effects of the Project and Related Activities on Hydrology for Anadromous Fish (Enclosure F, NMFS Request #2). NMFS's new study request includes seven request "elements," which may be summarized as follows:

- Request Element 1 – Develop three hydrologic data sets: 1) unimpaired using an independent analysis and not using information from the NID's Yuba-Bear Hydroelectric Project and PG&E's Drum-Spaulding Project relicensing hydrology, 2) Yuba River Development Project operations with unimpaired inflows to the Project; and 3) current conditions. The datasets would include data for each of the three scenarios for points in the Yuba River watershed, in the Feather River above and below the confluence with the Yuba River and in the Sacramento River to the Sacramento-San Joaquin Delta.
- Request Element 2 – Develop a flood frequency analysis on the three data sets listed in NMFS's Request Element 1, and summarizing average monthly flows and pulse flows.
- Request Element 3 – Compute the timing, magnitude, duration, and volume of spills at Project dams, and Englebright Dam.
- Request Element 4 – Analyze data for changes of flow and stage below the New Colgate and Narrows 2 powerhouses as well as below Log Cabin Diversion Dam and Our House Diversion Dam, and document the 10 largest ramp-up and ramp-down events. Under this item, NMFS also requests that a two-dimensional (2-D) hydraulic model of the reach below the New Colgate Powerhouse to Englebright Reservoir be developed and the ramp-up and ramp-down events modeled for effects on anadromous fish passage barriers and fish passage facility operations.
- Request Element 5 – Develop a 2-D hydraulic model for the Yuba River below Narrows 2 Powerhouse to the Feather River to assess floodplain inundation frequency and magnitude under current and unimpaired conditions.
- Request Element 6 – Determine the location and configuration of partial or full natural barriers to anadromous salmonid migration, and analysis of hydrology at these locations to determine under what conditions and what times these barriers are passable to fish, if at all.
- Request Element 7 – Analyze and synthesize available information regarding Project's effects on the Bay-Delta ecosystem and consumptive water demands in the Bay-Delta.

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NMFS states that the requested information is to be used to inform NMFS in its ESA §7 consultation and decisions regarding potential fishway alternatives and designs and for the purpose of safe and effective fish passage.

NOT ADOPTED - YCWA has not adopted the portions of the requested new study that pertain to anadromous fish passage at Englebright Dam or anadromous fish upstream of Englebright Dam for the reasons described in Section 3.1.2.

The portions of the requested new study that do not pertain to anadromous fish passage at Englebright Dam and anadromous fish upstream of Englebright Dam and YCWA's reply to each request are provided below.

Request Element #1
The hydrology data sets of NMFS request are identical to the hydrology data sets already included in the Hydrology Report and data provided in the PAD. These data sets are the Unimpaired and Current conditions hydrology, with the exception that the unimpaired hydrology includes data received from the Yuba-Bear/Drum Spaulding relicensing. NMFS provides no information to suggest that the information from the Yuba-Bear/Drum-Spaulding relicensing is incorrect and therefore should not be used (Criteria 4 and 7). The third requested hydrology data set, Project operations with unimpaired inflows to the Project, is not hydrology but is a modeling study. This data set could only be developed as the results of a modeling scenario using unimpaired hydrology as inputs to the Water Balance/Operations Model, and is therefore not a new study but a requested model run scenario for Study 2.2 Water Balance/Operations Model. YCWA will consider all reasonable model run requests once the Water Balance/Operations Model is developed, and outside of that study.

With regard to the development of hydrology below the mouth of the Yuba River in the Feather River and in the Sacramento River to the Bay-Delta, NMFS has not identified in its comments how examination of these other rivers would inform the development of potential license requirements, as required in FERC's study criterion 5. Instead, NMFS in its comments specifically addresses the applicability of criterion 5 with regard to fish passage at fishways and not on these resources. In addition, for Project hydrology effects on anadromous fish below Englebright, NMFS does not provide any statements or information that suggest the current studies are inadequate to provide information on any Project effects on these fish at this location as required by FERC study criterion 7.

Request Elements #2 and #3
Flood frequency analysis and ramping rate analysis on resulting flow and stage are already part of YCWA's Study 2.1 Hydrologic Alternation. NMFS has not provided any information that this study is inadequate to produce sufficient information to characterize flood frequency or ramping rates (Criteria 4 and 7).

Request Element #4
The characterization of ramping rates of change of flow below the various Project facilities is already part of study 2.1 Hydrologic Alteration. The request for a 2D model for the reach of the Yuba River below New Colgate Powerhouse is stated by NMFS to be needed for analysis of

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effects on anadromous fish passage, and the reasons for not adopting this request are described in Section 3.1.2.

Request Element #5
YCWA has adopted with modification NMFS's request for YCWA to perform a 2-D habitat model. The model will not be developed to the Feather River since backwater conditions make modeling that section of river problematic. The model will be able to assess various flow conditions.

Request Element #6
Request Element #6 applies to the river upstream of Englebright Dam. Refer to Section 3.1.2.

Request Element #7
NMFS states that the requested information on YRDP effects on the Bay-Delta ecosystem and consumptive demands in the Bay-Delta is to "shed light on the Project's effects" on these resources, however NMFS does not state how this information would inform the development of potential license requirements (FERC study criterion 5). In addition, although the Yuba Accord EIS cited by NMFS describes some of the effects on the inflow to the Bay-Delta that occur with the changes in Project operations with the implementation of the Yuba Accord, these effects are contrasted in that document with alternative Project operations, and the Yuba Accord EIS showed that as a percentage change in the timing and amount of flow to the Bay-Delta, these effects are very small.

3.1.4.12 Effects of the Project and Related Activities on Water Temperature for Anadromous Fish (*Request for a New Study*)

NMFS requested a new study named Effects of the Project and Related Activities on Water Temperature for Anadromous Fish (Enclosure F, NMFS Request #3). NMFS's request includes three request elements: 1) water temperature monitoring, 2) temperature refugia, and 3) temperature modeling.

NOT ADOPTED - YCWA has not adopted the portions of the requested new study that pertain to anadromous fish passage at Englebright Dam or anadromous fish upstream of Englebright Dam for the reasons described in Section 3.1.2. The portions of the requested new study that do not pertain to anadromous fish passage at Englebright Dam and anadromous fish upstream of Englebright Dam and YCWA's reply to each request are provided below.

Requested Element #1
NMFS's requested water temperature monitoring does not include any monitoring locations that are not already included in YCWA's proposed Water Temperature Monitoring Study.

Request Element #2
Request Element #2 applies to the river upstream of Englebright Dam. Refer to Section 3.1.2.

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Requested Element #3
NMFS's request includes many criteria that are included in YCWA's proposed Water Temperature Modeling Study. However, NMFS does not describe why YCWA's proposed study is not adequate to provide sufficient information (Criterion 7). NMFS estimated cost for all of the requested elements is from $100,000 to $250,000. YCWA estimates the total costs would be two to three times NMFS estimate, and NMFS's request, if adopted, would not substantially increase the amount or detail of information over what the current study plan will provide.

3.1.4.13 Effects of the Project and Related Activities on Coarse Substrate for Anadromous Fish (*Request for a New Study*)

NMFS requested a new study named Effects of the Project and Related Activities on Coarse Substrate for Anadromous Fish (NMFS, Enclosure F, NMFS Request #4). NMFS requests a study to evaluate the effects of the Project on fluvial processes and channel morphology, which includes the amount and size of coarse substrate material that life stages of anadromous and resident fishes use and rely upon in freshwaters. The study area includes: 1) the Middle Yuba River from Our House Diversion Dam to the confluence with the North Yuba River; 2) Oregon Creek from the Log Cabin Diversion Dam to the confluence with the Middle Yuba River; 3) the North Yuba River from New Bullards Bar Dam to the confluence with the Middle Yuba River; 4) the portion of the Yuba River from the confluence of the North and Middle Yuba rivers downstream to Englebright Dam; 5) the lower Yuba river from Englebright Dam to the Feather River confluence; and 6) the portion of the North Yuba, Middle Yuba, Oregon Creek affected by base-level control exerted by either the diversion dam (Our House, Log Cabin) or reservoir water level (New Bullards Bar). NMFS's new study request includes seven requested "elements," which are summarized as follows:

- Request Element #1: Develop sediment supply estimates to Project-Affected reaches through reservoir sediment rates into Project and nearby reservoirs and extrapolation of sediment yields to Project-affected reaches.
- Request Element #2: Coarse level stratification and study site selection through reviewing existing information and historical aerial photography, establish map-based channel slopes and longitudinal profiles, identify response reaches, and select study sites.
- Request Element #3: Assess channel morphology and fluvial processes by mapping sediment facies, collecting bulk samples of alluvial sediment, measure cross sections, establish stage-discharge relationship, measure longitudinal profile, map coarse sediment storage, and note other channel characteristics.
- Request Element #4: Calculate bed mobility and sediment transport capacity by a tracer rock study, calibrating a hydraulic model, calculating grain shear stress, establish incipient motion, calculate frequency of bedload mobilization, and calculate transport capacity.
- Request Element #5: Evaluate coarse sediment storage in Project-affected reaches and compare to reference reaches.
- Request Element #6: Synthesize results to evaluate ecological and geomorphic impacts by a sediment budget, summary and tabulation of results, develop bedload and sediment transport

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rating curve, and develop a simple conceptual model of channel sediment dynamics under current and reference conditions.

- Consideration of Level of Effort and Cost: Cost of study was estimated to be between $125,000 and $225,000.

NOT ADOPTED - YCWA has not adopted the portions of the requested new study that pertain to anadromous fish passage at Englebright Dam or anadromous fish upstream of Englebright Dam for the reasons described in Section 3.1.2.

The portions of the requested new study that do not pertain to anadromous fish passage at Englebright Dam and anadromous fish upstream of Englebright Dam are addressed below.

Request Element #1
NMFS noted on page 4 of Request #4 that sedimentation rates in Englebright Reservoir (Childs et al. 2003and Snyder et al. 2004a) can be used for representing South and Middle Yuba supply rates downstream of the South Yuba confluence with the Yuba River so no further data from YCWA are necessary.

Request Element #2
NMFS states that "detailed study sites downstream of Englebright Dam are likely not necessary due to pre-existing information and studies already underway from the RMT (Pasternak 2010)." No further site selection for detailed study sites for YCWA will be done.

Request Element #3
NMFS states that "detailed study sites downstream of Englebright Dam are likely not necessary due to pre-existing information and studies already underway from the RMT (Pasternak 2010)." The methods set out in Request Element #3 includes the data to be collected and analysis performed at detailed study sites, so it is unclear what additional data and analyses are being requested for the area downstream of Englebright Dam. YCWA cannot perform an analysis of the recommended classification and study site measurements given the ambiguous request. Furthermore, the analysis proposed appears related to selecting and analyzing reaches which are most responsive to future changes in hydrologic and sediment supply regime. It is not clear that this exercise is related to a description or analysis of the effects of the existing project or that YCWA's proposed Studies (1.1 Channel Morphology Upstream of Englebright Reservoir and 1.2 Channel Morphology Downstream of Englebright Reservoir) are not sufficient to provide the information needed. Therefore YCWA will not perform this new study request element as it does not satisfy FERC study criteria 5 or 7.

Request Element #4
Existing data and results of other studies pertaining to bed mobility thresholds, associated frequency and return-intervals for current and unimpaired conditions, and average annual sediment transport capacity will be summarized in YCWA's proposed Channel Morphology Downstream of Englebright Dam study. YCWA has modified the study proposal to include this summary. A new study is not needed.

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Request Element #5
NMFS stated on page 9 that channel sediment storage downstream of Englebright Dam is not necessary due to existing information, ongoing gravel augmentation projects, and the large quantities of hydraulic mining related sediment stored throughout the lower Yuba, so no further data gathering is required downstream of Englebright. Upstream of Englebright Reservoir, the requested study element attempts to compare sediment storage in Project affected reaches to that of reference reaches and to identify Project affected reaches that may warrant gravel augmentation. It is not practical to try this approach in a watershed which has historically undergone such extensive hydraulic mining, and YCWA feels that the information needs related to sediment storage are adequately fulfilled with its proposed Study 1.1 Channel Morphology Upstream of Englebright Reservoir and Study 1.2 Channel Morphology Downstream of Englebright Reservoir. A new study is not needed.

Request Element #6
Last, existing data and results of other studies being done below Englebright Dam will be used for the synthesis.

3.1.4.14 Effects of the Project and Related Activities on Large Wood and Riparian Habitat for Anadromous Fish (*Request for a New Study*)

NMFS requested a new study named Effects of the Project and Related Activities on Large Wood and Riparian Habitat for Anadromous Fish (NMFS, Enclosure F, NMFS Request #5). According to NMFS, the three Project dams (New Bullards Bar, Our House Diversion, and Log Cabin Diversion) along with Englebright Dam trap large woody debris (LWD), which is periodically removed from the reservoirs by YCWA and not returned to the river ecosystem. These actions have reduced LWD supplied to reaches downstream of Project dams, which could have negative effects on downstream habitat for anadromous fish. The magnitude of Project effects on LWD is a function of the amount of LWD trapped in project reservoirs, the potential mobility of that wood, and the distribution of potential depositional zones downstream. Information regarding the historical LWD budget along with the LWD volumes removed by the Applicant will help inform potential protection, mitigation and enhancement measures.

- Request Element #1: Quantitative and anecdotal information on LWD removal from Project reservoirs and diversions including New Bullards Bar and Englebright reservoirs, and Our House and Log Cabin Dams, will be assembled. Potential impacts of other land use activities, such as timber harvest, salvage logging, road construction, and channel modification that can alter LWD loading should also be assessed. From this information, estimates of annual volumetric flux of wood volume entering project reservoirs and diversions will be calculated.
- Request Element #2: LWD survey during the geomorphic field surveys conducted for NMFS information request #4 perform survey of LWD in 4 size classes. Various additional measurements may be needed of "key" pieces of LWD depending on size of the LWD in comparison to the channel bankfull width. Control reaches upstream of significant watershed development should be surveyed for LWD using the protocols above and used in comparative analysis. Control reaches outside of the Yuba basin can be chosen but must be

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representative of the climate, hydrology and geomorphology and geology of the study reaches and adequate justification provided.

- Request Element #3: Evaluation of Project effects on LWD and LWD Budget to evaluate and summarize Project and other land-use effects on LWD dynamics in the Project area which extends from the upstream extent of project reservoirs Evaluation of Project effects on LWD should include the development of a LWD budget that extends from the upstream extent of Project Reservoirs past Englebright Dam to the confluence with the Feather River. Conceptually, a wood budget uses a mass balance approach to analyze the input, output, depletion, and changes in storage of LWD in a channel network using a simplified mass balance relationship for LWD for a given channel segment.
- Request Element #4: Evaluate the Project's effects on riparian habitat and vegetation by assessing composition and distribution, and by quantifying the amount and type of riparian habitat lost under Project Reservoirs, including: New Bullards Bar, Our House, and Log Cabin reservoirs. The most appropriate method will likely be extrapolating riparian composition, distributions, and frequency from control reaches with similar geomorphic characteristics as the channels now under the reservoirs along the length of the now submerged channels. Reference reaches may also be used.

ADOPTED WITH MODIFICATION - YCWA has not adopted the portions of the requested new study that pertain to anadromous fish passage at Englebright Dam or anadromous fish upstream of Englebright Dam for the reasons described in Section 3.1.2.

The portions of the requested new study that do not pertain to anadromous fish passage at Englebright Dam and anadromous fish upstream of Englebright Dam and YCWA's reply to each request are provided below.

Request Element #1
Quantitative and anecdotal information on LWD removal from Project reservoirs and diversions including New Bullards Bar, Log Cabin Diversion and Our House Diversion will be assembled and reported within YCWA's proposed Channel Morphology Above Englebright Reservoir Study (1-1). Information regarding LWD supply on Slate Creek and the Yuba-Bear/Drum-Spaulding Project have been reported in YCWA's PAD (Section 7.1) but will be summarized for the study report. All LWD that comes down the SYR is captured by Englebright, which is not a project dam. Licensee understands that USACE sometimes passes some LWD over the dam.

Request Element #2
During YCWA's habitat mapping in reaches above Englebright Reservoir, LWD was quantified in ground-mapped sections. The quantity of LWD by reach is summarized in YCWA's PAD Section 7.1.

Due to the comprehensive LWD data for reaches upstream of Englebright Reservoir, additional assessment will not be added to the Riparian Habitat above Englebright (6-1) study plan. However, a LWD assessment has not been performed below Englebright Dam so the above methods will be added to the detailed study site assessment in YCWA's proposed Riparian Habitat below Englebright (6-2) study. A new study is not needed.

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The methods will remain and diameter classes used will remain the same as those used for the YCWA's habitat mapping report (Attachment to YCWA's proposed Instream Flow Above Englebright Reservoir Study). The detailed study site results using these criteria can be compared to those results for the same reaches using the slightly larger minimum sizes to be able to compare LWD loading in Project-affected reaches with other LWD studies. However, more detailed measurements will be taken for key pieces located within riparian habitat study sites. These are defined as pieces either longer than 1/2 times the bankfull width, or of sufficient size and/or are deposited in a manner that alters channel morphology and aquatic habitat (e.g., trapping sediment or altering flow patterns). Key piece characteristics to be recorded will include:

- piece location, either mapped onto aerial photos or documented with GPS
- piece length
- piece diameter
- piece orientation
- position relative to the channel
- whether the piece has a rootwad
- tree species or type (e.g., conifer or hardwood)
- whether the piece is associated with a jam or not
- the number of large pieces in the jam
- recruitment mechanism
- function in the channel

A LWD assessment has not been done below Englebright so the above methods will be added to the detailed study site assessment in YCWA's Riparian Habitat below Englebright (6-2) study plan

Control reaches on the North Yuba and the Middle Yuba will not be established because the North Yuba has no reference reach that is of similar morphology and the Middle Yuba above Our House Dam is affected by upstream diversions and dams. The only possible reference reach is one within Oregon Creek. A LWD assessment of a distance of at least 20 times the bankfull width will be done on a section of Oregon Creek above Log Cabin Dam and these values will be compared to the LWD assessment within Oregon Creek. Regional comparisons of LWD loading (e.g., Rudiger and Ward 1996, Slate Creek values) will also be made. A new study is not needed.

Request Element #3

YCWA will evaluate the effects of the Project on LWD as it pertains to the Project nexus in YCWA's proposed Riparian Habitat Below Englebright Dam study. The Project nexus is the volume of wood trapped in Project-facilities that is no longer available to downstream reaches, and the estimate of LWD in Project-affected reaches compared to regional estimates of LWD loading in similar sized Sierra streams. Existing conditions will be assessed and Project influences on LWD loading will be discussed. LWD loading prior to the dams being in place are not relevant as those conditions cannot be quantified and the *effects of continued operations*

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given the existing LWD availability and fate [emphasis added] are the object of the study. A new study is not necessary.

Request Element #4
The Project's effects on riparian habitat and vegetation will be qualitatively evaluated in the assessment of the current condition of riparian vegetation in YCWA's proposed Riparian Habitat Below Englebright Dam study. The contribution of LWD will be included in the study of riparian distribution, composition and health; information derived from the previous listed request elements will be utilized in the assessment. A new study is not necessary.

3.1.4.15 Effects of the Project and Related Activities on the Loss of Marine-derived Nutrients in the Yuba River (*Request for a New Study*)

NMFS requested a new study named Effects of the Project and Related Activities on the Loss of Marine-derived Nutrients in the Yuba River (NMFS, Enclosure F, NMFS Request #6). According to NMFS, the goal or purpose of this study is to evaluate the effects of the Project and Project-related activities on the degree of reduction or loss in nutrient replenishment to the upper and lower Yuba River. The nutrients in question are those that are marine-derived (i.e., nitrogen, carbon, and phosphorus), and then transported and deposited in freshwaters by migrating anadromous fishes. For simplicity, only the mass of nitrogen (N) will be measured. In the final element, NMFS requests information about current uptake of marine-derived N, which can be "traced" in terrestrial systems because the proportion of the heavier isotope is greater in marine than freshwater ecosystems. NMFS requests YCWA examine the ratio of (heavy) marine-derived N isotopes to the (lighter) atmospheric isotopes in periphyton and benthic macroinvertebrates collected in upper and lower Yuba locations, to compare and determine if differences in uptake in nutrients has occurred since salmon have lost access to the upper Yuba. NMFS's new study request includes seven request "elements," which may be summarized as follows:

- Request Element #1 - To estimate a range of the historic mass of marine-derived N that was transported annually by Chinook salmon (all runs) to the Yuba River. This is baseline information and may be obtained from a proportional estimate of the Yuba Run based on estimates by Merz and Moyle (2006) for the Central Valley. NMFS requests the Applicant use a 10- kilogram (kg) average mass for adult Chinook, and a 5.62 percent average N content.
- Request Element #2 - An estimate of the historic mass of marine-derived N that was transported annually by spring-run Chinook salmon to the upper Yuba River. This is baseline information done similarly as in step 1 if possible.
- Request Element #3 - An estimate of the current annual mass of marine-derived N transported by Chinook salmon to the lower Yuba River. This is current information, for comparison with baseline and should use the recent peak and 10-year (2001-2010) average Yuba River Chinook escapements, a 10 kilogram (kg) average mass for adult Chinook, and a 5.62% average N content to compute an estimated range of the current mass of marine-derived N transported annually to the Yuba River using the above equation.

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- Request Element #4 - An estimate of the current annual mass of marine-derived N transported by phenotypic "spring-run" Chinook salmon to the Yuba River. This is current information, for comparison with baseline and would be derived from Vaki Riverwatcher counts at Dagurre Point Dam, otoiliths, and possible tagging of some spring-run Chinook to validate the analysis.
- Request Element #5 - An estimate of the annual loss, from historic to current levels, of marine-derived N to the Yuba. This compares historic (baseline) conditions with current conditions from estimates obtained previously.
- Request Element #6 - An estimate of the annual loss, from historic to current levels, of marine-derived N to the upper Yuba. This compares historic (baseline) conditions with current conditions from estimates obtained previously.
- Request Element #7 - Compare the differences of marine-derived N incorporated into periphyton and aquatic benthic macroinvertebrates collected in the upper and lower Yuba. This will determine if uptake is occurring, and to what degree in the upper and lower Yuba.

The resulting information will be interpreted in the context of information or results yielded in other submitted requests, including *Effects of the Project and Related Facilities on Fish Passage for Anadromous Fish*, *Effects of the Project on Hydrology for Anadromous Fish: Magnitude, Timing, Duration, and Rate of Change*, and others.

The information or study resulting from this request would inform future ESA consultation between NMFS and the Commission because the Project's effects on the resource(s) to be studied in this request affect ESA-listed salmonids or sturgeon, and/or their ESA-designated critical habitats, both in the Yuba River and in locations downstream. Cost of the study was estimated to be between $10,000 and $20,000.

NOT ADOPTED - YCWA has not adopted the requested new study that pertains to anadromous fish passage at Englebright Dam or anadromous fish upstream of Englebright Dam for the reasons described in Section 3.1.2.

3.1.4.16 Effects of the Project and Related Activities on Aquatic Macroinvertebrates for Anadromous Fish (*Request for a New Study*)

NMFS requested a new study named Effects of the Project and Related Activities on Aquatic Macroinvertebrates for Anadromous Fish (NMFS, Enclosure F, NMFS Request #7). According to NMFS, the purpose of the request would be to describe the aquatic benthic macroinvertebrate (BMI) resources located within the Project's action area and, second, to evaluate the potential impacts to these resources that are a result of ongoing Project operations. The request would focus specifically on aquatic BMI as they are indicators of overall water quality and the prey base for fish. NMFS requests YCWA use CDFG's California Stream Bioassessment Procedure (CSBP) to assess BMI communities. The information or study resulting from this request would inform future ESA consultation between NMFS and the Commission because the Project's effects on the resource(s) to be studied in this request affect ESA-listed salmonids or sturgeon, and/or their ESA-designated critical habitats, both in the Yuba River and in locations

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downstream. The geographic scope of the study would include above and below the Project's dams, within Project stream reaches and by-passed reaches, and will require at least one reference point that is upstream of any Project influences. NMFS provides a detailed list that includes the location of 12 sampling areas which includes non-Project reaches including reaches downstream of Englebright Reservoir. Cost of the study was estimated to be between $50,000 and $150,000.

NOT ADOPTED: NMFS has structured their study request to investigate BMI communities above and below Englebright Reservoir in light of anadromous fish. Anadromous fish are present below the reservoir, but do not exist above Englebright Reservoir. As a result, YCWA has not adopted the portions of the requested new study that pertain to anadromous fish passage at Englebright Dam or anadromous fish upstream of Englebright Dam for the reasons described in Section 3.1.2.

Regardless of NMFS research focus on anadromous fish, they have also clearly not addressed FERC's study Criterion 6, how study methodology is consistent with generally accepted practice in the scientific community. NMFS asks for data collection of aquatic macroinvertebrates to follow the Department of Fish and Game's California Stream Bioassessment Procedure (CSBP) in project-affected stream reaches above Englebright Reservoir. YCWA has collaboratively agreed with relicensing participants to use the Surface Water Ambient Monitoring Program (SWAMP) protocol. This protocol is the current accepted method of choice among local and state agencies and has been the method for data collection of aquatic macroinvertebrates in recent FERC relicensings in California. NMFS also requests using the CSBP method below Englebright Reservoir. The CSBP study methodology is not well adapted to large rivers (i.e., non-wadeable). YCWA proposes an adapted large river sampling protocol that will be collaboratively agreed upon with relicensing participants.

FERC's study Criterion 7, why any proposed alternative studies would not be sufficient to meet the stated information needs, is not addressed, as YCWA has already proposed two studies to characterize BMI assemblages (i.e., Study 03-01 Aquatic Macroinvertebrates Above Englebright and Study 03-02 Aquatic Macroinvertebrates Below Englebright). Without a discussion of why the proposed studies are not sufficient to meet the needs of NMFS, YCWA is unable to address FERC's Study Criterion 7 in detail.

3.1.4.17 Anadromous Fish Ecosystem Effects Analysis (*Request for a New Study)*

NMFS requested a new study named Anadromous Fish Ecosystem Effects Analysis: Synthesis of the Direct, Indirect, and Cumulative Effects of the Project and Related Facilities on Anadromous Fish (NMFS, Enclosure F, NMFS Request #8).

The NMFS requested study *"…aims to synthesize the various abiotic and biotic categories studied in the ILP process (i.e. water resources, geology and soils, etc.) into a holistic and comprehensive assessment of the direct, indirect and cumulative effects of the Project, along with the effects of other activities that are interrelated or interdependent with the Project action, on anadromous fishes and their habitats."* (NMFS Enclosure F, NMFS Request #8, p.1). The proposed New Study requests the synthesized assessment of the preceding seven requested

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elements (NMFS #1-7), and considers the combined effects on each life stage of a species as well as on population structure and composition. NMFS's New Study request is arranged into six sub-elements that correspond to the life history stages of the species, and one population dynamics modeling element. NMFS indicates that the specific quantitative information needed for development of the population dynamics model should be gathered as part of the six lifestage-specific elements. NMFS' seven request elements are summarized below:

- Request Element #1: Adult Migration – This request is primarily focused on the adult migration lifestage of spring-run Chinook salmon, however NMFS indicates that it would also address fall/late-fall Chinook salmon and steelhead. The primary migration-specific information requested by NMFS as part of this element pertaining to the Yuba River downstream of Englebright Dam includes assessments of the temporal distribution of upstream migration, potential relationships with flows and water temperatures (including attraction flows and temperatures), passage considerations at Daguerre Point Dam and other potential physical fluvial/geomorphologic influences on adult upstream migration.
- Request Element #2: Holding – This request is focused on the adult holding lifestage of spring-run Chinook salmon and steelhead. The primary holding-specific information requested by NMFS as part of this element pertaining to the Yuba River downstream of Englebright Dam includes assessments of holding habitat availability and characterization, potential relationships between holding habitat availability and suitability and flows and water temperatures, and other potential physical fluvial/geomorphologic influences on holding habitat.
- Request Element #3: Spawning - This request is focused on the adult spawning lifestage of spring-run and fall/late-fall Chinook salmon and steelhead. The primary spawning-specific information requested by NMFS as part of this element pertaining to the Yuba River downstream of Englebright Dam includes assessments of spawning habitat characterization, utilization, temporal and spatial distributions, substrate suitability and fluvial/geomorphologic influences on spawning habitat, and potential relationships between spawning habitat availability and suitability and flows and water temperatures.
- Request Element #4: Incubation/Emergence – This request is focused on the embryo incubation/emergence lifestage, although it does not specify species or runs to be addressed. This request element focuses on the influence of substrate size, composition, and other fluvial/geomorphologic influences, and potential relationships between flow and water temperatures (including the temporal and spatial distributions of water temperature suitability, and potential redd dewatering).
- Request Element #5: Fry/Juvenile Rearing – This request is focused on the fry/juvenile rearing lifestage, although it does not specify species or runs to be addressed. The primary fry/juvenile rearing-specific information requested by NMFS as part of this element pertaining to the Yuba River downstream of Englebright Dam includes assessments of rearing habitat characterization, rearing habitat suitability and potential relationships between rearing habitat availability/suitability and flows and water temperatures, BMI food availability and fry/juvenile growth and condition.

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- Request Element #6: Fry/Juvenile Outmigration - This request is focused on the fry/juvenile outmigration lifestage, although it does not specify species or runs to be addressed. The primary fry/juvenile outmigration-specific information requested by NMFS as part of this element pertaining to the Yuba River downstream of Englebright Dam includes assessments of the temporal distribution of outmigration, potential relationships between outmigration magnitude and timing and flow and water temperatures, and outmigrant fry/juvenile size and condition.
- Request Element #7 – Population Structure and Dynamics – This request is focused on using a population dynamics model to estimate carrying capacity of the lower Yuba River downstream of Englebright Dam.

NOT ADOPTED – YCWA has not adopted the portions of the requested new study that pertain to anadromous fish passage at Englebright Dam or anadromous fish upstream of Englebright Dam for the reasons described in Section 3.1.2.

The portions of the requested new study that do not pertain to anadromous fish passage at Englebright Dam and anadromous fish upstream of Englebright Dam and YCWA's reply are provided below.

YCWA believes that the compilation of existing and ongoing data collection activities and programs, as described in study 7.8 – ESA and CESA Listed Salmonids Downstream of Englebright Dam, and analyses and results presentation described therein, sufficiently provide a comprehensive synthesis of potential project-related effects on anadromous salmonids. Moreover, YCWA does not necessarily agree that carrying capacity estimation through the use of a population dynamics model is required to evaluate Project-related effects on anadromous salmonids in the lower Yuba River downstream of Englebright Dam. NMFS does not describe available existing information, nor does NMFS describe the proposed synthesis of all available information presently incorporated in Study 7.8 - ESA and CESA Listed Salmonids Below Englebright Dam - that pertains to anadromous salmonids in the lower Yuba River. Therefore, NMFS has not explained or justified the need for additional information consistent with FERC Criterion 4.

With respect to Criterion 5, project nexus and how the information would inform license requirements, NMFS has included in its request dams (e.g., Daguerre Point Dam) and powerhouses (e.g., PG&E's Narrows 1) that are not Project facilities, and therefore does not appropriately explain the nexus between Project operations and effects on the resources to be studied or how the study results would inform the development of license requirements.

With respect to Criterion 7, NMFS does not provide details regarding the manner in which the cost estimate was derived, nor explain why it includes such a large range of cost. There are two major categories of cost associated with study request #8 – synthesis of information, and carrying capacity estimation via application of a population dynamics model. Each of these components may more realistically require or exceed the upper range of the provided cost estimate. YCWA anticipates that the cost to perform study request #8 is significantly higher than

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the cost estimated by NMFS, and potentially could be 10 times or greater than the lower range provided by NMFS.

3.1.4.18 Impacts of Recreation on Camptonville Volunteer Fire Department (*Request for a New Study)*

CCSD requested a new study regarding the effects of Project recreation at New Bullards Bar Reservoir on the Camptonville Volunteer Fire Department (CCSD, p. 1). Specifically, CCSD states that 20 percent of the emergency calls to the Volunteer Fire Department are from the New Bullards Bar Reservoir area, and this puts a strain on the Department. CCSD does not provide study goals and objectives, methods or an estimate regarding the level of effort and cost to perform the study.

NOT ADOPTED - YCWA has not adopted CCSD's requested new study for a number of reasons. With respect to study criterion 1, CCSD has not described the goals or objectives of the study or the information to be obtained. YCWA assumes the study would develop information regarding the impacts of the Project on the Camptonville Volunteer Fire Department. YCWA, through discussions with CCSD, believes this information exists and is readily available through CCSD, and therefore a study to develop the information is not needed (criterion 4). Further, CCSD has not described its proposed methodology (criterion 6) or provided an estimate of level of effort and cost to perform the study (criterion 7).

For the above reasons, YCWA is not able to provide a detailed reply to CCSD's request for a new study. However, in general, YCWA believes that existing information is available and adequate to inform license requirements and a study is not needed. YCWA views CCSD comment letter as more of a request for a protection, mitigation and enhancement (PM&E) measure than a study and intends to consult with CCSD regarding perceived impacts and potential resolution.

3.2 YCWA's Reply to Non-Study Comments

In some instances, a commenter made remarks that neither sought a modification of a study proposed by YCWA or requested a new study. In most cases, these comments pertained to general information in a study proposal, information contained in the PAD (i.e., not request for a study modification or new study) or pertained to FERC's SD1. Because FERC's ILP regulations do not require an applicant to revise and reissue the PAD, YCWA will consider such general comments on the PAD when YCWA drafts subsequent relicensing documents. YCWA assumes that general comments on the FERC's SD1 will be addressed by FERC as FERC deems appropriate.[22] Importantly, YCWA's lack of reply to such non-study comments should not be interpreted to mean that YCWA agrees or disagrees with the comments, positions or statements.

[22] YCWA filed with FERC comments on SD1 on April 12, 2011.

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3.3 List of Attachments to This Section

None.

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SECTION 4

MEETINGS, DATA AVAILABILITY AND REPORTS

This section describes YCWA's plan to hold study plan meetings during the 90-day review period for the Project's Proposed Study Plan (Section 4.1), and YCWA's provisions for periodic progress reporting (Section 4.2) and for making information available to Relicensing Participants (Section 4.3).

4.1 Study Proposal Meetings

Section 5.11(e) of FERC's ILP regulations requires that an applicant for a new license hold at least one meeting for the purpose of clarifying the applicant's proposed study plan and any initial information gathering or study requests, and in an attempt to resolve any differences regarding study proposals. The meeting must be held no later than 30 days after the Proposed Study Plan is filed.

YCWA and Relicensing Participants have scheduled 13 meetings before YCWA files with FERC its Revised Study Plan (anticipated to be by August 17, 2011). The purpose of the meetings is to resolve as many differences on studies with as many Relicensing Participants as possible. The meeting dates are listed below. YCWA proposes that the scheduled May 11, 2011, meeting be held to satisfy the specific requirement at 18 CFR § 5.11(e).

- May 4, 2011
- May 5, 2011
- May 11, 2011 - "Formal" Proposed Study Plan meeting, as required by 18 CFR § 5.11(e)
- May 12, 2011
- May 25, 2011
- June 8, 2011
- June 9, 2011
- June 10, 2011
- Jun 23, 2011
- July 13, 2011
- July 14, 2011
- August 10, 2011
- August 11, 2011

YCWA has posted a notice of the above meetings, including location, start time, and tentative agenda for each meeting on its Relicensing Website (**www.ycwa-relicensing.com**) Event Calendar. All meetings will be held in conformance with the Communication Guidelines included in Section 2.3 of YCWA's PAD.

YCWA, in collaboration with Relicensing Participants, may schedule additional meetings or cancel meetings as needed prior to filing the Revised Study Plan by August 17, 2011.

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4.2 Initial and Updated Study Reports

As required by 18 CFR § 5.11(c) and (f), YCWA plans to file with FERC and distribute to Relicensing Participants an Initial Study Report within 1 year of the date that FERC's Study Determination is deemed final, and an Updated Study Report within 2 years of FERC's Study Determination. Each report will describe YCWA's overall progress in implementing the studies, status of schedule, and a summary of data collected to date. Each report will also include a discussion of any variance from the FERC-approved study proposal and modifications to ongoing studies as well as any new studies proposed by YCWA.

YCWA considers the Initial and Updated study reports ***progress*** reports for the overall study effort - each report is intended to be filed during performance of the studies, not after all studies are complete. Also, YCWA intends that the Initial and Updated study reports address all ongoing studies during the period covered by the report.

YCWA intends to follow guidelines provided in 18 CFR § 5.15(c) and (f) regarding holding a meeting with Relicensing Participants within 15 days of filing the Initial and Updated study reports and filing with FERC a meeting summary within 15 days of the meeting. To the extent reasonably possible, YCWA will select the meeting dates collaboratively with Relicensing Participants.

4.3 Periodic Progress Reports

To supplement the information filed in the Initial and Updated study reports described above and in conformance with 18 CFR § 5.11(a)(3), YCWA plans to file with FERC two brief, written progress reports. The first report will be filed 6 months after FERC's Study Determination is deemed final and the second report will be filed 18 months after FERC's Study Determination is deemed final. In this manner, FERC will receive study progress reports every 6 months during the period in which studies are performed (i.e., a progress report in 6 months, the Initial Study Report in 12 months, a progress report in 18 months, and the updated Study Report in 24 months).

Both progress reports will describe the progress for each study and will provide key findings for ongoing studies, as they become available after quality control checking. Within 24 hours of filing the progress report with FERC, YCWA will post the report on its Relicensing Website and advise Relicensing Participants by email that the report is available on the website.

4.4 List of Attachments to This Section

None.

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SECTION 5
STATUS OF ENHANCEMENTS

In Section 6.7 of the PAD, YCWA stated it was in the process of evaluating potential physical enhancements to increase Project power generation, and that the status of YCWA's evaluations would be described in the Proposed Study Plan. This section provides a status report regarding YCWA's preliminary evaluation of potential generation enhancements to the Project.

YCWA has evaluated and dismissed the following potential enhancements:

- Improve flow efficiency in the New Colgate Power Tunnel and Penstock
- Add a pumped storage development
- Construct new diversion dams and conduits on tributary streams to increase Project water supply

At this time and based on a cursory review, YCWA believes that these potential enhancements are unattractive, and YCWA does not plan to pursue them in the relicensing.

YCWA is in the process of further evaluating the following potential enhancements:

- Increase diversion capacities of the Lohman Ridge and Camptonville diversion tunnels
- Increase the storage capacity of New Bullards Bar Reservoir
- Add a tailwater depression system to the New Colgate Powerhouse
- Install minimum flow turbine/generator units on Project outlets
- Upgrade the Narrows 2 Powerhouse efficiency (e.g., new turbines and generator rewinds)
- Improve Project flood control operations, which may involve increasing the storage capacity of New Bullards Bar Reservoir and/or modifying the existing New Bullards Bar Dam outlet or adding a new outlet
- Evaluate existing Project facilities to determine if some facilities and features are no longer used or useful.

YCWA will continue its evaluation of the above potential enhancements, and provide an update to FERC and Relicensing Participants in its Revised Study Plan.

At this time, YCWA believes that the studies included in this Proposed Study Plan are adequate to provide any additional information required for the scope and geographic extent of potential effects of the above enhancements being evaluated.

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YCWA reserves the right to consider enhancements originally eliminated from further analysis or additional generation enhancements to the Project as the relicensing proceeds and market conditions change.

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SECTION 6

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APPENDIX 1
DETAILED STUDY PROPOSALS

This appendix includes YCWA's detailed study proposals organized by resources area. Table App 1 below provides a list of the study proposals.

Table App 1. List of YCWA's proposed studies by resource area.

Study Number	Study Name
GEOLOGY AND SOILS	
1.1	Channel Morphology Upstream of Englebright Reservoir
1.2	Channel Morphology Downstream of Englebright Dam
WATER RESOURCES	
2.1	Hydrologic Alteration
2.2	Water Balance/Operations Model
2.3	Water Quality
2.4	Bioaccumulation
2.5	Water Temperature Monitoring
2.6	Water Temperature Model
AQUATIC RESOURCES	
3.1	Aquatic Macroinvertebrates Upstream of Englebright Reservoir
3.2	Aquatic Macroinvertebrates Downstream of Englebright Dam
3.3	Special-Status Aquatic Mollusks
3.4	Special-Status Amphibians – Foothill Yellow-Legged Frog Surveys
3.5	Special-Status Amphibians – Foothill Yellow-Legged Frog Habitat Modeling
3.6	Special-Status Turtles – Western Pond Turtle
3.7	Reservoir Fish Populations
3.8	Stream Fish Populations Upstream of Englebright Reservoir
3.9	Stream Fish Populations Downstream of Englebright Dam
3.10	Fish Instream Flow Upstream of Englebright Reservoir
3.11	Fish Entrainment
WILDLIFE RESOURCES	
4.1	Special-Status Wildlife – California Wildlife Habitat Relationships
4.2	Special-Status Wildlife – Bats
BOTANICAL RESOURCES	
5.1	Special-Status Plants
WETLAND, RIPARIAN AND LITTORAL HABITATS	
6.1	Riparian Habitat Upstream of Englebright Reservoir
6.2	Riparian Habitat Downstream of Englebright Dam
6.3	Wetlands
THREATENED, ENDANGERED AND FULLY PROTECTED SPECIES	
7.1	ESA-Listed Plants
7.2	Narrows 2 Powerhouse Intake
7.3	ESA-Listed Amphibians – California Red-Legged Frog
7.4	ESA-Listed Wildlife – Valley Elderberry Longhorn Beetle
7.5	CESA-Listed Plants
7.6	CESA-Listed and Fully Protected Wildlife – California Wildlife Habitat Relationships
7.7	CESA-Listed and Fully Protected Wildlife – Bald Eagle
7.8	ESA/CESA-Listed Salmonids Downstream of Englebright Dam
7.9	North American Green Sturgeon Downstream of Englebright Dam
7.10	Instream Flow for Steelhead and Chinook Salmon Downstream of Englebright Dam
RECREATIONAL RESOURCES	
8.1	Recreation Use and Visitor Surveys
8.2	Recreational Flow
LAND USE	
9.1	Primary Project Roads and Trails
AESTHETIC RESOURCES	
10.1	Visual Quality
CULTURAL RESOURCES	
12.1	Historic Properties

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Table App 1. (continued)

Study Number	Study Name
TRIBAL RESOURCES	
13.1	Native American Traditional Cultural Properties

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