

**Table of Contents**  
**Description**

<b>Section No.</b>	<b>Description</b>	<b>Page No.</b>
1.0	Introduction.....	E1-1
1.1	YCWA’s Amended Application for a New License.....	E1-1
1.2	Purpose of Action and Need for Power .....	E1-7
	1.2.1 Purpose of Actions .....	E1-7
	1.2.2 Need for Power .....	E1-8
1.3	Statutory and Regulatory Requirements .....	E1-8
	1.3.1 Migratory Bird Treaty Act of 1918.....	E1-10
	1.3.2 Federal Power Act of 1920 .....	E1-11
	1.3.2.1 Section 4(e) Conditions.....	E1-11
	1.3.2.2 Section 10(a) Recommendations .....	E1-12
	1.3.2.3 Section 10(j) Recommendations .....	E1-12
	1.3.2.4 Section 18 Fishway Prescriptions .....	E1-13
	1.3.3 Bald and Golden Eagle Protection Act of 1940.....	E1-14
	1.3.4 California Fully Protected Species Statutes (1957) .....	E1-14
	1.3.5 National Historic Preservation Act of 1966.....	E1-15
	1.3.6 Wild and Scenic Rivers Act of 1968.....	E1-18
	1.3.7 National Environmental Policy Act of 1969.....	E1-18
	1.3.8 Clean Air Act of 1970.....	E1-19
	1.3.9 Clean Water Act.....	E1-20
	1.3.10 California Environmental Quality Act of 1970 .....	E1-23
	1.3.11 Coastal Zone Management Act of 1972 .....	E1-24
	1.3.12 California Wild and Scenic Rivers Act of 1972 .....	E1-24
	1.3.13 Endangered Species Act of 1973 .....	E1-25
	1.3.14 Magnuson-Stevens Fishery Conservation and Management Act of 1976.....	E1-28
	1.3.15 California Native Plant Protection Act of 1977 .....	E1-29
	1.3.16 Pacific Northwest Electric Power Planning and Conservation Act of 1980 .....	E1-30
	1.3.17 Wilderness Act of 1984 .....	E1-30
	1.3.18 California Endangered Species Act of 1984.....	E1-30
	1.3.19 Forest Service’s Outdoor Recreation Accessibility Guidelines of 2006, and Architectural Barriers Act Accessibility Standards .....	E1-31
	1.3.20 Americans with Disabilities Act of 2010.....	E1-32
1.4	Public Review and Comment.....	E1-32
	1.4.1 Scoping .....	E1-32
	1.4.2 Interventions .....	E1-34

**Table of Contents (continued)**

<b>Section No.</b>	<b>Description</b>	<b>Page No.</b>
1.4.3	Cooperating Agency Status.....	E1-34
1.4.4	Relicensing Studies.....	E1-34
1.4.4.1	FERC’s Determination on Revised Study Plan .....	E1-34
1.4.4.2	FERC’s Determination Regarding Study Disputes.....	E1-34
1.4.4.3	FERC’s Determination on Initial Study Report.....	E1-35
1.4.4.4	FERC’s Determination on Updated Study Report.....	E1-35
1.4.4.5	Study Status .....	E1-36
1.4.4.6	Collaborative Development of YCWA’s Proposed Conditions.....	E1-39
1.4.5	Comments on the Draft License Application.....	E1-41
1.4.6	Comments on the Amended FLA .....	E1-42
1.4.7	Comments on the Draft Environmental Assessment .....	E1-42
2.0	Proposed Action and Alternatives .....	E2-1
2.1	No Action Alternative.....	E2-1
2.1.1	Existing Project Facilities .....	E2-1
2.1.1.1	New Colgate Development.....	E2-2
2.1.1.2	New Bullards Bar Minimum Flow Development.....	E2-7
2.1.1.3	Narrows 2 Development .....	E2-7
2.1.2	Existing Project Boundary .....	E2-10
2.1.3	Existing Project Safety.....	E2-10
2.1.4	Existing Project Operations .....	E2-11
2.1.4.1	Narrows 2 – Flow Transitions.....	E2-13
2.1.5	Existing Environmental Measures .....	E2-22
2.1.5.1	Measures in Current FERC License .....	E2-22
2.1.5.2	Measures in Other Licenses, Agreements and Contracts that Affect Operations.....	E2-24
2.2	YCWA’s Proposal .....	E2-32
2.2.1	Proposed Project Facilities.....	E2-32
2.2.1.1	Generation Facilities .....	E2-32
2.2.1.2	Non-Generation Facilities.....	E2-41
2.2.2	Proposed Project Boundary.....	E2-69
2.2.3	Proposed Project Operations.....	E2-73
2.2.3.1	Changes to Conditions in the FERC license .....	E2-73
2.2.3.2	Changes to Measures in Other Licenses, Agreements and Contracts that Affect Operations.....	E2-80

**Table of Contents (continued)**

<b>Section No.</b>	<b>Description</b>	<b>Page No.</b>
2.3	Alternatives Considered But Eliminated From Further Analysis .....	E2-80
2.3.1	Retire the Project.....	E2-81
2.3.2	Issue a Non-Power License.....	E2-81
2.3.3	Federal Agency Takeover of the Project .....	E2-81
2.3.4	Alternatives Proposed by Foothill Water Network in its DLA Comments .....	E2-82
3.0	Environmental Analysis.....	E3-1
3.1	General Description of the River Basin .....	E3-1
3.1.1	Existing Water Projects in the Yuba River Basin.....	E3-1
3.1.1.1	Yuba River Development Project .....	E3-1
3.1.1.2	South Feather Power Project.....	E3-1
3.1.1.3	Deadwood Creek Project .....	E3-2
3.1.1.4	Yuba-Bear Hydroelectric Project.....	E3-2
3.1.1.5	Francis Dam .....	E3-2
3.1.1.6	Drum-Spaulding Project .....	E3-2
3.1.1.7	Englebright Dam.....	E3-3
3.1.1.8	Narrows Project .....	E3-3
3.1.1.9	Wildwood Dam.....	E3-3
3.1.1.10	Scotts Flat Project .....	E3-3
3.1.1.11	Los Verjeles Dam .....	E3-3
3.1.1.12	Virginia Ranch Dam Project.....	E3-4
3.1.1.13	Hallwood-Cordua Diversion.....	E3-4
3.1.1.14	South Yuba-Brophy Diversion .....	E3-4
3.1.1.15	Browns Valley Diversion.....	E3-4
3.1.1.16	Daguerre Point Dam .....	E3-4
3.1.2	The River Basin .....	E3-5
3.1.2.1	North Yuba River Sub-basin.....	E3-9
3.1.2.2	Middle Yuba River Sub-basin .....	E3-10
3.1.2.3	South Yuba River Sub-basin.....	E3-11
3.1.2.4	Summary of Exports from North Yuba, Middle Yuba and South Yuba Sub-basins .....	E3-12
3.1.2.5	Yuba River Sub-basin.....	E3-13
3.1.2.6	Feather River, Sacramento River and Delta .....	E3-14
3.1.2.7	Potentially-Affected Yuba River Stream Reaches.....	E3-15
3.1.2.8	Yuba River Basin Streams and Tributaries.....	E3-16
3.1.2.9	Yuba River Basin Dams.....	E3-17

**Table of Contents (continued)**

<b>Section No.</b>	<b>Description</b>	<b>Page No.</b>
3.1.3	Climate.....	E3-21
3.1.4	Major Land Uses.....	E3-22
3.1.5	Major Water Uses .....	E3-22
3.2	Scope of Cumulative Effects Analysis .....	E3-23
3.2.1	Geographic Scope for Analysis of Cumulatively Affected Resources .....	E3-23
3.2.2	Temporal Scope for Analysis of Cumulatively Affected Resources ...	E3-24
3.2.3	Past, Present and Reasonably Foreseeable Future Actions Considered for Analysis of Cumulatively Affected Resources .....	E3-24
3.2.3.1	Past and Present Actions.....	E3-25
3.2.3.2	Reasonably Foreseeable Future Actions.....	E3-26
3.3	Proposed Action and Action Alternatives.....	E3-28
3.3.1	Geology and Soils.....	E3.3.1-1
3.3.1.1	Affected Environment.....	E3.3.1-1
3.3.1.2	Environmental Effects .....	E3.3.1-29
3.3.1.3	Cumulative Effects.....	E3.3.1-43
3.3.1.4	Proposed Measures Recommended by Agencies or Other Relicensing Participants That Were Not Adopted by YCWA .....	E3.3.1-43
3.3.1.5	Unavoidable Adverse Effects .....	E3.3.1-47
3.3.2	Water Resources .....	E3.3.2-1
3.3.2.1	Affected Environment.....	E3.3.2-1
3.3.2.2	Environmental Effects .....	E3.3.2-62
3.3.2.3	Cumulative Effects.....	E3.3.2-132
3.3.2.4	Proposed Measures Recommended by Agencies or Other Relicensing Participants That Were Not Adopted by YCWA .....	E3.3.2-136
3.3.2.5	Unavoidable Adverse Effects .....	E3.3.2-141
3.3.3	Aquatic Resources .....	E3.3.3-1
3.3.3.1	Affected Environment.....	E3.3.3-1
3.3.3.2	Environmental Effects .....	E3.3.3-220
3.3.3.3	Cumulative Effects.....	E3.3.3-283
3.3.3.4	Proposed Measures Recommended by Agencies or Other Relicensing Participants That Were Not Adopted by YCWA .....	E3.3.3-284
3.3.3.5	Unavoidable Adverse Effects .....	E3.3.3-287

**Table of Contents (continued)**

<b>Section No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.4	Terrestrial Resources .....	E3.3.4-1
3.3.4.1	Affected Environment.....	E3.3.4-1
3.3.4.2	Environmental Effects .....	E3.3.4-31
3.3.4.3	Cumulative Effects.....	E3.3.4-75
3.3.4.4	Proposed Environmental Condition.....	E3.3.4-78
3.3.4.5	Unavoidable Adverse Effects .....	E3.3.4-82
3.3.5	Threatened and Endangered Species .....	E3.3.5-1
3.3.5.1	Identification of Potentially-Affected ESA-listed Species and Critical Habitat.....	E3.3.5-4
3.3.5.2	Consultation with USFWS, NMFS and Other Relicensing Participants.....	E3.3.5-9
3.3.5.3	Environmental Baseline for ESA-listed Species Under USFWS’ Jurisdiction .....	E3.3.5-13
3.3.5.4	Effects of the Proposed Action on ESA-Listed Species Under USFWS’ Jurisdiction .....	E3.3.5-28
3.3.5.5	ESA-Listed Fish Species Under NMFS’ Jurisdiction.....	E3.3.5-39
3.3.5.6	Proposed Measures Recommended by Agencies or Other Relicensing Participants in Comments on DLA That Were Not Adopted by YCWA.....	E3.3.5-54
3.3.6	Recreation Resources.....	E3.3.6-1
3.3.6.1	Affected Environment.....	E3.3.6-1
3.3.6.2	Environmental Effects .....	E3.3.6-41
3.3.6.3	Proposed Measures Recommended by Agencies or Other Relicensing Participants in Comments on DLA That Were Not Adopted by YCWA.....	E3.3.6-55
3.3.6.4	Unavoidable Adverse Impacts .....	E3.3.6-61
3.3.7	Land Use.....	E3.3.7-1
3.3.7.1	Affected Environment.....	E3.3.7-1
3.3.7.2	Environmental Effects .....	E3.3.7-23
3.3.7.3	Proposed Measures Recommended by Agencies or Other Relicensing Participants in Comments on DLA That Were Not Adopted by YCWA.....	E3.3.7-28
3.3.7.4	Unavoidable Adverse Effects .....	E3.3.7-31
3.3.8	Cultural Resources .....	E3.3.8-1
3.3.8.1	Affected Environment.....	E3.3.8-1
3.3.8.2	Environmental Effects .....	E3.3.8-18

**Table of Contents (continued)**

<b>Section No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.8.3	Proposed Measures Recommended by Agencies or Other Relicensing Participants in Comments on DLA That Were Not Adopted by YCWA.....	E3.3.8-27
3.3.8.4	Unavoidable Adverse Effects .....	E3.3.8-27
3.3.9	Aesthetic Resources .....	E3.3.9-1
3.3.9.1	Affected Environment.....	E3.3.9-1
3.3.9.2	Environmental Effects .....	E3.3.9-3
3.3.9.3	Proposed Measures Recommended by Agencies or Other Relicensing Participants in Comments on DLA That Were Not Adopted by YCWA.....	E3.3.9-6
3.3.9.4	Unavoidable Adverse Impacts .....	E3.3.9-7
3.3.10	Socioeconomic Resources .....	E3.3.10-1
3.3.10.1	Affected Environment.....	E3.3.10-1
3.3.10.2	Environmental Effects .....	E3.3.10-13
3.3.10.3	Proposed Measures Recommended by Agencies or Other Relicensing Participants in Comments on DLA That Were Not Adopted by YCWA.....	E3.3.10-14
3.3.10.4	Unavoidable Adverse Impacts .....	E3.3.10-14
3.3.11	Air Quality .....	E3.3.11-1
3.3.11.1	Affected Environment.....	E3.3.11-1
3.3.11.2	Environmental Effects .....	E3.3.11-4
3.3.11.3	Proposed Measures Recommended by Agencies or Other Relicensing Participants in Comments on DLA That Were Not Adopted by YCWA.....	E3.3.11-5
3.3.11.4	Unavoidable Adverse Effects .....	E3.3.11-6
3.3.12	Noise .....	E3.3.12-1
3.3.12.1	Affected Environment.....	E3.3.12-1
3.3.12.2	Environmental Effects .....	E3.3.12-3
3.3.12.3	Proposed Measures Recommended by Agencies or Other Relicensing Participants in Comments on DLA That Were Not Adopted by YCWA.....	E3.3.12-3
3.3.12.4	Unavoidable Adverse Effects .....	E3.3.12-3
4.0	Developmental Analysis .....	E4-1
4.1	Alternatives Considered in This Section.....	E4-1
4.2	Power and Developmental Benefits.....	E4-2
4.3	Comparison of Alternatives .....	E4-3
4.4	Other Developmental and Non-Developmental Benefits .....	E4-1
4.4.1	Flood Management .....	E4-1

**Table of Contents (continued)**

<b>Section No.</b>	<b>Description</b>	<b>Page No.</b>
4.4.2	Irrigation .....	E4-2
4.5	Benefits of Yuba Accord .....	E4-4
4.5.1	Anadromous Fish in the Yuba River Downstream of Englebright Dam.....	E4-4
4.5.2	Statewide Water Supply and Funding for Local Flood Control Projects.....	E4-5
5.0	Conclusions.....	E5-1
5.1	Comparison of Alternatives .....	E5-1
5.2	Comprehensive Development and Recommended Alternative .....	E5-1
5.3	Unavoidable Adverse Effects .....	E5-1
5.4	Consistency with Comprehensive Plans .....	E5-1
6.0	Literature Cited .....	E6-1
7.0	Consultation Documentation .....	E7-1

**List of Figures**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
1.1-1.	Yuba River watershed in relation to the Feather River and other tributaries to the Sacramento River.....	E1-4
1.1-2.	Yuba County Water Agency’s Yuba River Development Project and Project Vicinity. ....	E1-5
2.1-1.	Our House Diversion Dam features.....	E2-2
2.1-2.	Log Cabin Diversion Dam features. ....	E2-3
2.1-3.	Longitudinal schematic of New Bullards Bar Dam on the North Yuba River and New Colgate Power Tunnel and Powerhouse on the Yuba River. ....	E2-5
2.1-4.	Longitudinal schematic of Narrows 2 Powerhouse Penstock and Powerhouse. ....	E2-9
2.1-5.	Historical mean daily discharge from Narrows 1 Powerhouse, Narrows 2 facilities, the Smartsville Gage, and Englebright Dam spill in Water Year 2007. The Narrows 2 Powerhouse was shut down during the period of October 1 through December 30, 2006 for the installation of the Narrows 2 Full Bypass. Siphons over Englebright Dam were used to provide flow to the Yuba River in addition to Narrows 1 Powerhouse releases. Accordingly, there is a difference between the flow from the Narrows 1 Powerhouse and Smartsville gage.....	E2-17

**List of Figures (continued)**  
**Description**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
2.1-6.	Historical mean daily discharge from Narrows 1 Powerhouse, Narrows 2 facilities, the Smartsville Gage, and Englebright Dam spill in Water Year 2008. ....	E2-17
2.1-7.	Historical mean daily discharge from Narrows 1 Powerhouse, Narrows 2 facilities, the Smartsville Gage, and Englebright Dam spill in Water Year 2009. ....	E2-18
2.1-8.	Historical mean daily discharge from Narrows 1 Powerhouse, Narrows 2 facilities, the Smartsville Gage, and Englebright Dam spill in Water Year 2010. ....	E2-18
2.1-9.	Historical mean daily discharge from Narrows 1 Powerhouse, Narrows 2 facilities, the Smartsville Gage, and Englebright Dam spill in Water Year 2011. ....	E2-19
2.1-10.	Historical mean daily discharge from Narrows 1 Powerhouse, Narrows 2 facilities, the Smartsville Gage, and Englebright Dam spill in Water Year 2012. ....	E2-19
2.1-11.	Historical mean daily discharge from Narrows 1 Powerhouse, Narrows 2 facilities, the Smartsville Gage, and Englebright Dam spill in Water Year 2013. ....	E2-20
2.1-12.	Historical mean daily discharge from Narrows 1 Powerhouse, Narrows 2 facilities, the Smartsville Gage, and Englebright Dam spill in Water Year 2014. ....	E2-20
2.1-13.	Historical mean daily discharge from Narrows 1 Powerhouse, Narrows 2 facilities, the Smartsville Gage, and Englebright Dam spill in Water Year 2015. ....	E2-21
2.1-14.	Historical mean daily discharge from Narrows 1 Powerhouse, Narrows 2 facilities, the Smartsville Gage, and Englebright Dam spill in Water Year 2016. ....	E2-21
2.1-15.	Yuba Accord North Yuba Water Year Type Index. ....	E2-26
2.1-16.	YCWA’s Member Unit service areas. ....	E2-29
2.2-1.	Conceptual level plan schematic flow diagram for YCWA’s proposed New Colgate Powerhouse Tailwater Depression System. ....	E2-35
2.2-2.	Conceptual level plan for general arrangement for YCWA’s proposed New Colgate Powerhouse Tailwater Depression System. ....	E2-36
2.2-3.	Conceptual level plan for piping sections and details for YCWA’s proposed New Colgate Powerhouse Tailwater Depression System. ....	E2-37
2.2-4.	Conceptual level plan and profile for YCWA’s proposed New Bullards Bar Dam Auxiliary Flood Control Outlet.....	E2-43
2.2-5.	Conceptual level map of construction area for YCWA’s proposed New Bullards Bar Auxiliary Flood Control Outlet.....	E2-48



**List of Figures (continued)**  
**Description**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
2.2-6.	Conceptual level profile of YCWA’s proposed Our House Diversion Dam fish release Outlet.....	E2-51
2.2-7.	Conceptual level profile of YCWA’s proposed Log Cabin Diversion Dam fish release Outlet.....	E2-52
2.2-8.	Conceptual level details of YCWA’s proposed Lohman Ridge Inlet Control Gate and Debris Rake. ....	E2-55
3.1-1.	Streambed gradient of the Yuba River from the most upstream Project facility on each tributary to the Yuba River confluence with the Feather River.....	E3-6
3.1-2.	Yuba River sub-basins. ....	E3-7
3.1-3.	General location of dams within the Yuba River watershed. ....	E3-19
3.3.1-1.	Generalized geologic map of the Project Vicinity. Project Vicinity was defined for the purposes of area computations as an area roughly 3 miles beyond the existing FERC Project Boundary. ....	E3.3.1-3
3.3.1-2.	Active and inactive mines in the Project Vicinity. Project Vicinity was defined for the purposes of area computations as an area roughly 3 miles beyond the existing FERC Project Boundary. ....	E3.3.1-7
3.3.1-3.	Soil associations within 3 miles of the Project Area.....	E3.3.1-13
3.3.1-4.	Study area and sites for YCWA’s Study 1.1, Channel Morphology Upstream of Englebright Reservoir. ....	E3.3.1-26
3.3.1-5.	Large mid-channel pool (looking upstream from base) with coarse sediment accumulation at downstream end of pool (pool tail-out).....	E3.3.1-36
3.3.1-6.	Trout-sized spawning gravel in velocity shadows of large boulders and bedrock within the North Yuba River below New Bullards Bar Dam.....	E3.3.1-37
3.3.1-7.	Dominant channel form in the North Yuba below New Bullards Bar Dam and upstream of the Middle Yuba junction.....	E3.3.1-38
3.3.1-8.	LWM deposited and perched within bedrock/boulders downstream of New Bullards Bar Dam on the North Yuba River.....	E3.3.1-40
3.3.1-9.	2011 Googleearth© image showing the North Yuba just downstream of New Bullards Bar Dam looking upstream. Brown/grey color is where vegetation, including large trees, was burned during fires in 2010.....	E3.3.1-41
3.3.1-10.	Large roughness elements of boulder and bedrock are the dominant forces influencing sediment deposition in the North Yuba River below New Bullards Bar Dam. Little LWM accumulates and its role would be minor compared to the influence of the current bedform. ....	E3.3.1-42

**List of Figures (continued)**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.2-1.	Schematic of the Project Vicinity, including USGS gage identification numbers. ....	E3.3.2-6
3.3.2-2.	Water temperature profiles in New Bullards Bar Reservoir near the dam in 2011.....	E3.3.2-27
3.3.2-3.	Water temperature profiles in Englebright Reservoir near the dam in 2011. ....	E3.3.2-28
3.3.2-4.	Water temperature profiles in Englebright Reservoir 3.3 mi upstream of the dam in 2011.....	E3.3.2-28
3.3.2-5.	New Bullards Bar Reservoir DO concentration profiles at four dates in 2011. ....	E3.3.2-30
3.3.2-6.	New Bullards Bar Reservoir water temperature profiles at four dates in 2011. ....	E3.3.2-31
3.3.2-7.	Englebright Reservoir DO concentration profiles at four dates in 2011.....	E3.3.2-33
3.3.2-8.	Englebright Reservoir water temperature profiles at four dates in 2011.....	E3.3.2-33
3.3.2-9.	Daily maximum water temperatures in the Middle Yuba River downstream of Our House Diversion Dam (Site M01, loggers A – D; flow—USGS 11408880).....	E3.3.2-43
3.3.2-10.	Daily maximum water temperatures in the Middle Yuba River upstream of the confluence with Oregon Creek (Site M02, loggers A – D; flow—USGS 11408880).....	E3.3.2-43
3.3.2-11.	Daily maximum water temperatures in the Middle Yuba River downstream of the confluence with Oregon Creek (Site M03, loggers A – D; flow—USGS 11408880 + USGS 11409400). ....	E3.3.2-44
3.3.2-12.	Daily maximum water temperatures in Oregon Creek near Celestial Valley (Site M04, loggers A – D; USGS 11409400).....	E3.3.2-44
3.3.2-13.	Simulated daily water temperatures for a representative wet WY (1998) at various locations along the Middle Yuba River. ....	E3.3.2-48
3.3.2-14.	Simulated daily water temperatures for a representative dry WY (2001) at various locations along the Middle Yuba River. ....	E3.3.2-49
3.3.2-15.	Simulated daily water temperatures for a normal WY (2005) at various locations along the Middle Yuba River. ....	E3.3.2-49
3.3.2-16.	Simulated daily water temperatures for a representative wet WY (1998) at various locations along Oregon Creek. ....	E3.3.2-50
3.3.2-17.	Simulated daily water temperatures for a representative dry WY (2001) at various locations along Oregon Creek. ....	E3.3.2-51
3.3.2-18.	Simulated daily water temperatures for a representative normal WY (2005) at various locations along Oregon Creek.....	E3.3.2-51

**List of Figures (continued)**  
**Description**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.2-19.	Simulated daily water temperatures for a representative wet WY (1998) at various locations along the North Yuba River. ....	E3.3.2-52
3.3.2-20.	Simulated daily water temperatures for a representative dry WY (2001) at various locations along the North Yuba River. ....	E3.3.2-53
3.3.2-21.	Simulated daily water temperatures for a representative normal WY (2005) at various locations along the North Yuba River. ....	E3.3.2-53
3.3.2-22.	North Yuba River downstream of New Bullards Bar Dam. ....	E3.3.2-54
3.3.2-23.	Simulated daily water temperatures for a representative wet WY (1998) at various locations along the Yuba River upstream of Englebright Reservoir. ....	E3.3.2-55
3.3.2-24.	Simulated daily water temperatures for a representative dry WY (2001) at various locations along the Yuba River upstream of Englebright Reservoir. ....	E3.3.2-55
3.3.2-25.	Simulated daily water temperatures for a representative normal WY (2005) at various locations along the Yuba River upstream of Englebright Reservoir. ....	E3.3.2-56
3.3.2-26.	Simulated daily water temperatures for a representative wet WY (1998) at various locations along the Yuba River downstream of the Narrows 2 Powerhouse. ....	E3.3.2-57
3.3.2-27.	Simulated daily water temperatures for a representative dry WY (2001) at various locations along the Yuba River downstream of the Narrows 2 Powerhouse. ....	E3.3.2-57
3.3.2-28.	Simulated daily water temperatures for a representative normal WY (2005) at various locations along the Yuba River downstream of the Narrows 2 Powerhouse. ....	E3.3.2-58
3.3.2-29.	Simulated daily flows for the Middle Yuba River below Our House Diversion Dam for the No Action and YCWA’s proposed Project for representative wet (1998), dry (2001) and normal (2005) WYs. ....	E3.3.2-67
3.3.2-30.	Simulated daily flows for Oregon Creek below Log Cabin Diversion Dam for the No Action and YCWA’s proposed Project for representative wet (1998), dry (2001) and normal (2005) WYs. ....	E3.3.2-68
3.3.2-31.	Simulated daily flows for the North Yuba River below New Bullards Bar Reservoir for the No Action and YCWA’s proposed Project for representative wet (1998), dry (2001) and normal (2005) WYs. ....	E3.3.2-68
3.3.2-32.	Simulated daily flows for the Yuba River near Smartsville for the No Action and YCWA’s proposed Project for representative wet (1998), dry (2001) and normal (2005) WYs. ....	E3.3.2-69

**List of Figures (continued)**  
**Description**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.2-33.	Simulated daily New Bullards Bar Reservoir water surface elevation for the No Action and YCWA’s proposed Project for representative wet (1998), dry (2001) and normal (2005) WYs.....	E3.3.2-86
3.3.2-34.	Simulated bi-weekly New Bullards Bar Reservoir 10°C and 15°C isotherm elevations for the No Action and YCWA’s proposed Project for a representative wet (1998) WY. The elevation of the New Colgate Power Tunnel upper and lower intakes is shown.....	E3.3.2-87
3.3.2-35.	Simulated bi-weekly New Bullards Bar Reservoir 10°C and 15°C isotherm elevations for the No Action and YCWA’s proposed Project for a representative dry (2001) WY. The elevation of the New Colgate Power Tunnel upper and lower intakes is shown.....	E3.3.2-88
3.3.2-36.	Simulated bi-weekly New Bullards Bar Reservoir 10°C and 15°C isotherm elevations for the No Action and YCWA’s proposed Project for a representative normal (2005) WY. The elevation of the New Colgate Power Tunnel upper and lower intakes is shown.....	E3.3.2-88
3.3.2-37.	Simulated exceedance probability of end-of-September New Bullards Bar Reservoir storage for the No Action and YCWA’s proposed Project for WYs 1970 through 2010. ....	E3.3.2-89
3.3.2-38.	Simulated daily Englebright Reservoir water surface elevation for the No Action and YCWA’s proposed Project for representative wet (1998), dry (2001) and normal (2005) WYs. ....	E3.3.2-90
3.3.2-39.	Simulated bi-weekly Englebright Reservoir 10°C and 15°C isotherm elevations for the No Action and YCWA’s proposed Project for a representative wet (1998) WY. The elevation of the Narrows 2 Power Tunnel intake is shown. ....	E3.3.2-91
3.3.2-40.	Simulated bi-weekly Englebright Reservoir 10°C and 15°C isotherm elevations for the No Action and YCWA’s proposed Project for a representative dry (2001) WY. The elevation of the Narrows 2 Power Tunnel intake is shown. ....	E3.3.2-91
3.3.2-41.	Simulated bi-weekly Englebright Reservoir 10°C and 15°C isotherm elevations for the No Action and YCWA’s proposed Project for a representative normal (2005) WY. The elevation of the Narrows 2 Power Tunnel intake is shown. ....	E3.3.2-92
3.3.2-42.	Simulated daily Narrows 2 Powerhouse release water temperatures for representative wet (1998), dry (2001), and normal (2005) water years. ....	E3.3.2-93
3.3.2-43.	Exceedance curves of modeled annual irrigation deliveries to YCWA Member Units for the No Action and YCWA’s proposed Project for WYs 1970 through 2010. ....	E3.3.2-94
3.3.2-44.	Simulated daily water temperatures for a representative wet WY (1998) at various locations along the Middle Yuba River. ....	E3.3.2-100

**List of Figures (continued)**  
**Description**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.2-45.	Simulated daily water temperatures for a representative dry WY (2001) at various locations along the Middle Yuba River. ....	E3.3.2-101
3.3.2-46.	Simulated daily water temperatures for a representative normal WY (2005) at various locations along the Middle Yuba River .....	E3.3.2-101
3.3.2-47.	Simulated daily water temperatures for a representative wet WY (1998) at various locations along Oregon Creek. ....	E3.3.2-102
3.3.2-48.	Simulated daily water temperatures for a representative dry WY (2001) at various locations along Oregon Creek. ....	E3.3.2-103
3.3.2-49.	Simulated daily water temperatures for a representative normal WY (2005) at various locations along Oregon Creek.....	E3.3.2-103
3.3.2-50.	Simulated daily water temperatures for a representative wet WY (1998) at various locations along the North Yuba River. ....	E3.3.2-104
3.3.2-51.	Simulated daily water temperatures for a representative dry WY (2001) at various locations along the North Yuba River. ....	E3.3.2-105
3.3.2-52.	Simulated daily water temperatures for a representative dry WY (2005) at various locations along the North Yuba River. ....	E3.3.2-105
3.3.2-53.	Simulated daily water temperatures for a representative wet WY (1998) at various locations along the Yuba River upstream of Englebright Reservoir. ....	E3.3.2-106
3.3.2-54.	Simulated daily water temperatures for a representative dry WY (2001) at various locations along the Yuba River upstream of Englebright Reservoir. ....	E3.3.2-107
3.3.2-55.	Simulated daily water temperatures for a representative normal WY (2005) at various locations along the Yuba River upstream of Englebright Reservoir. ....	E3.3.2-107
3.3.2-56.	Simulated daily water temperatures for a representative wet WY (1998) at various locations along the Yuba River downstream of the Narrows 2 Powerhouse. ....	E3.3.2-108
3.3.2-57.	Simulated daily water temperatures for a representative dry WY (2001) at various locations along the Yuba River downstream of the Narrows 2 Powerhouse. ....	E3.3.2-109
3.3.2-58.	Simulated daily water temperatures for a representative normal WY (2005) at various locations along the Yuba River downstream of the Narrows 2 Powerhouse. ....	E3.3.2-109
3.3.2-59.	Exceedance curves of modeled mean daily water temperatures in the Middle Yuba River downstream of Our House Dam for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-111

**List of Figures (continued)**  
**Description**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.2-60.	Exceedance curves of modeled mean daily water temperatures in the Middle Yuba River upstream of Oregon Creek for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-112
3.3.2-61.	Exceedance curves of modeled mean daily water temperatures in the Middle Yuba River downstream of Oregon Creek for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-113
3.3.2-62.	Exceedance curves of modeled mean daily water temperatures in the Middle Yuba River upstream of the North Yuba River for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-114
3.3.2-63.	Exceedance curves of modeled mean daily water temperatures in Oregon Creek downstream of Log Cabin Diversion Dam for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-115
3.3.2-64.	Exceedance curves of modeled mean daily water temperatures in Oregon Creek upstream of the Middle Yuba River for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-116
3.3.2-65.	Exceedance curves of modeled mean daily water temperatures in the North Yuba River upstream of the Middle Yuba River for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-118
3.3.2-66.	Exceedance curves of modeled mean daily water temperatures in the Yuba River downstream of the Middle Yuba River for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-119
3.3.2-67.	Exceedance curves of modeled mean daily water temperatures in the Yuba River upstream of the New Colgate Powerhouse for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-120
3.3.2-68.	Exceedance curves of modeled mean daily water temperatures in the Yuba River downstream of the New Colgate Powerhouse for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-122
3.3.2-69.	Exceedance curves of modeled mean daily water temperatures in the Yuba River near Smartsville for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-123

**List of Figures (continued)**  
**Description**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.2-70.	Exceedance curves of modeled mean daily water temperatures in the Yuba River downstream of Deer Creek for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-124
3.3.2-71.	Exceedance curves of modeled mean daily water temperatures in the Yuba River near Parks Bar for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-125
3.3.2-72.	Exceedance curves of modeled mean daily water temperatures in the Yuba River downstream of Dry Creek for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-126
3.3.2-73.	Exceedance curves of modeled mean daily water temperatures in the Yuba River downstream of Daguerre Point Dam for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-128
3.3.2-74.	Exceedance curves of modeled mean daily water temperatures in the Yuba River near Marysville for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-129
3.3.2-75.	Exceedance curves of modeled mean daily water temperatures in the Yuba River upstream of the Feather River for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-130
3.3.2-76.	Simulated daily water temperatures for a representative wet WY (1998) at various locations along the Yuba River downstream of the Narrows 2 Powerhouse for the No Action Alternative compared to the Future Proposed Project Alternative. ....	E3.3.2-135
3.3.2-77.	Simulated daily water temperatures for a representative dry WY (2001) at various locations along the Yuba River downstream of the Narrows 2 Powerhouse for the No Action Alternative compared to the Future Proposed Project Alternative. ....	E3.3.2-135
3.3.2-78.	Simulated daily water temperatures for a representative normal WY (2005) at various locations along the Yuba River downstream of the Narrows 2 Powerhouse for the No Action Alternative compared to the Future Proposed Project Alternative. ....	E3.3.2-136
3.3.3-1.	Size distribution and direction of movement of hardhead observed using a VAKI Riverwatcher™ fish monitoring system at Daguerre Point Dam fishways (RM 11.6) between January 2004 and February 2015. ....	E3.3.3-7

**List of Figures (continued)**  
**Description**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-2.	Temporal distribution and direction of movement of hardhead observed using a VAKI Riverwatcher™ fish monitoring system at Daguerre Point Dam fishways (RM 11.6) between January 2004 and February 2015. ....	E3.3.3-8
3.3.3-3.	Study area reaches. Note: the (Feather River downstream of the Yuba River) eventually flows into the Sacramento River. ....	E3.3.3-23
3.3.3-4.	Summary of stream fish collection (fish per mile by species) information in the Yuba River upstream of Englebright Dam. ....	E3.3.3-43
3.3.3-5.	Non-anadromous species composition collected by RSTs in the Yuba River downstream of Englebright Dam during the 2007-2008 and 2008-2009 RMT surveys. (Asterisk indicates introduced species).....	E3.3.3-49
3.3.3-6.	Simpson Lane Reach-specific species relative abundance observed by electrofishing and snorkeling based on the combined study results of Beak (1989) and Kozlowski (2004). ....	E3.3.3-52
3.3.3-7.	Daguerre Point Dam Reach-specific species relative abundance observed by electrofishing and snorkeling based on the combined study results of Beak (1989) and Kozlowski (2004). ....	E3.3.3-53
3.3.3-8.	Garcia Gravel Pit Reach-specific species relative abundance observed by electrofishing and snorkeling based on the combined study results of Beak (1989) and Kozlowski (2004). ....	E3.3.3-54
3.3.3-9.	Narrows Reach-specific species relative abundance observed by electrofishing and snorkeling based on the combined study results of Beak (1989) and Kozlowski (2004).....	E3.3.3-55
3.3.3-10.	Temporal distribution of fish species observed during the RST surveys from 1999 to 2009. ....	E3.3.3-58
3.3.3-11.	Temporal distribution of primary species observed passing Daguerre Point Dam RM 11.6) during the VAKI Riverwatcher™ surveys from 2007 through 2010. ....	E3.3.3-59
3.3.3-12.	Number of fish tagged by zone during the Lohman Ridge Diversion Tunnel Entrainment Study. Tagged fish included 159 rainbow trout and 2 brown trout. ....	E3.3.3-62
3.3.3-13.	Size of trout PIT-tagged for Lohman Ridge Diversion Tunnel Entrainment Study. ....	E3.3.3-63
3.3.3-14.	Lohman Ridge Diversion Tunnel Intake opening and trashrack. The three-antenna stacked PIT-tag array in the embedded photograph, was installed in the tunnel about 10-15 ft downstream of the trash rack.....	E3.3.3-64
3.3.3-15.	Number of tagged rainbow trout detected in the Lohman Ridge Diversion Tunnel, the days on which they were detected, and the flows in the tunnel when they were detected. ....	E3.3.3-65



**List of Figures (continued)**  
**Description**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-16.	Number of fish tagged by zone during the Camptonville Diversion Tunnel entrainment study. All tagged fish were rainbow trout. ....	E3.3.3-67
3.3.3-17.	Size of PIT-tagged trout for Camptonville Diversion Tunnel Entrainment Study. ....	E3.3.3-67
3.3.3-18.	Camptonville Diversion Tunnel Intake opening and trashrack. The three-antenna stacked PIT-tag array (see blue rectangle in intake opening) was installed in the tunnel about 10 ft downstream of the trash rack. ....	E3.3.3-68
3.3.3-19.	Location of Condemned Bar downstream of the New Colgate Powerhouse. Hydraulic transects, bar habitat mapping, fish stranding survey routes and fish stranding observations are shown. ....	E3.3.3-73
3.3.3-20.	Location of French Bar downstream of New Colgate Powerhouse Reach. Hydraulic transects, bar habitat mapping, fish stranding survey routes and fish stranding observations are shown. ....	E3.3.3-74
3.3.3-21.	Condemned Bar and French Bar stranding survey counts by event. ....	E3.3.3-75
3.3.3-22.	Looking upstream to the location of the study area in proximity to the Narrows 2 Powerhouse. ....	E3.3.3-79
3.3.3-23.	An example of 2D fish tracks for the final four hours that tag 2453.22 was observed in the study site. ....	E3.3.3-88
3.3.3-24.	Hydrophone locations as installed based on GPS location data in relation to Narrows 2 Powerhouse. ....	E3.3.3-90
3.3.3-25.	Percent of maximum fish presence when only the Full Bypass was operating - tag code 2061.06 for 858.5 hrs between August 25 and October 2, 2015. Note: areas where no shading occurs represents minimal usage, not absence. ....	E3.3.3-93
3.3.3-26.	Percent of maximum fish presence when only the Full Bypass was operating - tag code 2453.22 for 620.53 hrs between August 26 and September 28, 2015. Note: areas where no shading occurs represents minimal usage, not absence. ....	E3.3.3-94
3.3.3-27.	Percent of maximum fish presence when only the Full Bypass was operating - tag code 2537.25 for 22.67 hrs between September 3 and September 20, 2015. Note: areas where no shading occurs represents minimal usage, not absence. ....	E3.3.3-95
3.3.3-28.	Percent of maximum fish presence when only the Full Bypass was operating - tag code 2593.28 for 302.68 hrs between August 29 and September 15, 2015. Note: areas where no shading occurs represents minimal usage, not absence. ....	E3.3.3-96

**List of Figures (continued)**  
**Description**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-29.	Percent of maximum fish presence when only the Full Bypass was operating - tag code 2631.24 for 138.20 hrs between September 19 and September 26, 2015. Note: areas where no shading occurs represents minimal usage, not absence. ....	E3.3.3-97
3.3.3-30.	Percent of maximum fish presence when only the Full Bypass was operating - tag code 2705.01 for 620.50 hrs between August 26 and September 22, 2015. Note: areas where no shading occurs represents minimal usage, not absence. ....	E3.3.3-98
3.3.3-31.	Percent of maximum fish presence when no Narrows 2 Facilities were operating - tag code 2061.06 for 167.9 hrs between October 3 and October 16, 2015. Note: areas where no shading occurs represents minimal usage, not absence. ....	E3.3.3-99
3.3.3-32.	General location of the fish carcass observed by YCWA Operations staff on October 23, 2012 in relation to the Narrows 2 Powerhouse and Englebright Dam (yellow dot).....	E3.3.3-106
3.3.3-33.	Fifteen-minute flows data at the Full Bypass, Narrows 1 Powerhouse, and Smartsville Gage from 12:00 p.m. on October 22, 2012 to 12:00 p.m. on October 24, 2012. The Narrows 2 Powerhouse and the Partial Bypass did not operate during this period, and spills over Englebright Dam did not occur. ....	E3.3.3-107
3.3.3-34.	Sean Hoobler of Cal Fish and Wildlife holding an adult Chinook salmon carcass found in the crevice in which he is kneeling on October 25, 2012. Photo taken by John Wooster of NMFS. ....	E3.3.3-108
3.3.3-35.	Fifteen-minute discharge data at the Partial Bypass, Full Bypass, Narrows 1 Powerhouse, and Smartsville Gage from 12:00 p.m. on October 24, 2012 to 12:00 p.m. on October 26, 2012. The Narrows 2 Powerhouse did not operate during this period, and spills over Englebright Dam did not occur. The time the fish carcass was observed is shown. ....	E3.3.3-109
3.3.3-36.	Fifteen-minute discharge data at the Partial Bypass, Full Bypass, Narrows 1 Powerhouse, and Smartsville Gage from 7:00 a.m. September 6, 2013 to 7:00 a.m. September 9, 2013. The Narrows 2 Powerhouse did not operate during this period.....	E3.3.3-110
3.3.3-37.	Series of photos cataloging the location and position of the fish carcass found on October 7, 2013.....	E3.3.3-112
3.3.3-38.	Fifteen-minute discharge data at the Partial Bypass, Full Bypass, Narrows 1 Powerhouse, and Smartsville Gage from 2:00 p.m. October 6, 2013 to 2:00 p.m. October 8, 2013. The Narrows 2 Powerhouse did not operate during this period, and spills over Englebright Dam did not occur.....	E3.3.3-114

**List of Figures (continued)**  
**Description**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-39.	Series of photos that show the pool in which the fish were observed on October 11, 2013. The photos were taken from the Narrows 2 Powerhouse deck looking south across the Yuba River. ....	E3.3.3-115
3.3.3-40.	Fifteen-minute discharge data at the Narrows 2 Powerhouse, Full Bypass, Narrows 1 Powerhouse, and Smartsville Gage from 12:00 p.m. October 10, 2013 to 12:00 p.m. October 14, 2013. The Partial Bypass did not operate during this period, and Englebright Dam did not spill. The time the fish were observed in the pool is shown. ....	E3.3.3-117
3.3.3-41.	Fifteen-minute flow data at the Narrows 2 Powerhouse, Narrows 1 Powerhouse, Full Bypass and Smartsville Gage from 12:00 a.m. on October 14, 2014 through 12:00 a.m. on October 16, 2014. The Partial Bypass did not operate during this period, and spills over Englebright Dam did not occur. ....	E3.3.3-118
3.3.3-42.	Photo of Chinook salmon being released on October 15, 2014. ....	E3.3.3-119
3.3.3-43.	Fifteen-minute flow data at the Narrows 2 Powerhouse, Narrows 1 Powerhouse, Full Bypass and Smartsville Gage from 12:00 a.m. on October 6, 2015 through 12:00 a.m. on October 8, 2015. The Partial Bypass did not operate during this period, and spills over Englebright Dam did not occur. ....	E3.3.3-120
3.3.3-44.	Adult Chinook salmon in the Full Bypass pool as observed from the deck of Narrows 2 Powerhouse. ....	E3.3.3-121
3.3.3-45.	One of the two adult salmon being released into the Narrows 2 pool on October 26, 2015. ....	E3.3.3-122
3.3.3-46.	Daguerre Point Dam and associated north and south fish ladders. The South Yuba-Brophy District is seen in the upper left corner of the photograph. ....	E3.3.3-123
3.3.3-47.	The Daguerre Point Dam north (on left) and south (on right) fish ladders. ....	E3.3.3-123
3.3.3-48.	Hallwood-Cordua Diversion. Image on the left shows the control gate headworks on the north abutment of Daguerre Point Dam. Image on the right shows the current v-shaped screen. ....	E3.3.3-127
3.3.3-49.	The South Yuba-Brophy Diversion. The image on the left shows the general location of the diversion (center of picture) relative to Daguerre Point Dam. The image on the right shows an aerial view of the bypass channel, rock gabion, and diversion pool. ....	E3.3.3-128
3.3.3-50.	BVID’s Diversion. Image shows the screen and diversion forebay. ....	E3.3.3-129
3.3.3-51.	WUA for rainbow trout in the Our House Diversion Dam Reach of the Middle Yuba River. ....	E3.3.3-133

**List of Figures (continued)**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-52.	WUA for Sacramento sucker in the Our House Diversion Dam Reach of the Middle Yuba River. ....	E3.3.3-134
3.3.3-53.	WUA for rainbow trout in the Oregon Creek Reach of the Middle Yuba River. ....	E3.3.3-135
3.3.3-54.	WUA for Sacramento sucker in the Oregon Creek Reach of the Middle Yuba River. ....	E3.3.3-136
3.3.3-55.	WUA for rainbow trout in the Log Cabin Diversion Dam sub-reach of Oregon Creek. ....	E3.3.3-137
3.3.3-56.	WUA for Sacramento sucker in the Log Cabin Diversion Dam sub-reach of Oregon Creek. ....	E3.3.3-138
3.3.3-57.	WUA for rainbow trout in the Celestial Valley sub-reach of Oregon Creek. ....	E3.3.3-139
3.3.3-58.	WUA for Sacramento sucker in the Celestial Valley sub-reach of Oregon Creek. ....	E3.3.3-140
3.3.3-59.	WUA for rainbow trout in the New Bullards Bar Dam Reach of the North Yuba River. ....	E3.3.3-141
3.3.3-60.	WUA for Sacramento sucker in the New Bullards Bar Dam Reach of the North Yuba River. ....	E3.3.3-142
3.3.3-61.	WUA for hardhead and pikeminnow in the New Bullards Bar Dam Reach of the North Yuba River. ....	E3.3.3-143
3.3.3-62.	WUA for rainbow trout in the Middle/North Yuba River Reach of the Yuba River. ....	E3.3.3-144
3.3.3-63.	WUA for Sacramento sucker in the Middle/North Yuba River Reach of the Yuba River. ....	E3.3.3-145
3.3.3-64.	WUA for hardhead and pikeminnow in the Middle/North Yuba River Reach of the Yuba River. ....	E3.3.3-146
3.3.3-65.	WUA for rainbow trout in the New Colgate Powerhouse Reach of the Yuba River. ....	E3.3.3-147
3.3.3-66.	WUA for Sacramento sucker in the New Colgate Powerhouse Reach of the Yuba River. ....	E3.3.3-148
3.3.3-67.	WUA for hardhead and pikeminnow in the New Colgate Powerhouse Reach of the Yuba River. ....	E3.3.3-149
3.3.3-68.	Map of hydrologic node locations for the habitat duration analysis (HDA). ....	E3.3.3-155
3.3.3-69.	Habitat duration analysis results for the Our House Diversion Dam Reach, Middle Yuba River for the No Action Alternative at Node 0. ....	E3.3.3-157

**List of Figures (continued)**  
**Description**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-70.	Habitat duration analysis results for the Our House Diversion Dam Reach, Middle Yuba River for the No Action Alternative at Node 1.....	E3.3.3-158
3.3.3-71.	Habitat duration analysis results for the Oregon Creek Reach, Middle Yuba River for the No Action Alternative at Node 2.....	E3.3.3-159
3.3.3-72.	Habitat duration analysis results for the Log Cabin Diversion Dam Reach, Oregon Creek for the No Action Alternative at Node 0. ....	E3.3.3-160
3.3.3-73.	Habitat duration analysis results for Log Cabin Diversion Dam Reach, Oregon Creek for the No Action Alternative at Node 1. ....	E3.3.3-161
3.3.3-74.	Habitat duration results for the Log Cabin Diversion Dam Reach, Oregon Creek for the No Action Alternative at Node 2 (Celestial Valley).....	E3.3.3-162
3.3.3-75.	Habitat duration results for Log Cabin Diversion Dam Reach, Oregon Creek for the No Action Alternative at Node 3. ....	E3.3.3-163
3.3.3-76.	Habitat duration results for the New Bullards Bar Dam Reach, North Yuba River for the No Action Alternative at Node 0.....	E3.3.3-164
3.3.3-77.	Habitat duration results for the New Bullards Bar Dam Reach, North Yuba River for the No Action Alternative at Node 1.....	E3.3.3-165
3.3.3-78.	Habitat duration results for the Middle/North Yuba River Reach, Yuba River for the No Action Alternative at Node 1. ....	E3.3.3-166
3.3.3-79.	Habitat duration results for the New Colgate Powerhouse Reach, Yuba River for the No Action Alternative at Node 0. ....	E3.3.3-167
3.3.3-80.	Habitat duration results for the New Colgate Powerhouse Reach, Yuba River for the No Action Alternative at Node 1. ....	E3.3.3-168
3.3.3-81.	Map of hydrologic zone boundaries used in Study 7.10.....	E3.3.3-171
3.3.3-82.	Englebright Dam Hydrologic Zone rainbow trout adult, and lamprey guild WUA results .....	E3.3.3-174
3.3.3-83.	Deer Creek Hydrologic Zone rainbow trout adult and lamprey adult WUA results.....	E3.3.3-175
3.3.3-84.	Dry Creek Hydrologic Zone rainbow trout adult and lamprey adult WUA results.....	E3.3.3-176
3.3.3-85.	Daguerre Point Dam Hydrologic Zone rainbow trout adult, lamprey adult, and lamprey ammocoete WUA results. ....	E3.3.3-177
3.3.3-86.	Foothill yellow-legged frog survey site locations.....	E3.3.3-184
3.3.3-87.	Egg mass combined suitability output from the Middle Yuba 2D model for three simulation flows. ....	E3.3.3-193
3.3.3-88.	Tadpole combined suitability output from the Middle Yuba 2D model for three simulation flows. ....	E3.3.3-194

**List of Figures (continued)**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-89.	Egg mass combined suitability output from the Oregon Creek 2D model for three simulation flows. ....	E3.3.3-197
3.3.3-90.	Tadpole combined suitability output from the Oregon Creek 2D model for three simulation flows. ....	E3.3.3-198
3.3.3-91.	WUA for FYLF egg mass and tadpole life stages in the Oregon Creek and Middle Yuba River study sites. ....	E3.3.3-199
3.3.3-92.	Locations of WPT field reconnaissance and survey detections, incidental observations, and existing records. ....	E3.3.3-203
3.3.3-93.	Overview of scores by basin, stream, and indices. Sites with starred symbols represent locations where insufficient organisms were collected to make the resultant IBI and MMI scores reliable. ....	E3.3.3-211
3.3.3-94.	AUC for all lifestages and species at RM 12.6 on the Middle Yuba River based on YCWA’s proposed Project and the No Action Alternative.....	E3.3.3-245
3.3.3-95.	AUC for all lifestages and species at RM 8.8 on the Middle Yuba River based on YCWA’s proposed Project and the No Action Alternative.....	E3.3.3-245
3.3.3-96.	AUC for all lifestages and species at RM 4.3 on Oregon Creek based on YCWA’s Proposed Project and the No Action Alternative.....	E3.3.3-251
3.3.3-97.	AUC for all lifestages and species at RM 3.7 on Oregon Creek based on YCWA’s Proposed Project and the No Action Alternative.....	E3.3.3-251
3.3.3-98.	AUC for all lifestages and species at RM 2.5 on Oregon Creek based on YCWA’s Proposed Project and the No Action Alternative.....	E3.3.3-252
3.3.3-99.	AUC for all lifestages and species at RM 1.0 on Oregon Creek based on YCWA’s Proposed Project and the No Action Alternative.....	E3.3.3-252
3.3.3-100.	AUC for all lifestages and species at RM 2.3 in the Oregon Creek Reach based on YCWA’s Proposed Project and the No Action Alternative.....	E3.3.3-257
3.3.3-101.	AUC for all lifestages and species at RM 1.2 in the New Bullards Bar Dam Reach based on YCWA’s Proposed Project and the No Action Alternative.....	E3.3.3-262
3.3.3-102.	AUC for all lifestages and species at RM 2.4 in the New Bullards Bar Dam Reach based on YCWA’s Proposed Project and the No Action Alternative.....	E3.3.3-262

**List of Figures (continued)**

<b>Figure No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-103.	AUC for all lifestages and species at RM 37.1 in the Middle/North Yuba River Reach based on YCWA’s Proposed Project and the No Action Alternative.....	E3.3.3-269
3.3.3-104.	AUC for all lifestages and species at RM 32.7 on the Yuba River based on YCWA’s Proposed Project and the No Action Alternative.....	E3.3.3-273
3.3.3-105.	AUC for all lifestages and species at RM 34.0 in the Yuba River based on YCWA’s Proposed Project and the No Action Alternative.....	E3.3.3-274
3.3.6-1.	Functional use periods for the Cottage Creek and Dark Day boat ramps by median WSE and WY type based on Water Balance/Operations Model run results for WYs 1970 through WY 2010.....	E3.3.6-27
3.3.6-2.	Photograph of the slope instability site upslope from the Dark Day boat ramp at low water levels (typically during the non-peak season).....	E3.3.6-28
3.3.7-1.	Fire ignitions within the Project Vicinity.....	E3.3.7-20
3.3.8-1.	Management approach in HPMP to considering Project effects to cultural resources. ....	E3.3.8-20

**List of Tables**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
1.3-1.	Summary of statutory and regulatory requirements and status.....	E1-9
1.3-2.	Designated beneficial uses of surface water within the Project and the area downstream by HU in the Basin Plan. ....	E1-21
1.4-1.	List of comment letters in chronological order filed with FERC on FERC’s Scoping Document 1 and YCWA’s Pre-Application Document.....	E1-33
1.4-2.	Comment letters filed with FERC regarding YCWA’s Yuba River Development Project’s Initial Study Report and meeting summary. ....	E1-35
1.4-3.	Comment letters filed with FERC regarding YCWA’s Yuba River Development Project’s Updated Study Report and meeting summary.....	E1-36
1.4-4.	List of studies and associated technical memorandum conducted by YCWA in support of the relicensing, the data YCWA filed each technical memorandum with FERC, and the corresponding accession number for the technical memorandum in FERC’s ELibrary. ....	E1-37

**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
1.4-5.	List of YCWA’s proposed conditions and the Relicensing Participants that YCWA understands agree with YCWA’s proposed Condition.....	E1-39
1.4-6.	Comment letters filed with FERC regarding YCWA’s Yuba River Development Project’s Draft License Application.....	E1-41
2.1-1.	Key information regarding Yuba River Development Project powerhouses.....	E2-1
2.1-2.	Key information regarding Yuba River Development Project reservoirs and impoundments.....	E2-2
2.1-3.	Typical distribution of flows under normal operations (i.e., excluding brief transition periods) among Narrows 2 Powerhouse (generation only), Partial Bypass, Full Bypass and Narrows 1 Powerhouse.....	E2-16
2.1-4.	New Bullards Bar Reservoir flood storage space allocation in thousands of acre-feet.....	E2-24
2.1-5.	Yuba Accord flow schedules.....	E2-25
2.1-6.	Water right licenses held by YCWA for operation of the Project for power generation.....	E2-27
2.1-7.	YCWA’s annual contract amounts and place of delivery.....	E2-28
2.1-8.	YCWA’s water supply contract shortage provisions.....	E2-30
2.1-9.	YCWA historical sales from 1987 to 2016.....	E2-31
2.2-1.	Primary Project Roads and Trails (non-recreation roads and trails) included in Yuba River Development Project.....	E2-66
2.2-2.	Recreation roads included in Yuba River Development Project.....	E2-67
2.2-3.	Proposed additions to Primary Project Roads and Trails (non-recreation roads and trails) included in Yuba River Development Project by Development.....	E2-67
2.2-4.	Proposed additions to and withdrawals of Recreation Roads associated with the New Colgate Development. YCWA does not propose any changes to Recreation Roads and Trails associated with the New Bullards Bar Minimum Flow Development or the Narrows 2 Development.....	E2-68
2.2-5.	Summary of land ownership within the proposed Yuba River Development Project FERC Project Boundary by Project Development and difference as compared to existing FERC Project Boundary.....	E2-73
2.2-6.	Smartsville hydrological index Water Year types and associated thresholds.....	E2-74
2.2-7.	North Yuba Index Schedules and associated thresholds.....	E2-74



**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
2.2-8.	Proposed Project flow requirements for the Middle Yuba River downstream of Our House Diversion Dam by Smartsville hydrological index Water Year type.....	E2-75
2.2-9.	Proposed Project flow requirements for Oregon Creek downstream of Log Cabin Diversion Dam by Smartsville Hydrological Index Water Year type. ....	E2-75
2.2-10.	Proposed Project Flow Requirements for the North Yuba River downstream of New Bullards Bar Dam by Smartsville Hydrological Index Water Year type.....	E2-76
2.2-11.	Proposed Project whitewater boating flows below Our House Diversion Dam.....	E2-77
2.2-12.	Proposed Project flow requirements for the Yuba River downstream of Narrows 2 Powerhouse and Narrows 2 full flow bypass by North Yuba Index Flow Schedule.....	E2-78
2.2-13.	Maximum flow reductions corresponding to the maximum 5-day average release (Base Flow) that has occurred during the period extending from September 1 through December 31.....	E2-79
2.2-14.	Maximum flow reductions corresponding to the maximum 5-day average release (Base Flow) that has occurred during the period extending from January 1 through May 31.....	E2-79
2.2-15.	Maximum flow reductions corresponding to the preceding day average flow that has occurred during the period extending from April 1 through July 15.....	E2-80
3.1-1.	Exports of water from Yuba River Sub-basins from WY 1990 through 2016 averaged by WY type. ....	E3-13
3.1-2.	Stream reaches in the Yuba River Basin potentially affected by continued Project operations.....	E3-16
3.1-3.	Streams and tributaries to the North, Middle, South, and main stem of the Yuba River.....	E3-16
3.1-4.	Owners and capacities of dams and diversions in the Yuba River Basin. ....	E3-18
3.3.1-1.	Mines in the Yuba River Development Project Vicinity.....	E3.3.1-8
3.3.1-2.	Soil series and order summary description in the Project Vicinity.....	E3.3.1-9
3.3.1-3.	Soil associations in the Project Vicinity. ....	E3.3.1-11
3.3.1-4.	Estimated volume of sediment removed from Our House Diversion Dam impoundment from 1986 to the present. ....	E3.3.1-15
3.3.1-5.	Estimates of sediment yield at sediment supply nodes based on regional estimate of yield and drainage area under the With-Project and Without-Project conditions. ....	E3.3.1-17

**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.1-6.	Summary of channel storage of coarse sediment in Middle Yuba River and Oregon Creek downstream of Project diversion dams.....	E3.3.1-19
3.3.1-7.	Location of reaches where channel morphology study sites were located, and transects selected for channel morphology evaluation from among Study 3.10, Instream Flow Upstream of Englebright Reservoir, transects.....	E3.3.1-24
3.3.2-1.	Streamflow gages and Project tunnel, powerhouse and reservoir gages.....	E3.3.2-4
3.3.2-2.	No Action Alternative flows and storage by month from YCWA’s With-Project Hydrology dataset.....	E3.3.2-9
3.3.2-3.	Water quality objectives to support beneficial uses in the vicinity of the Project as designated by the CVRWQCB and listed in the Basin Plan.....	E3.3.2-15
3.3.2-4.	Water quality standards, criteria and benchmark values used for evaluating the protection of designated beneficial uses <sup>1</sup> in the vicinity of the Yuba River Development Project.....	E3.3.2-17
3.3.2-5.	Temperature and DO concentrations found in YCWA’s routine reservoir profile locations by reservoir.....	E3.3.2-26
3.3.2-6.	Monthly minimum, average and maximum DO concentrations in New Bullards Bar Reservoir near the dam from November 2010 through August 2012.....	E3.3.2-29
3.3.2-7.	Monthly minimum, average and maximum DO concentrations in Englebright Reservoir near the dam from November 2010 through August 2012.....	E3.3.2-31
3.3.2-8.	Monthly minimum, average and maximum DO concentrations in Englebright Reservoir 3.3 mi upstream of the dam from April 2011 through August 2012.....	E3.3.2-32
3.3.2-9.	Continuous stream water temperature monitoring location information.....	E3.3.2-34
3.3.2-10.	WYs 2009 through 2012 minimum and maximum daily average stream temperatures (°C) by month. Shaded cells indicate values over 20°C. An * indicates a site above the Project (i.e., not affected by the Project).....	E3.3.2-37
3.3.2-11.	Margin water temperature station information.....	E3.3.2-41
3.3.2-12.	Range of mercury concentrations in fish tissue by location and species.....	E3.3.2-60
3.3.2-13.	YCWA’s proposed Project flows and storage from YCWA’s proposed Project Hydrology dataset.....	E3.3.2-70

**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.2-14.	Comparison between the Existing FERC License, Smartsville Index and North Yuba Index for WYs 1970 through 2010 for YCWA’s proposed Project and No Action Alternative.....	E3.3.2-75
3.3.2-15.	Changes in Project flows and storage from No Action Alternative to YCWA’s proposed Project. ....	E3.3.2-78
3.3.2-16.	Proposed recreation-related rehabilitation and enhancements with the potential to effect water quality. ....	E3.3.2-95
3.3.2-17.	Average usable storage in New Bullards Bar Reservoir at the 10°C and 15°C isotherms for the modeled period of record (WYs 1970 through 2010) based on Operations Model and HEC-5Q temperature model results. ....	E3.3.2-97
3.3.2-18.	Comparison of simulated mean monthly water temperatures in the Middle Yuba River downstream of Our House Dam for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-111
3.3.2-19.	Comparison of simulated mean monthly water temperatures in the Middle Yuba River upstream of Oregon Creek for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-112
3.3.2-20.	Comparison of simulated mean monthly water temperatures in the Middle Yuba River downstream of Oregon Creek for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-113
3.3.2-21.	Comparison of simulated mean monthly water temperatures in the Middle Yuba River upstream of the North Yuba River for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-114
3.3.2-22.	Comparison of simulated mean monthly water temperatures in Oregon Creek downstream of Log Cabin Diversion Dam for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-116
3.3.2-23.	Comparison of simulated mean monthly water temperatures in Oregon Creek upstream of the Middle Yuba River for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-117
3.3.2-24.	Comparison of simulated mean monthly water temperatures in the North Yuba River upstream of the Middle Yuba River for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-118

**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.2-25.	Comparison of simulated mean monthly water temperatures in the Yuba River downstream of the Middle Yuba River for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-120
3.3.2-26.	Comparison of simulated mean monthly water temperatures in the Yuba River upstream of the New Colgate Powerhouse for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-121
3.3.2-27.	Comparison of simulated mean monthly water temperatures in the Yuba River downstream of the New Colgate Powerhouse for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-122
3.3.2-28.	Comparison of simulated mean monthly water temperatures in the Yuba River near Smartsville for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-124
3.3.2-29.	Comparison of simulated mean monthly water temperatures in the Yuba River downstream of Deer Creek for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-125
3.3.2-30.	Comparison of simulated mean monthly water temperatures in the Yuba River near Parks Bar for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-126
3.3.2-31.	Comparison of simulated mean monthly water temperatures in the Yuba River downstream of Dry Creek for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-127
3.3.2-32.	Comparison of simulated mean monthly water temperatures in the Yuba River downstream of Daguerre Point Dam for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-128
3.3.2-33.	Comparison of simulated mean monthly water temperatures in the Yuba River near Marysville for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-129
3.3.2-34.	Comparison of simulated mean monthly water temperatures in the Yuba River upstream of the Feather River for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.2-130
3.3.2-35.	The total available water supply, as calculated by the North Yuba Index, and the total minimum required flow below Narrows 2 Powerhouse, by Yuba Accord Water Year Type. ....	E3.3.2-139

**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-1.	List of fish species in alphabetic order that have been reported to occur in the Yuba River watershed within the Project Area.....	E3.3.3-3
3.3.3-2.	Lifestage-specific periodicities for fall-run Chinook salmon in the Yuba River (shaded boxes indicate temporal utilization of the Yuba River).....	E3.3.3-9
3.3.3-3.	Estimated number of phenotypic spring-run and fall-run Chinook salmon spawning in the lower Yuba River from 2004 through 2015, and corresponding spring-run and fall-run Chinook salmon spawners reported in GrandTab for the Yuba River and Sacramento River system.....	E3.3.3-10
3.3.3-4.	Summary of pink salmon observed migrating past Daguerre Point Dam in the Yuba River during the VAKI Riverwatcher™ monitoring study from 2004 through 2017.....	E3.3.3-14
3.3.3-5.	Known stocked fish species in New Bullards Bar Reservoir from 1969 through 2016 in order of abundance. *Note New Bullards Bar was finished in 1970 and some of the earliest data may have occurred in Bullards Bar Reservoir.....	E3.3.3-18
3.3.3-6.	Summary of relative abundance, length, and weight of all fish species collected at New Bullards Bar Reservoir in January and June 2012 in order of abundance. ....	E3.3.3-19
3.3.3-7.	Known stocked fish species in Englebright Reservoir from 1965 through 2016 in order of abundance. ....	E3.3.3-21
3.3.3-8.	Summary of relative abundance, length, and weight of all fish species collected at Englebright Reservoir in June 2012 in order of abundance. ....	E3.3.3-22
3.3.3-9.	Overview of fish species present from YCWA’s Study 3.8 conducted in 2012 and 2013, as well as documented species presence from historical reports.....	E3.3.3-26
3.3.3-10.	Summary of 2012 and 2013 fish population information collected by quantitative electrofishing for the Middle Yuba River upstream of Our House Diversion Dam (RM 13.3). ....	E3.3.3-27
3.3.3-11.	Summary of 2012 and 2013 fish population information collected by quantitative electrofishing for the Oregon Creek upstream of Log Cabin Diversion Dam Site (RM 4.5).....	E3.3.3-30
3.3.3-12.	Summary of 2012 and 2013 fish population information from quantitative snorkeling observations for the Middle Yuba River Downstream of Our House Diversion Dam Site (RM 12.5).....	E3.3.3-31
3.3.3-13.	Summary of 2012 and 2013 fish population information collected by quantitative electrofishing for the Middle Yuba River site at RM 5.0. ....	E3.3.3-32

**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-14.	Summary results of 2012 and 2013 fish population information collected by quantitative electrofishing for the Oregon Creek downstream of Log Cabin Diversion Dam Site (RM 0.3).....	E3.3.3-34
3.3.3-15.	Summary of 2012 and 2013 fish population information from quantitative snorkeling observations for the Middle Yuba River downstream of Moonshine Creek Site (RM 3.3).....	E3.3.3-35
3.3.3-16.	Summary of 2012 and 2013 fish population information from quantitative snorkeling observations for the Middle Yuba River Downstream of Yellowjacket Creek Site (RM 1.0).....	E3.3.3-36
3.3.3-17.	Summary of 2012 and 2013 fish population information collected by quantitative electrofishing for the Middle Yuba River Downstream of Yellowjacket Creek Site (RM 1.0).....	E3.3.3-36
3.3.3-18.	Summary of 2012 and 2013 fish population information from quantitative snorkeling observations for the North Yuba River Upstream of Middle Yuba River Site (RM 0.2). ....	E3.3.3-38
3.3.3-19.	Summary of 2012 and 2013 fish population information from quantitative snorkeling observations for the Yuba River Downstream of Middle Yuba River Site (RM 39.6).....	E3.3.3-39
3.3.3-20.	Summary of 2012 and 2013 fish population information from quantitative snorkeling observations for the Yuba River Upstream of New Colgate Powerhouse Site (RM 35.0).....	E3.3.3-39
3.3.3-21.	Summary of 2012 and 2013 fish population information from quantitative snorkeling observations for the Yuba River Downstream of New Colgate Powerhouse Site (RM 33.7)1 .....	E3.3.3-40
3.3.3-22.	Fish species distribution in the Yuba River downstream of Englebright Dam.....	E3.3.3-45
3.3.3-23.	Native fish species and associated native assemblages of the Yuba River watershed downstream of Englebright Dam.1 .....	E3.3.3-47
3.3.3-24.	Fish species composition related to fish assemblages in the Yuba River downstream of Englebright Dam. ....	E3.3.3-50
3.3.3-25.	Relative abundance in descending order for fish collected from 1999 through 2009 by RST surveys in the Yuba River near Hallwood Boulevard (RM 7.2). ....	E3.3.3-56
3.3.3-26.	Net passage (upstream subtracted from downstream passage) in descending order for fish observed by VAKI Riverwatcher™ passing through the fishways at Daguerre Point Dam on the Yuba River (RM 11.6) from biological years 2003-2016 (March to February). Negative values signify net downstream passage. Unidentified species were omitted.....	E3.3.3-57
3.3.3-27.	Effort, number tagged, and total catch by 0.1 mi interval zone on the Middle Yuba River, upstream of Our House Diversion Dam.....	E3.3.3-61

**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-28.	Effort, number of tagged fish (rainbow trout), and total fish catch by zone on Oregon Creek. ....	E3.3.3-66
3.3.3-29.	Summary of catch by gillnet depth at Site 1 near New Bullards Bar Dam in January and June 2012. ....	E3.3.3-70
3.3.3-30.	Summary of catch by gillnet depth at Site 1 near Englebright Dam from June 22-24, 2012. ....	E3.3.3-71
3.3.3-31.	Summary of planned and actual operational events from July through November 2012. ....	E3.3.3-81
3.3.3-32.	Summary of planned and actual operational events from July through November 2013. ....	E3.3.3-83
3.3.3-33.	Summary of the release date and time, the date and time of first and last detections, total hours of detection, and the total duration between the first and last detection of the six tagged adult Chinook salmon at the Narrows 2 study site in 2015. ....	E3.3.3-91
3.3.3-34.	Date, nearest approach distance to the Narrows 2 Powerhouse,1 and coordinates for the point of nearest approach for each of the six tagged fish. ....	E3.3.3-91
3.3.3-35.	Summary of combined surface observations during the visual observation events on September 9 and October 1, 2013. ....	E3.3.3-110
3.3.3-36.	WUA table for rainbow trout in the Our House Diversion Dam Reach. ....	E3.3.3-133
3.3.3-37.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the Our House Diversion Dam Reach. ....	E3.3.3-133
3.3.3-38.	WUA table for Sacramento sucker in the Our House Diversion Dam Reach. ....	E3.3.3-134
3.3.3-39.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the Our House Diversion Dam Reach. ....	E3.3.3-134
3.3.3-40.	WUA table for rainbow trout in the Oregon Creek Reach of the Middle Yuba River. ....	E3.3.3-135
3.3.3-41.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the Oregon Creek Reach of the Middle Yuba River. ....	E3.3.3-135
3.3.3-42.	WUA table for Sacramento sucker in the Oregon Creek Reach of the Middle Yuba River. ....	E3.3.3-136

**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-43.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the Oregon Creek Reach of the Middle Yuba River.....	E3.3.3-136
3.3.3-44.	WUA table for rainbow trout in the Log Cabin Diversion Dam sub-reach of Oregon Creek. ....	E3.3.3-137
3.3.3-45.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the Log Cabin Diversion Dam sub-reach of Oregon Creek.....	E3.3.3-137
3.3.3-46.	WUA table for Sacramento sucker in the Log Cabin Diversion Dam sub-reach of Oregon Creek. ....	E3.3.3-138
3.3.3-47.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the Log Cabin Diversion Dam sub-reach of Oregon Creek.....	E3.3.3-138
3.3.3-48.	WUA table for Rainbow trout in the Celestial Valley sub-reach of Oregon Creek.....	E3.3.3-139
3.3.3-49.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the Celestial Valley sub-reach of Oregon Creek. ....	E3.3.3-139
3.3.3-50.	WUA table for Sacramento sucker in the Celestial Valley sub-reach of Oregon Creek.....	E3.3.3-140
3.3.3-51.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the Celestial Valley sub-reach of Oregon Creek. ....	E3.3.3-140
3.3.3-52.	WUA table for rainbow trout in the New Bullards Bar Dam Reach. ....	E3.3.3-141
3.3.3-53.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the New Bullards Bar Dam Reach. ....	E3.3.3-141
3.3.3-54.	WUA table for Sacramento sucker in the New Bullards Bar Dam Reach.....	E3.3.3-142
3.3.3-55.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the New Bullards Bar Dam Reach. ....	E3.3.3-142
3.3.3-56.	WUA table for hardhead/pikeminnow in the New Bullards Bar Dam Reach.....	E3.3.3-143



**List of Tables (continued)**  
**Description**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-57.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the New Bullards Bar Dam Reach. ....	E3.3.3-143
3.3.3-58.	WUA table for rainbow trout in the Middle/North Yuba River Reach.....	E3.3.3-144
3.3.3-59.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the Middle/North Yuba River Reach. ....	E3.3.3-144
3.3.3-60.	WUA table for Sacramento sucker in the Upstream of New Colgate Powerhouse Reach.....	E3.3.3-145
3.3.3-61.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the Upstream of New Colgate Powerhouse Reach. ....	E3.3.3-145
3.3.3-62.	WUA table for hardhead and pikeminnow in the Middle/North Yuba River Reach. ....	E3.3.3-146
3.3.3-63.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the Middle/North Yuba River Reach.....	E3.3.3-146
3.3.3-64.	WUA table for rainbow trout in the New Colgate Powerhouse Reach.....	E3.3.3-147
3.3.3-65.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the New Colgate Powerhouse Reach.....	E3.3.3-147
3.3.3-66.	WUA table for Sacramento sucker in the New Colgate Powerhouse Reach.....	E3.3.3-148
3.3.3-67.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the New Colgate Powerhouse Reach.....	E3.3.3-148
3.3.3-68.	WUA table for hardhead and pikeminnow in the New Colgate Powerhouse Reach. ....	E3.3.3-149
3.3.3-69.	Values with conditional formatting from 80 to 100 percent of the maximum WUA. Bimodal curves have the lower peak highlighted in yellow, and the upper peak highlighted in green for the New Colgate Powerhouse Reach.....	E3.3.3-149

**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-70.	Summary table of discharge at 80 percent and 100 percent of maximum WUA for rainbow trout spawning, juvenile and adult life stages. ....	E3.3.3-151
3.3.3-71.	Summary table of discharge at 80 percent and 100 percent of maximum WUA for Sacramento sucker juvenile and adult life stages. ....	E3.3.3-152
3.3.3-72.	Summary table of discharge at 80 percent and 100 percent of maximum WUA for hardhead/pikeminnow juvenile and adult life stages. ....	E3.3.3-152
3.3.3-73.	Habitat duration analysis results for the Our House Diversion Dam Reach, Middle Yuba River for the No Action Alternative at Node 0. ....	E3.3.3-157
3.3.3-74.	Habitat duration analysis results for the Our House Diversion Dam Reach, Middle Yuba River for the No Action Alternative at Node 1. ....	E3.3.3-158
3.3.3-75.	Habitat duration analysis results for the Oregon Creek Reach, Middle Yuba River for the No Action Alternative at Node 2. ....	E3.3.3-158
3.3.3-76.	Habitat duration analysis results for the Log Cabin Diversion Dam Reach, Oregon Creek for the No Action Alternative at Node 0. ....	E3.3.3-159
3.3.3-77.	Habitat duration analysis results for the Log Cabin Diversion Dam Reach, Oregon Creek for the No Action Alternative at Node 1. ....	E3.3.3-160
3.3.3-78.	Habitat duration results for the Log Cabin Diversion Dam Reach, Oregon Creek for the No Action Alternative at Node 2 (Celestial Valley). ....	E3.3.3-161
3.3.3-79.	Habitat duration results for the Log Cabin Diversion Dam Reach, Oregon Creek for the No Action Alternative at Node 3. ....	E3.3.3-162
3.3.3-80.	Habitat duration results for the New Bullards Bar Dam Reach, North Yuba River for the No Action Alternative at Node 0. ....	E3.3.3-163
3.3.3-81.	Habitat duration results for the New Bullards Bar Dam Reach, North Yuba River for the No Action Alternative at Node 1. ....	E3.3.3-164
3.3.3-82.	Habitat duration results for the Middle/North Yuba River Reach, Yuba River for the No Action Alternative at Node 1. ....	E3.3.3-165
3.3.3-83.	Habitat duration results for the New Colgate Powerhouse Reach, Yuba River for the No Action Alternative at Node 0. ....	E3.3.3-166
3.3.3-84.	Habitat duration results for the New Colgate Powerhouse Reach, Yuba River for the No Action Alternative at Node 1. ....	E3.3.3-167
3.3.3-85.	Hydrologic zone boundaries established for habitat modeling in the Yuba River downstream from Englebright Dam. ....	E3.3.3-169
3.3.3-86.	Summary table of discharge at peak WUA for rainbow trout adult and lamprey ammocoete and adult lifestages. ....	E3.3.3-173

**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-87.	Englebright Dam Hydrologic Zone rainbow trout adult, lamprey adult, and lamprey ammocoete WUA results. ....	E3.3.3-174
3.3.3-88.	Deer Creek Hydrologic Zone rainbow trout adult, lamprey adult, and lamprey ammocoete WUA results. ....	E3.3.3-175
3.3.3-89.	Dry Creek Hydrologic Zone rainbow trout adult and lamprey adult and ammocoete WUA results. ....	E3.3.3-176
3.3.3-90.	Daguerre Point Dam Hydrologic Zone rainbow trout adult, and lamprey adult and ammocoete WUA results. ....	E3.3.3-177
3.3.3-91.	Amphibian species reported from the Project vicinity. ....	E3.3.3-180
3.3.3-92.	Summary of FYLF surveys and other information regarding the distribution of FYLF in the Middle Yuba River downstream of Our House Diversion Dam.....	E3.3.3-185
3.3.3-93.	Summary of FYLF surveys and other information regarding the distribution of FYLF in the North Yuba River downstream of New Bullards Bar Dam at Site NYR-1.....	E3.3.3-186
3.3.3-94.	Summary of FYLF surveys and other information regarding the distribution of FYLF in the Yuba River downstream of Middle Yuba/North Yuba Confluence at Sites YR-1, YR-2, and YR-2A. ....	E3.3.3-186
3.3.3-95.	Summary of FYLF surveys and other information regarding the distribution of FYLF in Oregon Creek downstream of Log Cabin Diversion Dam at Sites OC-1 and OC-2.....	E3.3.3-187
3.3.3-96.	Summary of FYLF surveys and other information regarding the distribution of FYLF upstream of Project facilities on the Middle Yuba River, North Yuba River, and Oregon Creek.....	E3.3.3-188
3.3.3-97.	Change in water surface elevations (ft) summarized by AOI region for the Middle Yuba River model domain.....	E3.3.3-190
3.3.3-98.	Change in water surface elevations (ft) summarized by AOI region for the Oregon Creek model domain. ....	E3.3.3-190
3.3.3-99.	Summary of WPT basking surveys results. ....	E3.3.3-205
3.3.3-100.	Target mollusk species.....	E3.3.3-209
3.3.3-101.	Water quality and habitat characteristics collected at six sites in the Yuba River downstream of Narrows 2 Powerhouse in July 2012. ....	E3.3.3-213
3.3.3-102.	BMI metrics from samples collected at six sites in the Yuba River downstream of Narrows 2 Powerhouse in July 2012.....	E3.3.3-214
3.3.3-103.	BMI metrics from samples collected at Site 1: Hallwood Boulevard (RM 7) on July 19, 2012 compared to historical samples collected by SYRCL in 2006 and 2007. ....	E3.3.3-215
3.3.3-104.	Comparison of Water Quality Parameters Necessary for Mussel Invasion (Unable [red], Potentially Able [yellow], and Able [green]) with Measurements in New Bullards Bar Reservoir.....	E3.3.3-216

**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-105.	Location of Asian clam observations.....	E3.3.3-218
3.3.3-106.	Comparison of simulated mean monthly water temperatures in the Middle Yuba River downstream and upstream of Our House Dam (Our House Diversion Dam Reach) for the No Action Alternative and Proposed Project for WYs 1970 through 2010.1 .....	E3.3.3-241
3.3.3-107.	Simulated mean monthly flows downstream in the Middle Yuba River downstream of Our House Diversion Dam from WY 1970 through WY 2010. ....	E3.3.3-242
3.3.3-108.	Percent of maximum WUA and the difference in percent of maximum WUA between the proposed Project and the No Action Alternative for rainbow trout adult, juvenile and spawning lifestages in the Our House Diversion Dam Reach that correspond with YCWA’s proposed Condition AR1.1 .....	E3.3.3-243
3.3.3-109.	Percent of habitat using HDA that corresponds with YCWA’s proposed Project for modeled species and lifestages as compared to the No Action Alternative in the Our House Diversion Dam Reach of the Middle Yuba River. Comparison made using all WYs in the period of record.....	E3.3.3-244
3.3.3-110.	Comparison of simulated mean monthly water temperatures in Oregon Creek downstream of Log Cabin Diversion Dam (Log Cabin Diversion Dam Reach) for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010.....	E3.3.3-247
3.3.3-111.	Simulated mean monthly flows in Oregon Creek downstream of Log Cabin Diversion Dam from WY 1970 through WY 2010. ....	E3.3.3-248
3.3.3-112.	Percent of maximum WUA and the difference in percent of maximum WUA between the proposed Project and the No Action Alternative for rainbow trout adult, juvenile and spawning lifestages in the Log Cabin Diversion Dam Reach that correspond with the Log Cabin Diversion Dam flows shown in YCWA’s proposed Condition AR1.1 .....	E3.3.3-248
3.3.3-113.	Percent of habitat under that corresponds with YCWA’s proposed Project for modeled species and lifestages as compared to the No Action Alternative in the Log Cabin Diversion Dam Reach of Oregon Creek. Comparison made using all WYs in the period of record. ....	E3.3.3-249
3.3.3-114.	Comparison of simulated mean monthly water temperatures in the Middle Yuba River downstream of Oregon Creek (Oregon Creek Reach) and upstream of the North Yuba River for the No Action Alternative and Proposed Project Alternative for WYs 1970 through 2010. ....	E3.3.3-254

**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-115.	Simulated combined mean monthly flow downstream of Oregon Creek on the Middle Yuba River from WY 1970 through WY 2010.....	E3.3.3-255
3.3.3-116.	Percent of maximum WUA and the difference in percent of maximum WUA between the proposed Project and the No Action Alternative for rainbow trout adult, juvenile and spawning lifestages in the Oregon Creek Reach that correspond with YCWA’s proposed Condition AR1.1,2 .....	E3.3.3-256
3.3.3-117.	Percent of habitat under that corresponds with YCWA’s proposed Project for modeled species and lifestages as compared to the No Action Alternative in the Oregon Creek Reach of the Middle Yuba River. Comparison made using all WYs in the period of record.....	E3.3.3-257
3.3.3-118.	Comparison of simulated mean monthly water temperatures in the North Yuba River downstream of New Bullards Bar Dam for the No Action Alternative and Proposed Project for WYs 1970 through 2010. ....	E3.3.3-259
3.3.3-119.	Mean monthly flows downstream of New Bullards Bar Dam for the Yuba River Index WY types from WY 1970 through WY 2010.....	E3.3.3-259
3.3.3-120.	Percent of maximum WUA and the difference in percent of maximum WUA between the proposed Project and the No Action Alternative for rainbow trout adult, juvenile and spawning lifestages in the New Bullards Bar Reach that correspond with YCWA’s proposed Condition AR10.1 .....	E3.3.3-260
3.3.3-121.	Percent of habitat under that corresponds with YCWA’s proposed Project for modeled species and lifestages as compared to the No Action Alternative in the New Bullards Bar Dam Reach of the North Yuba River. Comparison made using all WYs in the period of record. ....	E3.3.3-261
3.3.3-122.	Comparison of simulated mean monthly water temperatures in the Yuba River upstream of New Colgate Powerhouse for the No Action Alternative and Proposed Project for WYs 1970 through 2010.....	E3.3.3-265
3.3.3-123.	Simulated mean monthly flows (cfs) in the NYR/MYR Reach for the Yuba River from WY 1970 through WY 2010.....	E3.3.3-266
3.3.3-124.	Percent of maximum WUA and the difference in percent of maximum WUA between the proposed Project and the No Action Alternative for rainbow trout adult, spawning and juvenile lifestages in the North/Middle Yuba River Reach that correspond with YCWA’s proposed Condition AR1.1,2 .....	E3.3.3-267

**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.3-125.	Percent of habitat under that corresponds with YCWA’s proposed Project for modeled species and lifestages as compared to the No Action Alternative in the Middle/North Yuba River Reach. Comparison made using all WYs in the period of record.....	E3.3.3-268
3.3.3-126.	Comparison of simulated mean monthly water temperatures in the Yuba River downstream of the New Colgate Powerhouse (New Colgate Powerhouse Reach) for the No Action Alternative and Proposed Project for WYs 1970 through 2010. ....	E3.3.3-270
3.3.3-127.	Simulated mean monthly flows (cfs) downstream of the New Colgate Powerhouse for WY 1970 through WY 2010. ....	E3.3.3-271
3.3.3-128.	Percent of maximum WUA and the difference in percent of maximum WUA between the proposed Project and the No Action Alternative for rainbow trout adult, spawning and juvenile lifestages in the New Colgate Powerhouse Reach that correspond with YCWA’s proposed Condition AR1.1,2 .....	E3.3.3-271
3.3.3-129.	Percent of change in aquatic habitat under that corresponds with YCWA’s proposed Project for modeled species and lifestages as compared to the No Action Alternative in the New Colgate Powerhouse Reach. Comparison made using all WYs in the period of record. ....	E3.3.3-272
3.3.4-1.	Special-status plant and mushroom species potentially occurring in the vicinity of Yuba County Water Agency’s Yuba River Development Project.....	E3.3.4-3
3.3.4-2.	Special-status plants and mushrooms identified in the Yuba River Development Project study area. ....	E3.3.4-8
3.3.4-3.	Non-native invasive plants and other invasive species of concern to the Forest Service potentially occurring in the Project Vicinity.....	E3.3.4-18
3.3.4-4.	Non-native invasive plant occurrences identified on public land in the Yuba River Development Project. ....	E3.3.4-20
3.3.4-5.	Special-status, CESA-listed and fully protected wildlife with the potential to occur, or known to occur within 0.25-mi of the existing FERC Project Boundary. ....	E3.3.4-21
3.3.4-6.	Potential California Wildlife Habitat Relationship (CWHR) habitat types and acres disturbed by construction of the New Bullards Bar Dam Auxiliary Flood Control Outlet.....	E3.3.4-35
3.3.5-1.	ESA-listed species occurring or potentially occurring in the Project Vicinity. ....	E3.3.5-6
3.3.5-2.	ESA-listed species that have a potential to be affected by the Project. ....	E3.3.5-8
3.3.5-3.	ESA-listed plant species potentially occurring in the vicinity of YCWA’s Yuba River Development Project. ....	E3.3.5-13

**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.5-4.	Recorded occurrences of CRLF within 1 mile of the Yuba River Development Project FERC Project Boundary and other known occurrences in Yuba, Nevada, Sierra or Butte counties.....	E3.3.5-27
3.3.6-1.	Developed recreation facilities and undeveloped recreation sites at New Bullards Bar Reservoir. ....	E3.3.6-4
3.3.6-2.	Income and expenses for operations of Project recreation facilities from 2008 through 2012. ....	E3.3.6-6
3.3.6-3.	2012 Project recreation visitation in Recreation Days by type of facility, type of use and season. ....	E3.3.6-18
3.3.6-4.	Annual recreation use estimate projections through 2050 based on county population growth rates.....	E3.3.6-19
3.3.6-5.	Projected peak season occupancy, by day type, for the Project campgrounds through 2060.....	E3.3.6-20
3.3.6-6.	Projected peak season picnic area occupancy through 2060 by day type at Project picnic facilities.....	E3.3.6-21
3.3.6-7.	Current and projected peak season average occupancy levels for parking areas at Project boat launch facilities.....	E3.3.6-22
3.3.6-8.	Current and projected peak season average occupancy levels for parking areas at Project day-use facilities.....	E3.3.6-23
3.3.6-9.	Current and projected peak season average occupancy levels for parking areas at Project campground overflow parking areas. ....	E3.3.6-24
3.3.6-10.	Peak number of boats-at-one-time on New Bullards Bar Reservoir (2002-2012).....	E3.3.6-25
3.3.6-11.	Average and maximum BAOT, percent of maximum boating capacity and exceedance days for non-holiday and holiday weekend days (2010-2012). ....	E3.3.6-26
3.3.6-12.	Summary of angling locations, seasonality, constraints and success on the Project-affected river reaches.....	E3.3.6-40
3.3.7-1.	Summary of land ownership within the existing FERC Project Boundary by Project Development based on information provided by the County Assessor.....	E3.3.7-1
3.3.7-2.	Summary of county land within the existing FERC Project Boundary by Project Development based on the relicensing Geographic Information System database. ....	E3.3.7-2
3.3.7-3.	Distribution of public and private lands in Yuba County.....	E3.3.7-2
3.3.7-4.	Yuba County zoning ordinance land use categories in the Project Vicinity. ....	E3.3.7-3
3.3.7-5.	Plumas National Forest (PNF) management area standards and guidelines for New Colgate Development facilities. ....	E3.3.7-7

**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.7-6.	Tahoe National Forest (TNF) management area standards and guidelines for New Colgate Development facilities. ....	E3.3.7-7
3.3.7-7.	Yuba County Land Use designations for New Colgate Development facilities. ....	E3.3.7-8
3.3.7-8.	Yuba County Land Use Designations for New Bullards Bar Minimum Flow Development facilities. ....	E3.3.7-9
3.3.7-9.	Property management plans for Narrows 2 Development facilities. ....	E3.3.7-10
3.3.7-10.	Yuba County Land Use Designations for Narrows 2 Development facilities. ....	E3.3.7-10
3.3.7-11.	Primary Project Roads and Recreation Roads shown by road ID, length, width, surface treatment, and overall condition.1 ....	E3.3.7-15
3.3.7-12.	Wildfires in the Yuba River Development Project Vicinity from 2003 through 2011. ....	E3.3.7-18
3.3.7-13.	Wildfires within the Yuba River Development proposed Project Boundary from 2003 through 2011. ....	E3.3.7-19
3.3.7-14.	Wildfires outside of the proposed FERC Project Boundary from 2003 through 2011. ....	E3.3.7-19
3.3.7-15.	Fire occurrence analysis statistics by cause from 2003 through 2011. ....	E3.3.7-21
3.3.8-1.	Summary of archaeological sites identified within the APE. ....	E3.3.8-16
3.3.8-2.	Cultural resources potentially affected during construction of the new Auxiliary Flood Control Outlet. ....	E3.3.8-21
3.3.8-3.	Cultural resources potentially affected by construction of the fish release outlet modifications. ....	E3.3.8-23
3.3.8-4.	Cultural resources potentially affected by construction of the Lohman Ridge Diversion Tunnel modifications. ....	E3.3.8-24
3.3.8-5.	Summary of archaeological sites managed under specific measures. ....	E3.3.8-26
3.3.10-1.	Summary of Yuba County population and housing units, 1960-2010 and 2012. ....	E3.3.10-2
3.3.10-2.	Summary of Yuba County by age group, 2011. ....	E3.3.10-2
3.3.10-3.	Summary of household units and income in Yuba County and the State of California. ....	E3.3.10-3
3.3.10-4.	Summary of population by gender and race in Yuba County and the State of California, 2011. ....	E3.3.10-3
3.3.10-5.	Summary of industry statistics for Yuba County, 2011. ....	E3.3.10-4
3.3.10-6.	Summary of Sierra County population and housing units, 1960 – 2010 and 2012. ....	E3.3.10-5
3.3.10-7.	Summary of population in Sierra County by age group, 2011. ....	E3.3.10-6



**List of Tables (continued)**

<b>Table No.</b>	<b>Description</b>	<b>Page No.</b>
3.3.10-8.	Summary of household units, homeownership, home value, and income in Sierra County and the State of California. ....	E3.3.10-6
3.3.10-9.	Summary of population by gender and race in Sierra County and the State of California for 2011. ....	E3.3.10-6
3.3.10-10.	Summary of industry statistics for Sierra County, 2012.....	E3.3.10-7
3.3.10-11.	Summary of Nevada County population and housing units, 1960 – 2010, 2012, and 2013.....	E3.3.10-8
3.3.10-12.	Summary of population in Nevada County and California by age group, 2011. ....	E3.3.10-9
3.3.10-13.	Summary of household units, homeownership, home value, and income in Nevada County and the State of California. ....	E3.3.10-9
3.3.10-14.	Summary of population by gender and race in Nevada County and the State of California for 2011. ....	E3.3.10-9
3.3.10-15.	Summary of industry statistics for Nevada County, March 2013.....	E3.3.10-10
3.3.10-16.	Federal, State, and local agencies YCWA pays annually for Project-related services. ....	E3.3.10-12
3.3.11-1.	California and federal ambient air quality standards. ....	E3.3.11-2
3.3.11-2.	Attainment status for air quality pollutants in Nevada, Sierra and Yuba counties. <sup>1</sup> ....	E3.3.11-4
3.3.12-1.	Sierra, Yuba and Nevada counties’ noise standards. ....	E3.3.12-2
4.2-1.	Assumptions and cost items common to the No Action Alternative and YCWA’s Proposed Project Alternative. ....	E4-2
4.2-2.	Assumptions and cost items not common to the No Action Alternative and YCWA’s Proposed Project Alternative. ....	E4-3
4.3-1.	Comparison of annual power benefits, costs net benefits between No Action Alternative and YCWA’ proposed Project. ....	E4-3
4.3-2.	Yuba County Water Agency’s estimated costs in 2016 dollars related to implementation of YCWA’s proposed conditions as part of continued operation of the Yuba River Development Project.....	E4-5
4.4-1.	Yuba County Water Agency annual contract amounts.....	E4-3
7.0-1.	Federal, State of California, and local agencies, Native American tribes, and members of the public with which YCWA consulted for the relicensing of the Yuba River Development Project. ....	E7-2

**List of Volume II, Exhibit E Appendices**

- Appendix E1 Reply to FERC Staff Comments on Draft License Application and Request for Study Modifications and New Studies
- Appendix E2 Yuba County Water Agency's Proposed Conditions and Associated Rationale Statements
- Appendix E3 Proposed Implementation Plans
- Appendix E4 Information Related to YCWA's Proposed Conditions
- Appendix E5 List of Contributors
- Appendix E6 Yuba County Water Agency's Operations and Water Temperature Models, Hydrology and Water Temperature Data, Technical Memoranda, Project Video and Maps