

3.0 PROJECT LOCATION, FACILITIES AND OPERATIONS

[§ 5.6 (D)(2)]

3.1 AUTHORIZED AGENTS FOR APPLICANT

The exact name, business address and telephone number of each person authorized to act as agent for the applicant is identified below.

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3.2 PROJECT INTRODUCTION, LOCATION, FACILITIES AND OPERATIONS

The Project facilities are located in the Owens Valley and in areas of the eastern Sierra Nevada in the County of Inyo, southwest of the City of Bishop, California. The Project's facilities are sited along Bishop Creek and its tributaries including South Fork, Middle Fork, Green Creek, Birch Creek and McGee Creek. Bishop Creek is a tributary to the Owens River. Project facilities are located within the Inyo National Forest, in the John Muir Wilderness (both of which are managed by the USFS), lands managed by BLM, and on private lands.

The Project area is one of moderate to steep ridge and valley topography. Elevations within the drainages range from approximately 4,000 feet mean sea level (msl) to over 13,000 feet msl. Bishop Creek is a major stream with a total drainage area of approximately 70-square-miles, flowing northeastward approximately 28 miles from its headwaters in the Sierra Nevada to its confluence with the Owens River at the City of Bishop. The North, Middle and South forks of Bishop Creek originate in nearby glacial basins separated by ridges. South Lake and Lake Sabrina are the major storage reservoirs in the watershed.

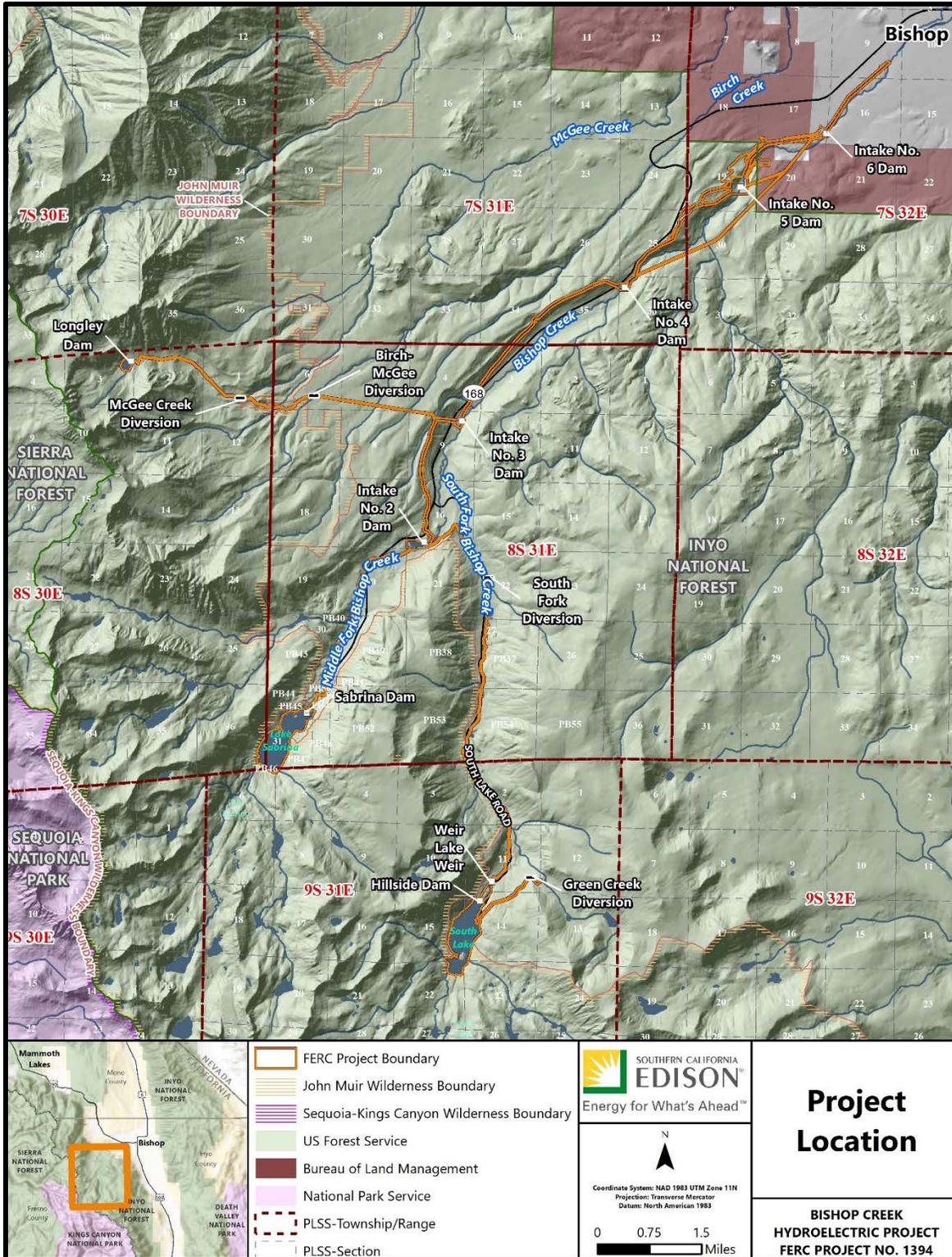


FIGURE 3-1 BISHOP CREEK PROJECT LOCATION

Water from McGee and Birch creeks is diverted to Bishop Creek through the existing hydroelectric facilities. Both streams originate on alpine slopes north of Bishop Creek. McGee and Birch creeks have a combined drainage area of approximately 25-square-miles. McGee Creek flows approximately 15 miles to its confluence with the Owens River. Birch Creek flows approximately 5 miles to the existing diversion and then becomes intermittent.

This section describes existing facilities and operations, and protection, mitigation and enhancement (PME) measures, if any, that are expected to be implemented over the course of the next license term. FERC will review the applicant's proposal and incorporate conditions and recommendations into a new license consistent with the Federal Power Act and other applicable statutes.

As the action agency, FERC will conduct a National Environmental Policy Act (NEPA) review of the proposed action. FERC's analysis of the proposed action would compare the applicant's proposal to the existing conditions (baseline) to determine the likely effects of issuing a new license.

SCE proposes only limited modifications to facilities and operations for the next license term that are intended to facilitate implementation of long-term O&M procedures.

3.3 MEASUREMENT OF ELEVATION AT THE PROJECT

Elevations referenced match those from previous license exhibits. Vertical surveys were performed by SCE in 1980. Refer to the document titled *Reservoir Surveys 1980* for description.

3.4 PROJECT FACILITIES

The Project consists of 13 dams/diversions, and 5 powerhouses with a combined generating capacity of 28.565 megawatts (MW). The Project diverts water for power generation from the Middle and South forks of Bishop Creek, McGee Creek and Birch Creek through the five powerhouses and associated intakes as follows: 1) Powerhouse No. 2, immediately below the confluence of the Middle and South forks of Bishop Creek; 2) Powerhouse No. 3, 3-miles-below Powerhouse No. 2; 3) Powerhouse No. 4, approximately 3 miles below Powerhouse No. 3;

4) Powerhouse No. 5, approximately 1 mile below Powerhouse No. 4; and 5) Powerhouse No. 6, approximately 2 miles below Powerhouse No. 5.

3.4.1 Reservoir

South Lake is operated as a store and release facility for water storage and downstream hydropower generation of electricity. South Lake holds and releases spring runoffs to allow for regulated flows during the summer months to the powerhouses and provide for water recreation. South Lake has a net storage capacity of 12,883 acre-feet at normal full pool elevation 9751.3 feet. The surface area of the reservoir when full is approximately 173 acres. The flow is regulated with an unlined tunnel with a capacity of 178 cubic feet per second (cfs). The submerged outlet tunnel intake portal is located approximately 1200 feet upstream of the dam.

Lake Sabrina has a net storage capacity of approximately 8376 acre-feet at normal maximum reservoir level elevation 9131.62 feet. The surface area of the reservoir when full is approximately 184 acres. Water is released to the downstream channel via low-level outlets; the intake is a fully submerged concrete box supporting three steel trash racks that is integral with the upstream side the dam. The invert of the intake is at elevation 9067.42 feet.

3.4.2 Dams and Diversions

Green Creek Diversion is located 0.8 miles east northeast of the Hillside Dam (South Lake) spillway. A wooden head gate, 3-feet-long by 2-feet-high, is located approximately 80-feet-downstream from Bluff Lake on Green Creek. The head gate diverts water into an open channel approximately 1400 feet in length to the Green Creek diversion intake. The diversion is earth and rockfill, located at 10,264 feet elevation, approximately 51-feet-along the crest and 9-feet-above the streambed. The diversion is equipped with a 12.5-foot-wide by 1-foot-deep spillway. The intake consists of a 16-inch-diameter steel pipe with a slide gate and a trash rack. A 16-inch-diameter drain pipe passes through the intake chamber which is constructed of concrete masonry. A 16-inch-diameter steel pipe, approximately 4750-feet-long, extends into a natural channel, 1150-feet in length, and carries water to South Lake.

South Fork Diversion is earth and rockfill with a crest elevation at 8211 feet, crest length of approximately 65 feet, and crest height of 10 feet above the streambed. The diversion is

equipped with a 40-foot-wide by 6-foot-deep spillway. A 38-inch-diameter steel pipe with a gate valve and trash rack comprises the outlet. The spillway height may be raised or lowered with 4-inch by 6-inch flashboards, each 4 feet in length. A 12-inch-diameter drain pipe passes through the base of the intake chamber and a 36-inch-diameter drainpipe passes through the diversion. The flowline consists of approximately 4104 feet of 38-inch-diameter steel pipe connected to 4059 feet of 34-inch-diameter steel pipe. The flowline extends from the South Fork diversion to Intake No. 2 reservoir. The flowline is protected with air valves, expansion joints, a sand box and a sand trap. The sand box is concrete lined, and approximately 17-feet by 24-feet with exit to a 38-inch-diameter steel pipe extending to Intake No. 2. The sand box has two drain gates.

Hillside Dam is an 81.5-foot-high rockfill timber face (covered with geomembrane) dam completed in 1910 to enlarge an existing natural lake (South Lake). The crest is 645-feet-long and is at elevation 9757.6 feet. There is a 40-foot spillway, and a 1900-foot unlined outlet tunnel that discharges into the South Fork of Bishop Creek, 600-feet downstream of the dam. The reservoir is operated as a regulating reservoir for a series of hydroelectric powerhouses including Bishop Creek Powerhouses 2 through 6.

Weir Lake Weir, located approximately 1800-feet-below Hillside Dam, is used for flow monitoring. Weir Lake Weir, also known as South Lake Weir, is a structure of concrete approximately 70-feet-long and varying in height from 2 feet to 4 feet. The weir is 25-feet-wide by 1-foot-high.

Sabrina Dam and associated facilities consist of a 70-foot by 900-foot timber face (covered with geomembrane) rockfill dam, an uncontrolled main spillway formed by an ogee crest, an uncontrolled auxiliary spillway formed by a concrete wall, and three low-level outlets. The dam forms Lake Sabrina, which is operated as a regulating reservoir for a series of hydroelectric powerhouses which include Bishop Creek Powerhouses 2 through 6.

Longley Dam is an earth and rockfill dam constructed with a reinforced concrete core wall. The dam has a crest elevation of 10,708 feet, crest length of 120 feet, and crest height of 27 feet above streambed. The upstream face of the dam has a slope of 2 to 1 and a downstream face slope of 1.5 to 1. There are two 8-inch-diameter steel outlet pipes encased in concrete which pass through the base of the dam. Flow is controlled by two 10-inch gate valves. The spillway is

8-feet-wide by 2-feet-deep. The spillway channel is excavated in 8-foot-wide solid rock where water is diverted into McGee Creek.

Intake No. 2 Dam is a 41-foot-high, 443-feet-long, earthfill dam with a concrete core wall extending over approximately half its length. The concrete corewall is discontinued on the right side of the dam where the dam is less than 20-feet-high. There is a service spillway with an ogee crest and an auxiliary spillway with an ungated concrete ogee crest, two low level outlet conduits, and one intake structure. Water is conveyed to **Flowline/Penstock No. 2** through a 48-inch-diameter steel pipe that passes under the dam near the left abutment. The steel pipe connects to a second hydraulically operated, 48-inch-diameter butterfly valve located in a small building at the downstream toe of the dam. The butterfly valve controls flow through a 48-inch to 60-inch-diameter expansion to the 60-inch-diameter flowline to Bishop Creek Powerhouse No. 2. The valves are normally open but are operable remotely from the SCE's Bishop Control Center located next to Powerhouse No. 4.

A 24-inch-diameter sand sluice pipe runs parallel to the 48-inch-diameter pipe and passes under the dam. A 20-inch fish-water release pipe branches off the 24-inch sluice line directly above the valve house. The fish-water release piping was reconfigured and a new acoustic velocity meter (AVM) to measure flow was installed in 2008 to monitor and record minimum flow releases (Section 3.7.63.7.6 below).

- **Intake No. 3 Dam:** 20-feet by 225-feet concrete arch; 40-feet by 3.5-feet spillway; 60-inch by 6421-foot-long steel pipe; 60-inch by 6209-foot steel pipe; 54-feet to 48-inch by 4673-feet penstock
- **Intake No. 4 Dam:** 28-feet by 323-feet concrete arch; 50-feet by 5-feet spillway; 60-feet steel intake pipe; 60-inch by 6242-feet steel pipeline; 30-feet by 24-inch by 5314-feet penstock; 30-inch by 5665-feet penstock
- **Intake No. 5 Dam:** 20-feet by 275-feet concrete; 60-inch by 3-feet spillway; 60-feet steel pipe; 60-inch by 2933-feet steel pipe; 60-inch by 540-feet concrete pipe; two 42-inch by 4800-feet penstocks
- **Intake No. 6 Dam:** 26-inch by 320-feet concrete dam; 6-feet spillway; 3000-feet steel pipe; 54-inch by 4360-feet penstock
- **Diversion Pipe:** The Birch-McGee Diversion pipe connects to the lower end of Flowline No. 2. This 24-inch-diameter steel pipe conveys water from Birch and McGee creeks to Flowline No. 2. The rated capacity of the Birch-McGee Diversion pipe is approximately 40 cfs. The flowline collects water from the following:

- **Birch-McGee Diversion:** a 6-feet by 22-feet stone and concrete diversion dam; a 22-inch steel pipe connects to Penstock 2 above Powerhouse 2.
- **McGee Creek Diversion** is a 6-feet by 22-feet concrete dam on McGee Creek, with a 12-feet by 1-foot spillway. Water is diverted into an 18-inch steel outlet pipe and into a flowline, which discharges into Birch Creek above the Birch Creek Diversion.

3.4.3 Powerhouse

Table 3-1 summarizes attributes of the powerhouses and associated facilities.

TABLE 3-1 SUMMARY OF BISHOP CREEK GENERATION EQUIPMENT

POWER HOUSE	TURBINES	INSTALLED CAPACITY*	NET HEAD	HYDRAULIC CAPACITY (MIN)	HYDRAULIC CAPACITY (MAX)
2	Three main horizontal-shaft, single-overhung, single-jet, impulse turbines rated at 10,870 hp total	7320 kW*	875 feet	5 cfs	135 cfs
3	Three main horizontal single-overhung, single-jet, impulse turbines rated at 12,000 hp total	7590 kW*	730 feet	6 cfs	180 cfs
4	Five main horizontal-shaft, single-overhung, single-jet impulse turbines rated at 14,700 hp total	7955 kW*	1053 feet	2 cfs	130 cfs
5	Two main horizontal-shaft reaction turbines rated at 5700 hp total	4100 kW*	382 feet and 350 feet	41 cfs	130 cfs
6	One main Pelton-type, horizontal-shaft, single jet, double overhung, hydraulic impulse turbine rated at 2850 hp	1600 kW*	220 feet	9 cfs	155 cfs

Note that Powerhouses are numbered 2 through 6.

*As part of the licensing all turbines and generators are being audited for the updated FERC Exhibit A, which will be part of the final license application.

Key: hp horsepower
kW kilowatt

3.4.4 Project Transmission

The Project includes the following transmission lines:

1. A 3.7-mile-long, 115-kilovolt (kV) transmission line from Powerhouse No. 3 to the Control Substation; (Control-Plant 3-Plant 4)
2. A 0.7-mile-long, 115-kV transmission line which runs from the Powerhouse No. 4 switchyard to the transmission line connecting Powerhouse 3 to the Control Substation; and (Control-Plant 3-Plant 4)
3. A 150-foot-long, 55-kV transmission line which runs from the Powerhouse No. 5 to tap the transmission line between Powerhouse No. 6 switchyard and the Control Substation (Control-Mount Tom).

Historically, the Project included:

1. A 1.3-mile-long, 55-kV transmission line which runs from the Powerhouse No. 6 switchyard the Control Substation; and (Control-Mount Tom)
2. A 6.9-mile-long, 55-kV transmission line which runs from the switchyard at Powerhouse No. 2 to the Control Substation (Control-Plant 2).

In 2001, SCE proposed removing the Control-Mount Tom and the Control-Plant 2 transmission lines from the FERC license and Project boundary because they are part of the transmission and distribution system, carrying power from both Project and non-Project sources. By Order dated February 28, 2002, FERC removed the 6.9-mile-long and the 1.3-mile-long transmission lines from the Project, effective upon receiving permits from the federal land managers. These permits were received and accepted by SCE from the BLM and the USFS on December 5, 2001 and March 12, 2007 respectively. One-line diagrams of the power houses are included with Volume V of this PAD.

3.5 CURRENT AND PROPOSED PROJECT OPERATIONS

3.5.1 Current Operations

The Project begins diverting or impounding water at five points: Green Creek at Bluff Lake, South Fork Bishop Creek at South Lake, Middle Fork Bishop Creek at Lake Sabrina, McGee Creek at Longley Lake, and Birch Creek at Birch-McGee Diversion (Figure 3-2).

Water from the Green Creek basin flows into Bluff Lake and is released into a ditch that carries the water to the Green Creek Diversion (10,264 feet msl). From this point, water flows through a

pipeline to South Lake where it meets flows from the upper watershed of the South Fork of Bishop Creek. Water is also released from Hillside Dam (9757.6 feet msl) into South Fork where it meets with the remaining flows from Green Creek that were not diverted. Together this water flows down the South Fork of Bishop Creek to the South Fork Diversion (8211 feet msl). At the South Fork Diversion structure, a portion of the flow is diverted through a pipeline to Intake No. 2 (8105 feet msl), as the remainder if the flow continues down South Fork. Upper watershed areas contributing to the Middle Fork of Bishop Creek drain into Lake Sabrina. Water is released through Lake Sabrina Dam (9137.9 feet msl) into the Middle Fork of Bishop Creek. Water flows approximately 1 mile before converging with the unimpaired North Fork of Bishop Creek. The combined waters flow to Intake No. 2 Dam (8104.8 feet msl) which also receives water from the South Fork Diversion flowline. From Intake No. 2 Dam, the water enters a 2.1-mile-long flowline and a 0.5-mile-long penstock which connects to Powerhouse No. 2 sited on Bishop Creek.

Powerhouse No. 2 receives water originating from Longley Lake Dam (McGee Lake) and the upper portions of the Birch Creek watershed. Longley Lake Dam (10,708 feet msl) discharges water to McGee Creek where it flows over 1 mile before being intercepted by the McGee Creek Diversion (9192 feet msl). Water is diverted into a series of pipelines and open channels and delivered to Birch Creek. After entering Birch Creek, the water flows approximately 0.5 mile before being diverted again by the Birch-McGee Diversion (8304 feet msl). At this point, the water enters a pipe where it descends over 1100 feet in elevation before intercepting the penstock to Bishop Powerhouse No. 2.

From this point on, a portion of the water flows down Bishop Creek and a portion is conveyed through a series of pipes and penstocks connecting Powerhouses Nos. 2, 3, 4, 5 and 6. Each powerhouse and intake controls the portion of water entering Bishop Creek and the portion directed into the pipe and penstock conveyances. After Powerhouse No. 6, Bishop Creek flows to the Bishop community and the Owens Valley. In addition, a 1.79-mile ditch (Abelour ditch) carries a water right from the Powerhouse No.6 penstock to the Rocking K subdivision. When Powerhouse No. 6 is offline, there is an alternate take-off below Powerhouse No. 5.

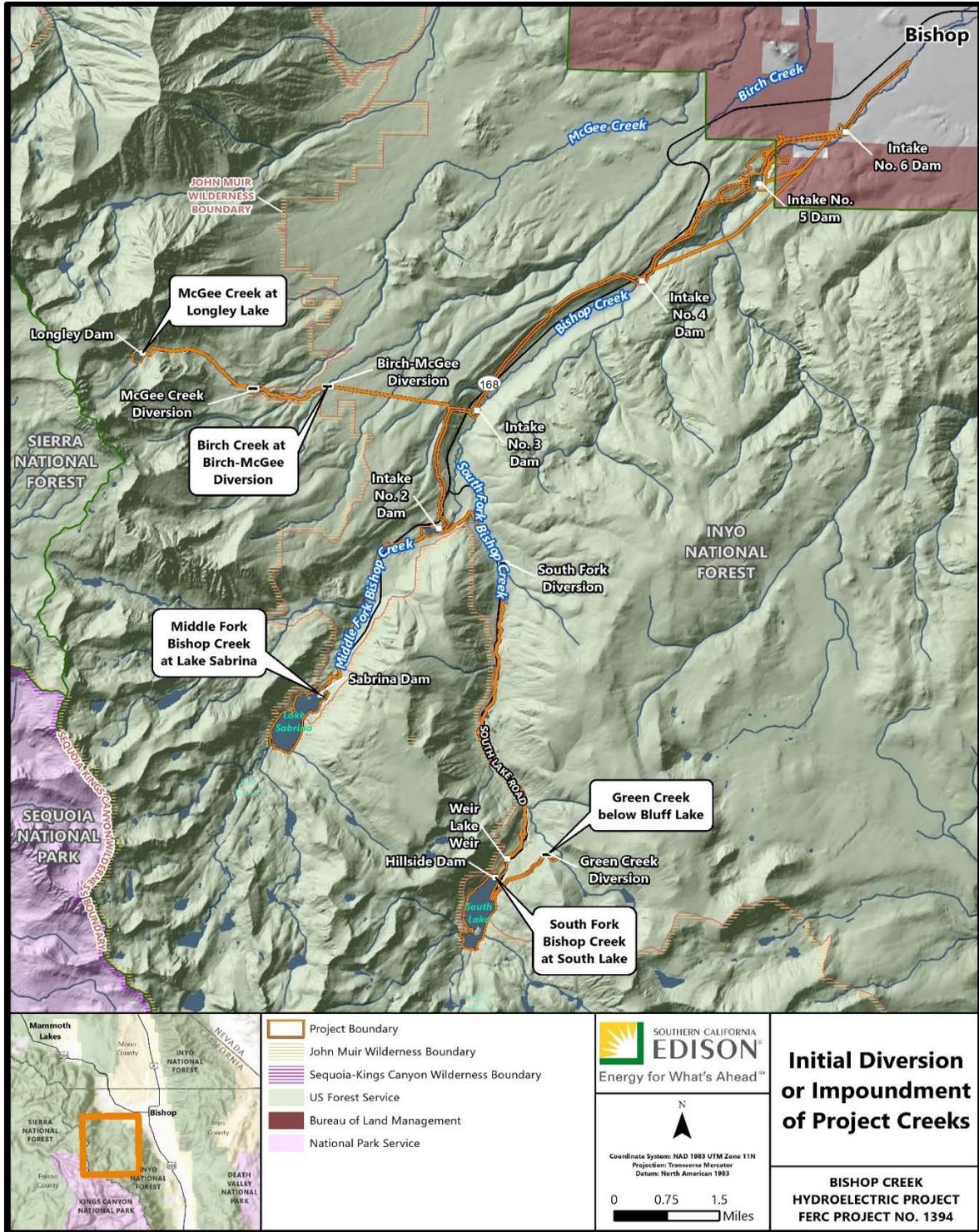


FIGURE 3-2 INITIAL DIVERSIONS OR IMPOUNDMENT OF PROJECT CREEKS

3.5.2 Plant Operation and Control

Plant operation is dictated by water availability. The water scheduling priority is based on the requirements of a 1922 water rights ruling (*Hillside Water Company v. William A. Trickey et.al*, herein referred to as the “Chandler Decree”) and with wintertime flows regulated by the 1933 Sales Agreement (Sales Agreement) between Southern Sierra Power Company (predecessor to SCE) and Los Angeles Department of Water and Power (LADWP). Both the Chandler Decree and the Sales Agreement form the standard of operations for which all regulations must be prioritized. Section 3.6 provides rule curves that describe the general allocation of water for these constraints during mean, high- and low-water years

The next operational consideration is the minimum flow requirements below the dams and intakes (Section 3.7.6). The remaining water is used for generation. Plant operators consider unit availability and capacity and determine the best configuration at each powerhouse.

3.5.3 Operations and Maintenance

Routine Project O&M include numerous activities to ensure the safe operation of the Project. Many of these activities are subject to State of California Department of Fish and Game Notification of Lake or Streambed Alteration, pursuant to Section 1600 (et. seq) of the Fish and Game Code. SCE entered into a long-term agreement with the CDFW to streamline the permitting process. The long-term agreement provides for the following routine activities:

Material Removal: When required, SCE removes material that obstructs the water diversions and operations of hydroelectric generation.

Vegetation Control: SCE controls vegetation growth at or adjacent to its facilities to prevent overgrowth of vegetation that interferes with the flow of water and the measurement of flow through the gaging stations. Methods proposed for vegetation control include selective thinning, selective removal or mowing.

Facilities Repair: When required, SCE routinely makes repairs to structures and facilities and conducts maintenance to retain the functional and structural integrity of facilities. These include:

- **Measuring Stations and Flumes:** SCE uses measuring stations and flumes to measure water in the waterways. Maintenance work related to measuring stations and flumes include mowing of vegetation to provide access along channel banks and the removal of stream deposit within an area of measuring stations to allow for unobstructed water flow, and the accurate reading of water flow, in waterways.

- ***Intake and Diversion Structures:*** SCE uses intake and diversion structures to divert water from a stream, canal or intermittent man-made waterway into a canal or intermittent man-made waterway. Stream deposits are removed above and or below intake structures.
- ***Gate Inspection and Maintenance:*** are mandated by the Department of Safety of Dams. These routine operations do not result in the draining of any ponds, which minimizes impacts to the stream. SCE is required to inspect penstocks, which does involve lowering the ponds to expose the entry point to the penstock.

Stream Deposit Management: Because of the nature of the facilities, stream deposits accumulate behind diversions and other structures and these deposits require regular removal or control. Stream deposits are managed as follows:

- ***Stream Deposit Bypass:*** Historical practice has been to remove one, several or all plants as needed from service in late winter or early spring and reduce creek flows to levels that: (a) are great enough to maintain downstream users' requirements (Chandler Decree) and (b) are small enough to allow all flows to pass through the open drain valves of desired intakes. Normally intakes are left in this state for 24 to 48 hours. This cuts a channel through the stream deposit and gravel that accumulated in the intake, and carries the deposits and gravel into the stream below the intake dams. SCE typically performs the necessary material removal in the springtime to augment the natural flows to assist in the removal of sediment and debris.
- ***Stream Deposit Removal:*** SCE periodically removes sediments and debris not moved by bypass flows from intakes utilizing heavy equipment. Barring extreme climatic events, it is presumed this procedure will be undertaken on a limited basis. To manage sediment in the impoundments, SCE periodically removes sediment to maintain storage capacity and minimize the potential of sediment being sucked through the powerhouses. ¹
- ***Stream Entry:*** Several sites require stream entry for maintenance purposes. For all areas listed below, SCE restricts activity in the channel to an area no further upstream or downstream than necessary to do the work.

Included in these protection measures are as needed nesting bird surveys, raptor surveys other sensitive species surveys, fish protection, restoration for impacts, implementation of best management practices (BMP) for work in and around stream and lakes, and monitoring, and reporting to SCE, CDFW, USFS and other resource agencies, as appropriate. These activities and

¹ The largest removal effort in the past 40 years occurred in response to historic flooding from Tropical Storm Olivia in 1982 that resulted in the failure of the North Lake Reservoir dam (peak flows estimated at 1500 to 2000 cfs in Bishop Creek). Details of this incident and subsequent removals of sediment after 1982 are discussed in the Sediment and Geomorphology Study Plan described in Section 5.2.

associated BMPs are described in the following resource management plans for use by Project personnel:

1. Avian Protection Plan and Bird Nesting Guidelines (includes provisions for reporting wildlife and avian interactions with the Project).
2. Historic Properties Management Plan
3. Vegetation Management Operations Manual
4. Invasive Mussel Prevention Plan
5. Fire Suppression Plan (part of the Project's Emergency Action Plan [EAP])

Non-Routine Projects: SCE resource specialists are consulted during the preparation of non-routine Projects that potentially expand or modify the Project from the original licensed configuration. In these instances, SCE utilizes an internal Environmental Screening Form through its EHSync database to initiate the appropriate environmental or cultural review. In the event of a potential impact on a cultural resource, the Project's Senior Archaeologist will implement procedures and measures identified in the Historic Properties Management Plan. As appropriate, consultation with USFWS, BLM, CDFW, USFS and the appropriate tribes is included in the review and permitting process.

3.5.4 Proposed Operations

SCE is not proposing any changes to the way the Project is operated or maintained.

3.6 WATER USE AND STORAGE

Flow varies monthly, depending on the amount of runoff and SCE's release schedule, which is dictated by snowpack, snow melt, spring rain events, drought, power demand and irrigation. At the lower end of the system, the peak runoff occurs from May to August. Annual runoff averages 100 cfs, with calculated monthly mean flows ranging from 41 cfs to 285 cfs. These numbers will be updated as part of the relicensing process.

The regulated reaches between Lake Sabrina and Intake No. 2 and between South Lake and South Fork Diversion experience similar flow fluctuations. Because these reaches aggregate and convey all Project flows, they are never as low as the flows in the diverted sections. During wet

years, the regulated reaches have much higher flows. The current license requires minimum flow releases into diverted reaches.

Figure 3-3 through Figure 3-5 below represent the operating rule curve for mean, high and low water years.

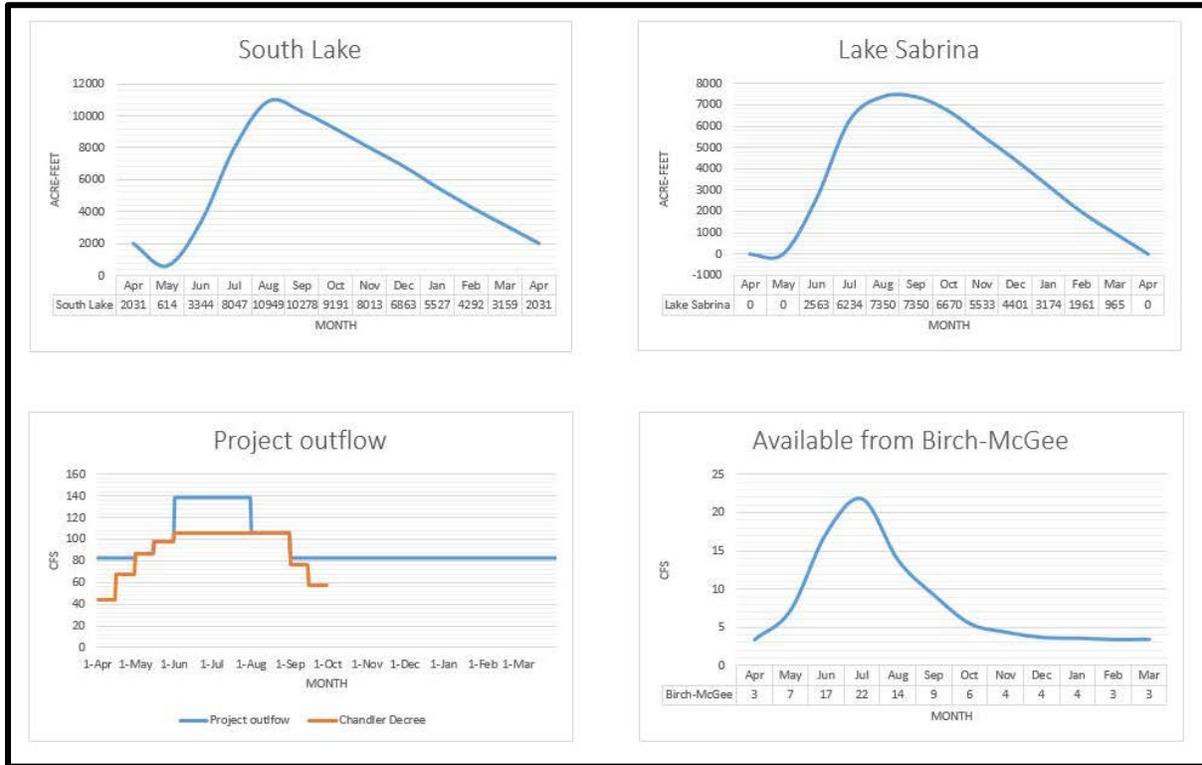


FIGURE 3-3 OPERATING RULE CURVE – MEAN WATER YEAR

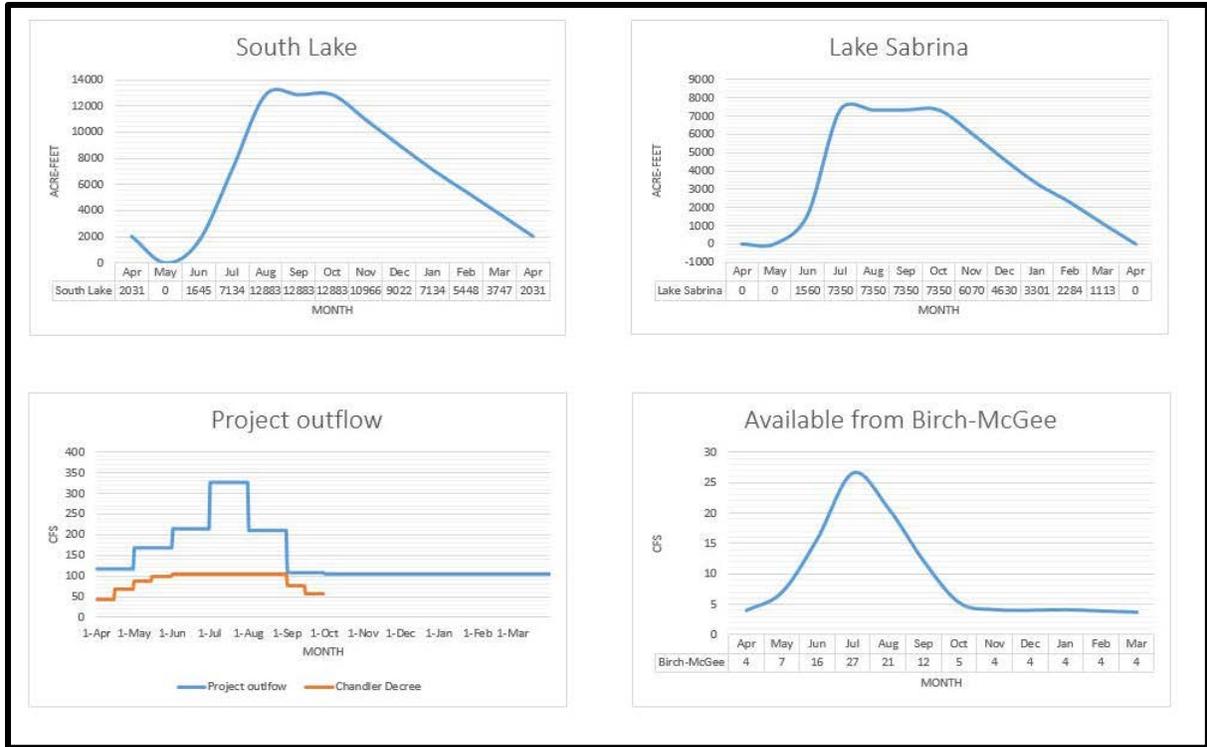


FIGURE 3-4 OPERATING RULE CURVE – HIGH WATER YEAR

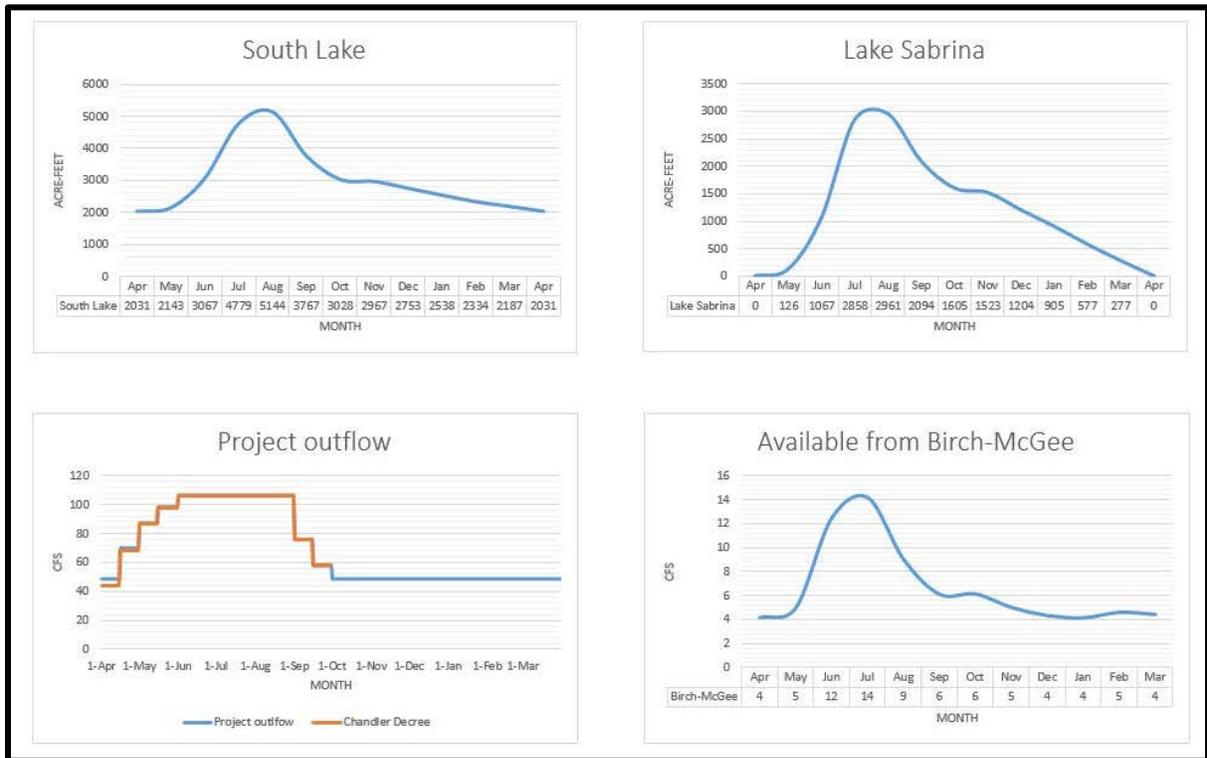


FIGURE 3-5 OPERATING RULE CURVE – LOW WATER YEAR

Seven years of Project generation and outflow data are summarized in Table 3-2.

TABLE 3-2 BISHOP CREEK GENERATION KWH AVERAGE (2011-2017)

	PLANT 2	PLANT 3	PLANT 4	PLANT 5	PLANT 6	TOTAL
January	939,000	939,000	1,490,400	226,500	354,717	3,871,450
February	910,286	977,714	1,463,829	599,000	387,500	4,338,329
March	1,442,286	1,603,286	1,440,343	963,429	522,757	5,972,100
April	1,963,714	1,899,000	1,616,229	972,500	625,300	7,076,743
May	2,840,571	2,719,586	3,252,343	1,593,857	1,073,571	11,479,929
June	3,687,000	3,535,500	4,403,200	1,587,000	844,983	14,057,683
July	4,024,687	3,795,259	4,186,957	1,640,932	1,078,574	14,726,410
August	3,651,248	3,488,064	4,022,588	1,463,147	872,729	13,497,777
September	2,365,904	2,198,609	2,765,296	735,377	629,318	8,694,504
October	1,756,747	1,494,507	2,441,455	552,933	474,335	6,719,977
November	1,600,949	1,060,400	1,360,079	344,000	247,093	4,612,521
December	1,101,905	1,071,272	1,626,282	444,457	226,422	4,470,338

Source: Bishop Creek Generation Data 2018 *personal communication*

3.7 ADDITIONAL PROJECT INFORMATION

3.7.1 Current License Requirements

The licensed Project is subject to Articles 1-28 of FERC's standard terms and conditions set forth in Form L-3, (October 1975) entitled *Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters of the United States*. Project-specific license Articles are stated in the 1994 License Order as amended. These are summarized, along with relevant amendments in Appendix B

The Project is not subject to a SWRCB Water Quality Certificate (WQC). SCE applied for a WQC on March 28, 1986. Because the SWRCB failed to act for over one year on SCE's request for a WQC, FERC waived the Project WQC requirement.

Articles 105 of the current license requires the release of various minimum flows. The minimum flow requirements are different for each development.

Table 3-3 summarizes requirements of primary resource-related license articles. A more detailed summary of all license requirements, including amendment history and those requirements that have been eliminated from the license, is included as Appendix B.

TABLE 3-3 SUMMARY OF LICENSE REQUIREMENTS

Requirement Type	Requirement	Amendment History
Article 101 Special Use Authorization from Forest Service	Requires licensee to obtain a special-use authorization from the Forest Service for the occupancy and use of Forest Service lands. Land-disturbing activities may commence 60 days following the filing date of such authorization.	FERC Order on Rehearing issued February 1, 1995: Removed this article from the license.
Article 102 Written Approval of Forest Service for Project Components Occurring on National Forest System Land	Requires licensee to obtain the prior written approval of the Forest Service for all final design plans for Project components which the Forest Service deems as affecting or potentially affecting Forest Service resources.	Amended November 20, 1998: Replaces the article's reference to the Forest Service special use authorization with the requirement to follow the written instructions provided by the Forest Service.
Article 103 Written Approval of Forest Service for Changes in Location of Project Features	Requires licensee to obtain written approval from Forest Service prior to making any changes in the location of any constructed Project features or facilities, or in the uses of Project lands and waters, or any departure from the requirements of any approved exhibits filed with FERC.	
Article 104 Annual Consultation	Requires consultation with the USFS regarding measures needed to ensure protection and development of the natural resource values of the Project area. Annual reports are due by July 15 each year.	FERC Order issued November 22, 2005 Consolidated the annual consultation meetings with Forest Service and the annual spring meetings with Forest Service and the California Department of Fish and Game for the Lee Vining, Rush Creek, Lundy and Bishop Creek Projects into a single meeting to be held annually by May 15 to fulfill the requirements of the Section 4(e) conditions and license Articles 104 and 105. Annual reports are due no later than July 15 each year.
Article 105 Maintain Minimum Flows and Summer Operations and Maintenance Plan	Establishes minimum flows and requires annual meeting with USFS and CDFW to develop summer O&M plan, water management of reservoirs, and	

Requirement Type	Requirement	Amendment History
	flushing flows (see Section 3.7.6.).	
Article 105 (continued) Temporary Modification of Minimum Flows	Provides for temporary modification of minimum flows, if required by operating emergencies beyond the control of the licensee; or for short periods upon written consent of the USFS.	
Article 105 (continued) Riparian and Aquatic Monitoring Plan	<p>Required implementation of 1993 plan as described by USFS revised conditions. By order dated 1/16/2014 the plan was revised to reflect USFS's 5/31/2013 letter regarding abiotic, vegetation and aquatic monitoring at the Project.</p> <p>Monitoring and ongoing reporting is required for term of license. The purpose of the monitoring is to determine if goals and objectives of the minimum flow requirements on riparian dependent species have been met. As needed licensee will propose changes in flows to meet the objectives. Annual reports of streamflows are filed with the Inyo National Forest.</p>	<p>Amended January 16, 2014: Revises the plan</p> <p>The revised plan discontinues monitoring at three sites on Bishop Creek which have been subject to vandalism and disturbance. The revised plan reduces monitoring parameters on lower Birch Creek to those most meaningful for evaluating current conditions. Finally, the revised plan discontinues aquatic monitoring and fish sampling at McGee Creek, Reach 4 of Bishop Creek, and sites 3 and 5 on Bishop Creek.</p>
Article 106 Installation of Stream Gage Device	Provides for installation of stream gages downstream of the point of release of all bypass flows and below South Lake Dam and Lake Sabrina Dam.	<p>Amended on October 6, 1999 Annual reports to be filed by April 1 for the preceding year instead of December 31 for the same year.</p> <p>Amended on November 20, 1998 Install an orifice type flow release device at the McGee Creek diversion instead of a continuously-recording stream gauge.</p>
Article 107 Recreation Resource Protection and Mitigation-Recreation Resource Protection and Mitigation Access	Required licensee to provide funding for trail construction and facilities construction. Required annual funding to USFS to pay for USFS	Amended on November 20, 1998 Established an alternative funding arrangement, requiring the licensee to reimburse the Inyo National Forest for one-half of its annual costs to operate and maintain day-

Requirement Type	Requirement	Amendment History
Trails Operation and Maintenance Costs	operations and maintenance expenses.	use recreation facilities at the South Lake and Sabrina reservoirs.
Article 108 Recreation Resource Protection and Mitigation Erosion, Stream Sedimentation, Dust, and Soil Mass Movement Control Plan	Before starting land disturbing activities on USFS lands, submit a plan to FERC; plan approved by the USFS for the control of erosion, stream sedimentation, dust and soil mass movement.	
Article 109 Solid Waste and Waste Water Disposal Plan	Before starting land disturbing activities on USFS lands, submit a plan to FERC; plan approved by the USFS for the treatment and disposal of solid waste and waste water generated during construction and operation of the Project.	
Article 110 Hazardous Substances Plan Updates	Before starting land disturbing activities on USFS lands, submit a plan to FERC; plan approved by the USFS for oil and hazardous substances storage and spill prevention and cleanup.	
Article 111 Spoil Disposal Plan	Before starting land disturbing activities on USFS lands, submit a plan to FERC; plan approved by the USFS for the storage and/or disposal of excess construction/tunnel spoils and slide material.	
Article 112 Visual plan	Before starting land disturbing activities on USFS lands, submit a plan to FERC; plan approved by the Forest Service for the design and construction of the Project facilities to preserve or enhance its visual character.	
Article 113 Threatened, Endangered, and Sensitive Species Management Plan	Before starting land disturbing activities on USFS lands, submit a plan to FERC; plan approved by the USFS for the mitigation of impacts to sensitive, threatened, and endangered plant and animal species located within the area to be disturbed.	
Article 114	A minimum flow of 18 cfs (or the natural flow, whichever is less)	FERC Order issued February 1, 1995

Requirement Type	Requirement	Amendment History
Minimum Flow Requirement	must be maintained in Bishop Creek on the BLM lands in stream reach 2 (below powerhouse No.4).	This Article was removed from the license due to a conflict with the Energy Policy Act of 1992.
Article 115 Right-of-Way Grant	Within six months of issuance of the license, the licensee will obtain a right-of-way grant from the BLM for the penstock, transmission lines and other facilities on BLM land, as required by Sections 501 and 511 of the Federal Land Policy and Management Act of 1976 (PL 94-579).	
Article 116 Authorization to Remove Mineral Materials	Prior to removal of any mineral materials from the BLM land, the licensee shall obtain authorization from the BLM.	
Article 117 FS Conditions Pertain to BLM Conditions	The FS 4(e) conditions, articles 101 through 113, shall also pertain to BLM lands unless those conditions conflict with BLM conditions, articles 114 through 117.	
Article 201 Annual Charges	Requirement to pay the United States annual charges as determined by FERC.	<p>Amended February 28, 2002</p> <p>Revisions that incorporate the removal of transmission lines will be made when the time arises. In the interim, the amendment corrects the acreage of federal lands occupied by the Project based on SCE's revised survey information, the addition of 1.17 acres for the gauging stations and access roads, the removal of 33.18 acres because company housing has been demolished, and the removal of 1.07 acres associated with the Horse Creek Diversion.</p> <p>Amended May 19, 1999 to reflect changes in the Project's installed capacity.</p> <p>Amended March 18, 1996 to reflect changes in the Project's installed capacity.</p>

Requirement Type	Requirement	Amendment History
		Amended September 19, 1995 to reflect changes in the Project's installed capacity.
Article 202 Reasonable Rate of Return	A specified reasonable rate of return upon the net investment in the Project shall be used for determining surplus earnings of the Project for the establishment and maintenance of amortization reserves.	
Article 203 Decommissioning of the Project	FERC reserves authority, in the context of a rulemaking proceeding or a proceeding specific to this license, to require the licensee at any time to conduct studies, make financial provisions, or otherwise make reasonable provisions for decommissioning of the Project.	
Article 204 Authority to Grant Permission for Use and Occupancy	Grants the licensee authority to grant permission for certain types of use and occupancy of Project lands and waters and to convey certain interests in Project lands and waters for certain types of use and occupancy, without prior FERC approval.	
Article 401 Minimum Flow Modifications	The minimum flows required by Articles 105 and 114 may be modified for short periods upon mutual agreement among the licensee, the Forest Service, the BLM, and the CDFW.	
Article 402 Approval to Modify Minimum Flows	The licensee shall obtain FERC approval before modifying any of the Project's minimum flows to meet the requirements of Articles 105 and 114 for achieving the vegetation potentials within the riparian zones affected by the Project.	
Article 403 Streamflow Gaging Plan	Required a plan to install, operate, and maintain streamflow gages necessary to monitor the minimum flow releases required in Articles 105 and 114.	Amended on November 18, 2016 Installation of new release pipe and a continuously recording AVM immediately downstream of the Intake 5 diversion dam. The new AVM to be used in lieu of the previously installed fluid gage and

Requirement Type	Requirement	Amendment History
		A-35 water level recorder, located approximately 300 feet downstream of the dam.
Article 404 Monitoring Plan for Turbine-Induced Injury and Mortality to Fish Resources	Requires the licensee to file with FERC, within six months from license issuance, a monitoring plan to evaluate turbine-induced injury and mortality to fish resources and their impact on fish abundance in Bishop Creek. The plan shall be developed in consultation with the FS, BLM, and CDFW. The licensee shall allow at least 30 days for the agencies to comment and make recommendations prior to filing the plan. If applicable, the filing must include the licensee's reasons for not adopting an agency recommendation. Also requires stocking of fish in consultation with CDFW.	Updated January 19, 2000 The licensee may stock 2,500 brown trout once every five years instead of 500 annually. FERC Order issued August 16, 1995 modifying and approving, in part, fish mortality monitoring plan. FERC order issued May 19, 1999 modifying and approving final entrainment report Beginning in 1999, the licensee shall stock 500 eight-inch brown trout annually at times and locations determined in consultation with the CDFW. (This requirement was changed with the 2000 amendment.)
Article 405 Riparian Monitoring Plan	Requires the filing of annual riparian vegetation monitoring reports required by Article 105.	Amended on January 16, 2014 to require the licensee to implement the revised riparian and aquatic monitoring plan attached to Article 405 in the FS's May 21, 2013 letter regarding abiotic, vegetation, and aquatic monitoring at the Project.
Article 406 Raptor Protection Plan	Requires a report outlining the modifications made to the Project transmission line to protect raptors.	
Article 407 Transmission Line Construction	The licensee shall design and construct the relocated segment of the Project transmission line in accordance with guidelines set forth in "Suggested Practices for Raptor Protection on Power Lines--the State of the Art in 1981," by Raptor Research Foundation, Inc. The licensee shall consult with the USFWS, the CDFW and the Forest Service in adopting these guidelines and shall develop and implement a	FERC Order on Rehearing issued February 1, 1995 Removed this Article from the license.

Requirement Type	Requirement	Amendment History
	design that will provide adequate separation of energized conductors, groundwires, and other metal hardware, adequate insulation, and any other measures necessary to protect raptors from electrocution hazards. Within 90 days after completion of construction, the licensee shall file as-built drawings of the relocated segment of the transmission line with FERC.	
Article 408 Recreation Facilities	Within six months after the Forest Service completes construction of the recreational facilities mentioned in Article 107, the licensee shall file with FERC drawings, showing the type and location of the completed facilities. At the same time, the licensee shall provide copies of the filing to the California Department of Parks and Recreation and the CDFW.	FERC Order on Rehearing issued February 1, 1995 Removed this Article from the license.
Article 409 Erosion, Stream Sedimentation, Dust, and Soil Mass Movement Control Plan	Requirement to file, at least 60 days prior to the start of construction of recreational facilities, the plan to control erosion, stream sedimentation, dust, and soil mass movement required by Article 108.	FERC Order on Rehearing issued February 1, 1995 Removed this Article from the license.
Article 410 Cultural Resources Management Plan	Requires implementation of the cultural resources management plan, filed with FERC on April 3, 1989, to avoid and mitigate impacts of the Project on nine archeological sites and the Bishop Creek Hydroelectric System Historic District determined eligible for inclusion in the National Register of Historic Places. The Article also mandates periodic monitoring be undertaken of each NRHP eligible site, as well as one site-specific measure.	Memorandum of Agreement approved April 12, 1995 Amends Cultural Resources Management Plan

Requirement Type	Requirement	Amendment History
Article 411 Cultural Resources Survey	Requirement to conduct a cultural resources survey where recreation facilities will be located prior to their construction. The survey shall be based on the recommendations of the California State Historic Preservation Office (SHPO) and the Forest Service. The survey shall be documented in a report and include a cultural resources management plan to avoid or mitigate any impacts to archeological or historic sites identified during the survey as eligible for inclusion in the NRHP.	FERC Order on Rehearing issued February 1, 1995 Removed this Article from the license.
Article 412 Cultural Resources Management Plan	Before starting any land-clearing or land-disturbing activities within the Project boundaries, other than those specifically authorized in this license, licensee must consult with the California SHPO, USFS, and Inyo National Forest, conduct a cultural resources survey of these areas, and shall file for FERC approval of cultural resources management plan to avoid or mitigate impacts to any significant archeological or historic sites identified during the survey.	
Article 501 Reimbursement of Owner of Headwater Improvement	Requirement for the licensee to reimburse the owner of headwater improvement for benefits to the licensee's Project.	

In addition to the numbered license Articles in Table 3-3, the following FERC Orders have modified the Project license:

- Amended September 4, 2013 to incorporate Memorandum of Agreement (MOA) to address the effects of intake structure modification work at the South Lake Reservoir.
- Amended April 15, 2011 to incorporate MOA to resolve adverse effects to Hillside Dam, a historic property, of installing a geomembrane liner on the face of the dam.

- FERC Order issued April 2, 2010: Set effective date for deletion of the transmission lines as December 5, 2001 and March 12, 2007; approved revised FERC Exhibit G drawings; and revised annual charges accordingly.
- Amended on May 18, 2004 to resolve adverse effects on the Bishop Creek Historic District of replacing the intake structure for Bishop Creek Plant No. 2.
- Amended on February 28, 2002: Incorporates revised FERC Exhibits A, F and G, which incorporate transmission line changes and the removal of the diversion at Horse Creek, into the license.

3.7.1.1 Project Inspections

Over the term of the existing license, SCE participated in FERC environmental inspections, operations inspections, and dam safety/operation inspections. Any subsequent FERC directives and items identified during the inspections as requiring attention have been timely addressed by SCE and written documentation filed with FERC.

3.7.1.2 Incident Reporting

SCE filed five incident reports (2007, 2008, 2016, 2016 and 2017) with FERC over the term of the existing license and one non-Project related safety incident reported in 2012. In all cases, SCE timely notified FERC of the incident and filed a written incident report. FERC subsequently issued letter orders concurring that the incident reports filed by SCE satisfy the requirements of 18 CFR § 12.10.

3.7.2 Compliance History of the Project

SCE has a sound compliance history for the Project with only one violation over the course of the current Project license. On September 21, 2004, FERC conducted a construction inspection and found that SCE failed to meet BMPs regarding pollution, sedimentation and erosion prevention per Article 19 of the license. SCE paused construction to avoid further violations and addressed each of FERC's concerns with a proposed action plan. On October 15, 2004, FERC issued a formal non-compliance memorandum but on the same day gave SCE verbal authorization to proceed with construction. On October 18, 2004, SCE submitted additional information regarding the plan of action, and on October 21 FERC informed SCE that it had reviewed the revised agreement and found SCE's submittal satisfactory.

SCE files minimum flow, pond level compliance reports and self-reports to FERC for any incidents of temporary deviation from the required minimum flows. Additionally, the FERC San Francisco Regional Office conducts annual inspections. SCE completes all necessary corrective actions to address comments and recommendations arising from FERC inspections in a timely manner.

3.7.3 Safety Procedures

Under FERC guidelines, the Project developments have the following high hazard potential designations:

- Hillside Dam
- Intake No. 2 Dam
- Sabrina Lake Dam

SCE prepared a Dam Safety Surveillance and Monitoring Plan (DSSMP) for each development that is classified as high hazard: Hillside, Intake No. 2 and Sabrina Lake Dams. The DSSMPs detail how SCE monitors and evaluates performance of the Project. The purpose of the surveillance program is to determine if a dam safety concern should develop, that it would be addressed in a timely manner.

SCE filed the most recently updated Public Safety Plan (PSP) for the Project on January 9, 2019. The PSP outlines the public safety measures that are in place for the Project, including signage and safety barriers such as fencing and gates.

EAPs are in place for Hillside, Intake No. 2, and Sabrina Lake Dams. However, SCE is exempt from filing an EAP for Birch-McKee Diversion; Green Creek Diversion; Intake Nos. 3, 4, 5 and 6; Longley; McGee Creek Diversion; and South Fork Diversion. These exemptions are renewed annually.

3.7.4 Current Net Investment

As of December 31, 2018, SCE incurred an original cost investment of \$81,500,192, accumulated depreciation of \$42,993,802 and a net book value of \$38,506,390 for the Project.

3.7.5 Average Annual Energy and Dependable Capacity

Because the Project utilizes storage that is managed year-round, the lowest hydraulic capacity of any single development was used to determine a dependable capacity of 28.56 MW. Based on data proved in Table 3-2, the average annual energy production of the entire Project is 99,518 megawatt hours (MWH).

3.7.6 Delivery of Water for Non-Power Uses

Project operations are subject to adjudicated water rights and other agreements that provide for non-power uses. The Chandler Decree is one of the primary controlling documents. The Sales Agreement between Southern Sierra Power Company (predecessor to SCE) and LADWP addresses SCE's obligations with respect to the waters of Bishop Creek. Within these constraints, SCE manages the releases from the storage reservoirs, for purposes of hydrogeneration and meeting water allocation requirements.

The Sales Agreement provides for seasonal maximum carry-over limits of 2147 acre-feet, as measured on or about April 1, annually. Variances from this requirement have been obtained on a case-by-case basis in the past, by mutual-agreement between SCE and LADWP. Additionally, SCE meets with the USFS annually to determine: 1) seasonal minimum storage requirements for recreation purposes; and 2) annual flushing flows.

The Chandler Decree and SWRCB water rights licenses determine how flows are allocated and used, as follows:

- Seasonal diversion/accumulation limit not to exceed historically measured use (i.e., not to exceed current Project capacity), including an annual limit of 1400-acre feet from Green Creek.
- Instantaneous diversion limit at all locations not to exceed historically measured use (i.e., not to exceed current Project capacity), including a daily average limit of 1 cfs for domestic use.
- Minimum Project flow-through (downstream delivery) requirements, for senior downstream water rights holders, are measured below Plant 6, as required by the Chandler Decree (Table 3-4).
- Minimum instream flow requirement of 0.25 cfs at the Birch-McGee Diversion, for senior downstream water rights holders, as stipulated by the Chandler Decree.

- Minimum instream flow requirement of 1.6 cfs during the irrigation season, and 0.4 cfs at other times, through the Abelour Ditch, for senior downstream water rights holders in the Rocking K Subdivision.

TABLE 3-4 DAILY AVERAGE FLOW REQUIREMENTS FOR FLOW BELOW PLANT 6

PERIOD	DAILY AVERAGE FLOW (cfs)	INSTANTANEOUS MINIMUM FLOW (cfs)
April 1-15	44	33
April 16-30	68	51
May 1-15	87	65
May 16-31	98	74
June 1 - Jul 31	106	90
August 1-31	106	80
September 1-15	76	57
September 16-30	58	44

Source: Chandler Decree 1922

In addition, there are required minimum instream flow requirements that are mandated by the Articles 105 of the FERC License, as follows:

- Lake Sabrina to Intake 2: no less than 13 cfs or natural flows, whichever is less, year-round
- South Lake to South Fork Diversion: no less than 13 cfs or natural flows, whichever is less, year-round
- Intake 2: no less than 10 cfs from Friday of the last weekend in April thru October 31; no less than 7 cfs for the remainder of the year; or no less than 5 cfs in all months in dry years
- Plant 2 to Plant 3: no less than 13 cfs year-round
- Plant 3 to Plant 4: no less than 5 cfs year-round
- Plant 4: no less than 12 cfs year-round (Article 105)²
- McGee Creek Diversion: no less than 1 cfs or the natural flow, whichever is less, year-round
- Birch-McGee Diversion: no less than 0.25 cfs or the natural flow, whichever is less, year-round

² Article 114 required 18 CFR (or the natural streamflow, whichever is less), however this license condition was removed by Order dated February 1, 1995 because of a conflict with the Energy Policy Act of 1992, which changed how the Federal Land Policy and Management Act (FLPMA) treated lands which had been previously subject to a reservation under Section 24 of the Federal Power Act. The remaining language in Article 105 ambiguous as to whether the minimum flow requirement is 12 cfs or some greater amount negotiated with the CDFW. Historically SCE has been releasing 18 cfs.

3.7.7 Project Boundary

Since the July 16, 1994 issuance of a new license for the Project, several changes have occurred through a series of amendment applications and FERC Orders that began in 1998. The following table summarizes notable Project boundary changes during that period.

**TABLE 3-5 NOTABLE PROJECT BOUNDARY CHANGES
DURING CURRENT FERC LICENSE**

PROJECT BOUNDARY CHANGE	ORDER APPROVING
Removal of a 1.3-mile-long, 55-kV transmission line which runs from the Powerhouse No. 6 switchyard the control substation	Conditionally approved by FERC Order of February 28, 2002. This Order provided final approval and an effective date for deletion of the transmission lines as December 5, 2001 and March 12, 2007, which are the dates that SCE received authorization for continued use of the federal lands from the BLM and the USFS, respectively.
Removal of a 6.9-mile long, 55-kV transmission line which runs from the switchyard at Powerhouse No. 2 to the Control Substation	Conditionally approved by FERC Order of February 28, 2002. This Order provided final approval and an effective date for deletion of the transmission lines as December 5, 2001 and March 12, 2007, which are the dates that SCE received authorization for continued use of the federal lands from the BLM and the USFS, respectively.
Removal of 1.07 acres of lands associated with Horse Creek Diversion, which was removed to allow free flow in Horse Creek in compliance with Article 105	Approved by FERC Order of February 28, 2002.
Removal of 33.18 acres of lands surrounding demolished company housing	Approved by FERC Order of February 28, 2002.
Addition of 1.17 acres for gauging stations and access roads	Approved by FERC Order of February 28, 2002.

Source: FERC 2008

On April 2, 2010, FERC issued an Order to approve SCE’s revised Exhibit G drawings and associated federal acreage for the Project. By letter dated May 5, 2010, SCE submitted geographic information system (GIS) Project boundary data, as required by paragraph (c) of that Order. Table 3-6 summarizes land ownership within the Project boundary based on this approved data:

TABLE 3-6 LAND OWNERSHIP WITHIN PROJECT BOUNDARY

OWNERSHIP	ACREAGE	PERCENTAGE OF TOTAL
U.S. Forest Service	733.8	67.8%
Bureau of Land Management	47.6	4.4%
Non-federal	300.9	27.8%
<i>Total Project Acreage</i>	<i>1082.2</i>	

Source: FERC 2010

3.8 REFERENCES

Bishop Creek Generation Data 2018. Paul Schmidt, Operator, *personal communication*

Chandler Decree 1922. Hillside Water Company v. William A. Trickey et.al, U.S. District Court, Southern Division of California (Northern Division), No. B-61 EQ, Final Decree in Equity (Chandler Decree), January 27, 1922 (Unreported).

Federal Energy Regulatory Commission (FERC). 2008. Order Amending License. FERC No. 1394-037. 85 FERC ¶ 62,117.

Federal Energy Regulatory Commission (FERC). 2010. Order Setting Effective Date for Deleted Transmission Line, Approving Revision Exhibits, and Revising Annual Charges. FERC No. 1394-072. 131 FERC ¶ 62,007.

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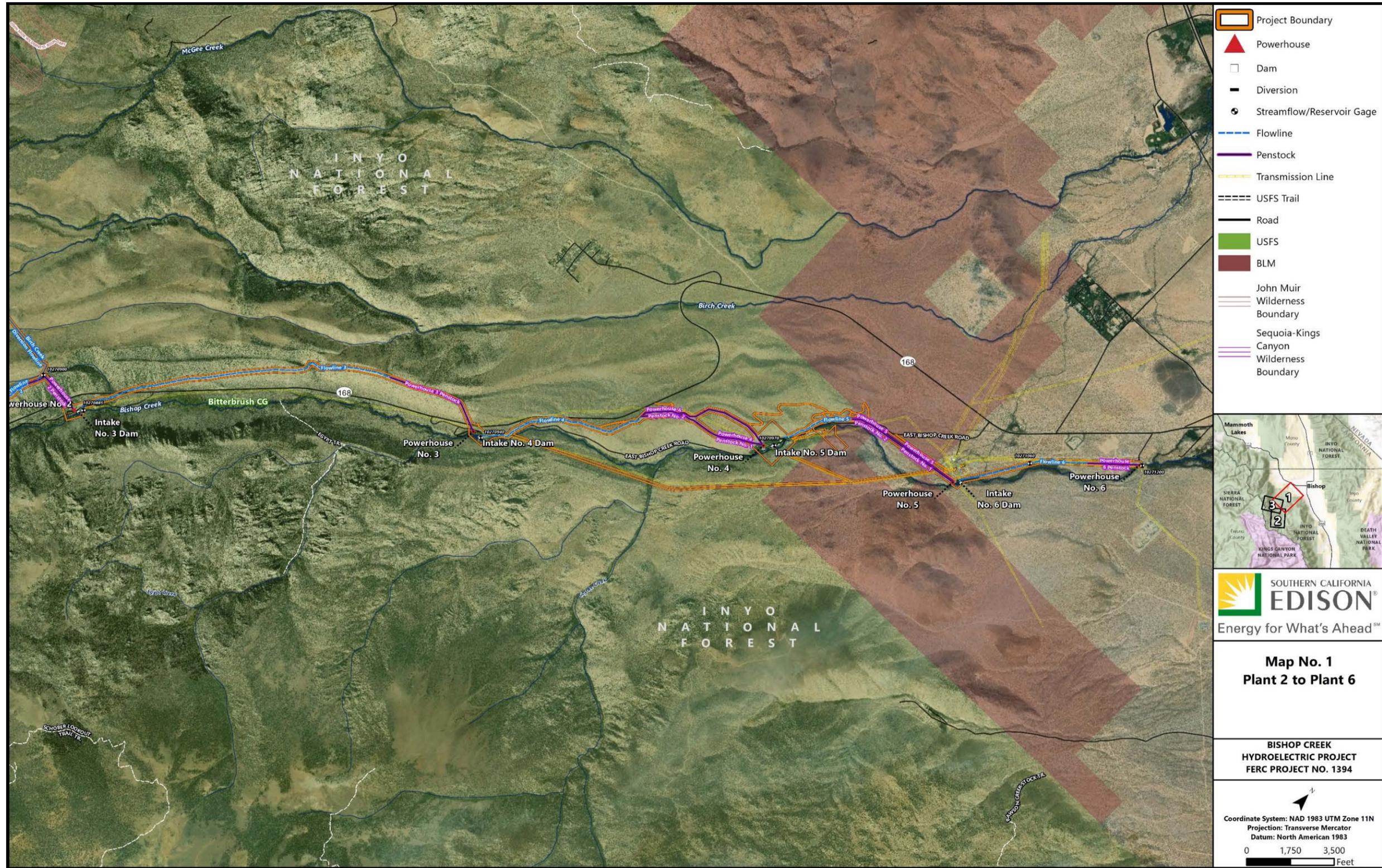


FIGURE 3-6 PROJECT BOUNDARY (PLANT 2 TO PLANT 6)



FIGURE 3-7 PROJECT BOUNDARY (LAKE SABRINA, SOUTH LAKE, INTAKE 2)

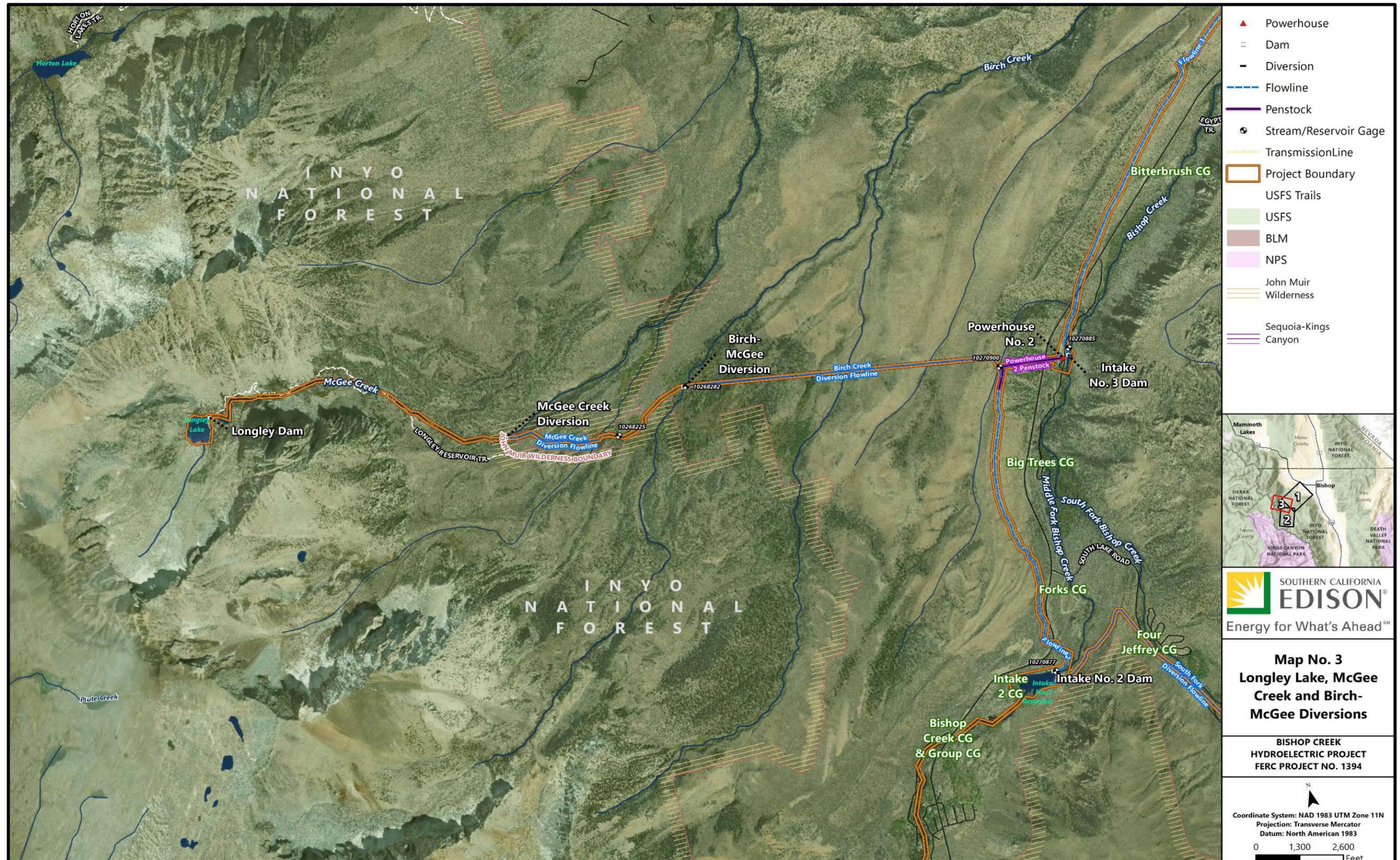


FIGURE 3-8 PROJECT BOUNDARY (LONGLEY LAKE, MCGEE CREEK, BIRCH-MCGEE DIVERSIONS)