Application for a New License
Major Project – Existing Dam

Water Temperature Monitoring Plan

Security Level: Public

Yuba River Development Project
FERC Project No. 2246

December 2016

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None.

GLOSSARY – DEFINITIONS OF TERMS, ACRONYMS AND ABBREVIATIONS

Term	Definition
°C	degrees Celsius
Cal Fish and Wildlife	California Department of Fish and Wildlife
C.F.R.	Code of Federal Regulations
CNDDB	California Natural Diversity Database
FERC	Federal Energy Regulatory Commission
Forest Service	United States Department of Agriculture, Forest Service
ft	Feet/foot
GIS	Geographic Information System
GPS	Global Positioning System
License Year	First full calendar year after FERC license issuance
NFS	National Forest System
NIST	National Institute of Standards and Technology
Plan	Water Temperature Monitoring Plan
PNF	Plumas National Forest
QA/QC	Quality assurance and quality control
Project	Yuba River Development Project, FERC Project No. 2246
Report	Water Temperature Monitoring Report
Sample Event	Events when water temperature data will be collected
SWRCB	State Water Resources Control Board
TNF	Tahoe National Forest
USGS	United States Geological Survey
YCWA	Yuba County Water Agency

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SECTION 1.0

INTRODUCTION

In April 2014, the Yuba County Water Agency (YCWA), pursuant to Section (§) 5.18 of Title 18 of the Code of Federal Regulations (C.F.R.), filed with the Federal Energy Regulatory Commission (FERC) an Application for a New License for Major Project – Existing Dam - for YCWA's 361.9 megawatt Yuba River Development Project, FERC No. 2246 (Project). In December 2016, YCWA amended its April 2014 Application for a New License. The initial license for the Project was issued by the Federal Power Commission (FERC's predecessor) to YCWA on May 16, 1963, effective on May 1, 1963. The Federal Power Commission's May 6, 1966, Order Amending License changed the license's effective date to May 1, 1966, for a term ending on April 30, 2016.

YCWA included this Water Temperature Monitoring Plan (Plan) in its December 2016 Amended Application for a New License.

The United States Department of Agriculture, Forest Service's (Forest Service) Federal Power Act Section 4(e) authority only applies in this Plan to Project facilities on National Forest System (NFS) lands. The Forest Service administers the Plumas National Forest (PNF) in conformance with the PNF Land and Resource Management Plan (Forest Service 1988), as subsequently amended, and administers the Tahoe National Forest (TNF) in conformance with TNF Land and Resource Management Plan (Forest Service 1990), as subsequently amended. When the TNF or PNF Forest Plan revisions occur, those revised plans will supersede the 1990 TNF and 1988 PNF plans.

1.1 Background

1.1.1 Yuba River Development Project

The Project is located in Yuba, Sierra and Nevada counties, California, on the main stems of the Yuba River, the North Yuba River and the Middle Yuba River, and on Oregon Creek, a tributary to the Middle Yuba River. Major Project facilities, which range in elevation from 280 feet (ft) to 2,049 ft, include: 1) New Bullards Bar Dam and Reservoir; 2) Our House and Log Cabin diversion dams; 3) Lohman Ridge and Camptonville diversion tunnels; 4) New Colgate and Narrows 2 power tunnels and penstocks; 5) New Colgate, New Bullards Minimum Flow and Narrows 2 powerhouses; and 6) appurtenant facilities and features (e.g., administrative buildings, switchyards, roads, trails and gages). The existing Project does not include any above-ground open water conduits (e.g., canals or flumes) or any transmission lines.

In addition, the Project includes 16 developed recreation facilities. These include: 1) Hornswoggle Group Campground; 2) Schoolhouse Campground; 3) Dark Day Campground; 4) Cottage Creek Campground;[1] 5) Garden Point Boat-in Campground; 6) Madrone Cove Boat-in

[1] Cottage Creek Campground was burned in 2010 and has not been rebuilt. YCWA is in discussions with the Forest Service regarding rebuilding the burned campground.

Campground; 7) Frenchy Point Boat-in Campground; 8) Dark Day Picnic Area; 9) Sunset Vista Point; 10) Dam Overlook; 11) Moran Road Day Use Area; 12) Cottage Creek Boat Launch;[2] 13) Dark Day Boat Launch, including the Overflow Parking Area; 14) Schoolhouse Trail; 15) Bullards Bar Trail; and 16) floating comfort stations.[3] All of the recreation facilities are located on NFS land, with the exception of the Dam Overlook, Cottage Creek Boat Launch and small portions of the Bullards Bar Trail, which are located on land owned by YCWA. All of the developed recreation facilities are located within the existing FERC Project Boundary, except for a few short segments of the Bullards Bar Trail to the east of the Dark Day Boat Launch. In addition, the Project includes two undeveloped recreation sites at Our House and Log Cabin diversion dams, both located on NFS lands and within the existing FERC Project Boundary.

Figure 1.1-1 shows the Project Vicinity,[4] proposed Project, and proposed FERC Project Boundary.[5]

[2] Emerald Cove Marina provides visitor services at Cottage Creek Boat Launch, including houseboat and boat rentals, boat slips and moorings, fuel and a general store. The marina is operated under a lease from YCWA by a private company.

[3] The Project recreation facilities included one campground that is no longer part of the Project. Burnt Bridge Campground was closed initially by the Forest Service in 1979 due to low use levels. FERC, in an August 19, 1993 Order which approved YCWA's Revised Recreation Plan, directed YCWA to remove all improvements and restore the Burnt Bridge Campground to the condition it was in prior to development of the facility. YCWA consulted with the Forest Service and all that remains of Burnt Bridge Campground today is the circulation road and vehicle spurs; all other facilities were removed.

[4] For the purpose of this Plan, "Project Vicinity" refers to the area surrounding the proposed Project on the order of United States Geological Survey (USGS) 1:24,000 quadrangles.

[5] The FERC Project Boundary is the area that YCWA uses for normal Project operations and maintenance. The Boundary is shown in Exhibit G of YCWA's Application for New License, and may be changed by FERC with cause from time to time during the term of the new license.

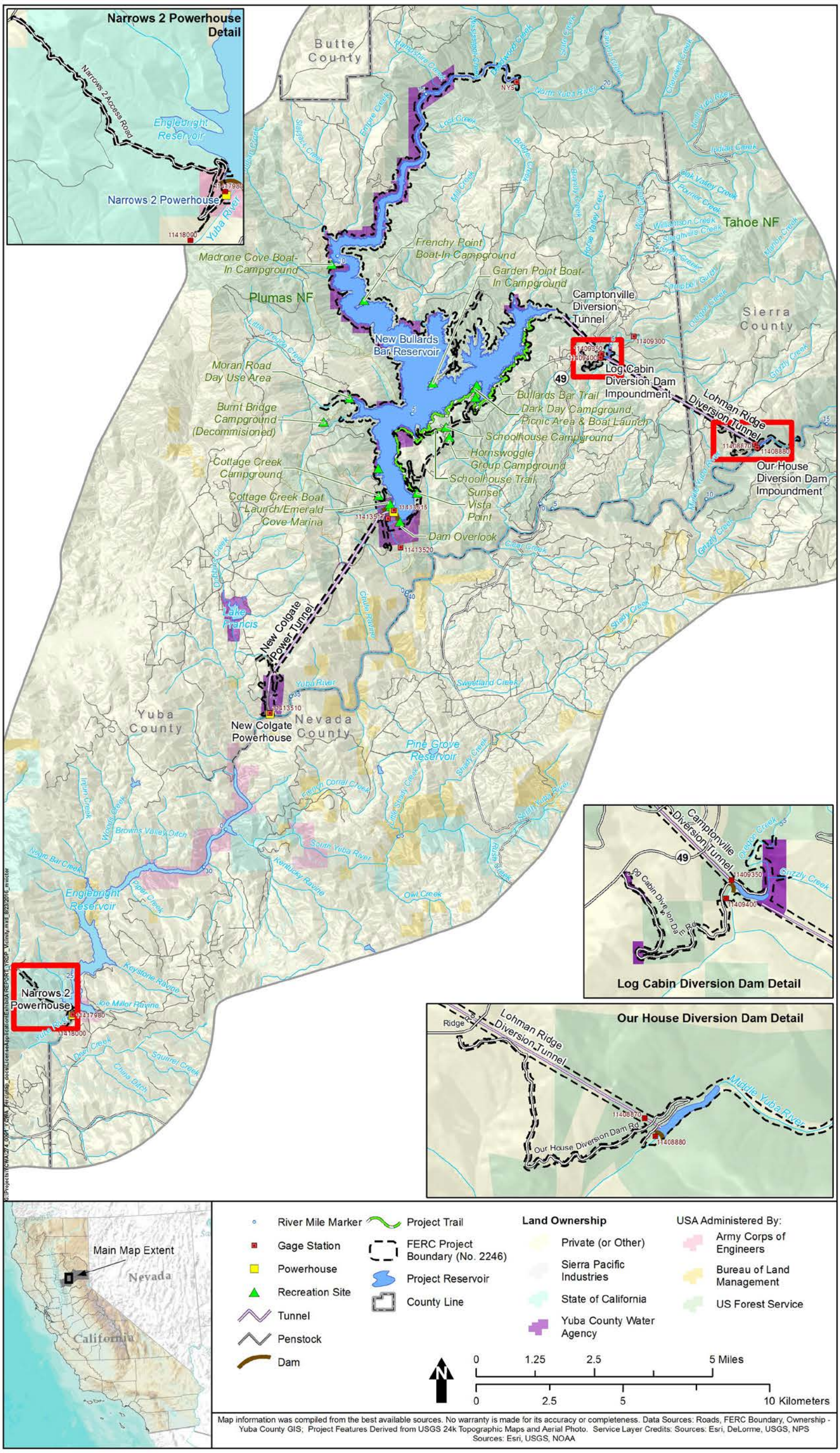

Figure 1.1-1. Yuba County Water Agency's Yuba River Development Project and Project Vicinity.

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1.2 Purpose of the Water Temperature Monitoring Plan

This Plan describes how YCWA will perform the monitoring of water temperature in Project waters.

For comparison purposes, water temperature data collected during YCWA's relicensing studies can be found in Section 3.3.2 of YCWA's Application for New License.

YCWA will coordinate, to the extent appropriate, the efforts required under this Plan with other Project resource efforts, including implementation of other resource management plans and measures included in the new license.

1.3 Objectives of the Water Temperature Monitoring Plan

The objective of the Plan is to monitor water temperature conditions in the Project reservoir, Project impoundments and Project-affected stream reaches of the North, Middle, and mainstream Yuba rivers, and in Oregon Creek, a tributary to the Middle Yuba River.

1.4 Contents of the Water Temperature Monitoring Plan

This Plan includes the following:

- Section 1.0. Introduction. This section includes introductory information, including a description of the Project and the purpose and goals of the Plan.
- Section 2.0. Monitoring Methods and Analysis. This section describes the methods that will be used to monitor and analyze water temperature.
- Section 3.0. Monitoring Locations and Frequencies. This section describes the locations at which water temperature monitoring will occur and the frequency with which it will occur.
- Section 4.0. Reporting, Consultation and Plan Revisions. This section describes reporting, consultation and Plan revisions.
- Section 5.0. References Cited. This section lists references cited in this Plan.

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SECTION 2.0

MONITORING METHODS AND ANALYSIS

This section describes the methods that will be used to monitor and analyze water temperature.

To allow for comparison of post-license issuance water temperature information with pre-license issuance information, the post-license issuance monitoring will use the same methods as the pre-license issuance sampling at selected sites.

2.1 Concepts That Apply to All Water Temperature Monitoring

The following concepts and practices apply to all aquatic monitoring:

- Personal safety is the most important consideration of each fieldwork team.
- Prior to performing fieldwork, YCWA will obtain all necessary permits and approvals required to perform the fieldwork (e.g., scientific collection permits). All fieldwork will be performed by individuals who hold the necessary current permits to perform the fieldwork.
- All fieldwork will occur under normal operating flow conditions (i.e., requests for variance to minimum streamflow requirements not needed).
- YCWA will make a good faith effort to obtain permission to access private property, where needed, well in advance of entering the property.
- Where required, Global Positioning System (GPS) data will be collected using either a Map Grade Trimble GPS (sub-meter data collection accuracy under ideal conditions), a Recreation Grade Garmin GPS unit (3-meter data collection accuracy under ideal conditions), or similar units. GPS data will be post-processed and exported from the GPS unit into Geographic Information System (GIS)-compatible file format in an appropriate coordinate system using desktop software. The resulting GIS file will then be reviewed by both field staff and YCWA's GIS analyst. Metadata will be developed for GIS data sets.
- Incidental observations of Western pond turtle (*Actinemys marmorata*) and American bullfrog (*Lithobates catesbeianus*) will be recorded, and field crews will be trained on the identification of these two species. Any fish species easily distinguishable, but previously not observed in the study reaches will also be noted. The incidental observation records will include the species, location, and an estimated number of individuals per observation. Records of special-status species observations will be submitted to the California Natural Diversity Database (CNDDB), and included in the appropriate monitoring reports.
- Field crews will be trained on and provided with materials (e.g., Quat, a disinfectant) for decontaminating their boots, waders, and other equipment between monitoring sites.

Major concerns are amphibian chytrid fungus, and invasive invertebrates (e.g., zebra mussel, *Dreissena polymorpha*). Field crews will adhere to accepted decontamination guidelines to minimize the likelihood of transmitting diseases (USFWS 2005), as appropriate.

2.2 Water Temperature Monitoring

2.2.1 Monitoring in Streams

2.2.1.1 Field Methods

YCWA will maintain continuous water temperature recorders (i.e., loggers) in streams at locations not associated with a flow gaging station. The locations are identified in Section 3.2.

YCWA will install the loggers in the active flow channel. The loggers will have 12-bit resolution with a minimum accuracy of +/-0.2 degrees Celsius (°C) (i.e., Onset Hobo® or equivalent). Each logger will be contained in a durable protective housing that permits the active flow of water in and around the unit, and the logger will be secured by a cable to a stable root mass, tree trunk, rock or man-made structure, or secured using embedded rebar where necessary such that the logger will be secured in the channel during high flow periods. The loggers will be installed near the channel thalweg, and the housing and cable will be disguised as much as possible while ensuring the ability to retrieve the unit for future downloads. A GPS coordinate will be taken and recorded at each installation point, along with any waypoints that may prove valuable for future retrieval, especially where there is not a defined trail leading to the access point. Photographs of the logger site, including installation configuration, will be taken. Each logger will be set to record water temperature at 15-minute intervals. YCWA will visit each logger at least every other month between the months of May and November (i.e., 4 visits), if flow conditions permit safe access to the location and reasonable access to retrieve and re-deploy the recorder. YCWA is not required to visit the loggers from January through April, but will assure the loggers have adequate storage to collect data through this period.

Prior to installation, each logger will be numbered. YCWA will install a redundant water temperature logger at each site. Redundant loggers will be located as close as possible to the primary logger. Where a redundant logger occurs, the primary logger will be labeled with the logger number for the site with the suffix “a” and the redundant logger with the number for the site with the suffix “b.” Data from both loggers will be downloaded during each scheduled visit.

During each visit, YCWA will download data into an optic shuttle or directly to a personal computer. Immediately after the data are safely downloaded, back-ups will be recorded on compact disc (CD) or other suitable medium. Only after the raw water temperature data are safely backed-up will the optic shuttle be cleared or the data manipulated.

YCWA will be prepared to replace or fix a logger installation during each site visit. Should a logger need to be replaced because it is missing or has failed, YCWA will be able to do so immediately to reduce the potential for additional data loss. Any logger that fails to download will be returned to the manufacturer for possible data recovery.

Loggers at some sites may be subject to vandalism or damage and loss due to high flows. If a logger is lost for these reasons, YCWA will replace the logger as described above. YCWA Is not required to take any other actions or install any other structures than described in this plan.

2.2.1.2 Quality Assurance/Quality Control Review Methods

Prior to installation, each logger will be calibrated to manufacturer's recommended specifications. Any variances will be noted and final report and recalibration or repair done as necessary.

Prior to each download of data, a National Institute of Standards and Technology (NIST)-traceable digital thermometer will be used to determine the water temperature at the logger site. The water temperature reading from the NIST-traceable thermometer will be compared to the last logger reading to check for accuracy drift of the logger. YCWA will maintain a record of all recorder installations and data downloads for a comparison between the NIST-traceable thermometer and logger water temperature readings, and a record of any problems that were encountered in the field.

During each visit, besides downloading data from the logger, YCWA will also check equipment operation/calibration and battery life. After the logger is removed from the water, it will be cleaned and visually inspected.

In addition, YCWA will subject all data to quality assurance and quality control (QA/QC) procedures including, but not limited to: 1) spot-checking data; and 2) reviewing logger readings and electronic data for completeness. The datasets will also be reviewed graphically to check for errors. If any datum seems inconsistent during the QA/QC procedures, YCWA will investigate the problem. Values that are determined to be anomalous will be removed from the database if the reason for the reading cannot be identified.

The raw data files will be retained by YCWA in their unaltered state for future QA/QC reference, for a minimum period of 3 years. Any datum modified in the final record will be so indicated in the record.

2.2.2 Monitoring at Streamflow Gaging Stations

2.2.2.1 Field Methods

YCWA will maintain continuous water temperature recorders at the existing streamflow gaging stations identified in Section 3.2.

YCWA may coordinate with the owner and operator of the flow gaging station for the installation and maintenance of the water temperature recorder.

The water temperature recorder probe will be located in the gage pool, in moving water, and will be mounted in a galvanized steel conduit running from the gage house to the gage pool. The water temperature recorders will have a minimum accuracy of +/-0.2°C. The data will be

collected in at least hourly intervals, with a preference that data be collected in 15-minute intervals.

YCWA will visit each recorder at least once each year to confirm the recorder is operating properly.

YCWA will make the water temperature data at the existing flow gaging stations available to the public on a real-time basis via the Internet; the publication of the information may be accomplished through a third party, such as the united States Geological Survey (USGS) or the California Data Exchange Center (CDEC). The data may be reported as mean daily water temperatures. It is understood this information will be provisional and subject to change because it will not have undergone a QA/QC review before it is made available to the public on the Internet.

2.2.2.2 Quality Assurance/Quality Control Review Methods

At each site visit, a NIST-traceable digital thermometer will be used to determine the water temperature at the recorder. The water temperature reading from the NIST-traceable thermometer will be compared to the last recorder reading to check for accuracy drift of the recorder. YCWA will maintain a record of all site visits, including a record of NIST-traceable thermometer and recorder water temperature readings, and a record of any problems that were encountered during the site visit.

During each visit, besides downloading data from the recorder, YCWA will check equipment operation/calibration.

YCWA will subject all data to QA/QC procedures including, but not limited to: 1) spot-checking data; and 2) reviewing logger readings and electronic data for completeness. The datasets will also be reviewed graphically to check for errors. If any datum seems inconsistent during the QA/QC procedures, YCWA will investigate the problem. Values that are determined to be anomalous will be removed from the database if the reason for the reading cannot be identified.

The raw data files will be retained by YCWA in their unaltered state for future QA/QC reference, for a minimum period of 3 years. Any datum modified in the final record will be so indicated in the record.

2.2.3 Monitoring in River Margin

2.2.3.1 Field Methods

YCWA will install and maintain continuous water temperature recorders (i.e., loggers) in river margins. The locations are identified in Section 3.2.

YCWA will install a water temperature logger in the river margin at one location upstream of Daguerre Point Dam and one location downstream of Daguerre Point Dam. The logger will have

12-bit resolution with a minimum accuracy of +/-0.2 degrees Celsius (°C) (i.e., Onset Hobo® or equivalent). Each logger will be contained in a durable protective housing, and the logger will be secured by a cable to a stable root mass, tree trunk, rock or man-made structure, or secured using embedded rebar where necessary such that the logger will be secured in the channel during high flow periods. The housing and cable will be disguised as much as possible while ensuring the ability to retrieve the unit for future downloads. A GPS coordinate will be taken and recorded at each installation point, along with any waypoints that may prove valuable for future retrieval, especially where there is not a defined trail leading to the access point. Photographs of the logger site, including installation configuration, will be taken. Each logger will be set to record water temperature at 15-minute intervals.

At the location upstream of Daguerre Point Dam, YCWA will visit the logger at least every other month between the months of May and November (i.e., 4 visits), if flow conditions permit safe access to the location and reasonable access to retrieve and re-deploy the recorder. YCWA is not required to visit the loggers from January through April, but will assure the logger has adequate storage to collect data through this period.

At the location downstream of Daguerre Point Dam, YCWA will install the logger in May in May of Schedule 5, 6 and Conference years as determined in May, and remove it in October of that year. YCWA will visit the logger at least every other month (i.e., 3 visits), if flow conditions permit safe access to the location and reasonable access to retrieve and re-deploy the recorder. YCWA will assure the logger has adequate storage to collect data through this period.

Prior to installation, each logger will be numbered. YCWA will install a redundant water temperature logger at each site. Redundant loggers will be located as close as possible to the primary logger. Where a redundant logger occurs, the primary logger will be labeled with the logger number for the site with the suffix “a” and the redundant logger with the number for the site with the suffix “b.” Data from both loggers will be downloaded during each scheduled visit.

During each visit, YCWA will download data into an optic shuttle or directly to a personal computer. Immediately after the data are safely downloaded, back-ups will be recorded on CD or other suitable medium. Only after the raw water temperature data are safely backed-up will the optic shuttle be cleared or the data manipulated.

YCWA will be prepared to replace or fix a logger installation during each site visit. Should a logger need to be replaced because it is missing or has failed, YCWA will be able to do so immediately to reduce the potential for additional data loss. Any logger that fails to download will be returned to the manufacturer for possible data recovery.

Loggers at some sites may be subject to vandalism or damage and loss due to high flows. If a logger is lost for these reasons, YCWA will replace the logger as described above. YCWA Is not required to take any other actions or install any other structures than described in this plan. Further, YCWA is not required to install the logger upstream of Daguerre Point Dam if the logger is lost more then 10 times, regardless of whether the specific installation site is relocated.

2.2.3.2 Quality Assurance/Quality Control Review Methods

Prior to installation, each logger will be calibrated to manufacturer's recommended specifications. Any variances will be noted and final report and recalibration or repair done as necessary.

Prior to each download of data, a NIST-traceable digital thermometer will be used to determine the water temperature at the logger site. The water temperature reading from the NIST-traceable thermometer will be compared to the last logger reading to check for accuracy drift of the logger. YCWA will maintain a record of all recorder installations and data downloads for a comparison between the NIST-traceable thermometer and logger water temperature readings, and a record of any problems that were encountered in the field.

During each visit, besides downloading data from the logger, YCWA will also check equipment operation/calibration and battery life. After the logger is removed from the water, it will be cleaned and visually inspected.

In addition, YCWA will subject all data to QA/QC procedures including, but not limited to: 1) spot-checking data; and 2) reviewing logger readings and electronic data for completeness. The datasets will also be reviewed graphically to check for errors. If any datum seems inconsistent during the QA/QC procedures, YCWA will investigate the problem. Values that are determined to be anomalous will be removed from the database if the reason for the reading cannot be identified.

The raw data files will be retained by YCWA in their unaltered state for future QA/QC reference, for a minimum period of 3 years. Any datum modified in the final record will be so indicated in the record.

2.2.4 Monitoring in New Bullards Bar Reservoir

2.2.4.1 Field Methods

Reservoir profiles will be taken at New Bullards Bar Reservoir once each month from April through September (i.e., 6 times). Sampling will occur at one location near the dam. A GPS receiver will be used during each sampling occasion to locate the geographical coordinates of the sample site. Care will be taken to identify the same site for successive profiles where water conditions and GPS accuracy allow.

YCWA will use a Hydrolab® DataSonde 5® multi-parameter water quality monitoring system (or equivalent) to measure water temperature (±0.2°C) and dissolved oxygen [(±0.2 milligrams per liter (mg/l)]. Generally, measurements will be taken at 10-ft vertical increments where the change in temperature with respect to depth is low. Where the temperature gradient is higher or where measuring an interflow or an underflow, 5-ft or smaller vertical increments will be used. At each sample depth, the parameter readings will be allowed to stabilize before water temperature and dissolved oxygen will be recorded on the data sheet. When possible, profiling will occur up to a depth of about 300 ft or the bottom, whichever is less.

YCWA will collect a Secchi disk depth reading with each reservoir water temperature profile. Secchi depth readings will be taken by lowering a Secchi disc over the shaded side of the boat until the disc is no longer visible from the boat. The disk will then be raised until visible, at which location the depth of the disc will be recorded in tenths of 1-ft, and the average of the two readings will be used as the water clarity reading for that location.

2.2.4.2 Quality Assurance/Quality Control Review Methods

Prior to and after each use, the instrument(s) will be calibrated using manufacturer's recommended calibration methods. Any variances will be noted on the field data sheet and final report and recalibration or repair done as necessary.

YCWA will subject all data to QA/QC procedures including, but not limited to: 1) spot-checking data; and 2) reviewing instrument readings and electronic data for completeness. The datasets will also be reviewed graphically to check for errors. If any datum seems inconsistent during the QA/QC procedures, YCWA will investigate the problem. Values that are determined to be anomalous will be removed from the database if the reason for the reading cannot be identified. Any datum modified in the final record will be so indicated in the record.

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SECTION 3.0

MONITORING LOCATIONS AND FREQUENCIES

3.1 Monitoring Area

The Study Area includes: 1) the Middle Yuba River from and including Our House Diversion Dam Impoundment to the confluence with the North Yuba River; 2) Oregon Creek from and including the Log Cabin Diversion Dam Impoundment to the confluence with the Middle Yuba River; 3) the North Yuba River from and including New Bullards Bar Reservoir to the confluence with the Middle Yuba River; and 4) the portion of the Yuba River from the confluence of the North and Middle Yuba rivers to the Feather River, including Englebright Reservoir (Figure 1.1-1).

3.2 Monitoring Locations

To allow for comparison of post-license issuance water temperature information with pre-license issuance information, the post-license issuance monitoring locations, to the extent possible, use the same monitoring locations as the pre-license issuance water temperature sampling locations at selected monitoring sites. Table 3.3-1 lists water temperature monitoring locations, including Universal Transverse Mercator coordinates. Figure 3.3-1 shows the location of each monitoring site in relation to Project facilities and features.

3.3 Monitoring Frequency

The monitoring frequencies in this Plan use "License Years," with "License Year 1" designating the first full calendar year in which the new license is effective. While YCWA has requested FERC issue a new license with a term of 50 years, for planning purposes this Plan assumes FERC will issue a new license with a term of 30 years. Regardless, monitoring under this Plan is intended to cover the period from License Year 1 until the time FERC issues a new license (i.e., through the term of the new license and any annual licenses issued by FERC until a new license is issued).

Table 3.3-1 describes the frequency of water temperature monitoring.

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Table 3.3-1. Location and frequency of water temperature monitoring.

Monitoring Site				Monitoring Methods	Relicensing Results		License Year (Year 1 is First Full Calendar Year After License Issuance and Year 30 Is Assumed Term of New License for This Exercise. Assumes YCWA Files with FERC NOI/PAD at Earliest Possible Time [in Year 25, 5.5 years prior to license expiration] to Enter Relicensing Process for New License.) [1]																														Possible Number of Sampling Events for License with a 30-Year Term
Stream	River Mile	Relicensing Site Name and Location	UTM Coordinates		Period of Record	Statistics: June - September; WY 2009 - WY 2012	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Middle Yuba	12.6	T30: Downstream of Our House Diversion Dam (USGS 11408880)	E 672305, N 4364261	Real-Time Data	10/24/08-10/15/12	total sample days = 488 days with average over 20.0°C = 214 daily maximum average = 24.6°C days with maximum over 25.0°C = 5 maximum temperature = 25.5°C	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
Middle Yuba	0.0	T90: Upstream of confluence with North Yuba River	E 660601, N 4359344	Continuous Logger (Hobo)	8/19/08-10/15/12	total sample days = 488 days with average over 20.0°C = 311 daily maximum average = 26°C days with maximum over 25.0°C = 72 maximum temperature = 27.6°C	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	120
Oregon Creek	4.3	T60: Downstream of Log Cabin Diversion Dam (USGS 11409400)	E 667014, N 4367343	Continuous Logger (Hobo)	8/30/08-10/15/12	total sample days = 488 days with average over 20.0°C = 127 daily maximum average = 23°C days with maximum over 25.0°C = 0 maximum temperature = 24.4°C	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	120
Oregon Creek	0.0	T63: Upstream of confluence with Middle Yuba River	E 665083, N 4362485	Continuous Logger (Hobo)	3/29/11-10/15/12	total sample days = 244 days with average over 20.0°C = 10 daily maximum average = 20.9°C days with maximum over 25.0°C = 0 maximum temperature = 22.6°C	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	120
North Yuba	2.4	In NBB reservoir, just upstream of the NBB dam	E 660518, N 4362508	Profile	8/25/89-12/15/15	reservoir profile data available in Tech Memo 2-5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	180
North Yuba	2.2	T70: At USGS gaging station about 2,000 ft below New Bullard Bar Dam (USGS 11413517)	E 660037, N 4361965	Continuous Logger (Hobo)	7/18/08-10/15/12	total sample days = 288 days with average over 20.0°C = 0 daily maximum average = 10.9°C days with maximum over 25.0°C = 0 maximum temperature = 13.3°C	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	120
North Yuba	0	T80: Upstream of confluence with Middle Yuba River	E 660503, N 4359348	Continuous Logger (Hobo)	8/19/08-10/15/12	total sample days = 451 days with average over 20.0°C = 230 daily maximum average = 23.9°C days with maximum over 25.0°C = 0 maximum temperature = 25°C	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	120
Yuba	34.3	T110: Upstream of New Colgate Powerhouse	E 656205, N 4355031	Continuous Logger (Hobo)	8/19/08-10/15/12	total sample days = 488 days with average over 20.0°C = 328 daily maximum average = 26.4°C days with maximum over 25.0°C = 65 maximum temperature = 27.7°C	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	120
Yuba	24.1	Englebright Reservoir - just upstream of Englebright Dam	E 649491, N 4345042	Profile	8/25/89 - 12/15/15	reservoir profile data available in Tech Memo 2-5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	180
Yuba	23.9	T170: Smartsville Gage (USGS 11419000)	E 649078, N 4344366	Real-Time Data	10/1/02-3/1/14	total sample days = 334 days with average over 20.0°C = 0 daily maximum average = 13.1°C days with maximum over 25.0°C = 0 maximum temperature = 13.4°C	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
Yuba	11.7	T200: In the Pool Upstream of Daguerre Point Dam or other site IF YCWA can find a good site with reasonable access (YCWA looking now)	E 634421, N 4341010	Continuous Logger (Hobo)	11/8/08-10/15/12	total sample days = 414 days with average over 20.0°C = 0 daily maximum average = 15.2°C days with maximum over 25.0°C = 0 maximum temperature = 17.6°C	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	120
Yuba	6.2	Marysville Gage (USGS 11421000)	E 627461, N 4337363	Real-Time Data	1/2/95-3/1/14	total sample days = 301 days with average over 20.0°C = 0 daily maximum average = 17.4°C days with maximum over 25.0°C = 0 maximum temperature = 20.2°C	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
Feather or Yuba	Upstream of Yuba or Feather	T250: Upstream of Yuba River	E 620369, N 4333182	Continuous Logger (Hobo)	8/15/08-10/15/12	total sample days = 366 days with average over 20.0°C = 201 daily max. average = 25.9°C days with maximum over 25.0°C = 9 maximum temperature = 27.1°C	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	120

Table 3.3-1. (continued)

Monitoring Site				Monitoring Methods	Relicensing Results		License Year (Year 1 is First Full Calendar Year After License Issuance and Year 30 Is Assumed Term of New License for This Exercise. Assumes YCWA Files with FERC NOI/PAD at Earliest Possible Time [in Year 25, 5.5 years prior to license expiration] to Enter Relicensing Process for New License.) [1]																															Possible Number of Sampling Events for License with a 30-Year Term
Stream	River Mile	Relicensing Site Name and Location	UTM Coordinates		Period of Record	Statistics: June - September; WY 2009 - WY 2012	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Feather	Downstream of Yuba (Left or Right)	T260 or T270: Downstream of Yuba River	E 620880, N 4329171	Continuous Logger (Hobo)	8/19/08-10/15/12	total sample days = 488 days with average over 20.0°C = 173 daily maximum average = 23.3°C days with maximum over 25.0°C = 0 maximum temperature = 24.8°C	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	120
Yuba	Upstream of Daguerre Point Dam	One Location in the River Margin to be Selected by the Ecological Group	--	Continuous Logger (Hobo)	--	Not surveyed during relicensing.	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	120
Yuba	Downmtream of Daguerre Point Dam	One Location in the River Margin to be Selected by the Ecological Group	--	Continuous Logger (Hobo)	--	Not surveyed during relicensing.	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	24
Total	**23 Sites**			--	--		55	55	55	55	55	55	55	55	55	55	55	55	55	55	85	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	1,530

[1] If FERC issues a new license with a term longer than 30 years, monitoring will continue at the same frequency as shown from License Years 1 throgh 30 beginning in License Year 31.

[2] The specific License Years shown in this table are placeholders to represent conditional monitoring. Specifically, monitoring will occuin Scehdule 5, 6 and Consultation years as determined in May. The water temperature recorder will be installed in May and removed in October of that year. The placeholders in this table is based on the fact that Schedule 5, 6 and Consulttaion years would have occurred XX times from 1981 through 2010. The number and specific License Years to be conditionally monitored depends on when and how often Schedule 5, 6 and Consultation years occur in the new license term.

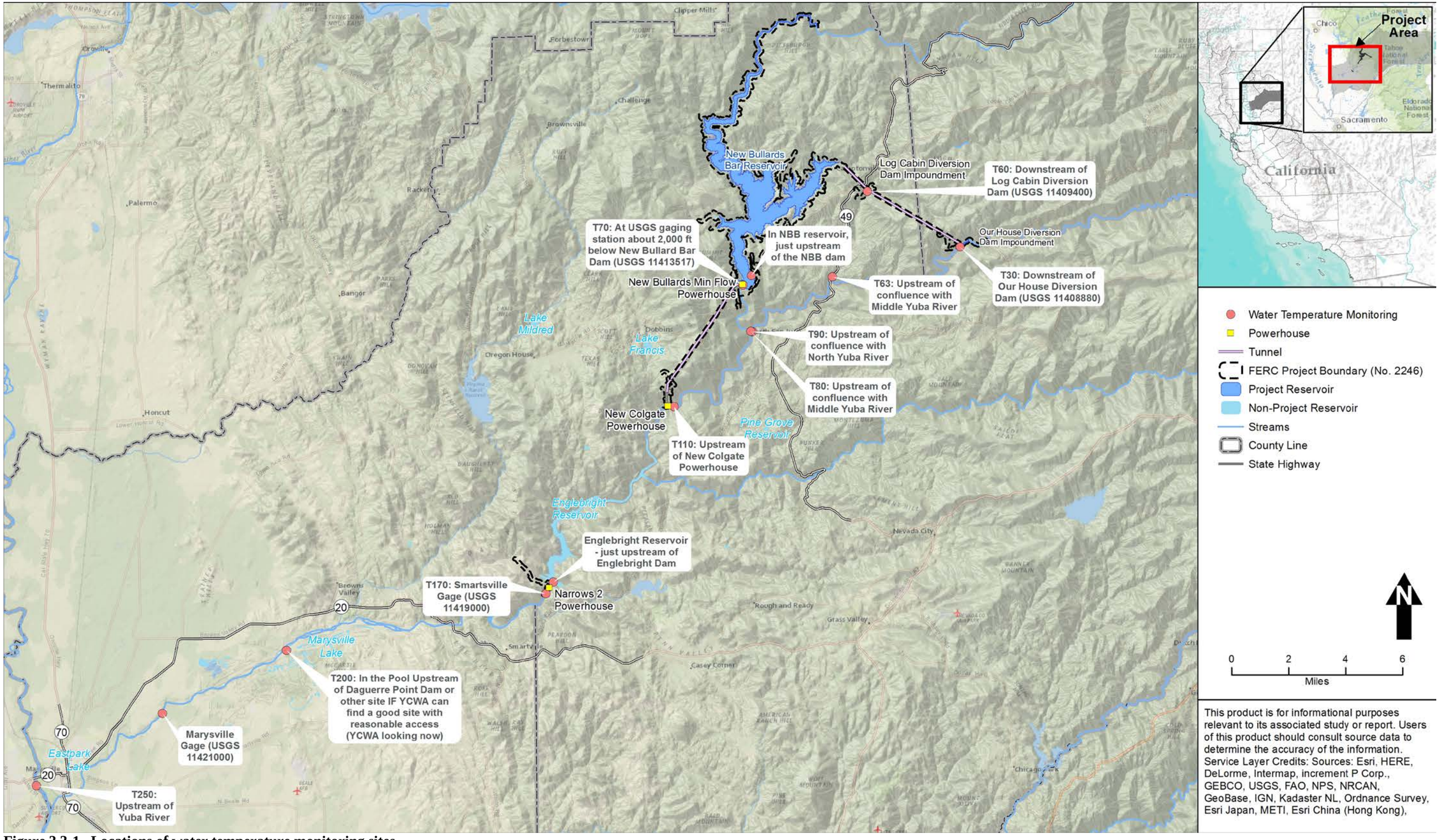

Figure 3.3-1. Locations of water temperature monitoring sites.

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SECTION 4.0

REPORTING, CONSULTATION AND PLAN REVISIONS

4.1 Reporting and Consultation

By the end of March each year, YCWA will file a water temperature report (Report) with FERC and make the Report available to the State Water Resources Control Board (SWRCB), Regional Water Quality Control Board (RWQCB), California Department of Fish and Wildlife (Cal Fish and Wildlife), USFWS, NMFS, Forest Service, and other interested parties.

The Report will cover the previous calendar year. At a minimum, the Report will include the following summaries/data presentations, along with the supporting data (i.e., in Excel, or similar spreadsheet format, DSS, and GIS layers, as appropriate): and include:

- A map of the temperature site locations
- Information on monitoring effort: date when monitoring started and stopped (i.e. monitoring devices were installed and removed, if applicable) and description of any time periods when monitoring devices were not functioning, during the expected monitoring period.
- Graphs comparing water temperature and streamflow from the nearest appropriate streamflow gage
- A discussion of the findings in relation to Water Year type, Project operations, or other pertinent Project-related factors. The discussion will also include any anomalous events.

4.2 Consultation

If requested in writing (i.e., e-mail is acceptable) by the SWRCB, RWQCB, Cal Fish and Wildlife, Forest Service, USFWS or NMFS regarding the Report, YCWA will schedule a meeting with that agency within 60 days of the request, and other interested parties may attend the meeting.

4.3 Plan Revisions

Following a Report and if requested by the SWRCB, RWQCB, Cal Fish and Wildlife, Forest Service, USFWS, or NMFS, YCWA will schedule a meeting with that agency to discuss possible modifications to the Plan, and other interested parties may attend the meeting. Such modifications may be due to, but not limited to, updates in the Basin Plan, and monitoring location suitability (e.g., access or public use). Sixty days following the meeting, YCWA, RWQCB, Cal Fish and Wildlife, Forest Service, USFWS, and NMFS and any interested parties may submit in writing to the SWRCB any recommendations for modification to the Plan. Within 60 days of receiving the comments, the SWRCB will advise YCWA, in writing, regarding any suggested modifications to the Plan. YCWA will diligently provide to the SWRCB a draft revised Plan for the SWRCB's approval. Upon written approval by the SWRCB of the revised

Plan, YCWA will file the revised Plan with FERC. When FERC approves the revised Plan, YCWA will implement the revised Plan as approved by FERC.[6]

[6] The Plan will not be considered revised until FERC issues its approval.

SECTION 5.0

REFERENCES CITED

United States Department of Agriculture, Forest Service (Forest Service). 1990. Tahoe National Forest Land and Resource Management Plan. Department of Agriculture. Nevada City, California. 687 pp. and appendices.

_____. 1988. Plumas National Forest Land and Resource Management Plan. Department of Agriculture. Quincy, California. Available online: < http://www.fs.usda.gov/detail/plumas/landmanagement/?cid=fsm9_034925>.

United States Fish and Wildlife Service (USFWS). 2005. Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog. Available online: .http://www.fws.gov/sacramento/es/documents/crf_survey_guidance_aug2005.doc.

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