

5.0 ENVIRONMENTAL CONSEQUENCES

This section describes the environmental effects of the Proposed Action and alternatives on each major resource area. These environmental effects consist of the difference between the Proposed Action or alternative as compared to the baseline environmental conditions. The baseline environmental conditions are those that would exist for each major resource area if the project were to continue operating under its current FERC license. Together, these baseline conditions describe the affected environment. The No Action Alternative will result in no changes to the affected environment. In general, for each major resource area, the subsections of Section 5.3:

- Identify the pertinent technical reports prepared by SMUD.
- Describe the Affected Environment, which is considered the baseline condition for identifying effects.
- Analyze the environmental effects should the Proposed Action or an alternative be implemented.

In addition, Section 5.1 provides a general description of the river basin. Section 5.2 describes in more detail the methodology that this PDEA uses to evaluate environmental effects. Section 5.4 addresses the No Action Alternative, which would result in continuation of the environmental conditions described in each Affected Environment subsection. Sections 5.5 and 5.6 describe irreversible and irretrievable commitment of resources, and the relationship between short- and long-term productivity, respectively.

5.1 General Description of the River Basin

The UARP is located on the western slope of the Sierra Nevada Mountain Range in northern California within El Dorado and Sacramento counties. The UARP area originates at Rubicon Reservoir at an elevation of 6,500 feet and extends to Folsom Junction at an elevation of 500 feet, a linear distance of about 52 miles. The water supply utilized by the UARP is composed entirely of surface runoff accumulated from approximately 674 square miles of drainage area, most of which flows in a generally westward direction, within the Rubicon River, Silver Creek, and SFAR basins.

The topography of the basins is characterized by mountains in the eastern part, gradually changing to low, rounded hills in the lower elevations. Deeply incised river canyons, with differences in elevation of about 1,000 feet or more from ridge top to river, and extensive outcrops and cliffs dominate the mountainous area. At the highest elevations, the ground is mostly bedrock. The mid-elevation region is similar to the higher elevation areas, except that mixed conifers dominate. The lower elevation is primarily vegetated by oak woodlands.

A Mediterranean-type climate extends over most of the UARP area creating warm, dry summers and cold, wet winters. Winter low temperatures below freezing at upper elevations and summer high temperatures above 100 degrees Fahrenheit (°F) at lower elevations are typical. Average precipitation ranges from 40 to 70 inches with more than 90 percent of the precipitation

occurring from October through April, mainly in the form of snow in the higher elevations. A snow pack of 5 to 10 feet is common in the higher elevations, with little or no snow in the lower elevations (below 2,000 feet). A description of each of the major basins is below.

5.1.1 Rubicon River

The Rubicon River originates near Clyde Lake in the Desolation Wilderness at an elevation of about 9,900 feet. Upstream of the UARP's Rubicon Reservoir, the major tributary to the Rubicon River is Phipps Creek. In addition, CDFG controls outlet facilities on small masonry dams at five lakes (Clyde, Schmidell, Lois, Highland and Middle Velma) in the Rubicon River watershed upstream of Rubicon Reservoir. From its headwaters, the Rubicon River flows generally north for about 8 miles to Rubicon Reservoir, then northwest about 4.8 miles to the mouth of the Little Rubicon River, and about 5 miles further to Placer County Water Agency's 209,000 acre-ft (ac-ft) Hell Hole Reservoir, part of the Middle Fork American River Project (FERC Project No. 2079). The Rubicon River flows westerly from the Hell Hole Reservoir until it joins the Middle Fork American River then the North Fork American River near Auburn, California. This confluence forms the main stem of the American River, which is dammed about 15.7 miles downstream to form the Central Valley Project's 977,000 ac-ft Folsom Reservoir, which is operated by the United States Bureau of Reclamation (USBR). Besides the main stem of Rubicon River on which Rubicon Dam is located, UARP facilities are located on three tributaries to the Rubicon River: Little Rubicon River (Buck Island Dam), Gerle Creek (Loon Lake and Gerle Creek dams) and the South Fork Rubicon River (Robbs Peak Dam).

5.1.1.1 Little Rubicon River

The Little Rubicon River headwaters originate near Highland Lake in the Desolation Wilderness at an elevation of about 7,800 feet. Highland Creek is the major tributary to the Little Rubicon River. From its headwaters, Highland Creek flows generally north for about 3 miles to Rockbound Lake and then to Buck Island Reservoir on the Little Rubicon River. Upstream of Buck Island Reservoir lie natural Rockbound Lake (which also has a small masonry dam built at its outlet) and Highland Lake. From Buck Island Reservoir, the Little Rubicon River flows generally northwesterly 2.5 miles to its mouth at the Rubicon River.

5.1.1.2 Gerle Creek

The Gerle Creek headwaters originate at an elevation of about 7,200 feet and, as Ellis Creek, flow generally westerly and southerly, a distance of 2.1 miles to Loon Lake Reservoir (elevation 6,400 feet). No reservoirs occur within the Gerle Creek watershed upstream of Loon Lake Reservoir. From Loon Lake Reservoir, Gerle Creek runs in an 8.5-mile-long arc before entering Gerle Creek Reservoir. A number of tributaries feed Gerle Creek between Loon Lake Reservoir and Gerle Creek Reservoir, including Jerrett, Barts, Dellar, and Rocky Basin. Below Gerle Creek Reservoir, Gerle Creek runs another 1.2 miles before terminating at the confluence with the SFRR.

5.1.1.3 South Fork Rubicon River

The headwaters of the SFRR originate at an elevation of about 8,870 feet near Tells Peak. The SFRR flows generally westerly to the Rubicon River at about elevation 3,850 feet, a distance of approximately 13 miles. Gerle Creek, described above, is the major tributary of the SFRR, entering the river about 4.8 miles upriver from where the SFRR enters the Rubicon River. No reservoirs occur on the SFRR upstream of the UARP's Robbs Peak Reservoir.

5.1.2 Silver Creek

The Silver Creek headwaters originate in the Desolation Wilderness at an elevation of over 9,000 feet in the Crystal Range. Silver Creek originates at the confluence of Tells Creek, Big Silver Creek and Jones Fork Silver Creek at Union Valley Reservoir. From the reservoir, Silver Creek flows generally southwesterly to its terminus at the SFAR at 2,050 feet elevation, a distance of 14.6 miles. Major tributaries of Silver Creek downstream of Union Valley Reservoir include South Fork Silver (SFSC), Little Silver, Onion, Jaybird Canyon and Round Tent Canyon creeks.

Three UARP facilities occur along the main stem of Silver Creek: Union Valley, Junction and Camino dams. No dams are located upstream of the UARP facilities. One UARP facility, Ice House Dam, is located on the SFSC, a tributary to Silver Creek.

5.1.2.1 South Fork Silver Creek

The SFSC headwaters originate in the Desolation Wilderness at an elevation of over 9,000 feet in the Crystal Range. The SFSC flows generally westerly and northerly to Silver Creek at Junction Reservoir at about elevation 4,450 feet, a distance of 24 miles. The segment of SFSC downstream of Ice House Reservoir extends 11.5 miles. Major tributaries of the SFSC include Lyons Creek, Peavine Creek and Big Hill Canyon. No reservoirs occur on the SFSC upstream of Ice House Dam.

5.1.3 South Fork American River

The SFAR headwaters originate above Echo Summit at an elevation of over 9,000 feet in the Crystal Range. The SFAR flows generally westerly to its terminus at the American River at Folsom Lake, a distance of approximately 75 miles. Major tributaries of SFAR above Slab Creek Dam include Pyramid Creek, Strawberry Creek, Silver Fork American River, Alder Creek, Silver Creek, Brush Creek, and Slab Creek. Downstream of Slab Creek Dam, Rock Creek and Iowa Canyon Creek are the primary tributaries. Besides the main stem of the SFAR, UARP facilities are located on Brush Creek and in the Silver Creek watershed.

5.1.3.1 Brush Creek

The headwaters of the Brush Creek originate at an elevation of 4,900 feet near Little Sugar Pine Mountain and then flows generally southwesterly to the SFAR at Slab Creek Reservoir, a distance of approximately 6 miles. No reservoirs occur on Brush Creek upstream of Brush Creek Dam.