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7.1 GENERAL DESCRIPTION OF THE RIVER BASIN

This section describes the Middle Fork American River Watershed (Watershed), which contains Placer County Water Agency's (PCWA) Middle Fork American River Project (MFP or Project). The Watershed is situated in central California in the foothills and mountainous uplands of the western slope of the Sierra Nevada mountain range, primarily within the Tahoe National Forest (TNF) and Eldorado National Forest (ENF). The Federal Energy Regulatory Commission's (FERC or Commission) content requirements for this section are specified in Title 18 of the Code of Federal Regulations (CFR) § 5.18(b)(1).

For context, an overview of the American River Basin is presented first, followed by information regarding the Watershed. This information includes the overall Watershed area and sub-watershed areas; rivers and streams affected by the MFP; major land and water uses; and other dams and diversions in the Watershed.

7.1.1 Information Sources

This section was prepared utilizing the following information sources:

- The existing and potential beneficial uses that apply to surface waters within the Watershed were obtained from Table II of The Sacramento River Basin and San Joaquin River Basin Water Quality Control Plan (RWQCB 2009).
- The United States Bureau of Reclamation (USBR) data from the Auburn State Recreation Area and the California Data Exchange Center provided information on the climate associated with the Watershed (USBR 1992).
- The Sacramento Municipal Utility District (SMUD) informational webpage provided maps and information on the Upper American River Project (UARP) (FERC Project No. 2101), a hydropower project partially located within the Watershed (SMUD 2006).
- The El Dorado County Water Agency's (EDCWA) Water Resources Development and Management Plan, which is available on the Internet, provided maps and information on the Georgetown Divide Public Utility District's (GDPUD) Stumpy Meadow Project (EDCWA 2003).

These references are cited throughout the text and complete reference information is provided at the end of this section.

7.1.2 Overview of the American River Basin

The American River Basin is comprised of three watersheds, with each containing a primary fork of the American River including the North Fork, the Middle Fork, and the South Fork. In addition, it includes an area surrounding Folsom Reservoir, referred to as the Foothill Drain Watershed. Together, the watersheds associated with these three forks and the Foothill Drain encompasses a 2,051-square-mile area. Of this, the North

Fork drains a 349-square-mile area. The North Fork originates near the north end of Granite Chief Wilderness and terminates at Folsom Reservoir, near the City of Auburn. The South Fork drains an 801-square-mile area. The South Fork originates along the crest of the Sierra Nevada in the Desolation and Mokelumne wilderness areas and terminates at Folsom Reservoir about 12 miles west of the City of Placerville. The Middle Fork drains a 616-square-mile area. The Middle Fork originates in the Granite Chief and Desolation wilderness areas and joins the North Fork American River approximately 21 miles upstream of Folsom Reservoir Dam. The Foothill Drain watershed encompasses a 285-square-mile area. The American River Basin is shown on Map 7.1-1.

Downstream of Folsom Reservoir, the lower American River is about 23 miles long and bisects the metropolitan Sacramento area, flowing into the Sacramento River near downtown Sacramento.

7.1.3 Description of the Middle Fork American River Watershed

The Watershed ranges in elevation from approximately 1,100 feet above mean sea level (msl) to 5,300 feet msl. The Watershed is characterized by hot, dry summers and mild, wet winters with most of the precipitation falling between October and March. Precipitation falls as rain in the lower elevations and snow at elevations greater than about 5,000 feet msl. Elevations higher than about 6,000 feet msl are typically covered by snow until May. Years tend to be at the extremes – either wet or dry – with high inter-annual variability, with few years receiving the “average” amount of precipitation. Mean annual precipitation and runoff in the Watershed ranges from approximately 35 inches (308,500 acre feet [ac-ft]) in dry years to 94 inches (1,218,000 ac-ft) in wet years. Total MFP inflow (combined flows from Duncan Creek, Middle Fork American River, Rubicon River, and Long Canyon Creek) for the period of 1975 to 2007 averages approximately 379,015 ac-ft and ranged from a low of approximately 62,638 ac-ft to a high of more than 790,820 ac-ft per year (more than a tenfold difference). The Watershed and its 12 constituent sub-watersheds are depicted on Map 7.1-2.

The principle MFP facilities located in the Watershed are shown on Map 7.1-3. A detailed description of the existing and future MFP facilities and operations are presented in Section 3.0 – No-Action Alternative and Section 4.0 – Proposed Action. The operation of the MFP modifies flows on the following rivers and streams:

- The Middle Fork American River, from French Meadows Reservoir to its confluence with the North Fork American River;
- North Fork American River from the confluence with the Middle Fork American River downstream to Folsom Reservoir;
- Duncan Creek, from the Duncan Creek Diversion to its confluence with the Middle Fork American River;
- The Rubicon River, from Hell Hole Reservoir to Ralston Afterbay;

- North Fork Long Canyon Creek from the North Fork Long Canyon Diversion to its confluence with the main stem of Long Canyon Creek;
- South Fork Long Canyon Creek from the South Fork Long Canyon Diversion to the confluence of the main stem of Long Canyon Creek; and
- Long Canyon Creek from the North Fork/South Fork Confluence to its confluence with the Rubicon River.

Table 7.1-1 provides a summary of the Watershed and sub-watershed areas, stream length, elevations, and stream gradient for waters affected by operations of the MFP.

7.1.4 Major Land Uses in the Watershed

The Watershed is heavily forested, rural in nature and sparsely populated. There are no residential or commercial developments in the immediate vicinity of the MFP. Several paved roads provide the primary access to the MFP vicinity. These include: Mosquito Ridge Road, Ralston Ridge Road, Blacksmith Flat Road, and Soda Springs Riverton Road. Access to more remote locations in the Watershed is possible using ancillary roads and trails associated with either the Forest Service Transportation System or the Auburn State Recreation Area (ASRA), located downstream of Ralston Afterbay.

The MFP facilities and land within the FERC Project boundary are located primarily within the TNF and ENF. Private parcels are present throughout the Watershed and within the FERC Project boundary at various locations. Land use within the FERC Project boundary is focused on hydropower generation and recreation. Land use outside the FERC Project boundary is managed mainly for recreation, timber harvest, grazing, natural resource protection, and to a lesser extent mining. Map 7.1-4 shows the MFP facilities and FERC Project boundary with respect to land ownership and various land jurisdictions in the Watershed.

7.1.5 Major Water Uses in the Watershed

Existing and potential beneficial uses that apply to surface waters within the Watershed are identified in the Sacramento River Basin and San Joaquin River Basin Water Quality Control Plan (Basin Plan) prepared by the California Regional Water Quality Control Board – Central Valley Region (RWQCB 2009). Beneficial uses identified in the Basin Plan that pertain to the MFP include: (1) municipal and domestic supply; (2) agricultural supply; (3) hydropower generation; (4) water contact recreation; (5) non-contact water recreation; (6) coldwater freshwater fish habitat; (7) spawning, reproduction, and/or early development habitat for fisheries; and (8) wildlife habitat.

Surface water is stored by the MFP and is released for consumptive use, and non-consumptive uses including hydroelectric power generation, recreation, and stream ecosystem health. The largest consumptive uses of water derived from the Watershed include municipal and domestic water supply and irrigation for agricultural crops within

western Placer County. The largest non-consumptive water use in the Watershed is for hydroelectric power generation by PCWA from the MFP and by the SMUD from the Upper American River Project (UARP) (FERC Project No. 2101). Other non-consumptive water uses in the Watershed include recreation use (boating, swimming, and fishing) and instream flow releases for aquatic and wildlife resources. Water Use and Water Quality in the Watershed are described in further detail in Sections 7.3 and 7.4 of this Draft Application for New License, respectively.

7.1.6 Other Dams and Diversions in the Watershed

Aside from the MFP, flows in the Watershed are influenced by two other projects, SMUD's UARP (FERC Project No. 2101) and the GDPUD Stumpy Meadows Project. Sugar Pine Dam, a small diversion dam operated by the Foresthill Public Utility District (FPUD), is located within the North Fork American River watershed but services the Town of Foresthill, which is situated on the Middle Fork American River watershed boundary. The locations of the primary facilities associated with these three projects are shown on Map 7.1-5.

Within the Watershed, SMUD's UARP influences flow into Hell Hole Reservoir and along the South Fork Rubicon River, a tributary to the Rubicon River entering downstream of Hell Hole Reservoir. GDPUD's Stumpy Meadows Project affects flows on Pilot Creek, a tributary to the Rubicon River entering downstream of Hell Hole Reservoir. The FPUD's Sugar Pine Dam affects flows on Shirttail Creek, a tributary to the North Fork American River.

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TABLES

Table 7.1-1. Information on Drainage Area, Stream Length, and Gradient of Waters Associated with the Middle Fork American River Project.

Stream Name	Total Sub-basin Area (mi ²)	Sub-divided Areas (mi ²)	Stream Length (mi)	Elevation (ft)	Average Stream Gradient (%)
Duncan Creek					
Duncan Creek – Headwaters to confluence with Middle Fork American River	23.5	-	14.1	Starting: 7045.0 Ending: 3365.6	5.0
Duncan Creek – Headwaters to Duncan Creek Diversion Dam	- 9.9		5.5	Starting: 7045.0 Ending: 5257.7	6.2
Duncan Creek – Duncan Creek Diversion Dam to confluence with Middle Fork American River	- 13.6		8.6	Starting: 5257.7 Ending: 3365.6	4.2
Middle Fork American River					
Middle Fork American River – Headwaters to confluence with the North Fork American River Confluence	184.5	-	62.3	Starting: 8268.1 Ending: 542.0	2.3
Middle Fork American River – Headwaters to French Meadows Reservoir Dam	- 47.0		15.1	Starting: 8268.1 Ending: 5084.2	4.0
Middle Fork American River – French Meadows Dam to Middle Fork Interbay	- 18.4		11.6	Starting: 5084.2 Ending: 2488.6	4.2
Middle Fork American River – Middle Fork Interbay Dam to Ralston Afterbay	- 22.8		10.8	Starting: 2488.6 Ending: 1158.1	2.3
Middle Fork American River – Ralston Afterbay Dam to confluence with North Fork American River	- 96.3		24.7	Starting: 1158.1 Ending: 542.0	0.5
Long Canyon Creek – Headwaters to confluence with Rubicon River	49.0	-	28.8	Starting: 6749.1 Ending: 1398.5	3.5
Long Canyon Creek – Confluence of North and South Forks of Long Canyon Creek to confluence with Rubicon River	- 31.3		11.4	Starting: 4119.8 Ending: 1398.5	4.5

Table 7.1-1. Information on Drainage Area, Stream Length, and Gradient of Waters Associated with the Middle Fork American River Project (continued).

Stream Name	Total Sub-basin Area (mi ²)	Sub-divided Areas (mi ²)	Stream Length (mi)	Elevation (ft)	Average Stream Gradient (%)
Middle Fork American River (continued)					
North Fork Long Canyon Creek	-	6.6	6.9	Starting: 6359.0 Ending: 4119.8	6.1
South Fork Long Canyon Creek	-	11.1	10.4	Starting: 6749.1 Ending: 4119.8	4.8
Rubicon River					
Rubicon River – Headwaters to Middle Fork American River	209.5	-	58.1	Starting: 8076.2 Ending: 1180.3	2.2
Rubicon River – Headwaters to Hell Hole Reservoir Dam	- 113.4		27.7	Starting: 8076.2 Ending: 4531.4	2.4
Rubicon River – Hell Hole Dam to Middle Fork American River	- 96.1		30.5	Starting: 4531.4 Ending: 1180.3	2.1
Other Major Streams in the Watershed					
South Fork Rubicon River – Headwaters to Confluence with Rubicon River	57.0	-	16.2	Starting: 7556.1 Ending: 3552.6	4.7
North Fork of Middle Fork American River – Headwaters to confluence with Middle Fork American River	92.5	-	18.8	Starting: 4373.3 Ending: 1069.9	3.3
North Fork American River– Confluence of Middle Fork American River to Folsom High Water Mark	5.5	-	4.0	Starting: 542.0 Ending: 491.1	0.2

MAPS