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**TABLE OF CONTENTS**


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	Page
<b>2.0 Existing Project Location, Facilities, and Operations .....</b>	<b>2-1</b>
2.1 Introduction .....	2-1
2.2 Authorized Agent .....	2-1
2.3 Project Overview.....	2-1
2.4 Existing Project Facilities .....	2-1
2.4.1 Diversion Dam and Impoundment .....	2-2
2.4.2 Intake Structure .....	2-2
2.4.3 Water Conveyance System .....	2-2
2.4.4 Powerhouse and Associated Equipment .....	2-4
2.4.5 Access Roads and Trails .....	2-5
2.4.6 Communication and Power Lines .....	2-5
2.4.7 Gaging Stations .....	2-6
2.4.8 Ancillary and Support Facilities .....	2-6
2.5 Existing Project Operations.....	2-8
2.5.1 Water Management .....	2-8
2.5.2 Project Generation and Recent Outflow Records .....	2-10
2.5.3 Regulatory Requirements .....	2-10
2.5.4 Existing Environmental Programs.....	2-11
2.6 Existing Project Maintenance.....	2-11
2.6.1 Powerhouse Inspection and Maintenance .....	2-11
2.6.2 Water Conveyance System .....	2-12
2.6.3 Dam Inspections, Testing, and Maintenance .....	2-12
2.6.4 Sediment Management.....	2-12
2.6.5 Vegetation Management.....	2-14
2.6.6 Woody Debris Removal .....	2-15
2.6.7 Pest Management.....	2-16
2.6.8 Road Maintenance.....	2-16
2.6.9 Trail Maintenance .....	2-16
2.6.10 Power and Communication Line Maintenance.....	2-16
2.7 Other Project Information.....	2-17
2.7.1 Project Compliance History.....	2-17
2.7.2 Emergency Action Plan.....	2-17
2.7.3 Current Net Investment.....	2-18

2.8 Proposed Project Modifications ..... 2-18

    2.8.1 Administrative ..... 2-18

    2.8.2 New Facilities or Components to be Constructed ..... 2-18

    2.8.3 Operations ..... 2-18

    2.8.4 Maintenance ..... 2-18

2.9 References ..... 2-19

**LIST OF TABLES**

Table 2-1. Project Facilities ..... 2-23

Table 2-2. Project Facility Specifications ..... 2-25

Table 2-3. Description of Project Access Roads and Trails ..... 2-27

Table 2-4. Average Annual and Monthly MWh Generation (1999–2022) ..... 2-29

Table 2-5. Summary of Project Generation and Outflows (2018–2022) ..... 2-30

Table 2-6. Summary of Current License Requirements and Compliance Status ..... 2-31

Table 2-7. Summary of Incidents over the Current License Term (1998–2022) ..... 2-39

**LIST OF MAPS**

Map 2-1. Project Vicinity and Land Jurisdiction ..... 2-43

Map 2-2. Lands and Water within the FERC Project Boundary by Township, Range, and Section ..... 2-45

Map 2-3. Project Facilities Map Index ..... 2-47

Map 2-3a. Project Facilities ..... 2-49

Map 2-3b. Project Facilities ..... 2-51

Map 2-3c. Project Facilities ..... 2-53

Map 2-3d. Project Facilities ..... 2-55

Map 2-3e. Project Facilities ..... 2-57

Map 2-3f. Project Facilities ..... 2-59

Map 2-3g. Project Facilities ..... 2-61

Map 2-4. FERC-Licensed Projects in the Kern River Basin ..... 2-63

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**LIST OF ACRONYMS**

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ac-ft	acre-feet
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
cfs	cubic feet per second
CWA	Clean Water Act
EAP	Emergency Action Plan
FERC or Commission	Federal Energy Regulatory Commission
FS	Forest Service
Hz	hertz
HP	horsepower
kV	kilovolt
kW	kilowatts
LOP	Letter of Permission
MW	megawatts
MWh	megawatt hour
PG&E	Pacific Gas and Electric Company
Project	Kern River No. 1 Hydroelectric Project
RPM	revolutions per minute
SCE	Southern California Edison Company
SHPO	State Historic Preservation Officer
SR	State Route
USACE	United States Army Corps of Engineers
Forest Service	United States Forest Service
USGS	United States Geological Survey

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## **2.0 EXISTING PROJECT LOCATION, FACILITIES, AND OPERATIONS**

### **2.1 INTRODUCTION**

This section provides a description of Southern California Edison Company's (SCE) Kern River No. 1 Hydroelectric Project (Project) (Federal Energy Regulatory Commission [FERC or Commission] Project No. 1930). FERC's content requirements for this section are specified in Title 18 of the Code of Federal Regulations (CFR) Chapter I § 5.6(d)(2).

### **2.2 AUTHORIZED AGENT**

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

Wayne P. Allen  
Principal Manager, Regulatory Support Services  
Southern California Edison Company  
1515 Walnut Grove Avenue  
Rosemead, CA 91770  
Telephone: 626-302-9741  
Project Location

The Project is located on the lower Kern River on the western slope of the Sierra Nevada, approximately 15 miles east of the City of Bakersfield in Kern County, California. The Project occupies federal lands within the Sequoia National Forest which is under the jurisdiction of the United States Forest Service (Forest Service). Map 2-1 displays the Project vicinity and associated land jurisdiction.

### **2.3 PROJECT OVERVIEW**

The Project, completed in 1906, is operated in a run-of-river mode and has no water storage. Water from the Kern River is diverted at Democrat Dam and directed through a concrete sandbox, where sediment settles out of the water before entering the Project's conveyance system, which is comprised of approximately 8.5 miles of tunnels, flumes, and conduits that run along the eastern side of the Kern River. Water within the conveyance system is directed to a small concrete forebay, through a buried penstock, and into the Project powerhouse. Water exiting the powerhouse enters a short tailrace and is returned to the Kern River upstream of the Kern Canyon Project (FERC Project No. 178) owned by Kern and Tule Hydro LLC. The total installed capacity of the powerhouse is 26.3 megawatts (MW).

### **2.4 EXISTING PROJECT FACILITIES**

This section describes existing Project facilities (from upstream to downstream) including the dam, water conveyance system, powerhouse, and other appurtenant facilities. A list of these Project facilities is provided in Table 2-1. A summary of the physical characteristics / specifications of the primary Project facilities is provided in Table 2-2. Refer to the following maps for geographic depictions of the Project vicinity and land

jurisdictions (Map 2-1); public land survey system (township, range, and section) (Map 2-2); and Project facility locations (Maps 2-3a–g).

### **2.4.1 Diversion Dam and Impoundment**

Democrat Dam is located on the Kern River approximately 10.2 miles upstream of the powerhouse. The dam is a 58-foot high cyclopean-concrete overflow gravity dam. The crest of the dam is at an elevation of 1,913 feet and approximately 29 feet is exposed above the stream bed. The length along the crest is 204 feet with a radiused top of approximately a 7-foot width. The crest of the dam also serves as a spillway and is designed to spill river flows that are not diverted for power production. Democrat Dam is not a high hazard dam under the criteria defined in 18 CFR § 12.

The Democrat Dam Impoundment (also referred to as the "pond") covers approximately 27 acres and has a gross storage capacity of 247 acre-feet (ac-ft) at an elevation of 1,913 feet. However, there is no usable storage at the diversion dam. Since Democrat Dam is a run-of-river dam and its whole crest is a spillway, the dam regularly spills and the impoundment and tailwater levels are governed by natural flows in the Kern River. A 329-foot-long drainage tunnel with a 72-inch electric motor operated sluice gate is located at the base of dam.

### **2.4.2 Intake Structure**

Water is diverted near the dam into the intake structure which includes two bar rack screens (trash racks). One screen is located immediately adjacent to the diversion dam and the other screen is located approximately 40 feet upstream. The screens are constructed of steel plates on two-inch centers with overall widths of 36 feet and 30 feet, respectively. They are designed to produce relatively low approach velocities. The height of the submerged portion of the screen face is somewhat dependent on sediment build up but averages approximately 11 feet when the impoundment is full.

### **2.4.3 Water Conveyance System**

The diverted water is conveyed through an approximately 8.5-mile-long water conveyance system consisting of a sandbox, flowline, forebay, and penstock which connects the intake structure at Democrat Dam with the powerhouse. The water conveyance system runs along the eastern hillslope above the Kern River. Two intake gates to the water conveyance system are hydraulically operated and are automatically controlled by impoundment and flume water controllers. The diverted water flows under gravity from an elevation of approximately 1,913 feet at the diversion dam to the top of the penstock at an elevation of approximately 1,830 feet.

#### **2.4.3.1 Sandbox**

A sandbox is located approximately 700 feet downstream of the diversion dam at the head of the flowline. The sandbox is 104 feet long and has a maximum width of 20 feet. The sandbox acts as a sediment trap, preventing the entry of sediments into the flowline and downstream powerhouse. Two slide gate valves with orifice plates are located on the

bottom, downstream end of the sandbox. One of the valves is used to provide FERC continuous minimum instream flow release requirements.<sup>1</sup> Since continuous flow occurs there is no formal operational program for flushing accumulated sediments from the sandbox. No significant sediment accumulation occurs in the sandbox due to upstream sediment trapping in large pools in the river, Democrat Dam Impoundment, and in Lake Isabella.

#### **2.4.3.2 Flowline**

From the sandbox, water enters Flume No. 1 and is conveyed through the remaining series of tunnels, flumes, and conduits comprising the flowline. The water conveyance system is designed to carry a maximum of 412 cubic feet per second (cfs) under optimum conditions.

There are 19 below-ground tunnel segments totaling 42,884 feet, numbered sequentially north to south. Tunnel segments have concrete floors with a typical width of 8 feet and vertical walls with a typical height of 7 feet. Approximately 16,000 feet of tunnel has a concrete roof cap placed in areas judged during construction to have potentially unstable rock, while the remainder of the tunnel has a natural rock roof.

The above-ground sections of the conveyance system, flumes and conduits, are generally located between tunnel segments. Similar to the tunnel segments, they are also numbered sequentially from north to south. The flowline includes six flume structures, including 390 feet of rectangular flume and 904 feet of Lennon flume on steel structures. There is also a total of 612 feet of arched-concrete conduit along nine conduit segments.

Nine tunnel portal access points, or adits, are located at various tunnel or tunnel / flume junctions along the flowline and provide access for maintenance activities.

#### **2.4.3.3 Forebay**

The forebay is a 45-foot-long, 33-foot-wide, and 11-foot-deep concrete gravity structure that impounds water (less than 1 ac-ft) to regulate flow to the powerhouse. Water enters the forebay via Tunnel No. 19 and flows into the primary of two reinforced concrete bays. The primary bay contains the penstock intake that is fitted with a trashrack. Inflow into the forebay is controlled by two butterfly valves at the tunnel outfall. Inflow into the penstock is controlled by two more butterfly valves located just downstream of the trashrack. All the butterfly valves can be remotely operated, but normally are manually operated at the forebay. The secondary bay is immediately to the left of the primary bay and is partitioned from it by a wall that is several feet lower than the outer retaining wall that contains both bays. The secondary bay serves as a spillway by allowing water to overflow from the primary bay and exit the structure via a 1,362-foot spillway overflow pipe that discharges into the Kern River. The above-ground overflow spillway pipe is supported by concrete piers and varies in diameter from 65 inches at the forebay to 44 inches just prior to entering the

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<sup>1</sup> FERC continuous minimum instream flow release requirements include release of 50 cfs or inflow, whichever is less, from June 1 through September 30 and 15 cfs from October 1 through May 31.

river. The primary / secondary bay partition wall is also fitted with a slide gate that can be opened to drain the forebay.

#### **2.4.3.4 Penstock**

From the forebay, an approximately 1,693-foot-long buried steel penstock carries water to the powerhouse. To increase velocity and pressure, the inside diameter of the penstock decreases over the length of the pipe, with a diameter of approximately 108 inches at the forebay tapering down to approximately 71 inches at the powerhouse. The penstock conveys water to the turbines through a manifold system. The static head is 877 feet. An adit is located near the penstock to provide access for maintenance activities.

#### **2.4.4 Powerhouse and Associated Equipment**

The powerhouse is an approximately 71-foot by 170-foot concrete structure located on the left bank of Kern River. Water to the powerhouse is supplied from the forebay through a single penstock. Water exiting the powerhouse enters a tailrace before being returned to the river. The switchyard is located directly adjacent to and south of the powerhouse. Other ancillary facilities located near the powerhouse include a machine shop, office / lunchroom, and restroom facilities.

##### **2.4.4.1 Turbines and Generators**

The powerhouse contains four Allis-Chalmers turbines (double overhung, single-jet, impulse type) rated at a total of 43,000 horsepower (HP). Individual turbine installed ratings are as follows:

- Unit 1: 10,750 HP, design head 865 feet and 300 revolutions per minute (RPM)
- Unit 2: 10,750 HP, design head 865 feet and 300 RPM
- Unit 3: 10,750 HP, design head 865 feet and 300 RPM
- Unit 4: 10,750 HP, design head 865 feet and 300 RPM

The four main generators are horizontal shaft General Electric units with a total installed capacity of 26,280 kilowatts (kW) or 26.3 MW. The main generator installed ratings are as follows:

- Unit 1: 6,570 kW, 0.9 power factor, 2.7 kilovolt (kV), three-phase, 60 hertz (Hz)
- Unit 2: 6,570 kW, 0.9 power factor, 2.7 kV, three-phase, 60 Hz
- Unit 3: 6,570 kW, 0.9 power factor, 2.7 kV, three-phase, 60 Hz
- Unit 4: 6,570 kW, 0.9 power factor, 2.7 kV, three-phase, 60 Hz



The powerhouse is normally unattended. Start-up and shut-down of the turbine / generator equipment is manually performed by the operators based at the Kern River No. 3 Powerhouse (FERC Project No. 2290).

#### **2.4.4.2 Tailrace**

Water is returned to the Kern River by the tailrace on the upstream side of the powerhouse. The tailrace slows the water exiting the powerhouse as it re-enters the river. Water from the tailrace is impounded behind the Kern Canyon Project (FERC Project No. 178) diversion structure immediately downstream.

#### **2.4.4.3 Switchyard**

The switchyard is located adjacent to the powerhouse. The Project transformer banks are connected to two 66-kV busses (non-project) through four, 3-pole, 66-kV, 1,200 amperes (amp), oil circuit breakers together with the necessary disconnecting switches, potential devices, and related equipment.

#### **2.4.4.4 Controls**

Necessary devices are installed to make the operation of the powerhouse semi-automatic. These consist of electrically operated alarm circuits for low-water pressure, alarms for generator and bearing oil temperature, automatic-trip oil circuit breakers, switchboards, meters, relays, instrument transformers, station light and power transformers, and selsyn water-level load control. This equipment transmits status signals, telemetering, and alarms to Kern River No. 3 Powerhouse, FERC Project No. 2290, and the Eastern Hydro Operations Center.

The station load control equipment consists of a solid-state electronic controller which receives forebay level data via a transducer at the forebay and actuates motors to open or close the turbine power needles to regulate forebay level and unit loading.

#### **2.4.5 Access Roads and Trails**

The Project includes various access roads and trails which are used for routine operation and maintenance of the Project (Maps 2-3a–g). Descriptive information on each access road and trail is provided in Table 2-3.

#### **2.4.6 Communication and Power Lines**

The Project includes the following communication and power lines:

- Intake Gatehouse to Flume No. 1 Powerline: A 1,844-foot-long (0.35 mile) powerline that extends from the Democrat Dam Intake Gatehouse to an outlet box near the southern end of Flume No. 1 and provides power for appurtenances during tunnel outages.

- Powerhouse to Forebay Communication / Powerline: A 1,665-foot-long (0.32 mile) communication line extends from the powerhouse to the forebay at the upper end of the penstock. The same poles which carry the communication line also carry a powerline which is used for the remote control of the gate at the upper end of the penstock.

There are no transmission facilities associated with this Project.

#### **2.4.7 Gaging Stations**

The Project includes the following gaging stations that monitor and record water flow for compliance:

- Kern River near Democrat Springs (United States Geological Survey [USGS] Gage No. 11192500; SCE Gage No. 409) – This gage is located about 0.4 mile downstream of the diversion dam. The streamflow is measured using a float and an A-35 recorder. Data collected from this gage represents flow in the Kern River, below the diversion dam.
- Kern River No. 1 Conduit near Democrat Springs (USGS Gage No. 11192000; SCE Gage No. 410) – This gage is located on the Kern River No. 1 Flowline near Cow Flat Creek. Streamflow is measured using a float and an A-35 recorder. Data collected from this gage represents flow diverted for the Project.
- Kern River near Democrat Springs + Conduit (USGS Gage No. 11192501) – Data for this gage is computed by combining the data collected in the bypass reach (USGS Gage No. 11192500) and the flowline (USGS Gage No. 11192000). For record keeping purposes, the USGS has numbered this gage 11192501 and compiles data as if it were an actual gage.

In addition, there are two stilling wells, one in the Kern River downstream of Democrat Dam near the gaging cableway, and one in Flume No. 2 at Cow Flat Creek. The stilling wells measure water level in the Kern River and the water conveyance system.

#### **2.4.8 Ancillary and Support Facilities**

Several detached ancillary buildings and features supporting the operations and maintenance of the Project. The location and function of each are described below by area.

##### **2.4.8.1 Democrat Dam Area**

- Buoy Line in Democrat Dam Impoundment: Prevents debris from collecting in front of the intake grates and restricts recreationists from accessing the dam from the impoundment.
- Intake Gatehouse: Structure on the east side of the dam that contains the intake gates, valves, and control room.

- Drainage Tower, Tunnel, and Tunnel Outlet: Located on the east side of the dam, they facilitate draining of the impoundment during sediment management activities.
- Democrat Dam Access Walkway: Provides access from the southern end of Flume No. 1 to Democrat Dam. A portion of the walkway is built on top of the flume, the remaining is elevated steel walkway. A short spur segment of the walkway also extends from the end of Flume No. 1 Road to the flume.
- Sandbox Drainage Channel: Channel that extends from the two valves at the bottom of the sandbox and returns water to the Kern River. FERC continuous minimum instream flows are released back into the river from the sandbox via this channel.
- Gaging Cableway: A gaging cableway is located approximately 0.5 mile downstream of Democrat Dam and is used to take hydrological measurements during high flows to calibrate the stream gage (develop accurate stage-discharge relationship).

#### **2.4.8.2 Water Conveyance**

- Flume No. 6 Access Platform: Located at the end of Stark Creek Road, the platform provides access to Flume No. 6.

#### **2.4.8.3 Forebay Operations Area**

- Operations Area Buildings: Several buildings located on the east side of State Route 178 (SR 178) support forebay operations activities, including the old admin building, two garages, and the old Ice House.
- Water Tank: A 5,000-gallon water tank located above the Skip Hoist House Lower Landing draws water from the penstock and provides domestic water for the powerhouse.
- Skip Hoist: A skip hoist is used to transport personnel and materials from the forebay operations area (lower landing on the east side of SR 178) up to the forebay (upper landing). The skip hoist hangs and travels on an approximately 1,050-foot-long aerial cable. The skip hoist cable is attached to a winch that is attached to the skip hoist cart and pulls the skip hoist up the hill.
- Skip Hoist Upper Landing to Forebay Catwalk: A 230-foot-long steel walkway from the Skip Hoist Upper Landing provides access to the forebay.
- Communication Site: A communication site located southwest of the forebay allows communication between the forebay and the powerhouse.
- Perimeter Fencing: Perimeter fencing around the forebay operations area and the forebay protect public safety and secure Project facilities.

#### 2.4.8.4 Powerhouse Area

- Powerhouse Area Buildings: Several buildings located on the west side of SR 178 support powerhouse operations activities, including a machine shop, office / lunchroom, and restroom.
- Perimeter Fencing: Perimeter fencing around the powerhouse and switchyard protect public safety and secure Project facilities.

### 2.5 EXISTING PROJECT OPERATIONS

#### 2.5.1 Water Management

##### 2.5.1.1 Kern River Watershed Overview

The Kern River Watershed consists of two principal forks, the North Fork and South Fork, and a lower portion referred to as the lower Kern River. Both forks flow generally southward and converge at Lake Isabella. The Kern River exits Lake Isabella and flows west toward the San Joaquin Valley and terminates in Buena Vista Lake about 20 miles southwest of Bakersfield.

There are six FERC-licensed hydroelectric projects located on the Kern River. Above Lake Isabella, SCE owns and operates the 40.2-MW Kern River No. 3 Project (FERC Project No. 2290) located on the North Fork of the Kern River. There are five other FERC-licensed hydroelectric projects located on the Kern River at or below Lake Isabella. All of the hydroelectric projects are non-consumptive users of water. The remaining five projects are listed below from upstream to downstream and shown on Map 2-4.

- Isabella Partners' 11.95-MW Isabella Hydroelectric Project (FERC No. 8377) is located on the downstream toe of the main United States Army Corps of Engineers (USACE)-owned dam at Lake Isabella and diverts its water at the dam outlet works. The total rate of diversion under existing permits is 1,632 cfs.
- SCE's 12.0-MW Borel Hydroelectric Project (FERC No. 382) is currently non-operational and is in the process of being decommissioned by SCE.
- SCE's 26.3-MW Kern River No. 1 Hydroelectric Project (FERC No. 1930) is operated as a run-of-the-river power generation facility at Democrat Dam. The maximum diversion capacity for power generation is 412 cfs.
- Kern and Tule Hydro LLC's 11.475-MW Kern Canyon Hydroelectric Project (FERC No. 178) was recently purchased from Pacific Gas and Electric Company (PG&E).
- Olcese Water District's 14.0-MW Rio Bravo Hydroelectric Project (FERC No. 4129) includes 5,100 acres of land and supplies irrigation water to agricultural lands and a golf course.

In addition, the USACE operates Lake Isabella, a major flood control and storage reservoir upstream of the Project.

### **2.5.1.2 Downstream of Lake Isabella**

Lake Isabella, a 568,075 ac-ft reservoir constructed in 1953 by the USACE, is managed primarily for flood control, irrigation water storage, and delivery. The hydrology of the lower Kern River is dominated by reservoir operations. As a result of reservoir operations, flows are high in summer when agricultural releases are made, and low in winter when the dam retains water to refill the reservoir. There are no formal instream flow releases required from Lake Isabella. Current operations, as stated in the USACE's Reservoir Regulation Manual for Lake Isabella (USACE 1953, amended January 1978), are as follows: "It has been a practice to maintain a minimum release of approximately 5 cfs for fish enhancement. No official requirement has been established for the action."

Water impounded in Lake Isabella is directly released to the Isabella Partners Project and to the lower Kern River. The Isabella Partners Project is located at Isabella Dam and diverts its water at the dam outlet works. The total rate of diversion under existing permits is 1,632 cfs. Water from the Isabella Partners Project is released at the same location as releases from Isabella Dam. The Isabella Partners Project does not influence the operation of Lake Isabella for flood control or irrigation. Flows below Isabella Dam equal the sum of outflow from the Isabella Partners Project and Lake Isabella.

Water from Lake Isabella was historically diverted to SCE's Borel Project Powerhouse located 7 miles downstream of the dam, however, in 2017, the USACE implemented a safety modification to the Isabella Auxiliary Dam which resulted in an existing section of the Borel Conduit that passed through the Auxiliary Dam to be filled with concrete and abandoned in-place. This action rendered the Borel Project non-operational, and SCE is currently in the process of decommissioning the Project with FERC.

Absent diversions by the Borel Project, water released from Isabella Dam enters the lower Kern River and is undiverted until reaching the Kern River No. 1 Hydroelectric Project diversion at Democrat Dam, approximately 20 miles downstream. Thus, the Kern River No. 1 Hydroelectric Project inflow is almost entirely regulated by upstream operations at Isabella Dam, save for accretion flow from a few small tributaries between Isabella and Democrat dams.

### **2.5.1.3 Kern River No. 1 Hydroelectric Project**

The Project is operated in a run-of-river mode. Water captured at the Democrat Dam diversion structure is transported through a connecting flowline and penstock to the powerhouse and then returned to the river through the powerhouse tailrace 10.2 miles downstream. SCE's Kern River No. 1 Hydroelectric Project has diversion rights of 412 cfs, which is the maximum capacity of the diversion. The Project license requires a minimum instream flow of 50 cfs to be released to the bypass reach from June 1 to September 30 and 15 cfs released between October 1 and May 31, or inflow if lower than the seasonal flow requirement. The amount and timing of flow diverted is a function of

releases from Lake Isabella, flowline and powerhouse capacities, and minimum instream flow requirements.

#### **2.5.1.4 Downstream of Kern River No. 1 Hydroelectric Project**

Water exiting the Kern River No. 1 Tailrace is immediately impounded behind Kern and Tule LLC's diversion for the Kern Canyon Project. Diverted water from the Kern Canyon Project is released back into the Kern River 1.6 miles downstream at the Kern Canyon Powerhouse and then diverted again 500 feet downstream by the Olcese Water District for its Rio Bravo Project. The Rio Bravo Project returns diverted water back to the Kern River 2 miles downstream at the Rio Bravo Powerhouse. From this point, the Kern River continues downstream into the City of Bakersfield and the California Central Valley where it is almost entirely utilized by consumptive uses.

### **2.5.2 Project Generation and Recent Outflow Records**

Average annual and monthly energy production for Project operations under the current license (January 1999 through December 2022) are summarized in Table 2-4. During this period, annual generation ranged from 44,254 MWh (when the Project was taken offline for maintenance) up to 188,247MWh. As the Project operates in a run-of-river mode and essentially has no storage, the estimated dependable generating capacity of the Project is 24.8 MWh.

A summary of Project generation and outflow records for operations (annually and quarterly) for the 5 years preceding filing of the PAD (2018 to 2022) is provided in Table 2-5. This summary presents that last 5 complete years of available records for Project operation. During this period annual generation ranged from 119,548 MWh to 173,613, and annual outflow ranged from 152,957 ac-ft to 220,380 ac-ft.

### **2.5.3 Regulatory Requirements**

#### **2.5.3.1 FERC License**

FERC issued the current Project license to SCE on June 16, 1998 (83 FERC ¶ 62,241). FERC has issued various administrative orders approving management and monitoring plans, and design drawings that were required as part of the current license. Table 2-6 provides a summary of the status of each license article and reference to subsequent FERC orders, letters, and amendments.

The Project is also subject to Articles 1–32 of the FERC's standard terms and conditions set forth in Form L-1 (October 1975), entitled *Terms and Conditions of License for Constructed Major Project Affecting the Lands of the United States*, 54 FPC 1792, 1799.

#### **2.5.3.2 Water Rights**

The rights to the use of the waters of the Kern River through the Kern River No. 1 Hydroelectric Project date back to Notices of Appropriation which were posted in 1900. The first use of water occurred in 1906 and Annual Statements of Water Diversion and Use

have been filed with the State Water Resources Control Board (State Water Board) since enactment of the New Water Use Inventory Law of September 17, 1965. SCE's water rights for the Project are for hydroelectric generation and incidental domestic use and are based on pre-1914 appropriation for the use of 412 cfs. All of the 412 cfs, plus any instream flow requirements, must be made available by the USACE as releases from Lake Isabella as natural flow (inflow) from the North and South forks of the Kern River into Lake Isabella is equal to or above 462 cfs. These rights are referenced in § 40(b) of the USACE's Reservoir Regulation Manual for Lake Isabella (USACE 1953, amended January 1978). Since no changes to the existing Project facilities or operations are proposed, no additional/modification to water rights are proposed by SCE over the term of a new license.

#### **2.5.4 Existing Environmental Programs**

SCE has established several environmental programs for its operators and any contractors that are employed related to work in the vicinity of the Project. A list of these plans and programs is provided below.

- Cultural Resources Management Plan (Taylor 1993)
- Emergency Action Plan for the Kern River No. 1 Forebay, Adit 17/18, and Stark Flume (SCE 2021a)
- Kern River Hydroelectric Projects Environmental Compliance Handbook (SCE 2012)
- Public Safety Measures for Kern River No. 1 Powerhouse Area (SCE 2021b)
- Revised Sediment Management Plan (SCE 2005)
- Spill Prevention Control and Countermeasure Plan (SCE 2004)

#### **2.6 EXISTING PROJECT MAINTENANCE**

Routine inspections are conducted at Project facilities to verify the structural and/or functional integrity of the facilities and to identify conditions that might disrupt operation or threaten public safety. Routine maintenance activities are conducted to maintain Project facilities in operational condition. A description of Project maintenance activities is provided in the following subsections.

##### **2.6.1 Powerhouse Inspection and Maintenance**

SCE inspects powerhouse appurtenances daily to ensure they are operating properly. Minor maintenance and repairs to powerhouse appurtenances are made on an as-needed basis. In addition, repairs to other buildings and ancillary facilities located in the vicinity of the powerhouse are made as needed, including painting, building and fence maintenance, and access road repairs.

In the first quarter of each year, SCE conducts more extensive maintenance on the four generating units. Typically, one of the four units are offline for maintenance while the remaining units continue generating. This process is repeated such that all four units receive maintenance over a 4- to 6-week period. During this maintenance period, SCE conducts mechanical and electrical inspections, testing, and maintenance of Project powerhouse appurtenances.

Full Project outages typically coincide with the need to conduct more extensive maintenance and are not a regular / routine activity.

### **2.6.2 Water Conveyance System**

SCE conducts monthly physical inspections of the exterior portions of the water conveyance system, including the sandbox, tunnels, flumes, conduits, forebay, and penstock. During these monthly inspections, SCE also tests valves along the water conveyance system to ensure they are operating properly and calibrates all gages. In addition to monthly inspections, the intake is also inspected weekly. SCE also conducts physical inspections after large storm events and, FERC inspects the forebay annually.

Minor repairs, including patching leaks, removal of debris, and repair of support structures are made on an as-needed basis. Physical inspection of the interior of the water conveyance system is typically conducted every 1 to 5 years and coincides with a full Project outage.

### **2.6.3 Dam Inspections, Testing, and Maintenance**

SCE visually inspects Democrat Dam and appurtenances monthly, including concrete; trash racks; ancillary and support facilities; handrails, walkways, and gates; gatehouse; and gaging stations.

### **2.6.4 Sediment Management**

Sediment management activities are conducted in the Democrat Dam Impoundment (also referred to as the "pond" or "impound") and in the Kern River No. 1 Forebay. Each is described below.

#### **2.6.4.1 Democrat Dam Impoundment**

Sediment management in Democrat Dam Impoundment was historically conducted in accordance with the Sediment Monitoring Results and Sediment Management Plan, Kern River No. 1 Hydroelectric Project (ENTRIX 1999). In 2005, SCE, in consultation with resource agencies, prepared a Revised Sediment Management Plan (SCE 2005) which proposed additional sediment management strategies, as well as monitoring and adaptive management.

To conduct sediment management activities described in the plan, SCE acquired the necessary permits under Section 1600 of the Fish and Game Code and Section 401 and 404 of the Clean Water Act (CWA). The status of these permits is described below.



- In March 2006, the California Department of Fish and Wildlife (CDFW) issued a Routine Maintenance Agreement (Agreement) to SCE. The Agreement was amended June 2009 to include modification of the Kern River No. 1 Intake. The CDFW issued a one-time extension in August 2018. The current Agreement is set to expire in March 2023.
- In February 2006, the USACE issued a Nationwide Permit 3, and in December 2008, the State Water Resources Control Board (State Water Board) issued a 401 Water Quality Certification to SCE. The USACE reauthorized sediment management activities with Letter(s) of Permission (LOP) in July 2009, February 2012, and February 2017. The current USACE LOP expired in February 2022. In the absence of coverage under Sections 401 and 404 of the CWA, sediment management activities are limited to operational flushing (see description below).

Due to the annual variability of the Kern River flows, some flexibility in the application of sediment management practices is necessary. For this reason, a stakeholder group was formed to provide an annual forum for presenting potential adjustments to sediment management activities. Group members include federal and state resource agencies, public and private utilities, local water purveyors, consultants, and private parties. The Kern River No. 1 Stakeholder Group meets each year to discuss and evaluate SCE's proposed sediment management procedures for the coming year.

Sediment management in the Democrat Dam Impoundment does not include physical removal (e.g., dredging), but focuses on flushing. Sediment that accumulates behind Democrat Dam is managed using the low-level outlet (or lower drain gate) located below the intake, at the bottom of the impoundment, near the base of the dam. Flushing emulates the natural sediment regime of the lower Kern River by allowing naturally occurring sediment that is temporarily deposited in the impoundment to continue downstream, past Democrat Dam, and into the lower Kern River.

Sediment management procedures include three options depending on flow conditions and time of year, as described below.

- Operational Flushing: Standard operational flushing is performed as needed to bypass sediment that has accumulated directly in front of the drain gate. Operational flushing is subject to flow criteria during specific fish spawning and rearing seasons to prevent sediment deposition during critical aquatic life stages. "Continuous" operational flushing (i.e., extended, or long-term operational flushing for several weeks and/or months) can also be implemented when flow criteria are met.
  - Flow Criteria:
    - Bypassed reach flow >600 cfs (July 1 to March 14)
    - Bypassed reach flow >1,200 cfs (March 15 to June 30)
- Full Pond Drain: A full pond drain includes operation of the lower drain gate to drain the Democrat Dam Impoundment, thereby allowing the full flow of the Kern River to erode and mobilize sediment deposited in the impoundment. Projected sediment

transport capacity in the bypassed reach must be sufficient to move accumulated sediment. The decision to drain the pond is determined based on flow forecasts and developed sediment transport rating curves that illustrate that peak inflows will be sufficient to mobilize temporarily deposited sediment in the bypassed reach. Per the *Revised Sediment Management Plan*, consultation with the Kern River No. 1 Stakeholder Group is required prior to implementation of a full pond drain.

- Flow Criteria: Total inflow must be <800 cfs (capacity of the drain gate)
- **Turbid Flow Bypass:** Turbid flow bypass is management of sediment-laden peak flows (resulting from natural precipitation events) that have the potential to transport significant amounts of sediment into the Democrat Dam Impoundment. The flowline gates are closed, and the lower drain gate fully opened to allow full river flow through the dam, and into the downstream bypassed reach. Per the *Revised Sediment Management Plan*, the Kern River No. 1 Stakeholder Group must be notified (via phone or e-mail) that a turbid flow bypass event is imminent, or in progress.
  - Flow Criteria: Turbid flow conditions

The most recent operational flushing event was completed in July 2020 and the last full pond drain was completed in January–February 2018.

#### **2.6.4.2 Forebay**

During periodic maintenance outages, SCE removes accumulated sediment from the forebay by opening the drain gate that goes into the spillway pipe. Once the forebay is completely drained, if needed, SCE removes any remaining sediment by hand.

#### **2.6.5 Vegetation Management**

Vegetation management is implemented at Project facilities as necessary to control vegetation that may affect access, functionality of facilities, or worker / public health and safety. In addition, vegetation management is implemented to maintain compliance with fire prevention and fuels management requirements. In general, vegetation management activities occur during the spring and early summer to avoid work during periods of high-fire danger. Vegetation management includes trimming by hand, removal of hazard trees, and herbicide application.

##### **2.6.5.1 Hand Trimming**

Hand trimming vegetation includes trimming grasses and forbs with a string trimmer and trimming shrubs and trees with a chainsaw, other handheld saw, or pruners. These activities are implemented on an as-needed basis. Hand trimming generally occurs in the following areas:

- Within 10 feet around the perimeter of the dam
- Within 10 feet on either side of exposed water conveyance system features

- Within and up to 5 feet around the forebay perimeter fence
- Within and up to 20 feet around the powerhouse and switchyard perimeter fence and within and up to 10 feet around the forebay operations area perimeter fence
- Within 15 feet on either side of communication and power lines
- Within 10 feet on either side of access roads
- Within 5 feet on either side of access trails

### **2.6.5.2 Hazard Tree Removal**

Hazard trees, generally defined as trees with defects that may cause a failure resulting in property damage, personal injury, or death, are removed on an as-needed basis with permission from the Forest Service. Removal is conducted with a chainsaw, handheld saw, or other equipment.

### **2.6.5.3 Herbicide Application**

Herbicides are used to control weeds and vegetation encroachment and are applied using a small truck-mounted sprayer or backpack sprayer. Annually, SCE works with a pesticide use advisor who makes recommendations on appropriate herbicides and application methods. These recommendations are required for compliance with the approved Pesticide Use Permit from the Forest Service to allow application on lands under their jurisdiction. A licensed vendor applies approved herbicides in accordance with label instructions and conditions in the permit. SCE's current permit is FS-2100-0002 (reference no. FSM2150).

Herbicide use occurs in accordance with locations and methods identified in the Pesticide Use Permit and currently include the following areas:

- Within 5 feet on either side of Project roads
- Under Flume No. 1 from the Sandbox to Tunnel No. 2 entrance
- Within 5 feet on either side of exposed water conveyance system features
- Within 3–5 feet of adit entrances
- Within the powerhouse and substation perimeter fence and 5 feet outside the fence

### **2.6.6 Woody Debris Removal**

The buoy line upstream of Democrat Dam is used to prevent large woody debris from collecting in front of the intake grates. As needed, a boat or helicopter is used to lift the buoy line to allow accumulated large woody debris to effectively be transported during high-flow events over the dam and downstream.

### **2.6.7 Pest Management**

Management of rodent populations at Project facilities includes a combination of physical control and rodenticide use. The purpose of rodent control is to prevent rodent infestations in building interiors, thereby protecting worker / public health and safety and maintaining system reliability. Rodent traps and over-the-counter rodenticides are used in the interior of buildings located in the vicinity of the powerhouse and at ancillary facilities located near Democrat Dam.

### **2.6.8 Road Maintenance**

Project access roads are regularly inspected during normal Project activities. Minor repairs are conducted on an as-needed basis and major repairs are implemented annually during the late summer / fall. Minor road maintenance generally includes debris removal; basic repairs, including filing of potholes; maintenance of erosion control features such as culverts, drains, ditches, and water bars; repair, replacement, or installation of access control structures such as posts, cables, rails, gates, and barrier rock; and repair / replacement of signage. Major road maintenance generally includes placement or replacement of culverts and other drainage features; grading, sealing, resurfacing, and road replacement. Vegetation management may also be conducted concurrently with road maintenance.

### **2.6.9 Trail Maintenance**

Project access trails are regularly inspected during normal Project activities. Repairs are conducted on an as-needed basis typically during late summer / fall. Trail maintenance generally includes debris and rock removal; basic repairs including minor brushing; maintenance of erosion control features such as water bars; repair, replacement, or installation of access control structures such as barrier rock; and repair / replacement of signage. Vegetation management may also be conducted concurrently with trail maintenance.

### **2.6.10 Power and Communication Line Maintenance**

Power and communication line maintenance includes replacement of damaged poles on an as-needed basis. New poles are placed in, or immediately adjacent to, the existing holes using helicopters and/or line trucks. Vegetation management is also conducted along power and communication line corridors, as needed. Vegetation management may also be conducted concurrently with power and communication line maintenance.

## **2.7 OTHER PROJECT INFORMATION**

### **2.7.1 Project Compliance History**

#### **2.7.1.1 FERC Inspections**

FERC conducts two types of inspections of the Project to verify license compliance: (1) dam safety inspections, and (2) environmental inspections. Dam safety inspections are conducted pursuant to part 12 of the Commission's regulations to verify that (1) the Project is being properly maintained to ensure the continued safety of the structures, (2) no unauthorized modifications have been made to the Project, and (3) the Project is being operated efficiently and safely and in compliance with the terms and conditions of the license. Democrat Dam and forebay were inspected by FERC on September 23, 2023.

FERC also conducts periodic environmental inspections to provide a thorough review of environmental requirements of the license, including those related to cultural resources, biological resources, public safety, and other environmental resources. The most recent environmental inspection was conducted on September 25, 2018.

SCE has completed all necessary corrective actions to address comments and recommendations arising from FERC inspections.

#### **2.7.1.2 Incidents and License Deviations**

SCE reviewed the Project compliance history and found no instances of reoccurring non-compliance. Over the term of the current license, SCE filed six incident reports with FERC as summarized in Table 2-7. In all cases, SCE timely notified FERC of the incident, filed a written incident report, and made any necessary repairs / corrections as soon as safely possible.

### **2.7.2 Emergency Action Plan**

Pursuant to 18 CFR § 12.20(a), FERC requires licensees to develop and file an Emergency Action Plan (EAP) with the Regional Engineer, unless granted a written exemption in accordance with § 12.21(a) of the regulations.

FERC classifies hydropower projects based on their hazard potential. Here, the forebay is classified as having "significant" hazard potential due to the possibility for disruption of an important transportation artery (SR 178) in the event of an uncontrolled release of water. The forebay was reclassified from "low" to "significant" after it was overtopped on August 19, 2013, following heavy rainfall that caused debris to be conveyed from Adit 17/18 to the forebay, blocking the trashrack. As a result of this event and in accordance with 18 CFR § 12.11(a)(1), SCE maintains an EAP for the Kern River No. 1 Forebay, Adit 17/18, and Stark Flume (SCE 2021a). The latest 5-year update of the Project EAP occurred in December 2021.

Democrat Dam is classified by FERC as having a "low" hazard potential. As such, SCE is exempt from filing an EAP for Democrat Dam. To support this exemption, SCE annually performs a field reconnaissance to determine if there were any changes to upstream and downstream conditions affecting the determination. In addition, SCE verifies contact information that would be used if the dam is in danger of failing or has failed. This information is submitted to FERC by December 31 of each year. To date, FERC has agreed with SCE's annual assessment and determined that an EAP is not required for Democrat Dam.

### **2.7.3 Current Net Investment**

The current net investment for the Project as of December 2022, represented by the net book value is \$28.5 million.

## **2.8 PROPOSED PROJECT MODIFICATIONS**

SCE proposes the following modifications to the Project during the term of the new license.

### **2.8.1 Administrative**

As part of the relicensing process, SCE will review the existing FERC Project Boundary and, if applicable, propose revisions needed to: (1) include facilities necessary for Project operation and maintenance; and (2) exclude lands within the current FERC Project Boundary that are not necessary for Project operation and maintenance.

### **2.8.2 New Facilities or Components to be Constructed**

No new facilities or components are proposed to be constructed.

### **2.8.3 Operations**

No changes to Project operations are proposed.

### **2.8.4 Maintenance**

Project maintenance activities would remain the same as described above except for sediment management and vegetation management activities, both of which are described below.

#### **2.8.4.1 Sediment Management**

Sediment management activities will continue as described above under the new license; however, SCE intends to obtain new resource agency permits to replace the expired permits. This could result in new permit conditions being required for implementation of sediment management activities.

### 2.8.4.2 Vegetation Management

The following changes to vegetation management are proposed under the new FERC License:

- Apply herbicides to the surface of all Project trails, including new trails added to the FERC Project boundary.
- Apply herbicides within the forebay perimeter fence and within 3-5 feet outside the perimeter fence.

## 2.9 REFERENCES

ENTRIX. 1999. Sediment Monitoring Results and Sediment Management Plan, Kern River No. 1 Hydroelectric Project.

FERC (Federal Energy Regulatory Commission). 1998a. Order Issuing New License (Major Project), Project No. 1930-014. 83 FERC ¶ 62,241. June 16.

\_\_\_\_\_. 1998b. Final Environmental Assessment for Hydropower License. Kern River No. 1 Hydroelectric Project. FERC Project No. 1930-014. California. June 17.

SCE (Southern California Edison Company). 1998. Exhibit F. Kern River No. 1, Project No. 1930. Filed November 2, as amended.

\_\_\_\_\_. 1999. Exhibit A, As-Built General Description and Specifications of Mechanical, Electrical, and Transmission Equipment. Kern River No. 1 Powerhouse, FERC Project No. 1930. August 25.

\_\_\_\_\_. 2004. Spill Prevention Control and Countermeasure Plan. August.

\_\_\_\_\_. 2005. Sediment Management Plan. February 28.

\_\_\_\_\_. 2012. Kern River Hydroelectric Projects Environmental Compliance Handbook. February.

\_\_\_\_\_. 2013. Revised Exhibit G. Kern River No. 1, Project No. 1930. Filed January 25 and Supplemented on March 14, 2013.

\_\_\_\_\_. 2021a. Emergency Action Plan, Kern River No. 1 Forebay, Adit 17/18, Stark Flume. Reprinted December 2021.

\_\_\_\_\_. 2021b. Public Safety Measures for the Kern River No. 1 Powerhouse. December.

Taylor, Thomas T. 1993. Cultural Resources Management Plan for Southern California Edison Company's Kern River No. 1 Hydroelectric Project, Kern County, California, FERC Project No. 1930. July.

USACE (U.S. Army Corps of Engineers). 1953. Lake Isabella, Kern River, California, Reservoir Regulation Manual. Department of the Army, Sacramento District, Corps of Engineers, Sacramento, California. Amended January 1978.



## **TABLES**

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**Table 2-1. Project Facilities**

<b>Diversion Dam</b>
Democrat Dam
<b>Impoundment</b>
Democrat Dam Impoundment
<b>Water Conveyance System</b>
Sandbox
Tunnels, Flumes, Conduits, and Adits
Forebay
Forebay Overflow Spillway
Penstock
<b>Powerhouse and Switchyard</b>
Kern River No. 1 Powerhouse and Switchyard
<b>Access Roads</b>
Willow Spring Creek Road (also referred to as Democrat Dam Road)
Powerline Road
Flume No. 1 Road
Dougherty Creek Road
Stark Creek Road
Forebay Operations Area Road
Lower Powerhouse Road
Upper Powerhouse Road
<b>Access Trails</b>
Democrat Gage Trail
Conduit No. 3 Trail
Cow Flat Creek Trail
Steel Flume Trail
Lucas Creek Trail
Dougherty Creek Trail
Stark Creek Trail
Adit 17 & 18 Trail
Overflow Spillway Trail
Skip Hoist / Forebay Trail
<b>Communication and Power Lines</b>
Intake Gatehouse to Flume No. 1 Powerline
Powerhouse to Forebay Communication / Powerline

<b>Gages and Stilling Wells</b>
Kern River near Democrat Springs (USGS Gage No. 11192500 / SCE Gage No. 409)
Kern River No. 1 Conduit near Democrat Springs (USGS Gage No. 11192000 / SCE Gage No. 410)
Kern River near Democrat Springs (USGS Gage No. 11192501; calculated 11192500+11192000)
Stilling Well No. 1
Stilling Well No. 2
<b>Ancillary and Support Facilities</b>
<b><i>Democrat Dam Area</i></b>
Buoy Line in Democrat Dam Impoundment
Democrat Dam Intake Gatehouse
Democrat Dam Drainage Tower
Democrat Dam Drainage Tunnel
Democrat Dam Drainage Tunnel Outlet
Democrat Dam Access Walkway
Sandbox Drainage Channel
Gaging Cableway
<b><i>Water Conveyance</i></b>
Flume No. 6 Access Platform
<b><i>Forebay Operations Area</i></b>
Old Admin Building
Garage No. 1
Garage No. 2
Old Ice House
Water Tank
Aerial Cable Tower
Skip Hoist House and Lower Landing
Skip Hoist Cables and Cart
Skip Hoist Upper Landing
Skip Hoist Upper Landing to Forebay Catwalk
Communication Site
Forebay Operations Area Perimeter Fence
Forebay Perimeter Fence
<b><i>Powerhouse Area</i></b>
Machine Shop
Office / Lunchroom
Restroom
Powerhouse and Switchyard Perimeter Fence

**Table 2-2. Project Facility Specifications**

<b>General Information</b>	
Owner and Operator	Southern California Edison Company
FERC Project Number	1930
Current License Term	30 years, expires May 31, 2028
Commenced Commercial Operations	1907
County	Kern
Watershed	Kern River
<b>Diversion Dam</b>	
Dam Location	Kern River SW ¼ of NW ¼ of Section 5, T.28 S., R.31 E., Mount Diablo Meridian
Constructed	1901–1907
Drainage Area (mi <sup>2</sup> )	2,258 square miles (Kern River above Democrat Dam)
Type	Cyclopean-concrete overflow gravity dam
Height of Dam Crest above Streambed	29 feet
Dam Crest Length	204 feet
Dam Thickness	85 feet at base
Elevation of Dam Crest	1,913 feet
Spillway	Crest of Democrat Dam also serves as a spillway
Elevation of Streambed	1,884 feet
<b>Impoundment above Democrat Dam</b>	
Capacity (approx.)	27 acres at crest elevation of 1,913 feet
Drainage Tunnel Length	329 feet long
Drainage Tunnel Diameter	7 feet, 6 inches
Drainage Tunnel Controls	72-inch electric motor operated sluice gate
Elevation of Drainage Tunnel (bottom)	1,875 feet (upper end of unlined section)
<b>Water Conveyance System</b>	
Intake Structure	<ul style="list-style-type: none"> <li>• Two steel bar rack screens (trash rack); two-inch centers with overall width of 36 feet and 30 feet</li> <li>• Two intake gates measuring 6 feet, 7.5 inches wide by 7 feet high</li> <li>• Elevation invert: 1,902 feet</li> </ul>
Sandbox (Sediment Trap)	<ul style="list-style-type: none"> <li>• 104 feet long, 20 feet wide</li> <li>• Includes two 24-inch slide gate valves for draining and instream flow releases</li> </ul>
Instream Flow Release	<ul style="list-style-type: none"> <li>• One of the two 24-inch slide gate valves located in the bottom of the sandbox provides FERC continuous minimum instream flow release requirements</li> </ul>

<b>Water Conveyance System (continued)</b>	
Flowline	<ul style="list-style-type: none"> <li>• Overall length: 44,790 feet; 8.5 miles</li> <li>• 42,884 feet of concrete tunnel</li> <li>• 390 feet of rectangular flume</li> <li>• 904 feet of Lennon flume on steel structures</li> <li>• 612 feet of arched-concrete conduit</li> <li>• Capacity: 412 cfs</li> </ul>
Forebay	<ul style="list-style-type: none"> <li>• 45-foot-long, 33-foot-wide, 11-foot-deep concrete structure that discharges directly into penstock or spillway pipe</li> <li>• Capacity: 10,263 cubic feet</li> </ul>
Penstock	<ul style="list-style-type: none"> <li>• Single 1,693-foot-long buried steel pipe</li> <li>• Diameter varies from 108–71 3/8 inches inside diameter</li> </ul>
Spillway	<ul style="list-style-type: none"> <li>• 1,362-foot-long steel pipe</li> <li>• Diameter varies from 65–44 inches inside diameter</li> </ul>
<b>Powerhouse</b>	
Dimensions	170-foot long, 71-foot wide
Type	Reinforced concrete
Turbines	
• Number	Four identical units
• Type	Double overhung, single-jet, impulse turbines
• Manufacturer	Allis-Chalmers
• Horsepower (HP) (each unit)	10,750 HP
• Design Head (each unit)	865 feet
• Revolutions Per Minute (RPM) (each Unit)	300 RPM
• Total Combined Rating	43,000 HP
• Static Head	374 psi
• Maximum Hydraulic Capacity	412 cfs
Generators	
• Number	Four identical units
• Type	Horizontal shaft
• Manufacturer	General Electric
• Installed Capacity (each unit)	6,570 kW, 0.9 power factor, 2.7 kV, three-phase, 60 Hz
• Total Installed Capacity	26,280 kW (26.3 MW)
Tailrace	Water is discharged into a concrete tailrace, with an approximate surface area of 4,350 square feet, before being released back into the Kern River

**Table 2-3. Description of Project Access Roads and Trails**

Project Facility	Start	End	Overall Length		Width (feet)	Surface Treatment	Gated and/or Vehicular Access Blocked
			Feet	Mile			
<b>Project Access Roads</b>							
Willow Spring Creek Road <sup>1</sup>	Kern Canyon Road (SR 178)	Democrat Dam Access Walkway	4,892	0.93	16	Paved/Aggregate	Yes
Powerline Road	Willow Spring Creek Road	Intake Gatehouse to Flume No. 1 Powerline	484	0.09	16	Native	Yes
Flume No. 1 Road	Willow Spring Creek Road	Flume No. 1	412	0.08	20	Native	Yes
Dougherty Creek Road	Stark Creek Road	Dougherty Creek Trail	577	0.11	20	Native	Yes
Stark Creek Road	Kern Canyon Road (SR 178)	Flume No. 6 Stark Creek	4,338	0.82	20	Paved/Aggregate	Yes
Forebay Operations Area Road	Kern Canyon Road (SR 178)	Forebay Operations Area	670	0.13	10	Paved	Yes
Lower Powerhouse Road	Upper Powerhouse Road	Switchyard	483	0.09	20	Paved/Aggregate	Yes
Upper Powerhouse Road	Kern Canyon Road (SR 178)	Powerhouse	521	0.10	40	Paved	Yes
<b>Project Access Trails</b>							
Democrat Gage Trail	Flume No. 1 Road	Gaging Cableway	1,596	0.3	4	Native	Yes
Conduit No. 3 Trail	Kern Canyon Road (SR 178)	Conduit No. 3	273	0.05	4	Native	No
Cow Flat Creek Trail	Kern Canyon Road (SR 178)	Flume No. 2 Cow Flat Creek	694	0.13	4	Native	No
Steel Flume Trail	Kern Canyon Road (SR 178)	Conduit No. 6	1,699	0.32	4	Native	No
Lucas Creek Trail	Kern Canyon Road (SR 178)	Flume No. 4 Lucas Creek	2,758	0.52	4	Native	No
Dougherty Creek Trail	Dougherty Creek Road	Flume No. 5 Dougherty Creek	2,351	0.45	4	Native	Yes
Stark Creek Trail	Stark Creek Road	Adit 13 & 14	6,081	1.15	4	Native	No

Project Facility	Start	End	Overall Length		Width (feet)	Surface Treatment	Gated and/or Vehicular Access Blocked
			Feet	Mile			
Adit 17 & 18 Trail	Forebay	Conduit No. 9	3,547	0.67	4	Native	Yes
Overflow Spillway Trail	Forebay Operations Area Lot	Adit 17 & 18 Trail	3,021	0.57	4	Native	Yes
Skip Hoist / Forebay Trail	Forebay Operations Area Lot	Forebay	3,035	0.57	4	Native	Yes

<sup>1</sup> Willow Spring Creek Road is also referred to as Democrat Dam Road



**Table 2-4. Average Annual and Monthly MWh Generation (1999–2022)**

Year	Sum of Jan	Sum of Feb	Sum of March	Sum of April	Sum of May	Sum of June	Sum of July	Sum of Aug	Sum of Sept	Sum of Oct	Sum of Nov	Sum of Dec	Total
1999	17,486	16,232	16,826	17,263	18,516	17,887	17,918	17,284	16,369	14,476	7,360	10,630	<b>188,247</b>
2000	11,704	14,111	15,198	18,118	18,738	17,973	17,602	16,867	13,746	-5.4	-14	-9	<b>144,029</b>
2001	6,352	11,989	16,939	17,487	17,955	17,666	17,785	17,783	14,326	10,732	6,125	12,194	<b>167,333</b>
2002	15,228	10,934	18,309	17,233	18,227	17,399	13,594	15,454	10,200	9,140	11,719	7,389	<b>164,826</b>
2003	1,575	1,375	14,332	14,684	15,590	14,489	9,881	14,704	13,575	14,150	7,252	9,066	<b>130,673</b>
2004	9,167	4,601	0	11,694	14,267	13,832	14,211	13,762	11,130	9,994	9,174	9,003	<b>120,835</b>
2005	9,401	11,875	8,746	13,745	14,395	13,863	15,507	11,293	0	0	0	-1	<b>98,824</b>
2006	-33	0	0	0	2,092	12,500	15,734	16,329	15,103	13,751	14,349	11,047	<b>100,872</b>
2007	8,867	9,174	6,374	15,089	15,679	15,134	15,246	15,206	1,971	0	0	0	<b>102,740</b>
2008	0	0	0	0	146	6,478	6,778	7,850	7,213	6,845	5,660	3,284	<b>44,254</b>
2009	4,336	6,585	7,327	7,325	7,467	7,410	7,567	3,245	0	0	0	0	<b>51,262</b>
2010	0	0	0	0	0	3,634	9,139	9,219	8,731	7,455	5,809	4,430	<b>48,417</b>
2011	5,875	8,382	9,305	9,012	9,402	9,102	10,075	18,271	17,702	17,461	17,471	17,096	<b>149,154</b>
2012	15,339	6,395	16,377	18,119	18,486	16,799	18,567	17,685	7,977	6,833	2,307	16,332	<b>161,216</b>
2013	7,550	0	0	0	17,365	18,005	13,512	4,875	0	0	0	0	<b>61,307</b>
2014	-20	815	10,539	14,016	16,895	15,978	12,146	9,316	3,132	6,280	4,936	7,656	<b>101,689</b>
2015	6,593	3,208	9,438	9,496	11,949	11,949	8,286	1,508	127	4,055	6,035	6,635	<b>79,279</b>
2016	11,812	12,837	13,858	14,030	16,967	17,658	18,496	17,457	6,931	7,516	6,052	8,754	<b>152,368</b>
2017	1,951	0	15,423	17,267	17,705	16,923	17,654	16,632	16,870	17,869	16,277	14,892	<b>169,463</b>
2018	13,580	2,963	15,211	17,045	17,931	16,911	17,568	17,242	14,952	7,760	7,707	11,483	<b>160,353</b>
2019	10,866	935	17,486	16,582	18,087	16,388	17,980	18,016	17,382	13,517	12,780	13,595	<b>173,614</b>
2020	12,886	9,901	11,850	17,681	18,963	17,382	18,463	18,240	9,150	7,203	6,682	8,390	<b>156,791</b>
2021	8,883	10,844	11,646	16,609	16,718	17,215	11,990	4,745	2,895	4,859	7,174	8,782	<b>122,360</b>
2022	619	3,545	13,927	17,674	17,799	16,386	17,266	11,758	5,432	5,912	4,947	4,283	<b>119,548</b>
<b>Total</b>	<b>180,017</b>	<b>146,701</b>	<b>249,111</b>	<b>300,169</b>	<b>341,339</b>	<b>348,961</b>	<b>342,965</b>	<b>314,741</b>	<b>214,914</b>	<b>185,803</b>	<b>159,802</b>	<b>184,931</b>	<b>2,969,454</b>

Negative generation reflects powerhouse light and power use when the Project is not generating.

Notes: MWh = megawatt hours

**Table 2-5. Summary of Project Generation and Outflows (2018–2022)**

Year	Quarter	Flow (ac-ft)	Generation (MWh)
2018	1	40,440	31,754
	2	66,020	51,886
	3	63,400	49,762
	4	33,750	26,950
	<b>2018 Annual Total</b>	<b>203,610</b>	<b>160,352</b>
2019	1	36,860	29,287
	2	65,800	51,056
	3	66,060	53,378
	4	51,660	39,892
	<b>2019 Annual Total</b>	<b>220,380</b>	<b>173,613</b>
2020	1	45,160	34,637
	2	70,420	54,025
	3	59,030	45,852
	4	27,260	22,276
	<b>2020 Annual Total</b>	<b>201,870</b>	<b>156,790</b>
2021	1	39,690	31,373
	2	64,740	50,541
	3	24,950	19,630
	4	25,640	20,814
	<b>2021 Annual Total</b>	<b>155,020</b>	<b>122,358</b>
2022	1	22,657	18,091
	2	67,050	51,859
	3	44,320	34,456
	4	18,930	15,142
	<b>2022 Annual Total</b>	<b>152,957</b>	<b>119,548</b>

Notes: ac-ft = acre-feet  
MWh = megawatt hours

**Table 2-6. Summary of Current License Requirements and Compliance Status**

License Article / Forest Service 4(e) Condition	Summary of License Article Requirements	Compliance Status	FERC Orders / Letters / Amendments
201	<b>Annual Charges.</b> Requires Licensee to annually reimburse the Federal Energy Regulatory Commission (FERC) for administrative costs and recompensing for use, occupancy, and enjoyment of Federal lands.	Ongoing Compliance	<ul style="list-style-type: none"> <li>• <b>June 21, 2006: Order Setting Effective Date for Deleted Transmission Lines and Revising Annual Charges.</b> The Order deleted paragraph 3 of Article 201 referencing transmission line and recompensing the United States for the use of its land for transmission line right-of-way (effective November 9, 2005).</li> </ul>
202	<b>Approved Drawings.</b> Within 45 days of the issuance of the license, the Licensee shall file three complete original sets of aperture cards of all the approved drawings, and a fourth, partial original set of aperture cards showing only the Exhibit G drawings.	Complete: <ul style="list-style-type: none"> <li>• Exhibit F and G drawings filed with FERC on November 2, 1998</li> </ul> Ongoing Compliance: <ul style="list-style-type: none"> <li>• Over the term of the existing license, Southern California Edison (SCE) has updated the Exhibit F and G sheets, as needed. Current Exhibit F and G sheets are on file with FERC.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>September 4, 1998: Order Granting Extension of Time.</b> The Order approved Licensee's request for an extension of time to comply with Article 202 which requires the Licensee to file, by August 1, 1998, three complete original sets of aperture cards of all the approved drawings, and a fourth, partial original set of aperture cards showing only the Exhibit G drawings. The deadline for filing the aperture cards and drawings was extended to October 31, 1998.</li> <li>• December 29, 1998: Order Approving Exhibits F and G.</li> </ul>
203	<b>Amortization Reserve.</b> Requires Licensee to annually determine reasonable rate of return to compute amortization reserves.	Ongoing Compliance	—
204	<b>Headwater Benefits.</b> If the Licensee's project was directly benefitted by the construction work of another Licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this new license.	Ongoing Compliance: <ul style="list-style-type: none"> <li>• SCE pays annual headwaters benefits to FERC for the Kern River Basin. The most recent payment was made on May 25, 2022.</li> </ul>	—
401	<b>Minimum Flow Requirements.</b> The Licensee shall release from the Democrat Dam into the Kern River the continuous minimum flow required by Forest Service Condition No. 4 in Appendix B, or inflow to the project, whichever is less, for the protection of fishery resources in the bypassed reach of the Kern River.  This flow may be temporarily modified if required by operation emergencies beyond the control of the Licensee, and for short periods upon agreement among the Licensee, the Forest Service, and the California Department of Fish and Game. If the flow is so modified, the Licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.	Ongoing Compliance	—

License Article / Forest Service 4(e) Condition	Summary of License Article Requirements	Compliance Status	FERC Orders / Letters / Amendments
402	<p><b>Sediment Management Plan.</b> Within 6 months of license issuance, the Licensee shall file for Commission approval the results of the 2-year sediment monitoring program that began in 1996. The filing also shall contain a sediment management plan for implementing any necessary adjustments to the Licensee's sediment releasing operations based on the monitoring results.</p>	<p>Complete:</p> <ul style="list-style-type: none"> <li>Results of 2-year sediment monitoring program and Sediment Management Plan filed with FERC on March 1, 1999</li> </ul> <p>Ongoing Compliance:</p> <ul style="list-style-type: none"> <li>Over the term of the existing license, SCE has implemented sediment management activities at the Democrat Dam Impoundment in accordance with the approved Sediment Management Plan.</li> <li>In 2005, SCE, in consultation with resource agencies, prepared a Revised Sediment Management Plan which proposed additional sediment management strategies, as well as monitoring and adaptive management.</li> </ul>	<ul style="list-style-type: none"> <li><b>January 8, 1999: Order Granting Extension of Time.</b> The Order approved Licensee's request for an extension of time to comply with Article 402 which requires the Licensee to file, by December 16, 1998, the results of the sediment monitoring program. The deadline for filing the results of the sediment monitoring program was extended to February 28, 1999.</li> <li><b>April 6, 1999: Order Approving Sediment Monitoring Results and Sediment Management Plan.</b> The Order indicates that SCE fulfilled the requirements of Article 402 and no additional monitoring was required.</li> </ul>
403	<p><b>Smallmouth Bass Study.</b> Within 6 months from the date of issuance of this license, the Licensee shall file for Commission approval a plan to study the adequacy of the minimum flows, required by Forest Service Condition No. 4, for protecting and enhancing the smallmouth bass fishery in the project bypassed reach.</p>	<p>Complete:</p> <ul style="list-style-type: none"> <li>Smallmouth Bass Study Plan filed with FERC on May 14, 1999.</li> <li>Implementation of the plan occurred between 1999 through 2008.</li> <li>Annual reports were filed each monitoring year with a final report filed on May 27, 2009.</li> </ul>	<ul style="list-style-type: none"> <li><b>January 8, 1999: Order Granting Extension of Time.</b> The Order approved Licensee's request for an extension of time to comply with Article 403 which requires the Licensee to file, by December 16, 1998, a minimum flow study plan to protect smallmouth bass. The deadline for filing the minimum flow plan was extended to April 1, 1999.</li> <li><b>April 9, 1999: Order Granting Extension of Time.</b> The Order approved Licensee's request for an extension of time to file the minimum flow study plan to protect smallmouth bass by another 45 days. The deadline for filing the minimum flow plan was extended to May 17, 1999.</li> <li>June 21, 1999: Order Approving Smallmouth Bass Study Plan.</li> <li><b>May 21, 2001: Order Granting Extension of Time.</b> The Order approves SCE's request to extend the survey deadline required under Article 403 due to the project being offline during the scheduled sampling period. The deadline to file the final report was extended to August 30, 2001.</li> <li><b>June 8, 2004: Order Granting Extension of Time.</b> The Order approves SCE's request to extend the smallmouth bass study by 2 years due to abnormal amounts of sediment in the lower Kern River which influenced the quality of the data collected. The deadline to file the final report was extended to June 1, 2006.</li> <li><b>May 9, 2006: Order Granting Extension of Time.</b> The Order approves SCE's request to extend the smallmouth bass study by another 2 years due to high river flows in the study reach in 2005 that prevented the collection of any data. The deadline to file the final report was extended to June 1, 2008.</li> <li><b>March 11, 2008: Order Granting Extension of Time.</b> The Order approves SCE's request to extend the smallmouth bass study by another year due to high river flows in the study reach caused by a powerhouse outage. The deadline to file the final report was extended to June 1, 2009.</li> <li><b>June 23, 2009: Letter Approving Final Summary Report.</b> The letter indicates that SCE fulfilled the requirements of Article 403 and no changes to the minimum instream flow regime were recommended.</li> </ul>

License Article / Forest Service 4(e) Condition	Summary of License Article Requirements	Compliance Status	FERC Orders / Letters / Amendments
404	<p><b>Water Temperature Study Plan.</b> Within 3 months from the date of issuance of this license, the Licensee shall file for Commission approval a schedule for conducting the "Kern River No. 1 Hydroelectric Project Water Temperature Study Plan", submitted by the Licensee on December 2, 1997, and required as a condition of the water quality certification.</p>	<p>Complete:</p> <ul style="list-style-type: none"> <li>Schedule filed with FERC on September 21, 1998.</li> <li>The 5-year water temperature study was implemented from 1999 through 2008.</li> <li>Annual reports were filed each monitoring year with a final report filed on May 13, 2008.</li> </ul>	<ul style="list-style-type: none"> <li>April 21, 1999: Order Modifying and Approving Schedule for Water Temperature Study.</li> <li><b>June 8, 2004: Order Granting Extension of Time.</b> The Order approves SCE's request to extend the water temperature study by 2 years due to abnormal amounts of sediment in the Lower Kern River which influenced the quality of the data collected. The deadline to file the final report was extended to May 15, 2006.</li> <li><b>May 9, 2006: Order Granting Extension of Time.</b> The Order approves SCE's request to extend the water temperature study by another 2 years due to past wildfires affecting river sediment levels that continue to affect the quality of data collected. The deadline to file the final report was extended to May 15, 2008.</li> <li><b>June 18, 2008: Letter Approving Final Temperature Monitoring Report.</b> The letter indicates that SCE fulfilled the requirements of Article 404 of the license.</li> </ul>
405	<p><b>Inspection of and Consultation for Project Flume Repairs.</b> The Licensee shall inspect the project flumes at least once each year to monitor the structural integrity of the leaking flumes. Prior to making any repairs that would reduce the existing leakage, which is providing micro-riparian habitats important to vegetation and wildlife, the Licensee shall consult with the Forest Service and the Commission to determine what measures may be possible to continue to sustain the micro-riparian habitats created by the leaking flumes. The Licensee shall implement the agreed to measures upon Commission approval.</p> <p>The Licensee may take whatever measures are necessary in an emergency to prevent a catastrophic failure of the flowline. If such emergency measures become necessary, the Licensee shall notify the Forest Service and the Commission as soon as possible, but no later than 24 hours after each such incident.</p>	Ongoing Compliance	—
406	<p><b>Forest Service Consultation.</b> Prior to painting project facilities, the Licensee shall consult with the Forest Service on the colors necessary to reduce the contrast of the project facilities with the surrounding environment.</p>	Ongoing Compliance	—
407	<p><b>Cultural Resources Management Plan.</b> The Licensee shall implement its cultural resources management plan contained in appendix E-9 of its license application for the Kern River No. 1 Water Power Project, FERC No. 1930, filed with the Commission on May 2, 1994, to avoid and mitigate impacts to the historical integrity of the Kern River No. 1 Historic District (District).</p>	Ongoing Compliance	—

License Article / Forest Service 4(e) Condition	Summary of License Article Requirements	Compliance Status	FERC Orders / Letters / Amendments
408	<p><b>Cultural Discovery.</b> If archeological or historic sites are discovered during project construction or operation, the Licensee shall: (1) consult with the California State Historic Preservation Officer (SHPO) and the Forest Service about the discovered sites; (2) prepare a site-specific plan, including a schedule, to evaluate the significance of the sites and to avoid or mitigate any impacts to sites found eligible for inclusion in the National Register of Historic Places; (3) base the site-specific plan on recommendations of the SHPO and the Forest Service, and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; (4) file the site-specific plan for Commission approval, together with the written comments of the SHPO and the Forest Service; and (5) take the necessary steps to protect the discovered archeological or historic sites from further impact until notified by the Commission that all of these requirements have been satisfied.</p>	Ongoing Compliance	—
409	<p><b>Recreation Monitoring Plan.</b> Within 9 months from the date of issuance of this license, the Licensee shall file for Commission approval a plan to monitor recreation use in the project's bypassed reach for the purpose of determining whether future demands for river recreation in the project's bypassed reach warrant modifications to the project's operating scheme to protect and enhance recreational values of the Kern River.</p>	<p>Complete:</p> <ul style="list-style-type: none"> <li>Recreation Monitoring Plan filed with FERC on October 28, 1999.</li> <li>The 5-year recreation use study was implemented between April 2000 and May 2005.</li> <li>The final report was filed on December 21, 2005.</li> </ul>	<ul style="list-style-type: none"> <li><b>March 5, 1999: Order Granting Extension of Time.</b> The Order approves SCE's request to extend the deadline to file the recreation plan required under Article 409 due to extensive consultation requirements. The deadline to file the final report was extended to September 1, 1999.</li> <li><b>October 12, 1999: Order Granting Extension of Time.</b> The Order approves SCE's request to extend the deadline to file the recreation plan required under Article 409 due to extensive consultation requirements. The deadline to file the final report was extended to November 1, 1999.</li> <li>March 10, 2000: Order Modifying and Approving Recreation Monitoring Plan.</li> <li><b>May 31, 2006: Letter Approving Five-year Recreation Use Report.</b> The letter indicates that no additional monitoring or modifications to the project's existing operations are warranted or recommended.</li> </ul>
410	<p><b>Recreation Flow Information Dissemination.</b> Within 1 year from the date of issuance of this license, the Licensee shall file for Commission approval a plan to implement a mechanism to provide flow information to the public.</p>	<p>Complete:</p> <ul style="list-style-type: none"> <li>Flow Information Plan filed with FERC on October 28, 1999.</li> <li>In March 2000, an automated flow phone for the Kern River became operational.</li> <li>In December 2022, SCE replaced the automated flow phone with a website (<a href="https://www.hydrometcloud.com/ScedisonDemocrat/tw/jsp/">https://www.hydrometcloud.com/ScedisonDemocrat/tw/jsp/</a>).</li> </ul>	<ul style="list-style-type: none"> <li><b>March 5, 1999: Order Granting Extension of Time.</b> The Order approves SCE's request to extend the deadline to file the flow information plan required under Article 410 due to extensive consultation requirements. The deadline to file the final report was extended to September 1, 1999.</li> <li><b>October 12, 1999: Order Granting Extension of Time.</b> The Order approves SCE's request to extend the deadline to file the flow information plan required under Article 410 due to extensive consultation requirements. The deadline to file the final report was extended to November 1, 1999.</li> <li><b>February 14, 2000: Order Approving Flow Information Plan.</b> The Order approves the plan and makes it part of the license.</li> </ul>

License Article / Forest Service 4(e) Condition	Summary of License Article Requirements	Compliance Status	FERC Orders / Letters / Amendments
411	<p><b>Access Improvement Plan.</b> Within 1 year from the date of issuance of this license, the Licensee shall file for Commission approval an access improvement plan that, as a minimum, assesses the feasibility of providing safe access improvements within the project's bypassed reach.</p>	<p>Complete:</p> <ul style="list-style-type: none"> <li>• Access Improvement Plan filed with FERC on October 28, 1999.</li> <li>• Construction of the Lucas Creek Trail was completed on December 10, 2004.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>March 5, 1999: Order Granting Extension of Time.</b> The Order approves SCE's request to extend the deadline to file the access improvement plan required under Article 411 due to extensive consultation requirements. The deadline to file the final report was extended to September 1, 1999.</li> <li>• <b>October 12, 1999: Order Granting Extension of Time.</b> The Order approves SCE's request to extend the deadline to file the access improvement plan required under Article 411 due to extensive consultation requirements. The deadline to file the final report was extended to November 1, 1999.</li> <li>• May 2, 2000: Order Approving Access Improvement Plan.</li> <li>• <b>March 8, 2002: Order Granting Extension of Time to Complete Access Trail.</b> The Order approves SCE's request to extend the deadline to complete the Lucas Creek Trail due to the current construction schedule not allowing ample time for Forest Service environmental review. The deadline to complete the Lucas Creek Trail was extended to April 30, 2003.</li> <li>• <b>June 17, 2003: Order Granting Extension of Time.</b> The Order approves SCE's request to extend the deadline to complete the Lucas Creek Trail by 18 months due to implications resulting from the McNally fire not allowing ample time for Forest Service environmental review. The deadline to complete the Lucas Creek Trail was extended to October 31, 2004.</li> <li>• <b>October 2004: Order Granting Extension of Time.</b> The Order approves SCE's request to extend the deadline to complete the Lucas Trail by 2 months due to delays in the Forest Service awarding a construction contract. The deadline to complete the Lucas Creek Trail was extended to December 31, 2004.</li> <li>• September 2, 2005: Letter Confirming Construction Completion.</li> </ul>
412	<p><b>Use and Occupancy.</b> Licensee shall have the 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 Commission approval.</p>	Ongoing Compliance	—
Forest Service 4(e) Condition No. 1	<p><b>Forest Service Approval of Final Design.</b> Before any construction of the project occurs on National Forest System land, the Licensee shall 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 National Forest System resources.</p>	Ongoing Compliance	—

License Article / Forest Service 4(e) Condition	Summary of License Article Requirements	Compliance Status	FERC Orders / Letters / Amendments
Forest Service 4(e) Condition No. 2	<b>Approval of Changes After Initial Construction.</b> Notwithstanding any Commission approval or license provisions to make changes to the project, the Licensee shall get written approval from the 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 the Commission. Following receipt of such approval from the Forest Service, and at least 60 days prior to initiating any such changes or departure, the Licensee shall file a report with the Commission describing the changes, the reasons for the changes, and showing the approval of the Forest Service for such changes. The Licensee shall file an exact copy of this report with the Forest Service at the same time it is filed with the Commission.	Ongoing Compliance	—
Forest Service 4(e) Condition No. 3	<b>Consultation.</b> Each year during the 60 days preceding the anniversary date of the license, the Licensee shall consult with the Forest Service with regard to measures needed to ensure protection and development of the natural resource values of the project area. Within 60 days following such consultation, the Licensee shall file with the Commission evidence of the consultation with any recommendations made by the Forest Service. The Commission reserves the right, after notice and opportunity for hearing, to require changes in the project and its operation that may be necessary to accomplish natural resource protection.	Ongoing Compliance: <ul style="list-style-type: none"> <li>The last annual meeting conducted February 23, 2022, and the meeting summary filed with FERC on April 13, 2022.</li> </ul>	<ul style="list-style-type: none"> <li><b>January 15, 2004: Order Revising Section 4(e) Conditions Regarding Scheduling of Annual Agency Meetings.</b> The Order approves SCE's request to hold a single annual meeting in January to fulfill the Forest Service consultation requirement of Section 4(e) Condition No. 3 of the licenses for the Kern River No. 1 Hydroelectric Project and Kern River No. 3 Hydroelectric Project projects.</li> </ul>
Forest Service 4(e) Condition No. 4	<b>Minimum Streamflow Requirements.</b> The minimum instream flow for fisheries in the existing license is to be required for the new license. The Licensee shall release the minimum instream flow of 50 cfs or inflow, whichever is less, from June 1 through September 30 of each year. The Licensee shall release the minimum instream flow of 15 cfs or inflow, whichever is less, from October 1 through May 31 of each year. These instream flow releases shall be continuously monitored by the Licensee at the existing USGS gage Station No. 11192500. If monitoring of stream flows in the bypassed reach of the Kern River No. 1 Hydroelectric Project identifies a violation of the minimum flow requirements, the Licensee shall file a report with the Commission within 30 days from the date that the data becomes available indicating the violation. The Licensee shall file a report that identifies the cause, duration, and severity of the violation, any environmental impacts resulting from the violation, and the measures that were implemented to correct the violation. Based on this report, the Commission reserves the right to require modifications to the projects facilities and operations to ensure future compliance.	Ongoing Compliance	—
Forest Service 4(e) Condition No. 5	<b>Project Recreation Plan.</b> Within 1 year following the date of issuance of this license and before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for accommodation of project-induced recreation.	Complete: <ul style="list-style-type: none"> <li>Recreation Plan filed with FERC on February 28, 2000.</li> <li>Forest Service filed a letter with FERC on October 3, 2003, stating that SCE had satisfactorily completed the recreation improvements required by Condition No. 5 and detailed in the Recreation Plan.</li> </ul>	<ul style="list-style-type: none"> <li><b>October 28, 1999: Order Granting Extension of Time.</b> The Order approves SCE's request to extend the deadline to file the Project recreation plan required under Forest Service 4(e) Condition No. 5 in order to complete ongoing consultation. The deadline to file the final plan was extended to March 1, 2000.</li> </ul>



License Article / Forest Service 4(e) Condition	Summary of License Article Requirements	Compliance Status	FERC Orders / Letters / Amendments
Forest Service 4(e) Condition No. 6	<b>Erosion Control Plan.</b> Before starting any activities, the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for the control of erosion, stream sedimentation, dust, and soil mass movement.	Ongoing Compliance	—
Forest Service 4(e) Condition No. 7	<b>Solid Waste and Waste Water Plan.</b> Before starting any activities, the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan, approved by the Forest Service, for the treatment and disposal of solid waste and waste water generated during construction and operation of the project.	Ongoing Compliance	—
Forest Service 4(e) Condition No. 8	<b>Hazardous Substances Plan.</b> Within 1 year following the date of issuance of this license and at least 60 days before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for oil and hazardous substances storage and spill prevention and cleanup.	Ongoing Compliance: <ul style="list-style-type: none"> <li>• Spill Prevention Control and Countermeasure Plan for the Kern River No. 1 Powerhouse filed with FERC on June 14, 1999.</li> </ul>	<ul style="list-style-type: none"> <li>• July 16, 1999: Letter Approving Hazardous Substances Plan.</li> </ul>
Forest Service 4(e) Condition No. 9	<b>Spoil Disposal Plan.</b> Before starting any activities, the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for the storage and/or disposal of excess construction/tunnel spoils and slide material.	Ongoing Compliance	—
Forest Service 4(e) Condition No. 10	<b>Visual Resource Protection.</b> Before starting any activities, the Forest Service determines to be of a land-disturbing nature on National Forest System land, the Licensee shall file with the Director, Office of Hydropower Licensing, a plan approved by the Forest Service for the design and construction of the project facilities in order to preserve or enhance its visual character.	Ongoing Compliance	—
Forest Service 4(e) Condition No. 11	<b>Protection of Sensitive and Threatened and Endangered Species.</b> Before starting any activities, the Forest Service determines to be of a land-disturbing nature on Forest Service land, the Licensee shall prepare a Biological Evaluation evaluating the potential impact of the action on the species or its habitat and submit it to the Forest Service for approval.	Ongoing Compliance	—

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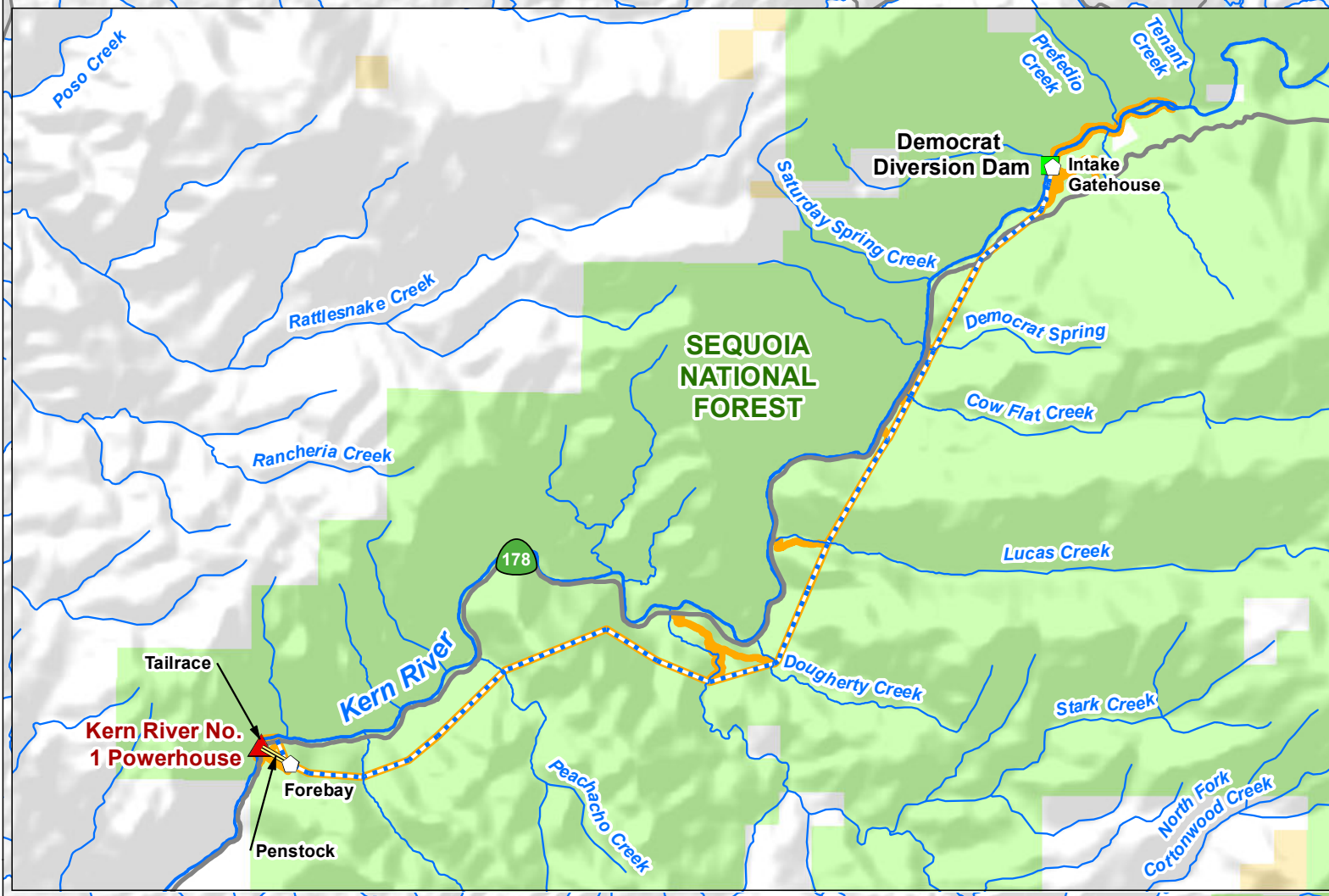
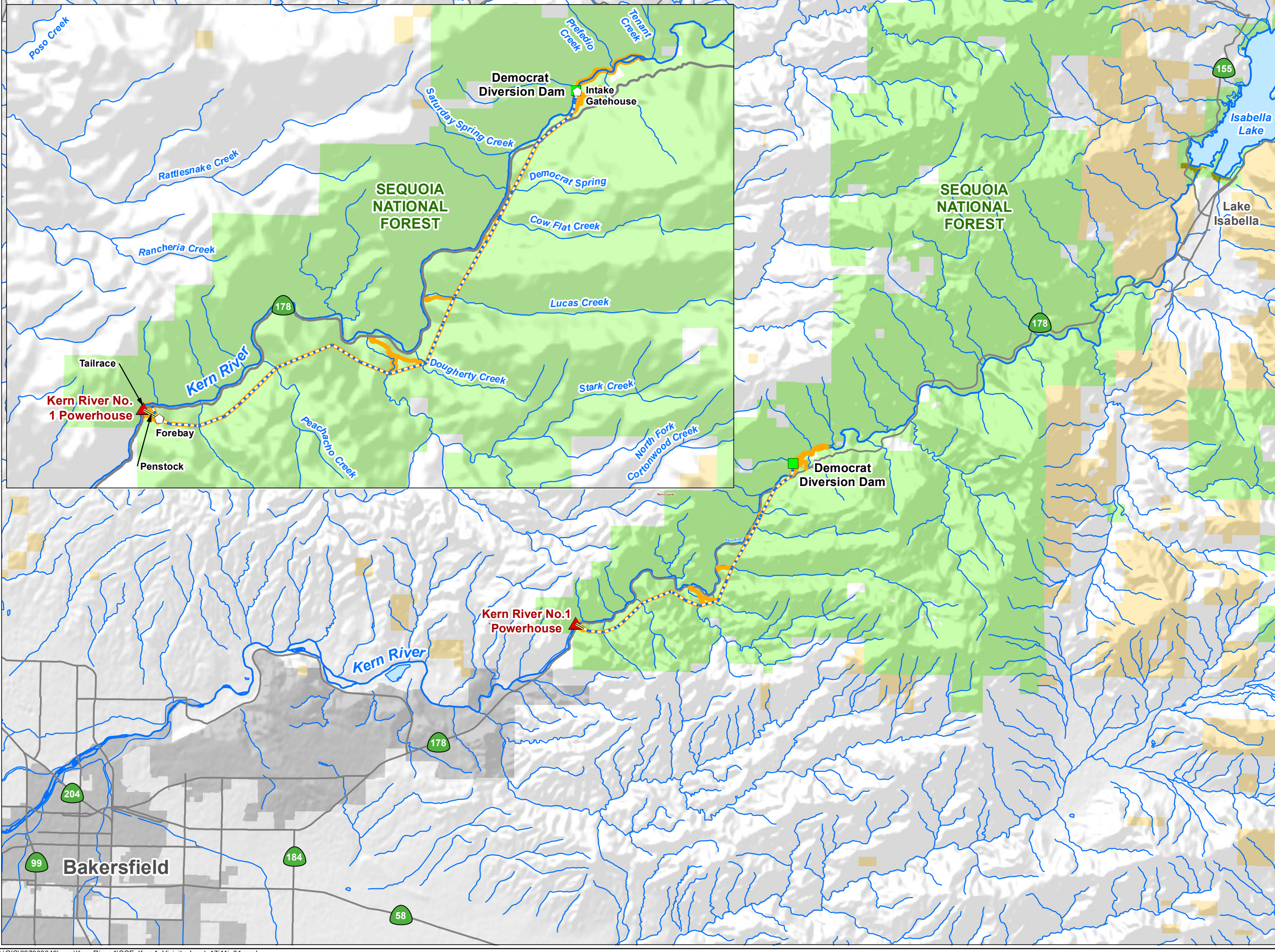
**Table 2-7. Summary of Incidents over the Current License Term (1998–2022)**

Date of Incident	Brief Description of Incident
June 11, 2002	<p><b>Tunnel Collapse</b></p> <p>Approximately 30 cubic yards of rock and concrete from the tunnel ceiling fell, blocking part of the Kern River No. 1 water conveyance system (approximately 1.25 miles downstream of Stark Flume). It was determined that the incident was caused by deteriorated concrete at the interface between the arch top and the culvert side walls. The rock fall caused the failure of approximately 13 feet of unreinforced concrete arch ceiling. Flows of approximately 60 cfs overflowed at an adit approximately 1 mile upstream of the tunnel collapse. Flows continued along a rocky embankment then over and under Highway 178 before entering the Kern River. Additionally, an undetermined amount of water overflowed Stark Creek Flume and entered the natural streambed. No erosion or other environmental damage is known to have occurred.</p> <p>By July 15, the tunnel debris removal effort was completed. No immediate repairs were necessary however, a tunnel investigation was completed in the fall of 2002 to identify and determine the magnitude of needed repairs. Repairs were implemented in the fall of 2003. Prior to the completion of repairs, the Project operated under restricted flow conditions.</p>
December 20, 2010	<p><b>Rockslide Blocking Access to Powerhouse</b></p> <p>Unusually heavy rainfall in late December caused large rocks to slough from the steep Kern Canyon walls blocking SR 178 which provides access to the powerhouse. Because the canyon walls remained unstable and the road was littered with rocks and damaged from the falling rocks, subsequent access to the powerhouse was not allowed by Caltrans until the road was reopened on January 6, 2011. No damage occurred to Project facilities as a result of the rockslide.</p>
June 16, 2011	<p><b>Democrat Dam Buoy Line Detachment</b></p> <p>Due to an accumulation of debris from high flows brought on by unseasonably high spring runoff, the Democrat Dam Impoundment Buoy Line became detached from its anchor. As soon as flows receded enough to enable safe access, the anchor was repaired and the buoy line reinstalled.</p>
July 11, 2011	<p><b>Recreationist Death</b></p> <p>On July 2, 2011, the victim entered the Kern River below the Sandy Flat Day Use Area, not wearing a life jacket. The Sandy Flat Day Use Area is over 10 miles upstream of the Kern River No. 1 Diversion Dam. The victim was found on July 10, 2011, below the diversion. Due to the location where the victim went into the water and where he was found, and the eight-day time lapse from when he went missing to the time of discovery, the drowning was determined not to be Project related.</p>
August 19, 2013	<p><b>Forebay Overtopping</b></p> <p>On August 19, 2013, a severe storm event initiated a rock and mudslide above Adit 17/18 (approximately 1-mile upstream of the forebay), causing large amounts of debris to wash into the conveyance tunnel opening at Adit 17/18. Debris was transported through the tunnel to the forebay where it plugged the overflow spillway pipe. Overtopping of the forebay ensued, followed by severe erosion below the forebay and along the overflow spillway pipe supports. The incident resulted in the closure of SR 178. Following the incident, the Project was taken offline, and repairs were completed in 2014.</p>

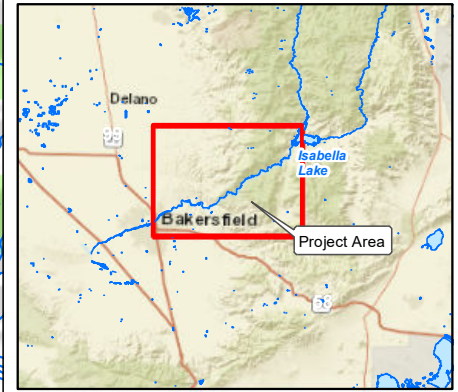
Date of Incident	Brief Description of Incident
January 5, 2017	<p><b>Rockslide</b></p> <p>From the hillside (right bank) across from the Kern River No. 1 Powerhouse, a large boulder fell into the Kern River, broke apart, and fragments were projected across the river into the Kern River No. 1 Switchyard, causing a loss of power. The rock fall also caused severe damage to the adjacent Kern Canyon Project Diversion Dam (FERC Project No. 178), causing it to be out of operation. Subsequently, on January 10, 2017, additional storm damage was discovered at a section of flume on the Kern River No. 1 Flowline near Dougherty Creek. Damages resulting from this incident were described as repaired in a report filed with FERC in the fall of 2017.</p>

## **MAPS**

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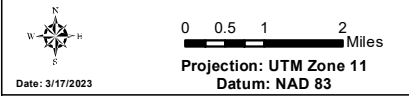


- Facilities**
- Dam
  - ▲ Powerhouse
  - Water Conveyance Feature
  - Flowline
  - Penstock
  - FERC Boundary
- Other Features**
- Highway
  - Watercourse
  - Water Body
- Land Jurisdiction\***
- U.S. Forest Service
  - U.S. Bureau of Land Management
  - U.S. Army Corps of Engineers
  - Private (Blank)
- \*SOURCE: BLM 2021



Kern River No. 1 Hydroelectric Project  
FERC Project No. 1930

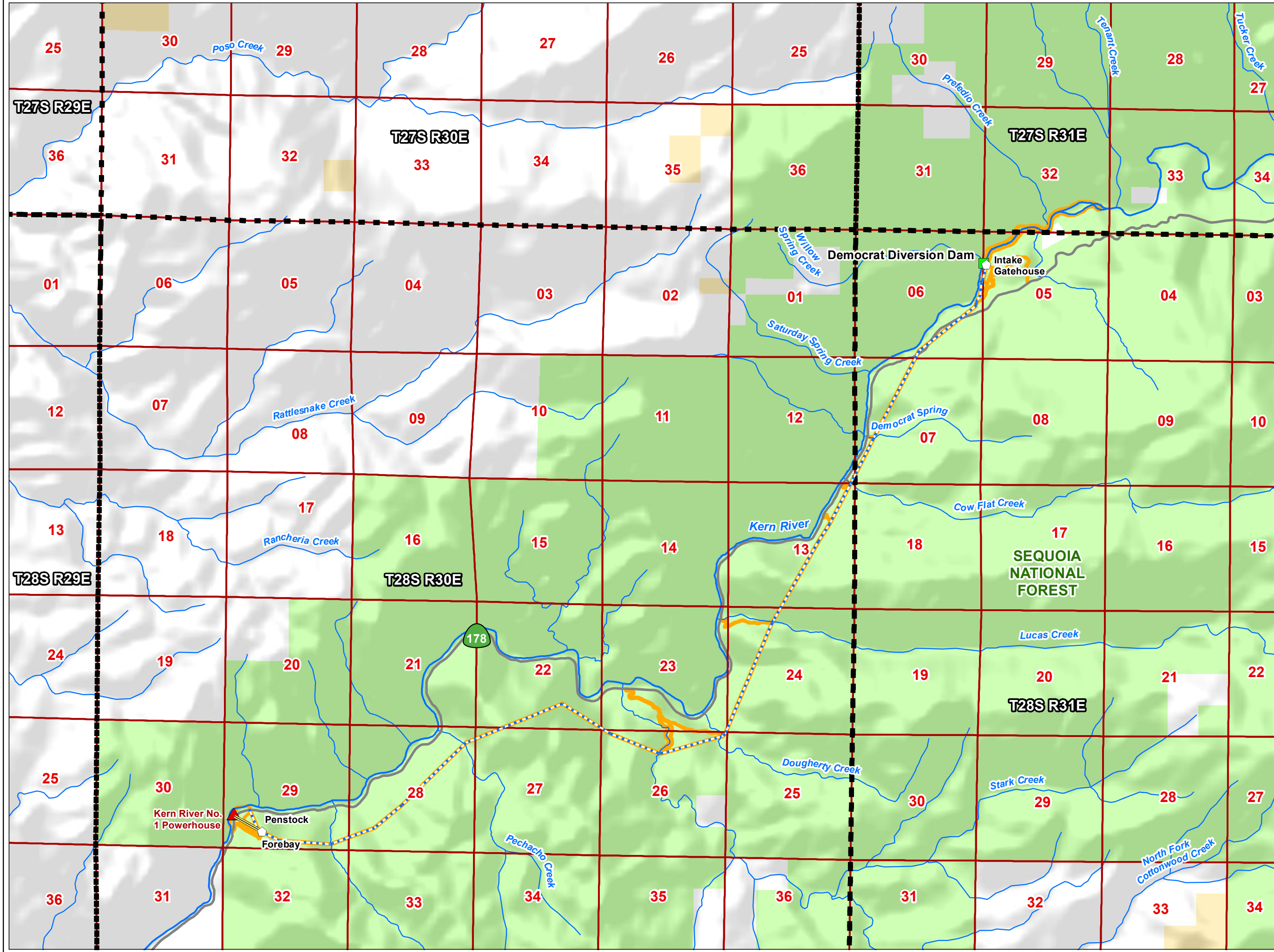
**Map 2-1**  
**Project Vicinity and**  
**Land Jurisdiction**



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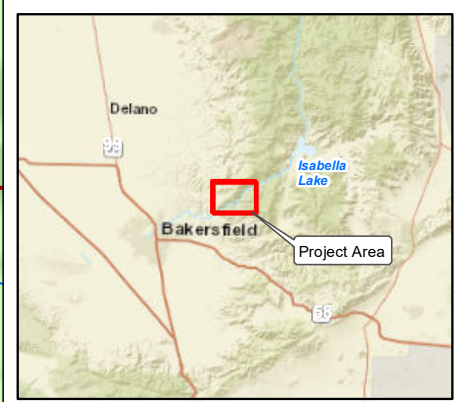
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- Facilities**
- Dam
  - ▲ Powerhouse
  - Water Conveyance Feature
  - Flowline
  - Penstock
  - FERC Boundary
- Other Features**
- Watercourse
  - Highway
- Land Jurisdiction\***
- U.S. Forest Service
  - U.S. Bureau of Land Management
  - Private (Blank)
- Public Land Survey System\***
- Section
  - Township / Range

\*SOURCE: BLM 2021



Kern River No. 1 Hydroelectric Project  
FERC Project No. 1930

Map 2-2

**Lands and Water within the  
FERC Project Boundary by  
Township, Range, and Section**

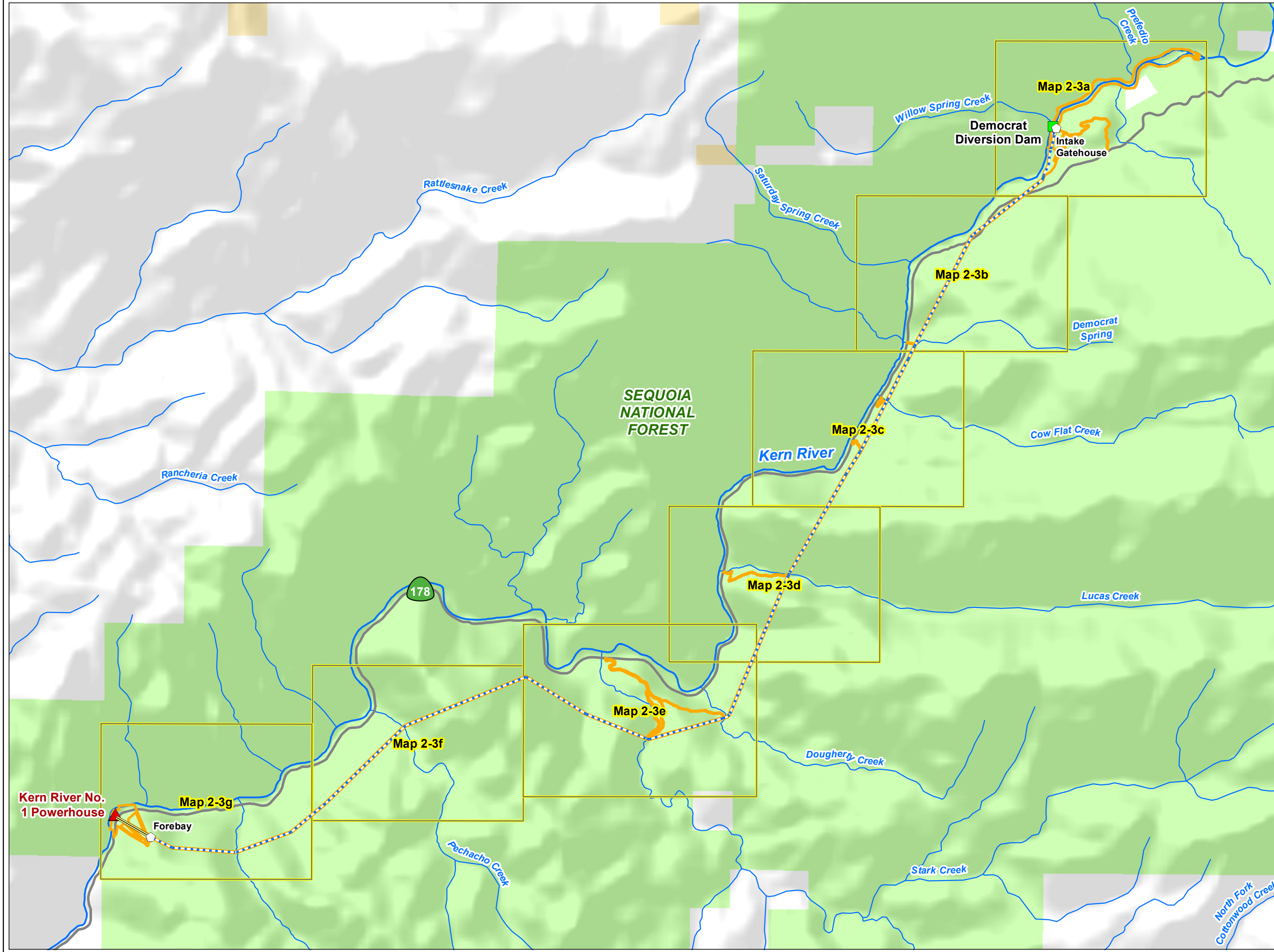


0 0.25 0.5 Miles

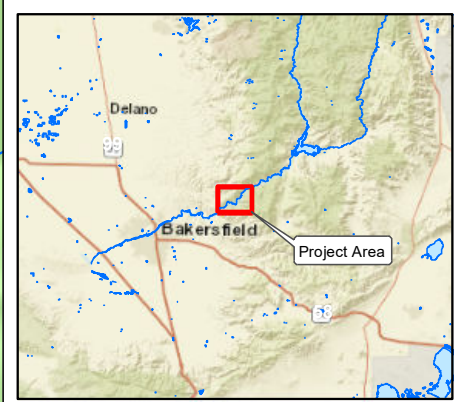
Projection: UTM Zone 11  
Datum: NAD 83

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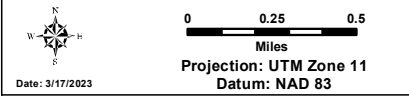


- Facilities**
- Dam
  - ▲ Powerhouse
  - Water Conveyance Feature
  - ⋯ Flowline
  - Penstock
  - FERC Boundary
- Other Features**
- Watercourse
  - Highway
- Land Jurisdiction\***
- U.S. Forest Service
  - U.S. Bureau of Land Management
  - Private (Blank)
- \*SOURCE: BLM 2021



Kern River No. 1 Hydroelectric Project  
FERC Project No. 1930

**Map 2-3**  
**Project Facilities**  
**Map Index**

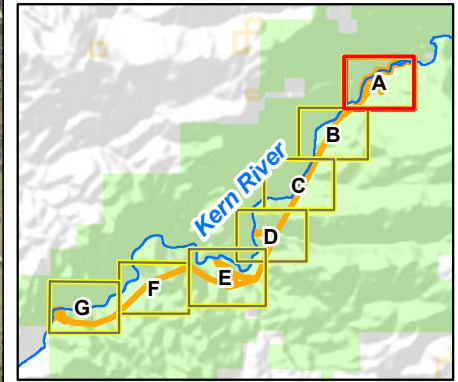



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- Facilities**
- Dam
  - ▲ Powerhouse
  - Water Conveyance Feature
  - Tunnel
  - Flume
  - Conduit
  - Sandbox
  - Penstock
  - Spillway
  - Tailrace
  - Gage
  - Ancillary Facility
  - Ancillary Feature
  - Powerline
  - Communication / Powerline
  - FERC Boundary
- Transportation**
- Project Road
  - Project Trail
  - Other Road
  - X Gate
- Other Features**
- Watercourse
- Land Jurisdiction\***
- U.S. Forest Service
- \*SOURCE: BLM 2021






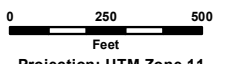
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An EDISON INTERNATIONAL® Company

Kern River No. 1 Hydroelectric Project  
FERC Project No. 1930

**Map 2-3a**  
**Project Facilities**



Date: 3/17/2023



0 250 500  
Feet

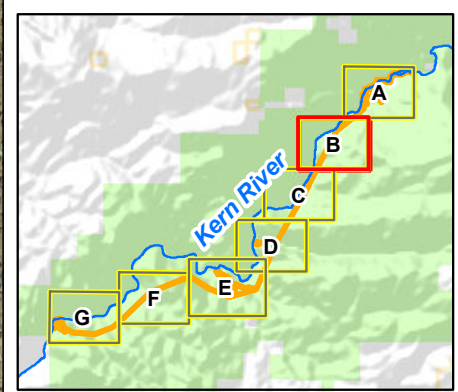
Projection: UTM Zone 11  
Datum: NAD 83

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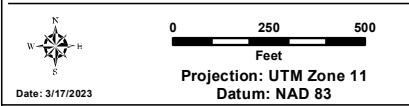


- Facilities**
- Dam
  - ▲ Powerhouse
  - ◻ Water Conveyance Feature
  - Tunnel
  - Flume
  - Conduit
  - Sandbox
  - Penstock
  - Spillway
  - Tailrace
  - Gage
  - Ancillary Facility
  - Ancillary Feature
  - Powerline
  - Communication / Powerline
  - FERC Boundary
- Transportation**
- Project Road
  - Project Trail
  - Other Road
  - ⊠ Gate
- Other Features**
- Watercourse
- Land Jurisdiction\***
- U.S. Forest Service
- \*SOURCE: BLM 2021



An EDISON INTERNATIONAL® Company  
 Kern River No. 1 Hydroelectric Project  
 FERC Project No. 1930

**Map 2-3b**  
**Project Facilities**



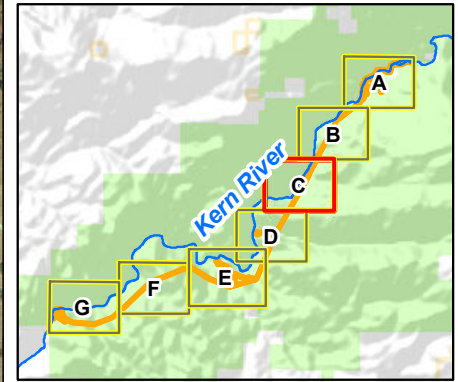
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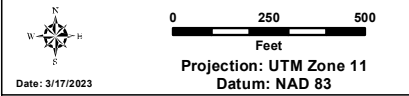


- Facilities**
- Dam
  - ▲ Powerhouse
  - Water Conveyance Feature
  - Tunnel
  - Flume
  - Conduit
  - Sandbox
  - Penstock
  - Spillway
  - Tailrace
  - Gage
  - Ancillary Facility
  - Ancillary Feature
  - Powerline
  - Communication / Powerline
  - FERC Boundary
- Transportation**
- Project Road
  - Project Trail
  - Other Road
  - Gate
- Other Features**
- Watercourse
- Land Jurisdiction\***
- U.S. Forest Service
- \*SOURCE: BLM 2021



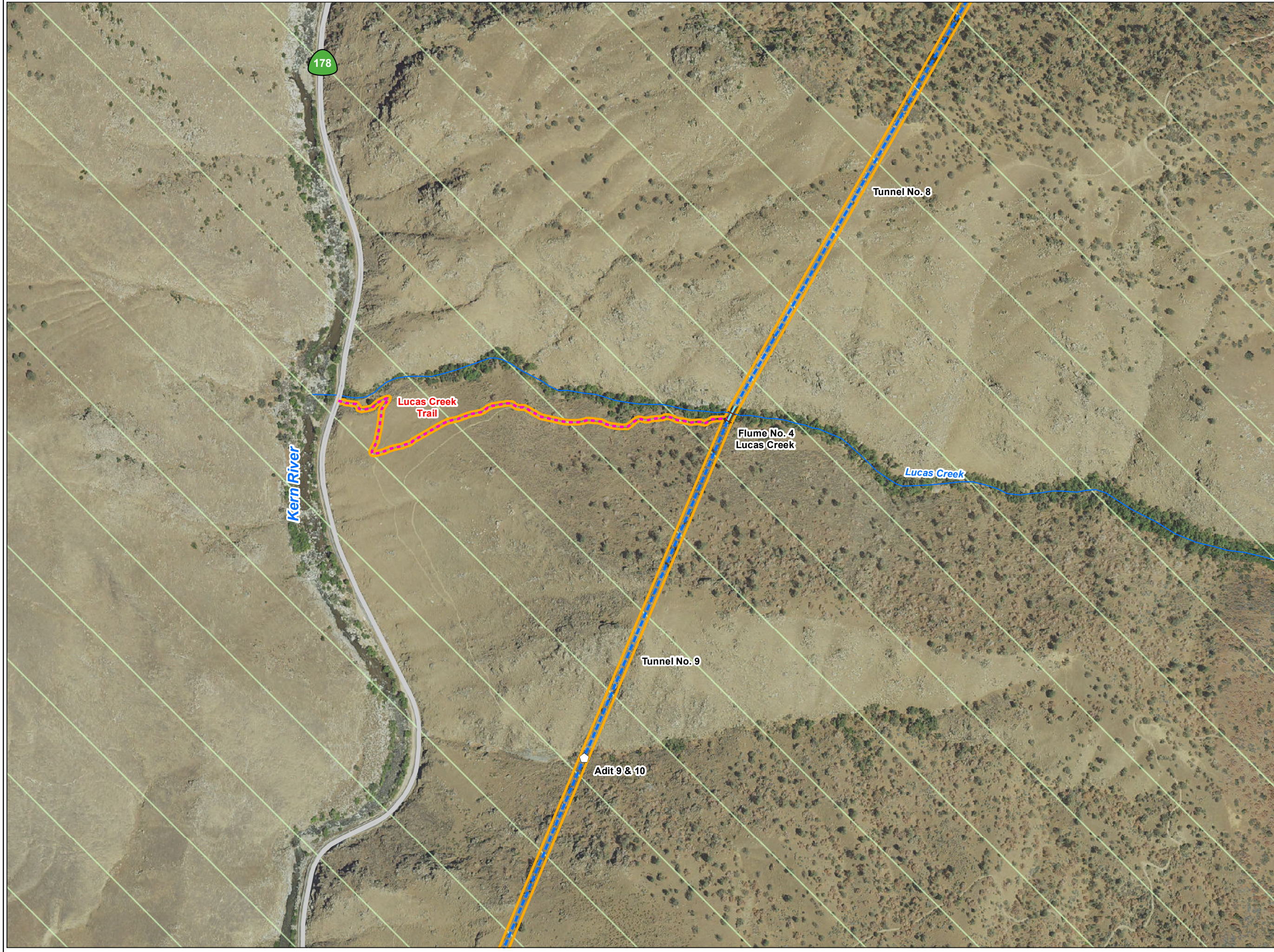
Kern River No. 1 Hydroelectric Project  
FERC Project No. 1930

**Map 2-3c**  
**Project Facilities**

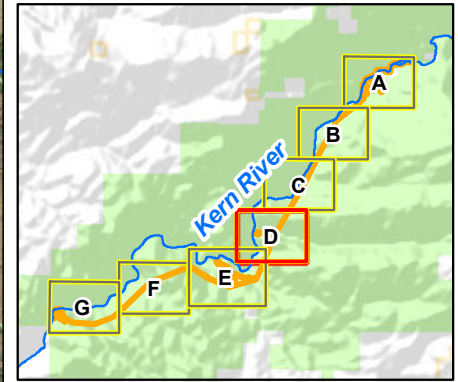


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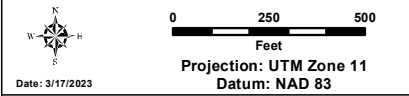


- Facilities**
- Dam
  - ▲ Powerhouse
  - ◻ Water Conveyance Feature
  - Tunnel
  - Flume
  - Conduit
  - Sandbox
  - Penstock
  - Spillway
  - Tailrace
  - Gage
  - Ancillary Facility
  - Ancillary Feature
  - Powerline
  - Communication / Powerline
  - FERC Boundary
- Transportation**
- Project Road
  - Project Trail
  - Other Road
  - ⊠ Gate
- Other Features**
- Watercourse
- Land Jurisdiction\***
- U.S. Forest Service
- \*SOURCE: BLM 2021



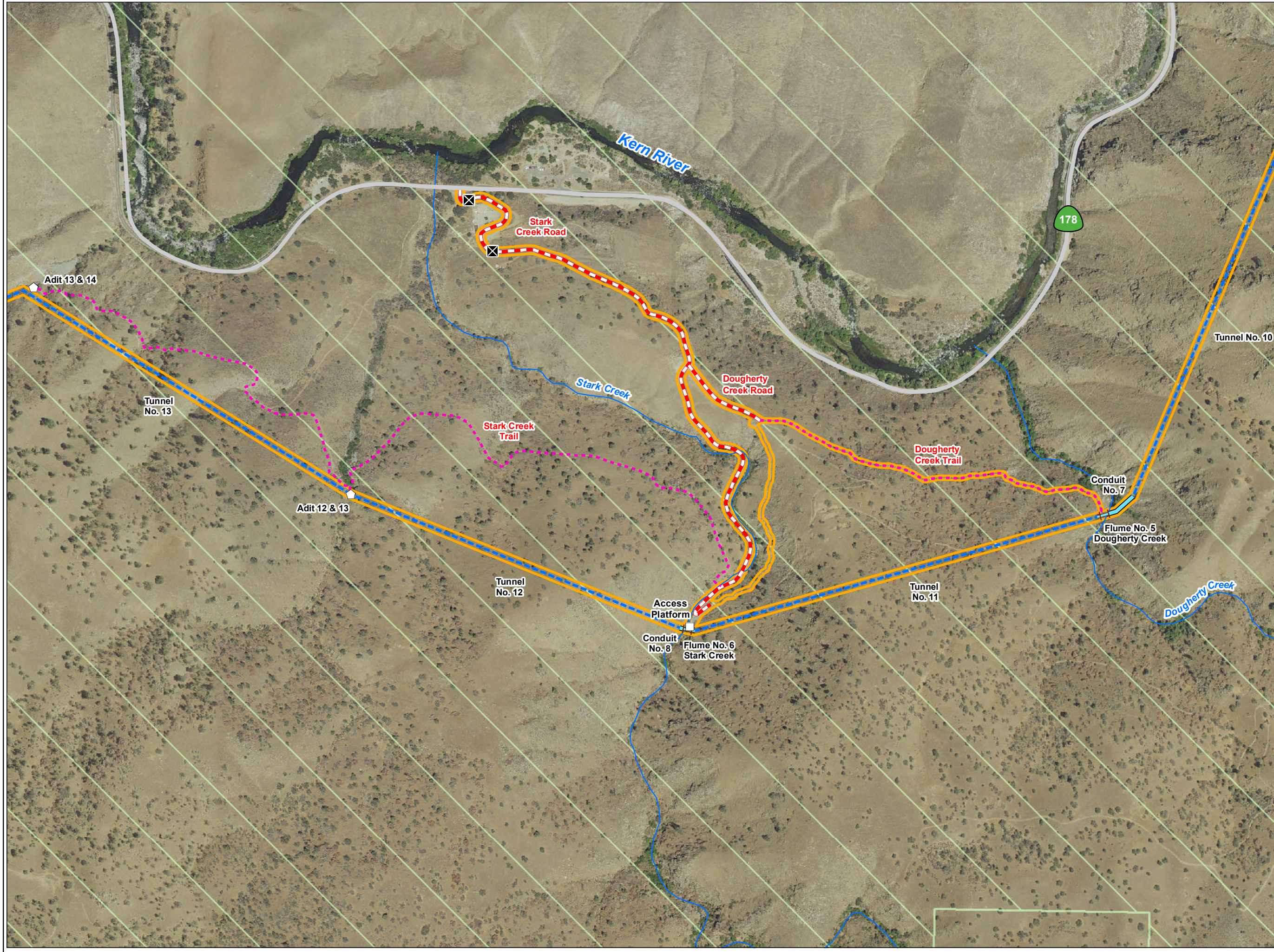
Kern River No. 1 Hydroelectric Project  
FERC Project No. 1930

**Map 2-3d  
Project Facilities**

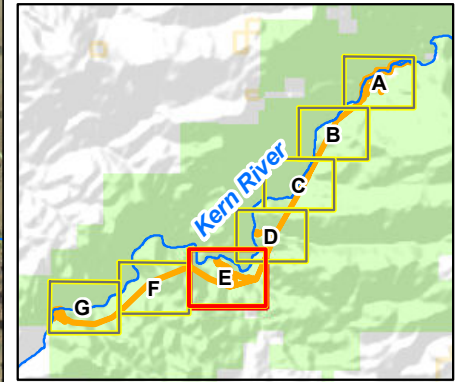


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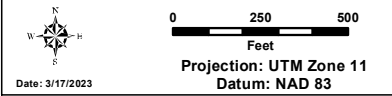


- Facilities**
- Dam
  - ▲ Powerhouse
  - ◻ Water Conveyance Feature
  - Tunnel
  - Flume
  - Conduit
  - Sandbox
  - Penstock
  - Spillway
  - Tailrace
  - Gage
  - Ancillary Facility
  - Ancillary Feature
  - Powerline
  - Communication / Powerline
  - FERC Boundary
- Transportation**
- Project Road
  - Project Trail
  - Other Road
  - Gate
- Other Features**
- Watercourse
- Land Jurisdiction\***
- U.S. Forest Service
- \*SOURCE: BLM 2021



Kern River No. 1 Hydroelectric Project  
FERC Project No. 1930

**Map 2-3e**  
**Project Facilities**

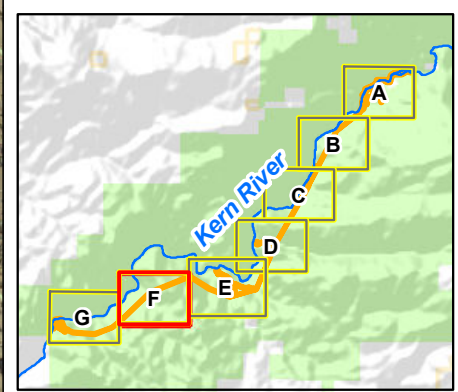


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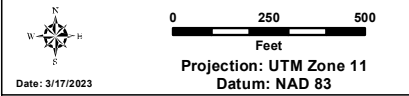
- Facilities**
- Dam
  - ▲ Powerhouse
  - ◻ Water Conveyance Feature
  - Tunnel
  - Flume
  - Conduit
  - Sandbox
  - Penstock
  - Spillway
  - Tailrace
  - Gage
  - Ancillary Facility
  - Ancillary Feature
  - Powerline
  - Communication / Powerline
  - FERC Boundary
- Transportation**
- Project Road
  - Project Trail
  - Other Road
  - ⊠ Gate
- Other Features**
- Watercourse
- Land Jurisdiction\***
- U.S. Forest Service
- \*SOURCE: BLM 2021



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Kern River No. 1 Hydroelectric Project  
FERC Project No. 1930

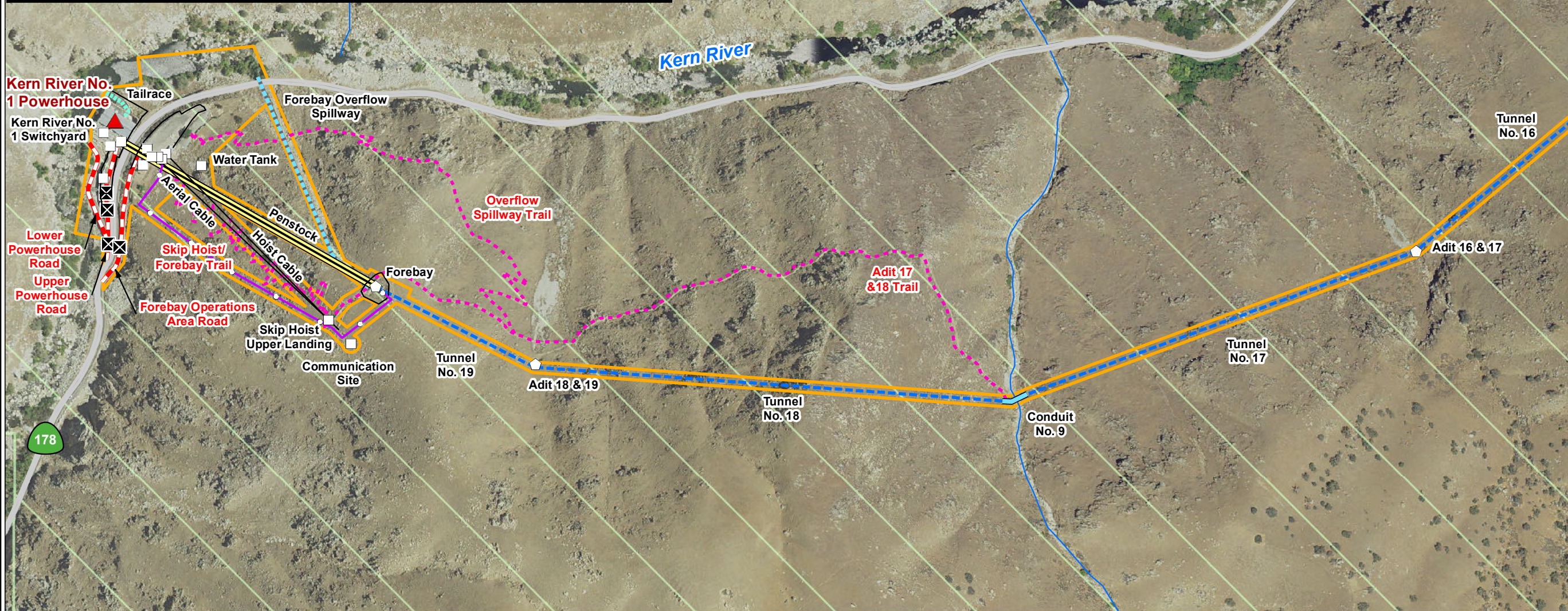
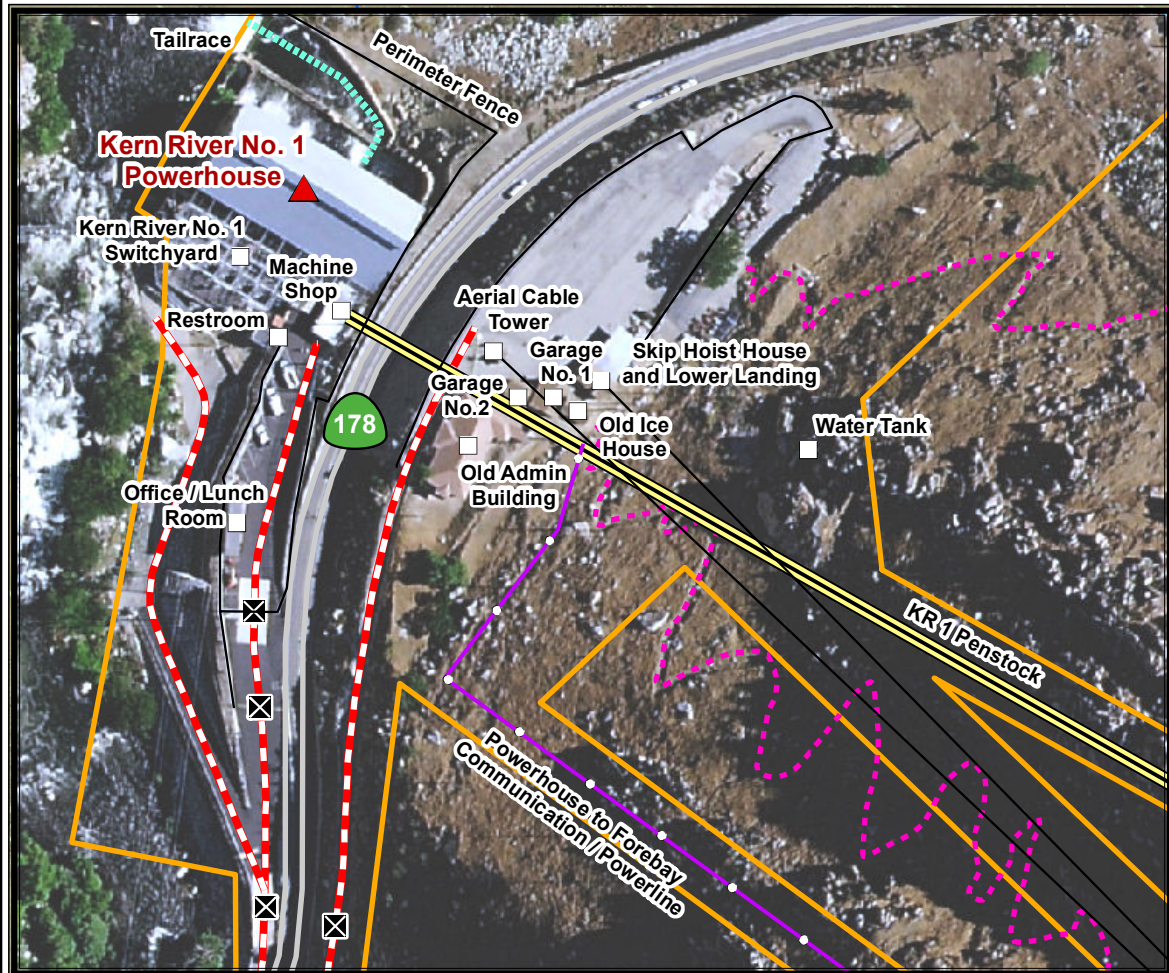
**Map 2-3f**  
**Project Facilities**



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**Facilities**

- Dam
- Powerhouse
- Water Conveyance Feature
- Tunnel
- Flume
- Conduit
- Sandbox
- Penstock
- Spillway
- Tailrace
- Gage
- Ancillary Facility
- Ancillary Feature
- Powerline
- Communication / Powerline
- FERC Boundary

**Transportation**

- Project Road
- Project Trail
- Other Road
- Gate

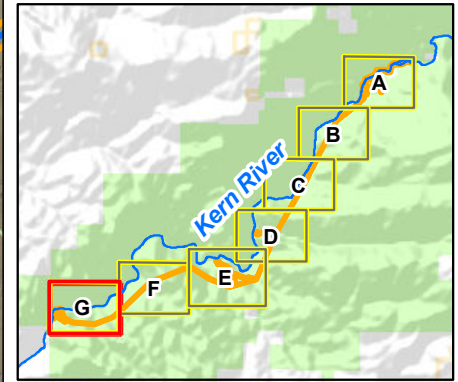
**Other Features**

- Watercourse

**Land Jurisdiction\***

- U.S. Forest Service

\*SOURCE: BLM 2021



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Kern River No. 1 Hydroelectric Project  
FERC Project No. 1930

**Map 2-3g**  
**Project Facilities**

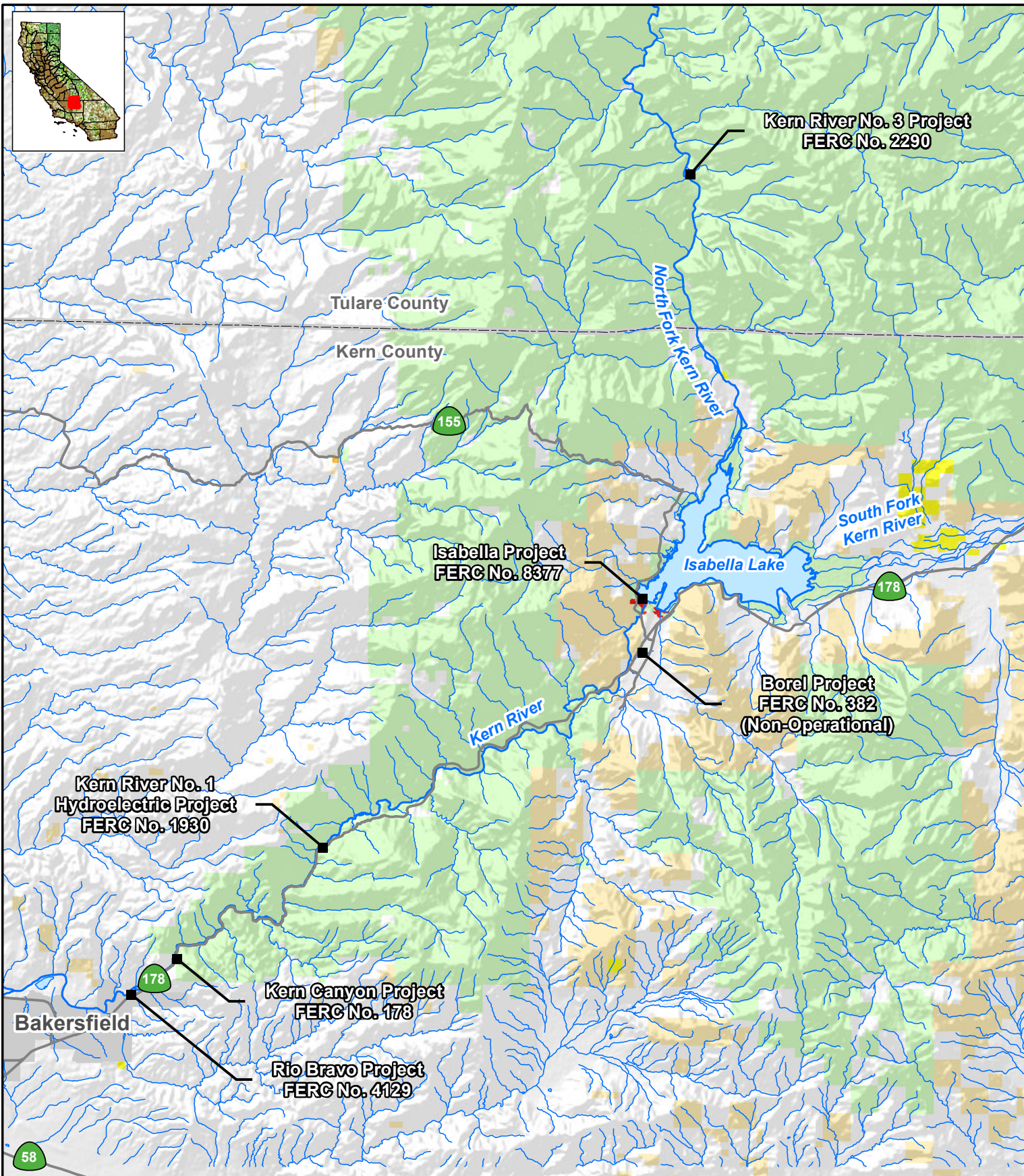
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Feet

Projection: UTM Zone 11  
Datum: NAD 83

Date: 3/17/2023

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- County Boundary
- Highway
- Watercourse
- Water Body

- Land Ownership (BLM, 2021)**
- U. S. Forest Service
  - U. S. Bureau of Land Management
  - U. S. Army Corps of Engineers
  - State of California
  - Private (Blank)



Kern River No. 1 Hydroelectric Project  
FERC Project No. 1930

**Map 2-4**  
**FERC-Licensed Projects**  
**in the Kern River Basin**

Projection: UTM Zone 11 N Datum: NAD 83  
 Date: 5/1/2023

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