# Southern California Edison

## Application for Surrender of License
## Borel Hydroelectric Project
## FERC Project No. 382

## Volume III

## Applicant-Prepared Draft Environmental Assessment

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December 2022

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# 1.0 Introduction

## 1.1 Application

Southern California Edison (SCE), licensee of the Borel Hydroelectric Project (FERC No. 382) (Borel Project), proposes to surrender the existing Federal Energy Regulatory Commission (FERC or Commission) license for the Borel Project and decommission Borel Project facilities as described in the Decommissioning Plan (Plan; Volume II of this Application for Surrender of License [Application]). The Borel Project is located on the North Fork and main stem of the Kern River in Kern County, California. The Borel Project includes a 158-foot-long, 4-foot-high concrete diversion dam on the North Fork of the Kern River and a powerhouse with two 3,000-kilowatt (kW) generators and a 6,000-kW generator for a total installed capacity of 12 megawatts (MW). These facilities are situated on private land that is under Kern County's jurisdiction as well as on federally owned lands managed by the U.S. Army Corps of Engineers (Corps); U.S. Department of Agriculture, Forest Service (Forest Service); and U.S. Department of the Interior, Bureau of Land Management (BLM). The Borel Project location is shown in Figure 1.1-1.

SCE is filing with FERC an Application pursuant to 18 Code of Federal Regulations (CFR) § 6.1, which requires, in part, that a surrender for a major hydroelectric project must be executed in the same form and manner as an application for a new license. Accordingly, SCE has developed this Applicant-Prepared Draft Environmental Assessment (APDEA). The APDEA presents the purpose and a description of the proposed action of surrendering the Borel Project license; assesses the current existing environment of the Borel Project boundary and Project Vicinity[1]; describes potential environmental effects associated with Project surrender and decommissioning; and details the proposed measures that SCE will implement to avoid or address adverse environmental effects.

In particular, this APDEA can be used by the Commission as a biological assessment (BA) to determine whether the federal proposed action is likely to: 1) adversely affect listed species or designated critical habitat; 2) jeopardize the continued existence of species that are proposed for listing; or 3) adversely modify proposed critical habitat.



[1] Project Vicinity" refers to the 0.5-mile area surrounding the FERC Project boundary.

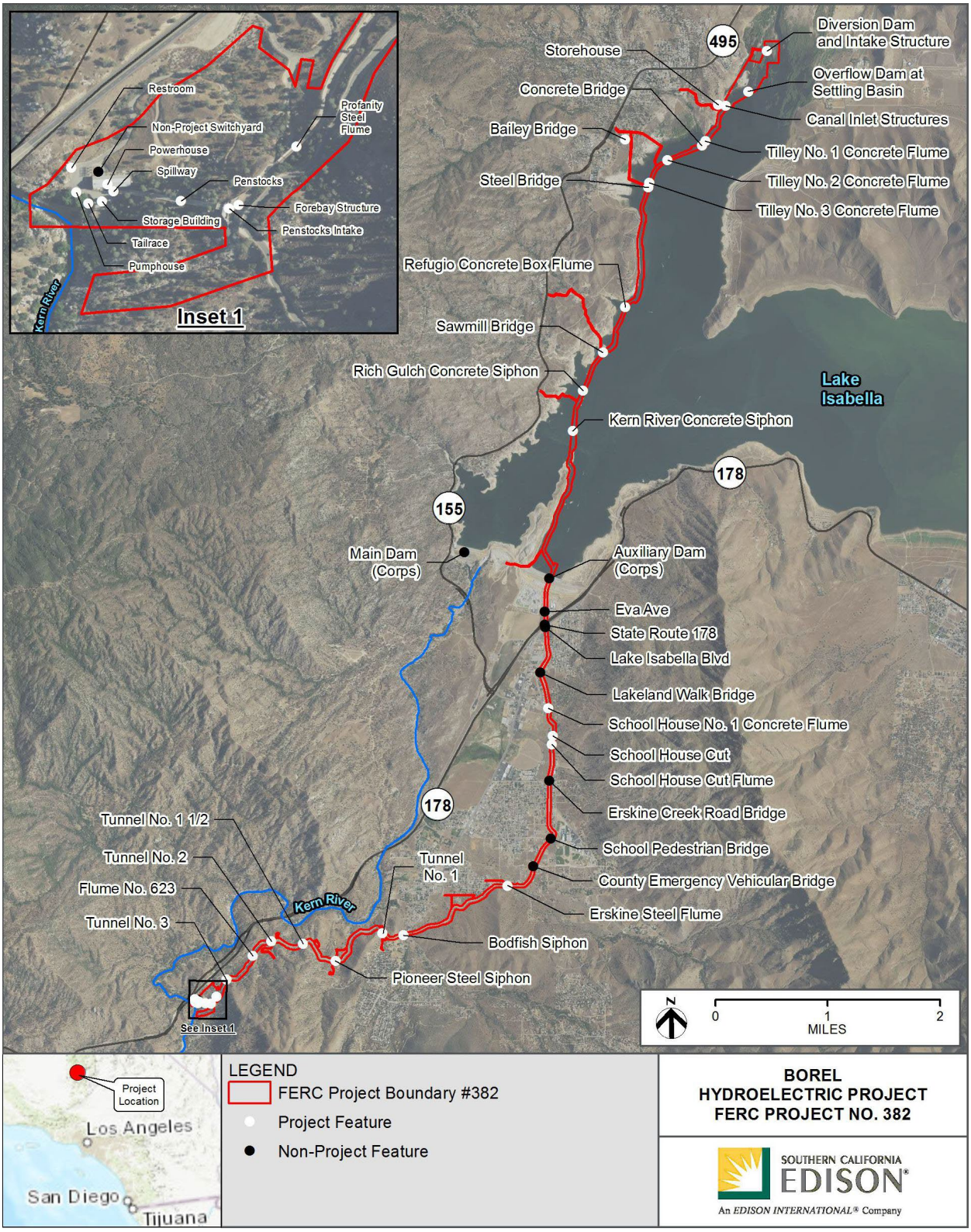


**Figure 1.1-1. General Borel Project Location**

In support of the Borel Project relicensing that culminated in FERC issuing a new license in 2006, studies were performed related to a variety of environmental resources, which are discussed throughout this APDEA. The existing license for the Borel Project requires monitoring and management for water quality, flows, fisheries, wildlife and botanical resources, threatened and endangered species, cultural resources, and aesthetic resources, which are also discussed in this APDEA. Additionally, SCE performed the following targeted information gathering studies in 2021 and 2022 to better understand the potential impacts of Borel Project surrender and decommissioning:

1. Aquatic Resources Delineation
2. Bat Survey
3. Endangered Species Act Listed Bird Habitat Assessment
4. Special-Status Plant Survey
5. Special-Status Wildlife Habitat Assessment
6. Invasive Weeds Survey
7. Cultural Resource Survey
8. Tribal Resource Study
9. Built Environment Assessment
10. Hydrology and Hydraulics Modeling

Therefore, there is ample available information from relicensing studies, post-licensing monitoring and studies, and recent studies to evaluate potential effects on environmental resources from Borel Project license surrender and decommissioning.

## 1.2 Purpose of Action

SCE is surrendering the Borel Project license because in 2017, the Corps implemented a safety modification to its Lake Isabella Auxiliary Dam for which the Corps condemned 10.7 acres of private and public land associated with the Borel Project and sealed off the existing section of conduit through the Auxiliary Dam by filling it with concrete and abandoning the conduit in place. This action rendered the Project nonfunctional and therefore SCE is seeking to surrender the Project license. The Surrender application addresses the disposition of all project facilities (i.e., removal, modification, or abandonment in place) and has been developed in accordance with 18 C.F.R. § 6.1. As proposed, surrender of the Borel Project license and decommissioning of the Borel Project will involve the removal and modification of facilities as well as certain facilities being abandoned in place, as described in the Plan presented in Volume II of SCE's Application.

## 1.3 Statutory and Regulatory Requirements

The surrender of the Borel Project license and the decommissioning of Borel Project facilities is subject to requirements under the Federal Power Act (16 United States Code [U.S.C.] § 791 *et seq*.) and other statutes. Major regulatory and statutory requirements applicable to the Borel Project surrender and decommissioning are summarized in Table 1.3-1 and described below.

**Table 1.3-1. Major Regulatory and Statutory Requirements for the Borel Project Surrender and Decommissioning**

| Requirement | Agency | Status |
|---|---|---|
| Section 6.2 of the Commission's Regulations | FERC | SCE will distribute the Application, including this APDEA, to stakeholders and continue to consult with the BLM, Forest Service, and Corps throughout the FERC license surrender process. |
| Clean Water Act | Corps | SCE will continue to consult with the Corps throughout the decommissioning and license surrender process. |
| | SWRCB | SCE will apply to the SWRCB at the appropriate time in the License Surrender proceeding for Section 401 water quality certification, and provide a copy of the request to FERC. |
| Endangered Species Act | U.S. Fish and Wildlife Service; National Marine Fisheries Service | FERC has designated SCE as the Commission's non-federal representative for carrying out informal Section 7 consultation. Borel Project decommissioning construction activities may affect but are not likely to adversely affect three ESA-listed species (yellow-billed cuckoo [*Coccyzus americanus occidentalis*]- western distinct population segment, southwestern willow flycatcher [*Empidonax traillii extimus*], and least Bells' vireo [*Vireo bellii pusillus*]).The ESA-listed species section of the APEA is written to allow it to be used as a Biological Assessment. |
| National Historic Preservation Act | California State Historic Preservation Office | FERC has designated SCE as the Commission's non-federal representative for carrying out day-to-day Section 106 consultation. Consultation meetings with federal agencies and Native American Tribes were held on March 17, 2021 and October 6, 2022. SCE prepared a Cultural Resources Study Report and a Tribal Resources Study Report to identify historic properties and any adverse effects. Pending concurrence from the SHPO, demolition of the Borel Powerhouse would constitute an adverse effect to a historic property. |
| Coastal Zone Management Act | California Coastal Commission | SCE will consult with the appropriate California Coastal Commission and file with FERC documentation of the consultation and the Coastal Zone Commission. |

### 1.3.1 Section 6.2 Restoration of Federal Lands

Section 6.2 of the Commission's regulations (18 CFR § 6.2) states that where project works have been constructed on lands of the United States, "the licensee will be required to restore the lands to a condition satisfactory to the Department having supervision over such lands . . . ." Implementation of the Plan and additional measures will ensure that federal lands are adequately restored. SCE met with the Forest Service and BLM multiple times to discuss plans to decommission Borel Project facilities, and these are documented in the Record of Consultation presented in Volume IV of SCE's Application.

### 1.3.2 Clean Water Act

Section 404 of the Clean Water Act (CWA) establishes a program to regulate the discharge of dredged or fill material into Waters of the United States, including wetlands. Activities in Waters of the United States regulated under this program include fill for development, water resource projects (e.g., dams, levees), infrastructure development (e.g., highways, airports), and mining projects. Section 404 requires a permit before dredged or fill material may be discharged into Waters of the United States, unless the activity is exempt from Section 404 regulation (e.g., certain farming and forestry activities). SCE will comply with any conditions of the Corps' Section 404 permit requirements to limit impacts to water resources, aquatic resources, and geology and soils.

Under Section 401 of the CWA, an applicant for a federal license or permit must obtain certification from the appropriate state pollution control agency verifying compliance with the CWA. SCE met with the State Water Resources Control Board on January 12, 2021, to discuss the Application process and schedule and to provide an overview of the Borel Project. SCE will obtain any CWA Section 401 water quality certifications necessary to support the decommissioning activities.

### 1.3.3 Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species.

On December 16, 2020, SCE filed a request with FERC to be designated as the Commission's non-federal representatives to conduct informal consultation with the U.S. Fish and Wildlife Service (USFWS) pursuant to the regulations at 50 CFR § 402.08, implementing Section 7 of the ESA. By a letter dated December 17, 2020, the Commission designated SCE as their non-federal representative[2].

On October 21, 2021, and again on October 3, 2022, SCE generated a list of candidate and ESA-listed species for the Borel Project using the USFWS' Information for Planning and Consultation System (IPaC; USFWS 2021a, 2022b). The list included ten species: one plant, one amphibian, one fish, four birds, and three mammals. All these species are listed as threatened or endangered under the ESA:

- Threatened

[2] Accession Number: 20201217-3035.

  - Yellow-billed cuckoo (*Coccyzus americanus occidentalis*) – western distinct population segment (DPS)
  - Delta smelt (*Hypomesus transpacificus*)
  - California red-legged frog (*Rana draytonii*)

- Endangered

  - Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*)
  - Southwestern willow flycatcher (*Empidonax traillii extimus*)
  - California condor (*Gymnogyps californianus*)
  - Bakersfield cactus (*Opuntia basilaris* var. *treleasei*)
  - Fisher (*Pekania pennanti*)
  - Least Bell's vireo (*Vireo bellii pusillus*)
  - San Joaquin kit fox (*Vulpes macrotis mutica*)

Some species were removed from further consideration in this APDEA based on species range, absence of suitable habitat, or because the species did not occur on site. Borel Project decommissioning construction activities may affect, but are not likely to adversely affect, three ESA-listed species (yellow-billed cuckoo-western distinct population segment, southwestern willow flycatcher, and least Bell's vireo). Further information is located in Section 3.7, Species Listed Under the Endangered Species Act.

SCE met with USFWS on three occasions as part of informal consultation on the potential for decommissioning activities to impact listed species. These meetings are documented in the Record of Consultation presented in Volume IV of SCE's Application.

SCE intends for this APDEA to facilitate the Commission's consultation with the USFWS pursuant to Section (§) 7(c)(1) of the ESA (Title 16 of the United States Code [U.S.C] § 1536(c)(1)) and the implementing joint agency regulations in Title 50 of the Code of Federal Regulations (CFR), § 402.12. In particular, this APDEA ca be used by the Commission as a biological assessment (BA) to determine whether the federal proposed action is likely to: 1) adversely affect listed species or designated critical habitat; 2) jeopardize the continued existence of species that are proposed for listing; or 3) adversely modify proposed critical habitat.

### 1.3.4 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider the effect of federal actions on historic properties, and to allow the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on the proposed action. "Historic properties" are defined as any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places (NRHP). FERC is to seek concurrence with the State Historic Preservation Officer (SHPO) on any finding of effect for historic properties and allow the ACHP an opportunity to comment. In the event that Native American properties are identified, Section 106 requires that FERC consult with any potentially interested Native American Tribes that might attach religious or cultural significance to such properties.

On December 16, 2020, SCE filed a request with FERC to be designated as the Commission's non-federal representatives to consult with the California SHPO, applicable Native American Tribes, and

other appropriate consulting parties pursuant to the regulations at 36 CFR § 800.2(c)(4), implementing Section 106 of the NHPA. By a letter dated December 17, 2020, the Commission designated SCE as their non-federal representative for day-to-day Section 106 consultation.[3]

SCE held two Section 106 consultation meetings with Tribes, federal agencies, and consulting parties. These meetings are documented in Volume IV (Record of Consultation) and in Volume V (Privileged Information) of this Application. These meetings served to present the Borel Project, invite participation in the process, and to request input on the resource avoidance measures incorporated into the Plan.

To identify historic properties, SCE prepared a *Cultural Resources Study Report* and a *Tribal Resources Study Report* documenting the archival research, resource surveys, Tribal interviews, NRHP eligibility determinations, and effects assessments. No adverse effects to any archeological or tribal resource were identified. Demolition of the Borel Powerhouse would constitute an adverse effect to a historic property. Resolution of adverse effects will follow the NHPA regulations detailed in 36 CFR § 800.6 (Resolution of Adverse Effects) including preparation of a Memorandum of Agreement (MOA).

### 1.3.5 Coastal Zone Management Act

The Federal Consistency Unit of the California Coastal Commission implements the federal Coastal Zone Management Act (CZMA) of 1972 as it applies to federal activities, development projects, permits and licenses, and support to state and local governments. In the CZMA, Congress created a federal and state partnership for management of coastal resources. The federal government certified the California Coastal Management Program (CCMP) in 1977. SCE will consult with the appropriate California Coastal Commission and file with FERC documentation of the consultation and the Coastal Zone Commission.

## 1.4 Consultation

SCE is continuing consultation with interested stakeholders, including public and private landowners, as well as state and federal agencies. SCE has held multiple public meetings and virtual town halls to engage the public and private landowners in Borel Project discussions. Other public communication tools have also been employed, including public notices and advertisements for meetings and a dedicated Borel Project website and telephone hotline.

Consultation documentation is provided and described in detail in Volume IV (Record of Consultation) of this Application.

[3] Accession Number: 20201217-3035.

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# 2.0 Proposed Action and Alternatives

## 2.1 No Action Alternative

Under the No Action alternative, the license and facilities of the Borel Project, which is not operational, would remain in place. The Borel Project would continue to be maintained according to the conditions of the existing license. Current license requirements include seasonal minimum flows into the lower Kern River (currently managed at the direction of the Kern Watermaster), periodic fish monitoring and reporting, and a Historical Properties Management Plan and annual cultural resources reporting, as well as management for other resources such as instream flows, vegetation and noxious weeds, sensitive wildlife, and visual resources.

The No Action alternative serves as a baseline for existing environmental conditions described in this APDEA. Under the No Action alternative, the environmental resource effects discussed in this APDEA would not occur.

### 2.1.1 Borel Project Facilities

The Borel Project, as currently licensed, consists of: (1) a 158-foot-long, 4-foot-high concrete diversion dam on the North Fork of the Kern River; (2) a 61-foot-long intake structure with three 10-foot by 10-foot radial gates; (3) a canal inlet structure consisting of a canal intake, trash racks, and a sluice gate; (4) a canal with a combined total length of 1,985 feet of tunnel, 1,651 feet of steel-lined flume, 3,683 feet of steel siphon, and 51,835 feet of concrete-lined canal; (5) four steel penstocks—penstocks 1 and 2 are 526 feet long and 565 feet long, respectively, with varying diameters between 42 and 60 inches; penstocks 3 and 4 each are 60 inches in diameter and extend 622 feet, at which point they join together to form a single 84-inch-diameter, 94-foot-long penstock; (6) a powerhouse with two 3,000-kilowatt (kW) generators and a 6,000-kW generator for a total installed capacity of 12 megawatts (MW); and (7) other appurtenant facilities.

Borel Project facilities are described in detail in the Plan (Volume II).

### 2.1.2 Borel Project Operations

The Borel Project is non-operational. Existing Borel Project maintenance involves regular inspections for public safety in accordance with the Borel Project PSP and in adherence to applicable license articles and conditions.

### 2.1.3 Existing Environmental Measures

The Borel Project license requires SCE compliance with numerous environmental measures. In addition to standard license articles set forth in Form L-1 (October 1975), entitled “Terms and Conditions of License for Constructed Major Project Affecting Lands of the United States” (*see* 54 FPC 1799 *et seq.*), which includes License articles 1-32. The Borel Project is subject to the license articles and conditions in Table 2.1-1. Articles that were removed (Articles 402, 403, 404, 405, 408, Conditions 26, 28), completed (Articles 203, 204, 301, 406) or administrative and/or legal (Articles 201, 202, 205, 415; Conditions 1,2, 4, 5,6, 7, 8, 9, 10, 12, 13, 14, 22, 23) are not described in the table.

**Table 2.1-1. Existing Active Borel Project License Articles**

| Article/ Condition Number | Name of Measure and/or Compliance Plan | Requirement | Status |
|---|---|---|---|
| Article 401 | Minimum Stream Flows | Reference Conditions 17(a), 17(b) and 18 in table below.<br><br>Implementation of a Fish Monitoring Plan that includes sampling using gill nets between February through April of specific years. Report due at the end of each round of monitoring. | Current, as amended February 11, 2020 |
| Article 407 | Vegetation and Noxious Weed Management Plan. | Vegetation and Invasive Weed Management Plan, including annual monitoring, treatment and mapping of invasive weeds and use of pesticides on National Forest System (NFS) lands, inventory and mapping of new/existing nox weed pops, adaptive management, control, monitoring, revegetation, etc. | Current, as amended by FERC Order dated June 1, 2022 |
| Article 409 | Southwestern Pond Turtle Monitoring Plan, | Provides for monitoring of pond turtle populations in the Kern River bypassed reach, and a record of average daily flows during the survey period. | Current |
| Article 410 | Riparian Habitat Enhancement | Includes planting native riparian species in degraded or fire burn areas and selected recreation sites, public education program to protect restoration efforts, and documentation of enhancements. | Current |
| Article 411 | Sensitive Species Protection Plan | Avoidance and protective measures for Kern Canyon clarkia; elderberry shrubs; yellow-blotched and Kern Canyon slender salamanders; foothill yellow-legged frog; southwestern pond turtle; coast horned lizard; bald eagle; American peregrine falcon; other raptors; southwestern willow flycatcher; and western red, Townsend's big-eared, and pallid bats. | Current, as amended by FERC Order dated June 1, 2022 |

**Table 2.1-1. Existing Active Borel Project License Articles**

| Article/ Condition Number | Name of Measure and/or Compliance Plan | Requirement | Status |
|---|---|---|---|
| Article 412 | Erosion Control Plan | To prevent, control, and repair gullying of hill slopes, fill slopes, and road tread, and to prevent and control production of fine-grained sediment (silt-sized particles) delivered to waterways. | Current |
| Article 413 | Visual Management Plan | Measures include surface treatment, use of native plant species, restoration of disturbed areas, removal of project debris and general maintenance and upkeep | Current |
| Article 414 | Programmatic Agreement and Historic Properties Management Plan | Implementation of Programmatic Agreement and Historic Properties Management Plan; consultation with Tribes, State Historic Preservation Office (SHPO), Federal Energy Regulatory Commission (FERC), and U.S. Department of Agriculture, Forest Service (Forest Service) for non-routine repairs and maintenance | Current |
| Condition 3 | Annual Consultation on Affected National Forest Resources | SCE meets with Forest Service between January 10 and March 15 of each year to discuss license compliance measures. | Current |
| Condition 11 | Pesticide-Use Restrictions on National Forest System Land (NFSL) | Requires prior written Forest Service approval for use of pesticides, use of only Environmental Protection Agency-registered materials | Current |
| Condition 15 | Protection of Forest Service Special Status Species | Prior to actions that may affect Forest Service special-status species or their critical habitat, prepare a Biological Evaluation evaluating the potential impact of the action on the species or its habitat and submit for Forest Service approval | Current |
| Condition 16 | Erosion and Sediment Control | Notify Forest Service within 3 days of emergency site stabilization, erosion protection, or sedimentation | Current |

**Table 2.1-1. Existing Active Borel Project License Articles**

| Article/ Condition Number | Name of Measure and/or Compliance Plan | Requirement | Status |
|---|---|---|---|
| | | management that affects NFS Land or resources and Forest Service approval prior to permanent remediation measures | |
| Condition 17(a) | Flow Regime for Affected NFS Lands: Instream Flow Measurement Plan, | Requires the measurement and documentation of instream flow releases in a publicly available format. These flows are currently managed at the direction of the Kern Watermaster. | Current, per October 16, 2007 license amendment |
| Condition 17(b) | Flow Regime for Affected NFS Lands: Minimum Instream Flow[a] | Seven-day average minimum flow requirements for Corps to release at Isabella Main Dam to Kern River of 25 cubic feet per second (cfs) in November through April, 30 cfs in May and October, and 60 cfs in June through September; instantaneous minimum flow requirements to Kern River of 20 cfs in November through April, 25 cfs in May and October, and 50 cfs in June through September. These flows are currently managed at the direction of the Kern Watermaster. | Current, per October 16, 2007 license amendment |
| Condition 18 | Fish Monitoring | Fish monitoring in Kern River below Isabella Dam; study and reporting to occur every 5 years | Current, per October 16, 2007 license amendment |
| Condition 19 | Borel Canal Fish Rescue | Evaluation of level of fish entrainment and measures to reduce entrainment and mortality; new fish rescue facility with receiving basin with polyvinyl chloride pipe feed from the Borel forebay. | Current |
| Condition 20 | Borel Canal Sediment Removal Affecting NFS Lands | Borel Canal Sediment Removal Plan affecting portions of the Borel Canal within NFS lands; consultation and permits with or from California Department of Fish and Wildlife, State Water Resources Control Board, United States Fish and | Current |

**Table 2.1-1. Existing Active Borel Project License Articles**

| Article/ Condition Number | Name of Measure and/or Compliance Plan | Requirement | Status |
|---|---|---|---|
| | | Wildlife Service, and Army Corps of Engineers. | |
| Condition 21(a) | Land Resource Plans for Mitigating Project Effects to NFS Resources: Fire Management and Response Plan, | Details SCE's responsibility for the prevention, reporting, control and extinguishing of fire in the vicinity of the Project | Current, as amended by FERC Order dated April 13, 2009 |
| Condition 21(b) | Land Resource Plans for Mitigating Project Effects to NFS Resources: Visual Management Plan | Measures include surface treatment, use of native plant species, restoration of disturbed areas, removal of project debris and general maintenance and upkeep | Current, as amended by FERC Order dated April 13, 2009 |
| Condition 21(c) | Land Resource Plans for Mitigating Project Effects to NFS Resources: Sign Plan | Addresses maintenance standards and requires Forest Service approval for signs on NFS Lands | Current, as amended by FERC Order dated April 13, 2009 |
| Condition 24 | Biological Resources Management Plans for Mitigating Project Effects to NFS Resources: Vegetation and Invasive Weed Management Plan | Requires annual monitoring, treatment and mapping of invasive weeds and use of pesticides on NFS lands, inventory, and mapping of new/existing noxious weed populations, adaptive management, control, monitoring, revegetation, etc. | Current, as amended by FERC Order dated June 1, 2022 |
| Condition 25 | Cultural Resources Management Plan | Includes measures to mitigate the identified impacts, including a monitoring program, a patrolling program, and management protocols for the ongoing protection of archaeological properties. | Current |
| Condition 27 | Roads and Facilities Management Plan for NFS roads affected by the Project or Project roads affecting NFS resources; the plan | Incorporates Forest Service standards for design, construction, operation and maintenance for Project roads and facilities on NFS lands. | Current |

[a].

## 2.2 Applicant's Proposal

SCE is proposing to surrender the existing Borel Project license and decommission Borel Project facilities. Given the variety of facility types, land ownership, and topography, the proposal includes several decommissioning strategies, including the removal of facilities, abandoning facilities in place, and abandoning facilities with modifications. The detailed proposal is outlined in the Plan (Volume II).

SCE will continue to maintain the Borel Project and adhere to applicable license articles and conditions until decommissioning activities are deemed complete or make those actions infeasible. Once FERC issues its order approving the Surrender Application and approving the Plan, it is expected that the decommissioning process will take more than 5 years. An anticipated schedule is provided in Section 3 of the Plan (Volume II).

### 2.2.1 Decommissioning of Borel Project Facilities

The decommissioning of Borel Project facilities is organized into 11 major segments (Table 2.2-1 and Figure 2.2-1). Segments are ordered upstream to downstream and are based on land ownership, access, location, and other common conditions. **Segments 1 through 4** (Upper Borel) are located upstream from the Auxiliary Dam (Corps) and entirely within the limits of Lake Isabella and subject to inundation when the water surface elevation of the reservoir is at elevation 2,550 or higher. Access to these segments and decommissioning actions will be dependent upon water year and lake levels. **Segment 5** is located partially within the reservoir and partially downstream of the Auxiliary Dam (Lower Borel). **Segments 6 through 11** are located downstream from the Auxiliary Dam (Lower Borel), and access is not impacted by reservoir operations.

**Table 2.2-1. Borel Project Decommissioning Segments**

| Segment No. | Segment Description | Station[a] Number – Start | Station Number – End | Length (feet) | Land Owner |
|---|---|---|---|---|---|
| 1 | Diversion Dam and Intake Structure to Tilley No. 1 Concrete Flume | 32+30 | 52+00 | 1,970 | SCE, Forest Service |
| 2 | Tilley No. 1 Concrete Flume to Tilley No. 3 Concrete Flume | 52+00 | 88+15 | 3,615 | SCE |
| 3 | Tilley No. 3 Concrete Flume to End of SCE Land | 88+15 | 161+00 | 7,285 | SCE, Forest Service |
| 4 | End of SCE Land to Auxiliary Dam (Corps) | 161+00 | 273+80 | 11,280 | SCE, Forest Service |
| 5 | Auxiliary Dam (Corps) | 273+80 | 298+00 | 2,420 | Corps |
| 6 | Auxiliary Dam (Corps) to Alta Sierra Avenue | 298+00 | 398+45 | 10,045 | SCE |
| 7 | Alta Sierra Avenue to Erskine Steel Flume | 398+45 | 451+20 | 5,275 | BLM, private |
| 8 | Erskine Steel Flume to Bodfish Siphon | 451+20 | 506+29 | 5,509 | SCE, BLM |
| 9 | Bodfish Siphon to Pioneer Steel Siphon | 506+29 | 548+79 | 4,250 | SCE, BLM, Forest Service |
| 10 | Pioneer Steel Siphon to Forebay Structure | 548+79 | 628+74 | 7,995 | Forest Service |
| 11 | Forebay Structure to the Powerhouse and Tailrace[b] | 628+68 | 639+03 | 1,035 | Forest Service |
| | **Total** | -- | -- | **60,679** | -- |

[a] Stationing is a form of measurement used by engineers and surveyors to show the linear distance from the point of origin. Each station is equal to one hundred feet from the linear point of origin. For example, XX + xx, where XX is multiplied by one hundred + xx is the additional number of feet. “32 + 30” is 3200+30 = 3,230 feet from the linear point of origin.

[b] End stationing for this segment is at the terminus of the spillway channel. Borel Project stationing was not provided in the 2006 License Exhibits (F, G, K) for the penstocks and powerhouse.

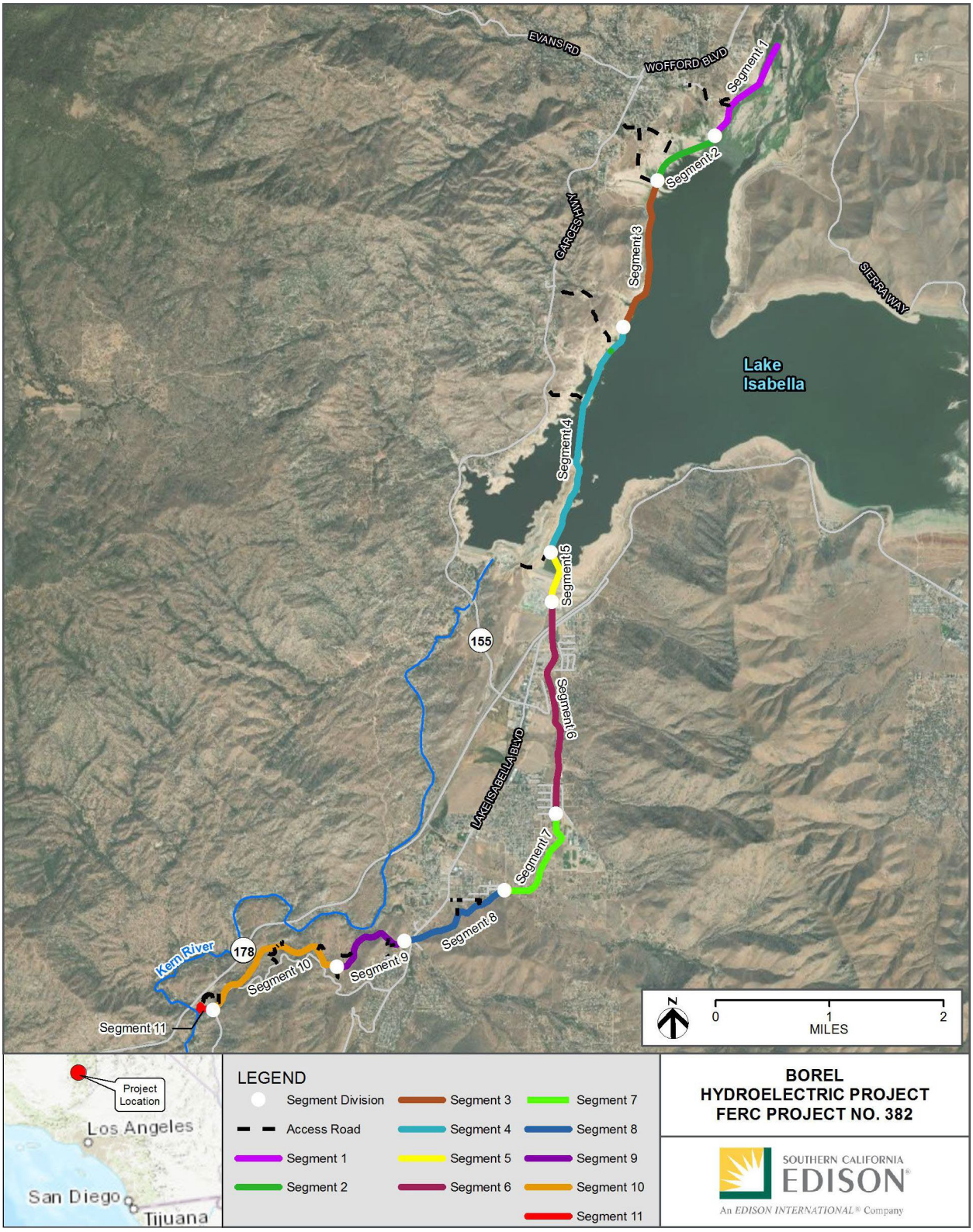


**Figure 2.2-1. Borel Project Decommissioning Segments**

**Segment 1** (Diversion Dam and Intake Structure to Tilley No.1 Concrete Flume) is approximately 1,970 feet long. The Diversion Dam and Intake Structure to the Overflow Dam at Settling Basin are on property owned by SCE. The Intake Structure, Canal Inlet Structures, and Storehouse are on federal land administered by the Forest Service. Proposed work includes abandoning the Diversion Dam and Intake Structure in place. No work is proposed along the Overflow Dam at Settling Basin, which is upstream from the Canal Inlet Structure, as the area has naturally revegetated. The Canal Inlet Structure is proposed to be abandoned in place with modifications, such as backfilling the structure and removing steel racks, gates, actuators and fencing. The proposed plan for the concrete-lined canal is to abandon with modification; the concrete canal will be backfilled with imported soil to limit ground disturbance. If necessary, the canal will be dewatered prior to fill placement. The Storehouse, fencing, and material stored in the yard will be demolished and hauled off site to an approved facility, and the foundation will be left in place. The utility poles and lines, which are outside the Storehouse yard, will be protected in place to maintain service to adjacent parcels, and only the service drop will be disconnected. The Project access roads (PARs) used to access the Storehouse, Canal Inlet Structures, and concrete-lined canal will likely be improved for construction access and subsequently abandoned.

**Segment 2** (Tilly No. 1 Concrete Flume to Tilley No. 3 Concrete Flume) is approximately 3,615 feet. All features within **Segment 2** are on property owned by SCE. Proposed work includes abandoning Tilley No. 1 concrete flume and backfilling with imported soil. Tilley No. 2, and 3 Concrete Flumes will be demolished and buried. The transition wing walls will also be demolished to reduce fish stranding potential and for the safety of the public by reducing fall hazards. The abutments will remain in place, and the remaining concrete will be processed and placed within the canal with clean fill on top. Several sections of the concrete-lined canal will be abandoned in place or abandoned with modification and backfilled with imported soil to limit ground disturbance. The remaining sections will be demolished and buried, and the lining within the canal will be removed and processed as backfill.

**Segment 3** (Tilley No. 3 Concrete Flume to End of SCE Land) is approximately 7,285 feet. All Borel Project facilities within **Segment 3** are on property owned by SCE, while access roads are located on federal land administered by the Forest Service. Proposed work in the concrete-lined canal includes abandoning with modification and backfilling with imported soil, as well as demolishing and burying sections of the concrete-lined canal, as described in **Segments 1 and 2** above. The Steel Bridge will also be demolished and hauled off site to an approved recycling facility. The Refugio Concrete Box Flume is proposed to be demolished and buried along with the abutments, transitions, and foundations. Piers and footings will be removed to a depth of 2 feet below existing grade. Concrete will be processed and buried in adjacent portions of the canal. Bailey Bridge will no longer be needed and will be dismantled and hauled off site for recycling.

**Segment 4** (End of SCE Land to the Auxiliary Dam) is approximately 11,280 feet. The upper 6,815 feet of the segment is on federal land administered by the Forest Service, and in the lower 5,165 feet of the segment is on SCE owned land. Proposed work includes abandoning two sections of concrete-lined canal and backfilling with imported soil to limit ground disturbance. The rest of the concrete-lined canal in the segment will be demolished and buried. The left bank of the lined canal will be excavated after removal of the upper portion of the liner and the existing rock slope protection on the outboard slope (rock slope protection will be put back in place after the completed bank). Excavated material will be blended with processed liner material on the right side of the canal to extend the bank into the reservoir bottom. The Sawmill Bridge will also be removed and demolished.

The concrete will be processed and buried with clean fill within the adjacent canal. The Rich Gulch Concrete Siphon and Kern River Concrete Siphon will be abandoned in place with a concrete slurry/plug placed at the entry and exit. Any fencing, exposed steel, or metal safety hazards will be removed. The existing wingwalls will be buried with clean fill and graded to conform to the adjacent topography.

**Segment 5** (Auxiliary Dam) is approximately 2,420 feet. **Segment 5** is within federally owned land administered by the Corps and has no proposed action. An estimated 900 feet of canal upstream and 600 feet of canal downstream of the Corps' Auxiliary Dam have been filled by the Corps. The canal intake works at the Auxiliary Dam have been removed, destroyed, and filled as part of seismic upgrades.

**Segment 6** (Auxiliary Dam to Alta Sierra Avenue) is approximately 10,045 feet. All lands within **Segment 6** are owned by SCE. Proposed work includes demolishing the entire concrete-lined canal, processing the concrete before mixing with native soil, and using it as backfill material. The canal underneath the vehicle bridges will be backfilled with lightweight concrete in lieu of earthen fill to minimize loading on the existing bridge foundations. The entire concrete liner will remain in place beneath the bridges to a distance of 20 feet on both sides to provide protection to the canal slope. The Lakeland Walk Bridge will remain in its current condition. Fill will be placed within School House Cut to the top of the rectangular channel, with a high point near the middle and the fill graded to drain north and south. The School House No. 1 Concrete Flume and School House Cut Flume will be demolished; and the concrete will be processed mixed with native soil and used to backfill the canal and reconstruct the bank of the drainage crossings.

**Segment 7** (Alta Sierra Avenue to Erskine Steel Flume) is approximately 5,275 feet. Property within **Segment 7** is owned by private parties, SCE, or the federal government (and administered by BLM). Decommissioning of the existing canal on public lands will be consistent with **Segment 6**. On private parcels, the concrete-lined canal will be removed, processed, mixed with native soils, then used to backfill canal reaches on SCE land. Native soils will be used to backfill the canal and regrade the area to conform to the adjacent topography. School Pedestrian Bridge and the County Emergency Vehicular Bridge will be protected in place, and the canal beneath will be filled and graded. Erskine Steel Flume will be demolished, and the materials will be hauled off site. The foundations and piers will be removed to a depth of 2 feet below grade and disposed of offsite.

**Segment 8** (Erskine Steel Flume to Bodfish Siphon) is approximately 5,509 feet. Property within **Segment 8** is owned by private parties, SCE, or the federal government (and administered by BLM). On the private parcels, the proposed work includes demolishing the concrete-lined canal and grading to promote drainage to Erskine Creek. The remainder of the canal on federally owned lands adminstered by BLM or SCE land will be demolished, processed as backfill, and buried. The area will be graded to drain toward Bodfish Siphon, which will be abandoned in place with modifications. The wingwalls will be demolished, and the headwalls will be protected in place. The siphon will be filled with concrete slurry, and the gauging station and concrete vaults used to dewater the siphon will be demolished to allow for conveyance and release of drainage flow into Bodfish Creek. The existing culvert under Lake Isabella Boulevard will be replaced to accommodate stormwater flows that exceed the capacity of the biofiltration basin. The culvert will discharge into a biofiltration swale on the SCE property (east of Lake Isabella Boulevard). The swale will treat and ultimately convey stormwater into Bodfish Creek.

**Segment 9** (Bodfish Siphon to Pioneer Steel Siphon) is approximately 4,250 feet. Most land within **Segment 9** is federally owned and managed by the BLM, except for the canal segment upstream of Tunnel No. 1 (SCE) and the last 240 feet of Pioneer Steel Siphon (federally owned and administered by the Forest Service). Proposed work includes demolishing and burying the concrete-lined canal as previously described. Tunnel No. 1 will be abandoned with modification and backfilled with a mixture of debris and flowable fill material. The headwalls will remain, and the area will be backfilled and graded. Pioneer Steel Siphon will be demolished and hauled off site. Lead remediation for Pioneer Steel Siphon will be determined following testing and verification of the levels of contaminants present. Appurtenant facilities, including the gauging station building and siphon, drainpipe, and concrete energy dissipation structure, will be removed and hauled away. The overhead communications and power lines will be protected in place.

**Segment 10** (Pioneer Steel Siphon to Forebay Structure) is approximately 7,995 feet long. All lands within **Segment 10** are federally owned and administered by the Forest Service. The concrete liner of the canal will be removed to a depth of approximately 1 foot below finished grade on both sides of the canal, and the materials will be processed to be suitable as backfill. The right bank of the canal will be excavated and processed as fill material. Tunnel Nos. 1 1/2, 2, and 3 will be abandoned with modification, as described for Tunnel No. 1 in **Segment 9** above. Flume No. 623 and Profanity Steel Flume will be demolished, and the materials will be hauled off site. Existing concrete footings will remain in place to minimize ground disturbance.

**Segment 11** (Forebay Structure to the Powerhouse and Tailrace) is approximately 1,035 feet and includes features that will generally be demolished. All lands within **Segment 11** are federally owned and administered by the Forest Service. Access to the Forebay Structure is limited to a section of Kern Canyon Road. All features of the Forebay Structure will be demolished and hauled off site, including existing electrical and lighting equipment, stairs, handrails, intake screens, and others. Concrete not used as backfill in the immediate area will be hauled to other areas of the canal to be used as backfill. The penstocks, anchors blocks, and footings will be removed to existing grade. The Powerhouse will be demolished and hauled off site, with lead and/or asbestos remediation performed as needed. Three auxiliary buildings to the Powerhouse (Storage Building, Restroom and Pumphouse) will be demolished to the footing and disposed of offsite. The Tailrace tunnel will be demolished and backfilled with a blend of native material and processed concrete. After grading, clean riprap will be placed on the finished surface at a slope that conforms to the adjacent contours. No action is proposed for the natural spillway channel.

### 2.2.2 Proposed Environmental Measures

SCE proposes to include a comprehensive suite of measures as part of the proposed action to ensure appropriate resource protections during Borel Project decommissioning. Table 2.2-2 summarizes the measures that are proposed for protection of the human and natural environment.

**Table 2.2-2. Measures for Borel Project Decommissioning**

| Measure No. | Subject | Measure |
|---|---|---|
| ***General Construction Measures*** | | |
| 1 | Permits | SCE will consult with the applicable federal, state, and local agencies to obtain necessary permits and will comply with these permits during all decommissioning activities. |
| 2 | Borel Project Footprint | Work area footprints will be confined as much as reasonably practicable. All parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities will be confined, to the greatest extent possible, to previously disturbed areas. Additionally, the site footprint/area will be clearly defined and marked to avoid working in areas outside of the approved area. Fences and flagging will be installed by the contractor in a manner that does not impact habitats and other sensitive areas to be avoided and it is clearly visible to personnel on foot and operating heavy equipment. |
| 3 | Garbage and Micro trash | Work areas will be kept clear of garbage, including micro trash (small pieces of trash or smaller, broken-down pieces of trash). Trash and food will be stored in closed containers and removed daily to reduce attractiveness to opportunistic predators such as coyotes, domestic and feral dogs and cats, opossums, skunks, and raccoons. Littering of trash and food waste will be prohibited. Upon completion of a decommissioning activity, the work site will be inspected to ensure it is free of garbage and micro trash. If garbage or micro trash is detected at the site, it will be removed. |
| 4 | Construction Timing | Impacts to the community will be minimized, to the extent possible, through the use of seasonally-appropriate construction windows. |
| 5 | Speed Limits | All construction equipment and vehicles will drive no faster than 15 miles per hour on PARs and anywhere within the FERC Project boundary for reasons of public safety, avoidance of wildlife collisions, and to prevent excess dust. Vehicles will stay on designated roads to the extent reasonably possible. Construction truck trips will be minimized to the extent practicable, particularly in the community and on the grade between Bakersfield and Lake Isabella. |
| 6 | Hazardous Materials | All work-related materials will be properly stored and secured. Materials that are in any type of liquid or powder form will be stored in sealed leak-proof containers. In addition, all parked vehicles/equipment will be kept free of leaks, particularly antifreeze, as this could be fatal if consumed by wildlife. |
| 7 | Hazardous Liquids | The contractor will be required to conduct vehicle refueling and maintenance in upland areas, where fuel cannot enter aquatic habitats or areas that have suitable habitat to support federally and/or state listed species. Equipment and containers will be inspected daily for leaks. Should a leak occur, contaminated soils and surfaces will be cleaned up and disposed of as required by the Borel Project's regulatory permits and materials safety data sheets. |
| 8 | Invasive Weeds Prevention | Use certified weed-free straw or rice straw for all construction, erosion control, or restoration needs. Use gravel and sand from local and weed-free sources where possible. Whenever possible, dispose of any spoils on site, graded to match local contours, and use fill collected on site. |
| 9 | Construction Plans | SCE or the contractor will develop a suite of plans that the contractor will be required to follow throughout the decommissioning process. These plans are expected to include, but are not limited to, a traffic control plan, a staging and haul route plan, a materials handling plan, a construction safety plan, a specific fire safety plan, a dewatering plan, and a Stormwater Pollution Prevention Plan (SWPPP). |

**Table 2.2-2. Measures for Borel Project Decommissioning**

| Measure No. | Subject | Measure |
|---|---|---|
| 10 | Use of Local Construction Materials | Construction supplies will be purchased from local businesses to the extent practicable. |
| 11 | Clean Fill | Imported fill will be minimized to the extent possible. All imported fill will come from clean sites (soils will be tested as needed) and be weed-free. |
| 12 | Modern Vehicles | On-road heavy duty truck fleet to comply with California Title 13 CCR § 2025 which requires that older vehicles be replaced by modern, emission-controlled trucks. |
| 13 | Worker Environmental Awareness Program (WEAP) | A WEAP will be established and implemented prior to the start work activities in the field and cover biological and cultural resources. The program will be presented by a qualified biologist and a qualified archaeologist to all construction crew members. If new employees join the crew, they will receive formal, approved training prior to working on site. Upon completion of the orientation, employees will sign a form stating they attended the program and understand all protection measures. A fact sheet containing the presented information will also be prepared and distributed.<br><br>For biological resources, the WEAP will cover special-status wildlife species, general behavior and ecology of these species, their sensitivity to human activities, their legal protection, penalties for violating federal laws, reporting requirements, Borel Project mitigation measures, and measures to implement in the event that the species is found during activities.<br><br>For cultural resources, the WEAP will cover the existence of and potential for cultural and tribal resources in the Borel Project Vicinity, and contractor roles/responsibilities in the case of an inadvertent discovery during construction. |
| ***Wildlife and Habitat Measures*** | | |
| 14 | ESA Birds and Habitat | No work activities will take place upstream of the Canal Inlet Structure to prevent potential impacts to ESA-listed bird habitat and other sensitive natural communities present in this Borel Project segment. |
| 15 | Biological Monitor | A biological monitor will be on site during all ground-disturbing and vegetation removal activities associated with the decommissioning in areas of sensitive vegetation communities, ESA-listed species habitat, or known special-status species occurrences. |
| 16 | Pre-construction Surveys | Prior to the start of activities that may impact biological resources, in each specific segment of the Borel Project (see Volume II, Decommissioning Plan), pre-construction surveys for sensitive habitats and sensitive species, including ESA-listed species, will be conducted. Surveys will be conducted by qualified biologists and during the appropriate timeframe for detection of target species, within the given period for the activity (e.g., nesting bird surveys will not be performed for activities that will take place completely outside of the nesting bird season). |
| 17 | Revegetation | Upon completion of work activities, temporarily disturbed areas will be revegetated with native plant species. A revegetation plan will be developed that addresses revegetating areas where Borel Project features have been removed. |
| 18 | Reporting Injured, Diseased, or Deceased Wildlife | All decommissioning staff will report any instances of injured, notably diseased, or deceased wildlife observed within the FERC Project boundary to the SCE authorized representative or designee, who will report the information to the appropriate jurisdictional agency(ies). |

**Table 2.2-2. Measures for Borel Project Decommissioning**

| Measure No. | Subject | Measure |
|---|---|---|
| 19 | Active Bird Nests | To protect native breeding birds, work activities will avoid to the extent possible the general avian breeding season of February 1 through September 15. If decommissioning activities cannot be avoided during this period, a focused survey for active nests within the area proposed for work will be conducted prior to the commencement of Borel Project activities. If no nests are located, work may proceed as planned. If nesting activity is detected, a protective buffer will be established, as determined by a qualified biologist. |
| 20 | Bat Exclusion | The year prior to the proposed start of the removal of Borel Project facilities with suitable bat habitat , humane exclusion devices will be placed on all Borel Project facilities that will be removed/filled and have known bat occupation, signs of bat occupation, or potential bat habitat. The humane exclusion device will be installed at the appropriate time of year, outside of maternal season (April and late August) and outside of hibernation season (between November and February). Typically, humane devices should be left in place for a minimum of 7 nights and, in some cases, 2 full weeks to ensure all bats have left the facility. Surveys will be completed by a qualified biologist to ensure humane exclusion devices have worked properly and all bats have left before permanent exclusion devices are installed. A permanent exclusion device must follow a humane exclusion immediately after the area is bat free. |
| 21 | Bat Surveys | No more than 7 days prior to the removal/fill of Borel Project features where permanent bat exclusion devices have been placed, a qualified biologist will perform a survey of the feature(s) to ensure no bats are present and exclusion devices are still functional. Exclusion devices will only be removed, if necessary, no more than 1 day before decommissioning activities on the feature commence. |
| 22 | Special-status Species | If special-status species are detected, those individuals will be allowed to move from the area of their own volition. If impacts to special-status species cannot be avoided, the agency(ies) with jurisdiction will be consulted and any necessary permits or approvals will be acquired prior to the commencement of decommissioning activities. |
| 23 | Excavations | For any activities requiring an excavation, if excavations are to be left open and unattended for more than 12 hours, they will either be covered, surrounded with exclusion fencing, or an escape ramp will be constructed to the bottom of the pit with less than a 2:1 slope, to provide an escape route to prevent small wildlife species (e.g., lizards, rodents) in the area from getting trapped in the excavation. To the extent feasible, excavations will not be left open at the end of the day and will be covered after confirming absence of trapped individuals. Prior to commencement of work activity each day, staff will check excavations to ensure no animals are trapped. Before backfilling or permanently closing any excavation, it will be checked to ensure no wildlife are present within the excavated area. If wildlife has become trapped, it will be removed prior to closure or backfilling. |
| 24 | Riparian Vegetation | Riparian vegetation removal and trimming will be limited to the amount necessary to successfully complete all activities. To prevent unintended or unnecessary removal or trimming of riparian vegetation, orange barrier fencing, or flagging will be erected to clearly define the habitat to be avoided during work activities. |
| 25 | Special-status Plants | Tracy's eriastrum and Kern Canyon clarkia occurrences will be flagged and avoided to the extent feasible. If work is completed during reproductive life stages, a biological monitor should be present periodically to determine if there is damage or removal of the clarkia and eriastrum due to work activities. |

**Table 2.2-2. Measures for Borel Project Decommissioning**

| Measure No. | Subject | Measure |
|---|---|---|
| 26 | Designated Biologist | A designated qualified biologist will review final plans, designate areas that need temporary fencing, and monitor construction activities within and adjacent to areas with aquatic or other sensitive habitats. The qualified biologist will monitor activities within designated areas during critical times, such as initial ground-disturbing activities (e.g., ESA fencing installation), and check that all regulatory agency permit requirements, conservation measures, and mitigation measures are properly implemented and followed. The qualified biologist will check construction barriers or exclusion fencing and provide corrective measures to the contractor to keep the barriers or fencing maintained throughout construction. |
| 27 | Equipment Cleaning | Prior to the first time any vehicles and equipment enter a work area, a qualified biologist will perform an inspection for non-native invasive plants (NNIP). All visible soil, plant materials, animal remnants, or any other signs of invasive species on vehicles and equipment will be removed prior to entering the Borel Project site. Removal and decontamination requirements of vehicles and equipment will be up to the discretion of a qualified biologist. If contamination is small enough to be managed on site, the qualified biologist may approve the decontamination of the vehicle or equipment at a proper staging area with adequate containment. Any materials removed at a containment site must be bagged and taken off site. If contamination is extensive, the contractor may be required to take the vehicle or equipment to an off-site wash station. Additionally, if a vehicle or piece of equipment must leave the Borel Project site for any length of time and has been exposed to a different project site or location, it must be re-inspected prior to re-entering the Borel Project site. Vehicles and equipment that perform work in known NNIP occurrences during work activities should be cleaned before leaving the site. |
| 28 | ESA-listed Birds | No work activities will take place within approximately 0.5 mile of any of the mapped potential nesting habitat patches for least Bell's vireo, southwestern willow flycatcher and yellow-billed cuckoo during the avian breeding season (February 1–September 1). |
| 29 | ESA-listed and CESA-listed Species | If any ESA-listed or CESA-listed species are observed during pre-construction surveys or work activities, SCE will notify USFWS and/or CDFW. All ESA-listed and CSA-listed species will be allowed to leave a work area without harassment. |
| ***Water Resources and Aquatic Resource Measures*** | | |
| 30 | Natural Drainage | Natural landscape drainage patterns will be maintained to the extent practicable. |
| 31 | Avoidance of Aquatic Habitat | Impacts to delineated aquatic resources, outside of the Borel Canal, will be limited to the amount necessary to successfully complete all work activities. To prevent unintended or unnecessary impacts, orange barrier fencing or flagging will be erected to clearly define the aquatic habitat to be avoided. |
| 32 | SWPPP | SCE or the contractor will develop a SWPPP in accordance with the State Water Resources Control Board General Construction Permit and local regulations. The SWPPP will include measures to reduce or eliminate construction impacts to stormwater runoff. |
| 33 | Lake Isabella Elevation | Work in Lake Isabella will be completed during dry conditions when the lake elevation is at 2,535 feet mean sea level or below. |

**Table 2.2-2. Measures for Borel Project Decommissioning**

| Measure No. | Subject | Measure |
|---|---|---|
| ***Cultural and Tribal Resources Measures*** | | |
| 34 | Ground Disturbance | Ground disturbance in the vicinity of unevaluated or NRHP-eligible archaeological sites, Traditional Cultural Properties (TCPs), and Traditional Cultural Landscapes (TCLs) will be avoided to the extent possible. All decommissioning-related ground disturbance will be confined to within the FERC Project boundary. |
| 35 | Exclusionary Fencing | A qualified archaeologist will review final plans and designate areas that need temporary exclusion fencing. The archaeologist will check construction barriers or exclusion fencing and provide corrective measures to the contractor to ensure the barriers or fencing are maintained throughout construction. |
| 36 | Footings | Footings will be left in place at siphons, flumes, and penstocks to minimize ground disturbance to the extent possible. |
| 37 | Archaeological Analysis and Consultation | Additional analysis may be required to determine effects (if any) related to the decommissioning process. Contingent on the results of consultation with Tribes and agencies, further measures may be necessary. |
| 38 | Tribal Consultation | Analysis and consultation with Tribes and agencies is ongoing to accurately characterize the extent of tribal resources and assess effects of decommissioning activities on previously recorded or newly documented Traditional Cultural Properties (TCPs) and Traditional Cultural Landscapes (TCLs). |
| 39 | Cultural and Tribal Monitors | On-site cultural monitoring by a qualified archaeologist will be necessary in the vicinity of all unevaluated and NRHP-eligible archaeological sites during decommissioning-related ground disturbance. Tribal monitoring will likely be necessary in any area deemed culturally sensitive by the Tribe(s). Identification of these areas will be borne out of the ongoing consultation effort noted in Measure Nos. 37 and 38. |
| 40 | Borel Powerhouse Documentation | Historic American Buildings Survey and Historic American Engineering Record documentation will be prepared for the Powerhouse if an adverse effect cannot be avoided. |
| 41 | Inadvertent Discovery | A qualified archaeologist will be available to assess any inadvertent discovery, including human remains, make the proper notifications, and recommend protection and/or treatment measures. |

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# 3.0 Environmental Analysis

## 3.1 General Description of the River Basin

The Kern River and its tributaries lie within the Tulare Lake Drainage Basin. This basin comprises the Central Valley drainage area south of the San Joaquin River Basin. In years of extreme rainfall, surface water from the basin drains north into the San Joaquin River; otherwise, there is no surface drainage to the San Joaquin River, and the Tulare Lake Drainage Basin may be referred to as "closed." The Tulare Lake Drainage Basin covers approximately 10.5 million acres and includes the entire area drained by the Kern River (SCE 2003a; CRWQCB 2018). The Tulare Lake Drainage Basin is considered one of the most important agricultural centers in the world, with petroleum production and refining the next largest industry in the region (CRWQCB 2018).

The Kern River drains a rugged mountainous area through a highly-developed drainage system composed of two principal streams: the main stem of the Kern River (North Fork) and the South Fork. Both streams flow generally southward and converge in Lake Isabella. A high north-south mountain range (near 10,000 feet) separates the North Fork from the South Fork. The North Fork comprises approximately 85 percent of the total flow into Lake Isabella (Corps 1978).

The total drainage area of the Kern River encompasses 2,324 square miles (FERC 2005). The drainage area of the Kern River at Isabella Dam is 2,074 square miles. The historical average annual runoff of the Kern River at Isabella Dam is approximately 736,000 acre-feet (1954 through 2000 average). Typically, approximately two-thirds of the annual runoff occurs during the April through July snowmelt period (SCE 2003a).

The regional watersheds of the Borel Project area are shown in Figure 3.1-1.

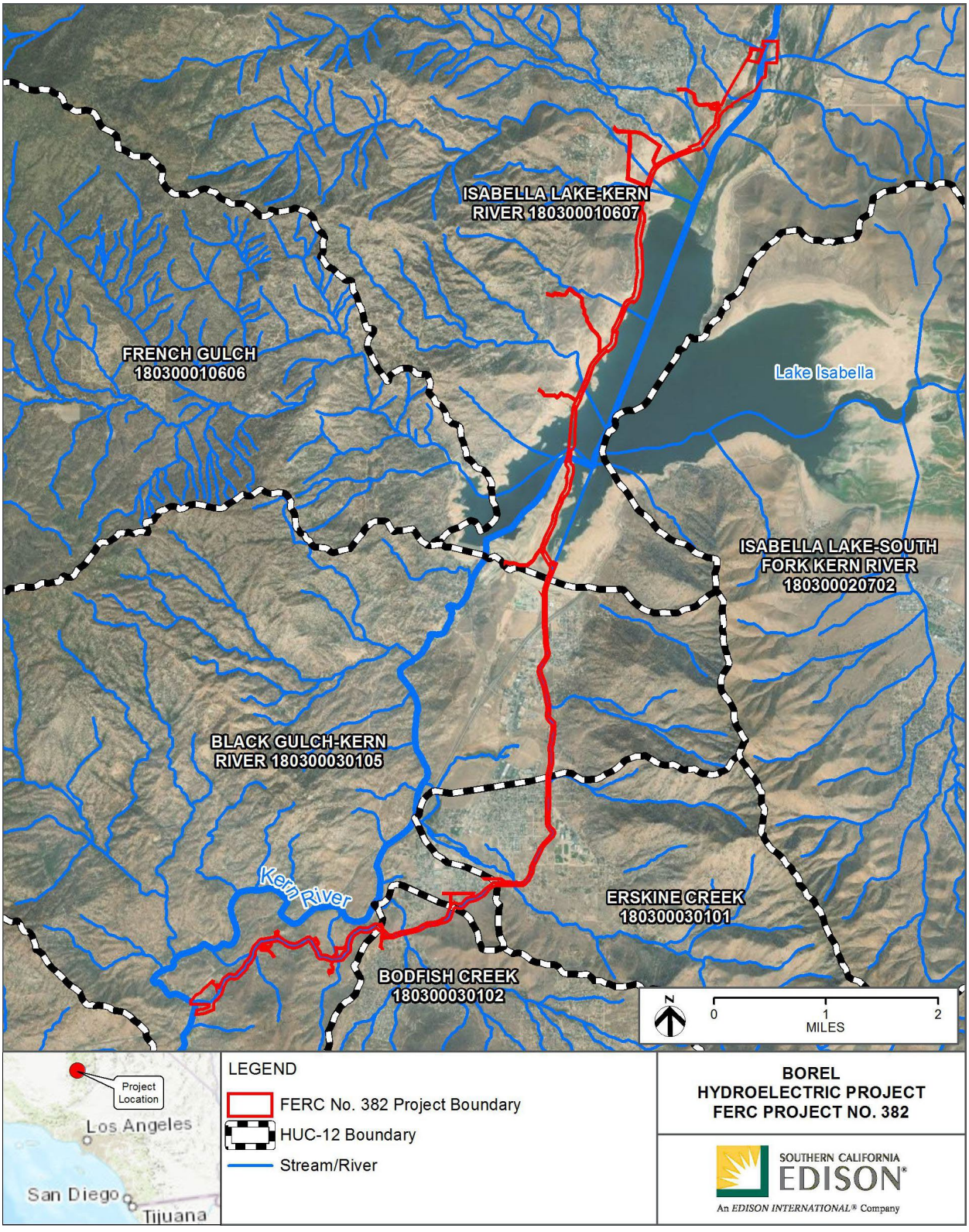



**Figure 3.1-1. Watersheds in the Borel Project Vicinity**

### 3.1.1 Climate

The climate of the Borel Project area is characterized by cool, wet winters and warm, dry summers (SCE 2003a). Temperatures in the basin gradually decrease with increasing elevation, and summers are cool at higher elevations while winters are severe. Observed temperature extremes at Isabella Dam are 109 degrees Fahrenheit (°F) and 11°F (SCE 2003a). The monthly distribution of mean temperatures at Isabella Dam are shown in Table 3.1-1.

**Table 3.1-1. Monthly Average Temperatures in the Borel Project Vicinity (Kern County, 1895–2021)**

| Month | Monthly Average Temperature (°F) |
|---|---|
| January | 44.7 |
| February | 48.0 |
| March | 51.9 |
| April | 57.3 |
| May | 64.7 |
| June | 73.1 |
| July | 79.8 |
| August | 78.5 |
| September | 72.3 |
| October | 62.5 |
| November | 52.1 |
| December | 45.0 |

Source: NOAA 2021

Mean annual precipitation is approximately 10 to 20 inches in Kern County (NOAA 2021). Approximately 90 percent of the runoff-producing precipitation occurs from November through April (Corps 1978). The San Joaquin Valley floor receives approximately 6 inches of precipitation per year (Provost & Pritchard Consulting Group 2020). Typically, precipitation falls as rain at elevations below approximately 5,000 feet and as snow at higher elevations, but snow can occur on the valley floor and rain at an elevation of 10,000 feet (SCE 2003a). Snowpack accumulates during winter, with the peak snowpack occurring around April 1 of each year.

### 3.1.2 Topography

The Kern River, the southernmost river in the Tulare Lake Drainage Basin, is located in the Sierra Nevada Mountains. The Kern River Valley is relatively flat, ranging from 2,300 to 3,500 feet (Audubon n.d.). The Sierra Nevada Mountains range in elevation from the valley floor to approximately 2,500 feet near Lake Isabella Dam and approximately 14,000 feet near Mount Whitney (SCE 2003a). Approximately 80 percent of the Kern River watershed tributary to Lake Isabella is above 5,000 feet in elevation. The Borel Project area ranges in elevation between 2,366 to 2,689 feet mean sea level (msl) (SCE 2007a).

### 3.1.3 Tributary Rivers and Streams

The Kern River is composed of two principal streams: the main stem of the Kern River (North Fork) and the South Fork. Minor tributaries to the Kern River include Poso, Caliente, El Paso, Erskine, Bodfish, Clear, and Cottonwood Creeks, which join the Kern River below Lake Isabella (Provost & Pritchard Consulting Group 2020). Besides the small valley in which Lake Isabella is located,

tributaries to the Kern River flow through steep, narrow canyons from their headwaters to the mouth of Kern Canyon.

### 3.1.4 Dams and Diversions in the Basin

The Kern River is impounded by the Corps' Isabella Dam, which forms Isabella Lake. Isabella Dam was constructed in the Kern River channel at the confluence of the North Fork and South Fork of the Kern River in 1953 for downstream flood control. It controls the downstream flow of water from the upper 2,074 square miles of the Kern River watershed (County of Kern 2003, as cited in SCE 2021a).

There are five FERC-licensed hydroelectric projects located on the Kern River at or below Isabella Lake, listed from upstream to downstream below (SCE 2021a).

- Isabella Partners' 11.95-MW Isabella Hydroelectric Project (FERC No. 8377) is located on the downstream toe of the main Corps-owned dam at Isabella Lake and diverts its water within the dam outlet works. The total rate of diversion under existing permits is 1,632 cubic feet per second (cfs).
- SCE's 12-MW Borel Project (FERC No. 382) is currently non-operational.
- 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. 1798) was recently purchased from Pacific Gas and Electric Company.
- Olcese Water District's 14-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.

### 3.1.5 Major Land and Water Uses

Lake Isabella is administered and operated by the Corps. The lake is formed behind two dams referred to as the "Isabella Main Dam" and the "Isabella Auxiliary Dam," and has a maximum storage capacity of 570,000 acre-feet. Lake Isabella is operated as a multipurpose reservoir. Its primary function is flood control but flows out of the reservoir are also managed by the Kern Watermaster to meet water supply demands of downstream users, principally those of agricultural interests, and to accommodate reservoir recreation.

During summer, nearly all of the water released from Lake Isabella is used to irrigate approximately 1 million acres of Kern County land in the San Joaquin Valley (SCE 2003a). Water use on the Kern River between Lake Isabella and the Kern River No. 1 (KR-1) powerhouse includes hydropower generation, recreation, and aquatic habitat (CRWQCB 2008, 2018). Waters downstream of the KR-1 powerhouse also include municipal, industrial, and agricultural water supply as well as groundwater recharge. However, surface water supply is generally inadequate to support the existing level of agriculture and other development in the Tulare Lake Drainage Basin, so groundwater sources are also used to satisfy demand. Kern County water sources are listed in Table 3.1-2.

**Table 3.1-2. Water Sources in Kern County**

| Source | Percent |
|---|---|
| Kern River | 20 |
| State Water Project (California Aqueduct) | 26 |
| Federal (Central Valley Project) (Friant-Kern Canal) | 12 |
| Local Streams and Other Sources (e.g., Poso Creek.) | 6 |
| Groundwater | 36 |
| **Total** | **100** |

Source: WAKC 2021

Water rights diversions from the Kern River for agricultural and domestic purposes date back to the 1860s. The present distribution, use, and basis of water rights in the Kern River is complex and based on various other decrees and agreements developed over the last 100 years (CAEPA 2008).

Urban development in the Tulare Lake Drainage Basin is confined to the foothill and eastern valley floor areas, including Bakersfield, Fresno, Porterville, Hanford, Tulare, and Visalia (CRWQCB 2018). Project facilities are situated on private land that is under Kern County's jurisdiction, and on federal lands administered by the Corps, Sequoia National Forest (SQF; Forest Service), and BLM (SCE 2003a). Land ownership/management within the FERC Project boundary is summarized in Table 3.1-3 and presented in Figure 3.1-2.

**Table 3.1-3. Land Ownership/Management in the FERC Project boundary**

| Landowner | Acreage |
|---|---|
| Federal (Forest Service) | 159.24 |
| Federal (BLM) | 29.47 |
| Federal (Corps) | 10.70 |
| Private (SCE and 27 other private parties) | 163.59 |
| **Total** | **363.00** |

Major land uses in the Borel Project Vicinity include recreation, grazing, and minor population centers. The Borel Project is located in a rural, semi-arid region with scattered minor population centers and an economy highly influenced by recreation. Lands managed by the Forest Service and BLM in the Borel Project Vicinity are used for agriculture and grazing as well as recreation. Private lands are mostly residential, commercial or vacant. In addition to agriculture and recreation, lands in Kern County are also used for mineral and petroleum resources (Provost & Pritchard Consulting Group 2020).

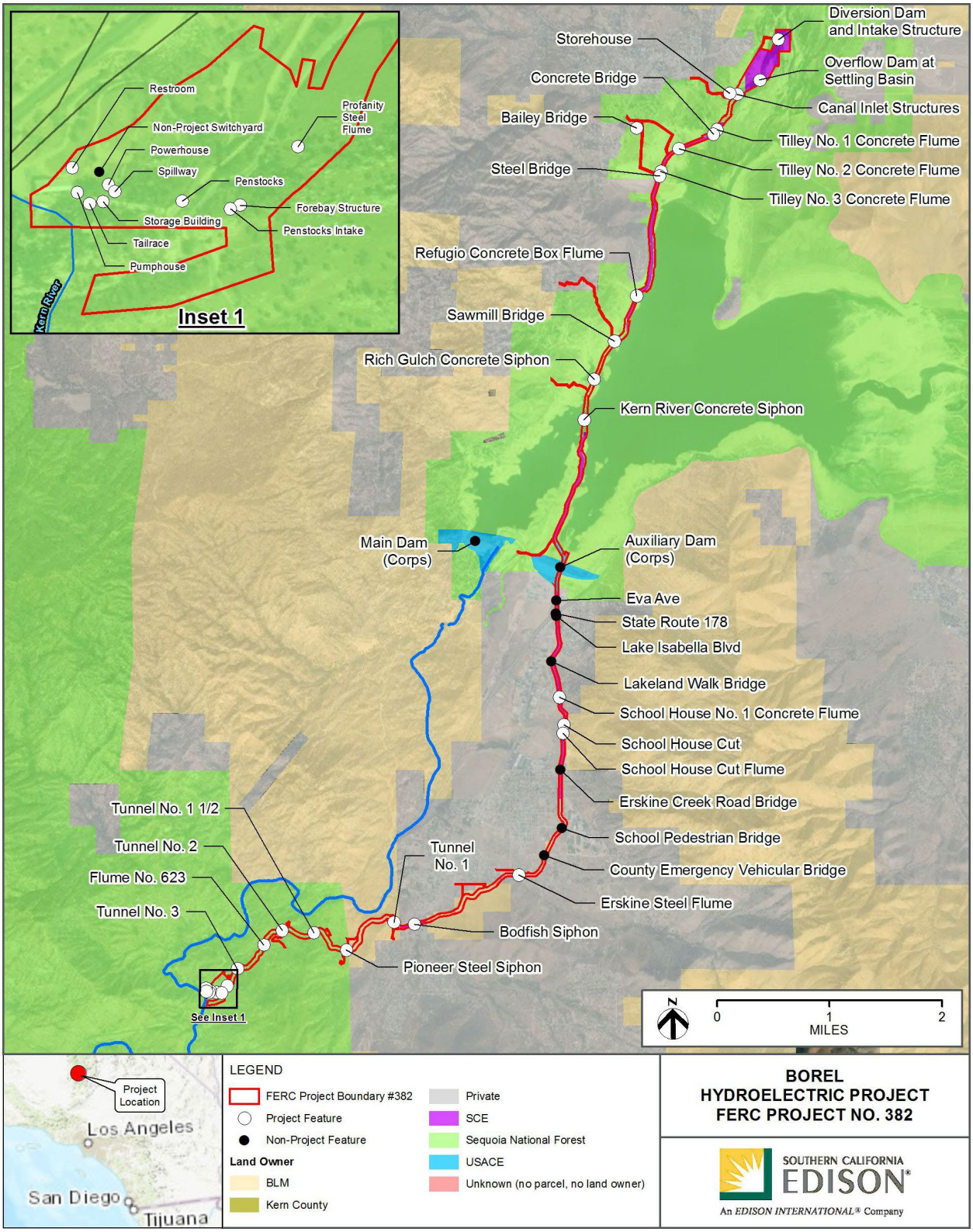



**Figure 3.1-2. Land Ownership in the Borel Project Vicinity**

## 3.2 Scope of Cumulative Effects Analysis

According to the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA), a cumulative effect is an effect on the environment that results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor, but collectively significant actions, occurring over a period of time that includes hydropower and other land and water development activities.

Based on information in this APDEA and consultation conducted to date, no resources have the potential to be cumulatively affected by the Borel Project license surrender and decommissioning of Borel Project facilities.

## 3.3 Geological and Soil Resources

Geologic, seismic, and soil conditions are described in this section for the Borel Project area. A regional geologic and site geologic description is provided. Additionally, soils within the Borel Project area are described, with emphasis on the soils in the immediate vicinity of Borel Project facilities.

### 3.3.1 Existing Environment

#### 3.3.1.1 Regional Geology

The Borel Project is located in the Sierra Nevada geomorphic province (Sierra Nevada). The California Geological Survey has subdivided California into 11 geologic provinces based on differences in geology, faults, topographic relief, and climate. The Borel Project is in the southern portion of the Sierra Nevada.

The Sierra Nevada is a tilted fault block nearly 400 miles long. Its eastern face is high and rugged, contrasting with the gentle western slope that disappears under sediments of the Great Valley. Deep river canyons are cut into the western slope. The northern boundary of the Sierra Nevada is marked where bedrock disappears under the Cenozoic volcanic cover of the Cascade Range (CGS 2002).

The Sierra Nevada is the product of numerous episodes of deposition, deformation, uplift, erosion, and intrusion of igneous rocks. During the second half of the Paleozoic era (230 to 420 million years ago), a shallow sea covered the area that is now the Sierra Nevada. The marine sediments deposited within this sea lithified into a complex sequence of sedimentary rock units. Uplift initiated at the end of the Jurassic Period (approximately 132 million years ago) and deformed the sedimentary rocks into a northwest trending fold. During this orogenic (mountain building) event, bodies of magma of diverse composition were emplaced within the fold (SCE 2003a).

As mountain building continued, these bodies of molten rock grew and merged, resulting in the development of a large batholith. The development of the batholith from the coalescing of smaller igneous bodies has resulted in a distinct geologic feature with variable mineralogy; however, overall composition of the batholith is generally granodioritic. As seen today, the Sierra Nevada batholith is approximately 400 miles long and typically ranges in width from 60 to 80 miles. The lower Kern River watershed is located within the southern portion of the Sierra Nevada batholith (SCE 2003a).

Two major orogenies of the Sierra Nevada Mountains occurred within the Cenozoic era (65 million years ago to the present). During the middle of the Tertiary period (25 million years ago), the eastern edge of the present mountain range was uplifted along the Sierra Nevada fault, tilting the batholith to the west. The last major orogeny of the Sierra Nevada Mountains brought the mountains to their present height and occurred near the end of the Tertiary period (3 million years ago) (SCE 2003a).

The Sierra Nevada Mountains were glaciated at various times during the Pleistocene epoch (10,000 to approximately 2 million years ago), with the last major glaciation ending approximately 11,000 to 25,000 years ago. Minor glaciations have also occurred, with the last commonly accepted glaciation (the "Little Ice Age") ending approximately 200 years ago. The high areas of the Sierra Nevada exhibit numerous erosional features associated with the alpine glaciation such as cirques, U-shaped valleys, striations, and glacial stairways. Deposits of glacial outwash and fill are common throughout the middle and lower elevation of the mountain range. The gradual warming of the climate during the present interglacial period has resulted in the disappearance or retreat of the alpine glaciers to a few small remnants currently found in the highest area of the Sierra Nevada Mountains (SCE 2003a).

#### 3.3.1.2 Site Geology

The Borel Project area is broadly composed of plutonic and metamorphic rocks forming the adjacent hills and mountains, while valley fill is composed of sedimentary deposits of the Kern River and its tributaries. The Kern Canyon fault (KCF) bisects the valley, striking roughly parallel to the canal alignment. A list of all the geologic units mapped throughout the Borel Project Vicinity are described in Table 3.3-1 and are shown in Figure 3.3-1 and Figure 3.3-2.

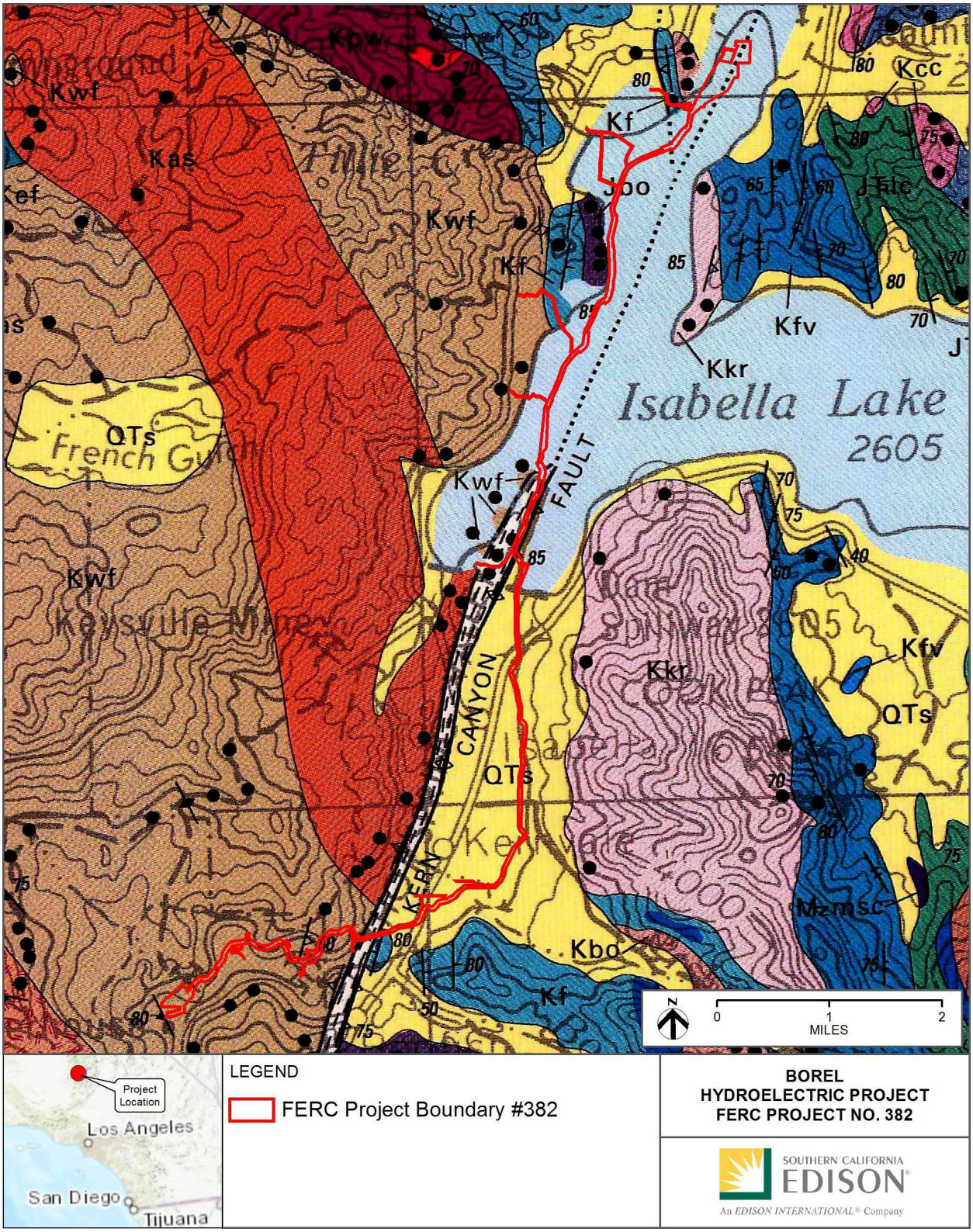
The Borel Project area is underlain by Mesozoic, predominantly granitic bedrock with elevations ranging from 2,560 feet msl at the historic intake facilities under Lake Isabella to 2,280 feet above msl at the Borel Powerhouse (SCE 2003a). These rocks form the surrounding mountains of the Kern River Valley and include the Granite of Kern River, Granodiorite of Alto Sierra, Granodiorite of Wagy Flat, the Granite of Bodfish Canyon, and the Olivine Gabbro of Bodfish Canyon (Ross 1995). The Fairview Metasedimentary and Metavolcanic belt and Long Canyon Metasedimentary Belt cut across these units, oriented roughly northwest-southeast, and are offset right-laterally by the KCF. The southwestern portion of the Borel Canal, including the Borel Powerhouse, are founded in the Granodiorite of Wagy Flat (Jennings et al. 1977; Ross 1995).

The Kern River Valley, containing Isabella Lake, Dam, and Borel Canal, is filled with Quaternary marine and nonmarine sedimentary rocks of the Pleistocene-Holocene age. These deposits encompass unconsolidated and semi-consolidated alluvium, lake, playa, and terrace deposits (CGS 2015). The majority of the Borel Canal is founded in these deposits. The fluvial deposits are discontinuous in nature and appear to represent at least two different depositional regimes. The fluvial materials currently being deposited by the river are thin, relatively fine-grained, and moderately well sorted. The construction of Lake Isabella in 1953 cut off a significant portion of the sediment supply to the downstream portion of the Kern River. This has presumably resulted in a reduced volume of transportable materials and a reduction in the size of materials being transported through the river channel (SCE 2003a). Borings completed for the project (Kleinfelder 2017) encountered sandy deposits with gravel and trace clay.

**Table 3.3-1. Descriptions of Surficial Deposits in the Borel Project Footprint**

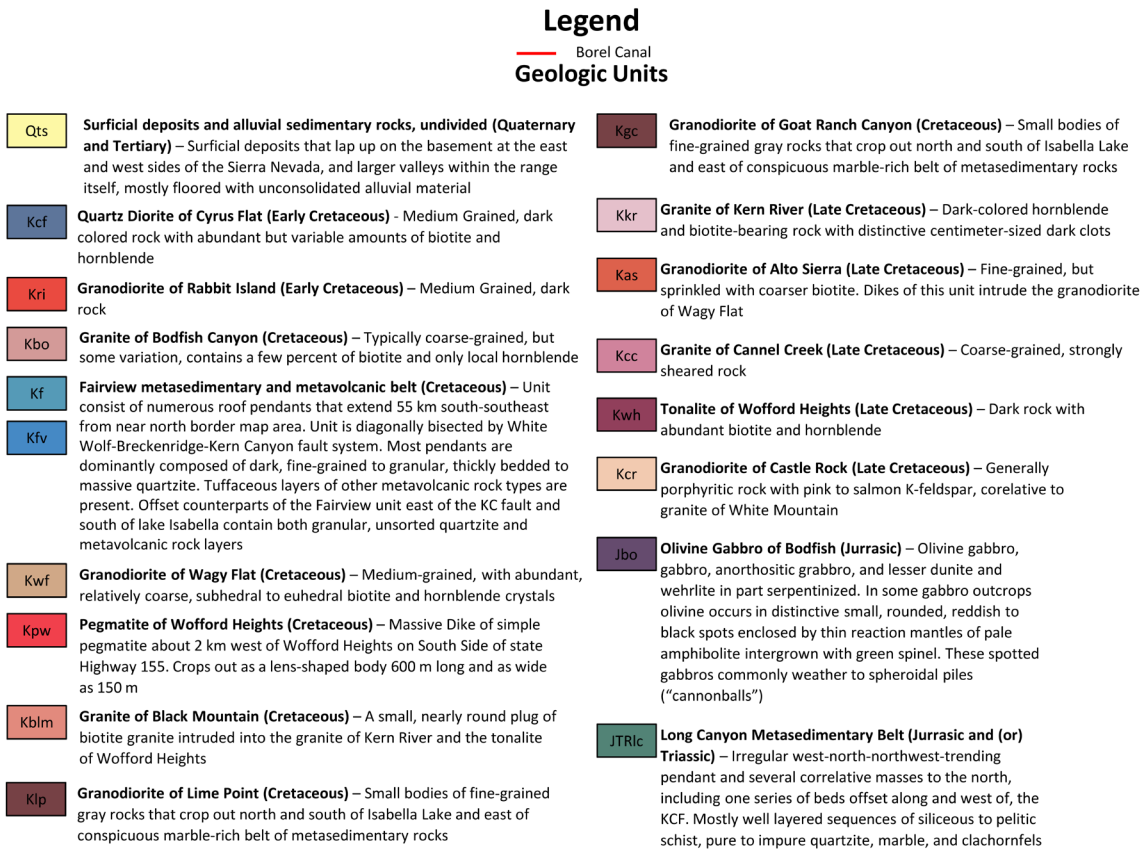
| Unit | Surficial Deposit Descriptions |
|---|---|
| Qts | *Surficial deposits and alluvial sedimentary rocks, undivided (Quaternary and Tertiary)* **–** Surficial deposits lapping up on the basement at the eastern and western sides of the Sierra Nevada and larger valleys within the range itself, mostly floored with unconsolidated alluvial material |
| Kbo | *Granite of Bodfish Canyon (Cretaceous)* – Typically coarse-grained, but some variation; contains a few percent of biotite and only local hornblende |
| Kf | *Fairview metasedimentary and metavolcanic belt (Cretaceous)* – Unit consists of numerous roof pendants that extend 55 kilometers south-southeast from near the northern border map area; unit is diagonally bisected by White Wolf-Breckenridge-Kern Canyon fault system; most pendants are dominantly composed of dark, fine-grained to granular, thickly bedded to massive quartzite; tuffaceous layers of other metavolcanic rock types are present; offset counterparts of the Fairview unit east of the Kern Canyon fault and south of Lake Isabella contain both granular, unsorted quartzite and metavolcanic rock layers |
| Kwf | *Granodiorite of Wagy Flat (Cretaceous)* – Medium-grained, with abundant, relatively coarse, subhedral to euhedral biotite and hornblende crystals |
| Kkr | *Granite of Kern River (Late Cretaceous)* – Dark-colored hornblende and biotite-bearing rock with distinctive centimeter-sized dark clots |
| Kas | *Granodiorite of Alto Sierra (Late Cretaceous)* – Fine-grained with coarser biotite grains present; dikes of this unit intrude the granodiorite of Wagy Flat |
| Jbo | *Olivine Gabbro of Bodfish (Jurassic)* – Olivine gabbro, gabbro, anorthositic grabbro, and lesser dunite and wehrlite in part serpentinized; in some gabbro outcrops, olivine occurs in distinctive small, rounded, reddish to black spots enclosed by thin reaction mantles of pale amphibolite intergrown with green spinel |

Source: Ross 1995




Source: Adapted from Ross (1995)

**Figure 3.3-1. Geologic Map of Borel Project Area**



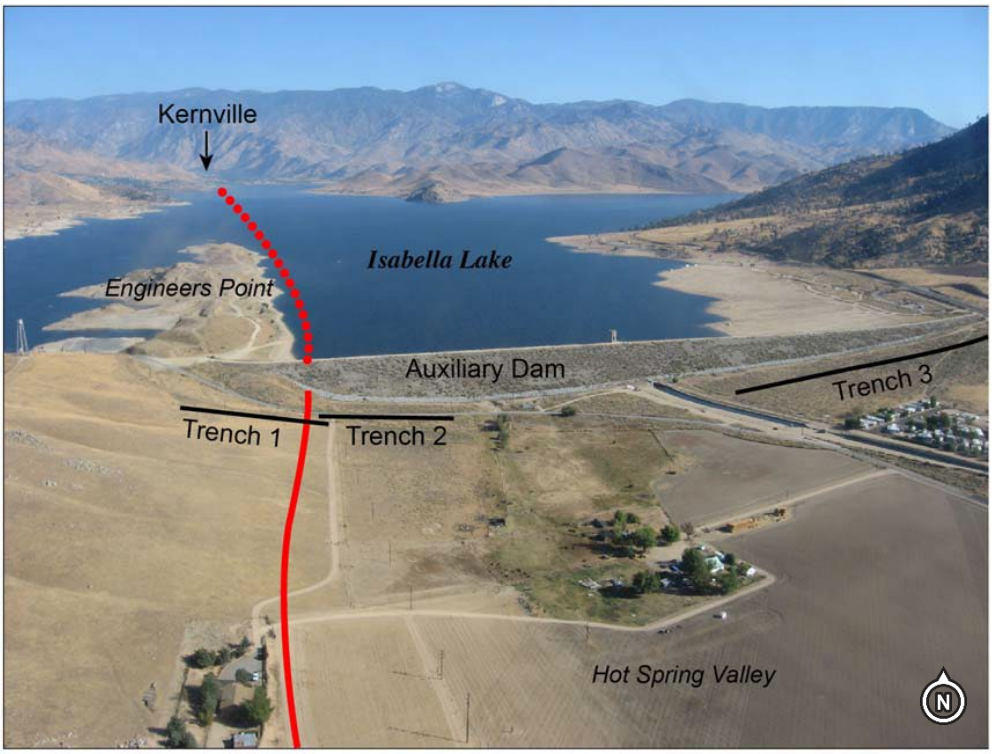

Source: Adapted from Ross (1995)

**Figure 3.3-2. Legend for Geologic Map of the Borel Project Area**

### 3.3.1.3 Faults and Seismicity

The Borel Project facilities are located in a seismically active region that is influenced by three major physiographic and geologic provinces: Sierra Nevada, Great Central Valley, and, to a lesser extent, Coast Ranges. The active faults with the highest potential to affect the Borel Project area include the KCF, located under the right abutment of the Auxiliary Dam on the western side of Hot Spring Valley (Figure 3.3-3); the White Wolf fault, 40 miles to the southwest; the Garlock fault, 55 miles to the south; the Owens Valley fault, 60 miles to the northeast; and the San Andreas fault, 90 miles to the west. According to the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) (2007), major earthquakes (magnitude 5.0 or greater) occurred in the Borel Project Vicinity in 1952 and 1995, and numerous other earthquakes have occurred within the past 200 years.

The KCF is associated with a significant linear trend of accurately located epicenters of magnitude 2.0 or greater. As described above, this ancient fault line bisects the Borel Project area, running north and south, under the Auxiliary Dam (California Department of Conservation, Division of Mines and Geology 1992, as cited in USDA-NRCS 2007).




Source: Kelson et al. 2010
Note: The KCF extends beneath the dam and along the eastern side of Engineers Point. The locations of trenches 1, 2, and 3 at the Barlow Drive site are also shown. The Isabella Main Dam is located west (left) of the photograph (northerly view, taken October 26, 2006).

**Figure 3.3-3. Oblique Aerial View of Isabella Auxiliary Dam, Looking along Hot Spring Valley Toward the Southern Sierra Nevada**

The north-striking KCF is a primary geologic structure within the southern Sierra Nevada, extending for more than 87 miles from the Walker Basin on the south to the Kings-Kern Divide on the north. Until recently, the KCF was thought to be inactive, based on early interpretations that a 3.5-million-year-old basalt flow (located approximately 37 miles north of Isabella Dam) is not displaced by the fault (Webb 1946, as cited in Kelson et al. 2010). However, the KCF is associated with prominent geomorphic expression (Page 2005; URS 2006, as cited in Kelson et al. 2010), and initial findings based on Kelson et al. (2010) documented geomorphic evidence of displacement within the past approximately 15,000 years (URS 2007, 2008; Kelson et al. 2009). The KCF is now judged as a capable fault per Corps criteria (e.g., ground deformation within the past 35,000 years), and an active fault per California Division of Safety of Dams criteria (Fraser 2001, as cited in Kelson et al. 2010). The Corps classifies the Isabella Dam in Dam Safety Action Class 1, which is the highest rating, based on a high probability of failure and severe consequence from failure (Kelson et al. 2010).

According to the California Department of Conservation California Earthquake Hazards Zone Application (CDC 2021), the Borel Project area is not located in a mapped earthquake hazard zone. However, the Borel Project area has not been evaluated for liquefaction or landslides (CGS 2021).

#### 3.3.1.4 Volcanic Activity

The Borel Project is located in a region that historically had volcanic activity. The Coso Volcanic Field is located approximately 50 miles northeast of Lake Isabella, mainly within the boundary of the Naval Air Weapons Station, China Lake. It covers approximately 150 square miles and is home to one of the largest producers of geothermal power in the United States. The Coso Volcanic Field geothermal resource fuels the many hot springs, steam vents, and boiling mud pots near the center of the Coso Volcanic Field. Approximately 40 eruptions in the last 0.25 million years produced a field of steep-sided lava domes, red hills of volcanic cinder, and rough-surfaced lava flows. The most recent eruption occurred approximately 40,000 years ago. Some geological landform relationships suggest that the youngest lava dome may have formed within the past 12,000 years, but this young activity has not been confirmed via dating methods. Geophysical and geochemical studies detect a zone of partially molten rock (magma) underlying the center of the Coso Volcanic Field. Small to moderate earthquakes, some due to the geothermal resource, are common (USGS n.d.).

#### 3.3.1.5 Soils

The USDA NRCS has synthesized soil survey data into an online database that can be queried where data are available. A custom soil resource report was generated for the Borel Project area (USDA-NRCS 2021a). Figure 3.3-4 through Figure 3.3-6 show the soil resources in the Borel Project area from upstream to downstream. Described below are the dominant soil types expected to be found during decommissioning work.

Soil textures are typically a mixture of sand-, silt-, and clay-sized particles. For example, a clay soil has 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt. A loam is a soil material with 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles (USDA-NRCS n.d.). In part, because clay has predominantly smaller particle size than loam, clay is more easily eroded.

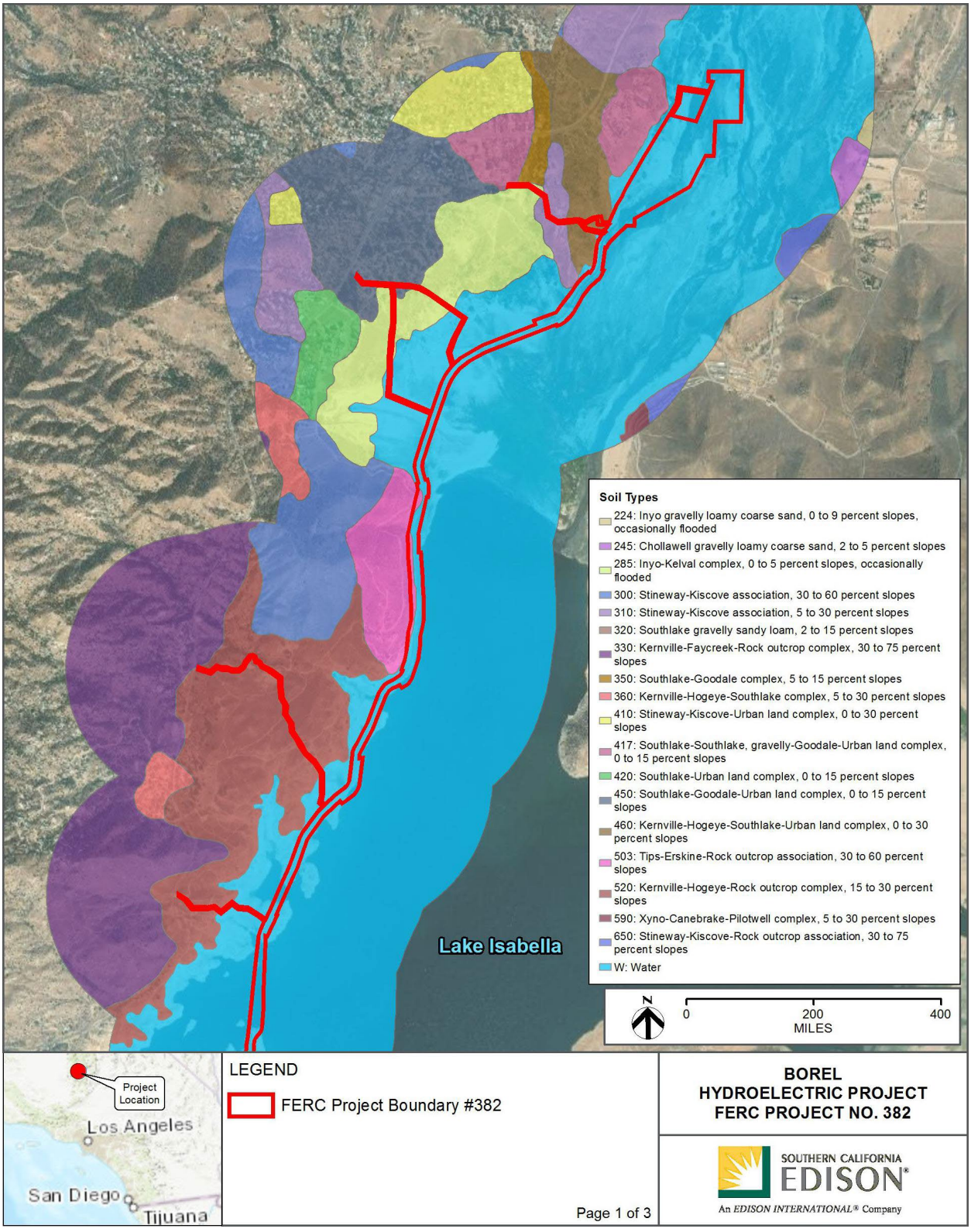



**Figure 3.3-4. Soils in the Borel Project Area (1 of 3)**

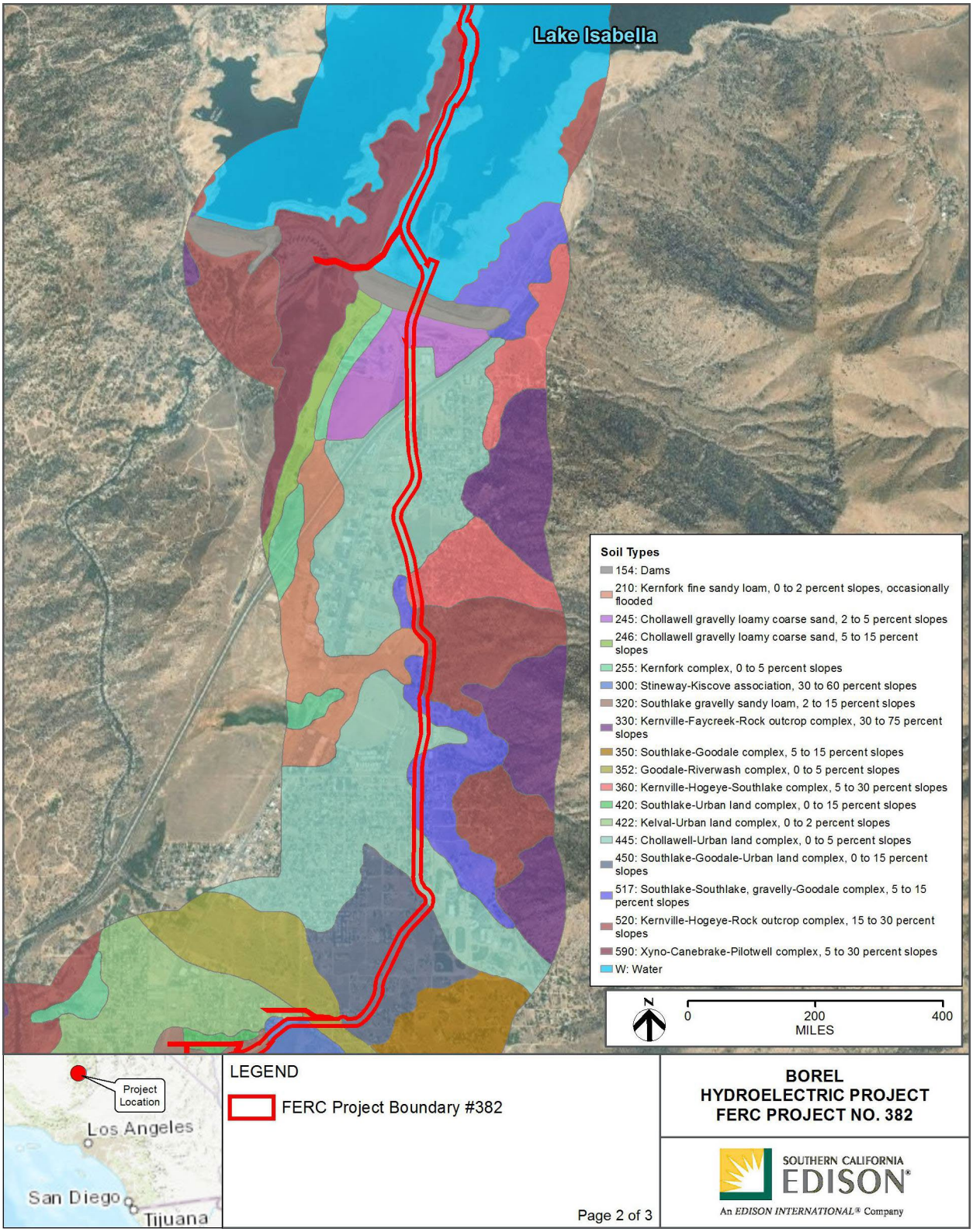



**Figure 3.3-5. Soils in the Borel Project Area (2 of 3)**

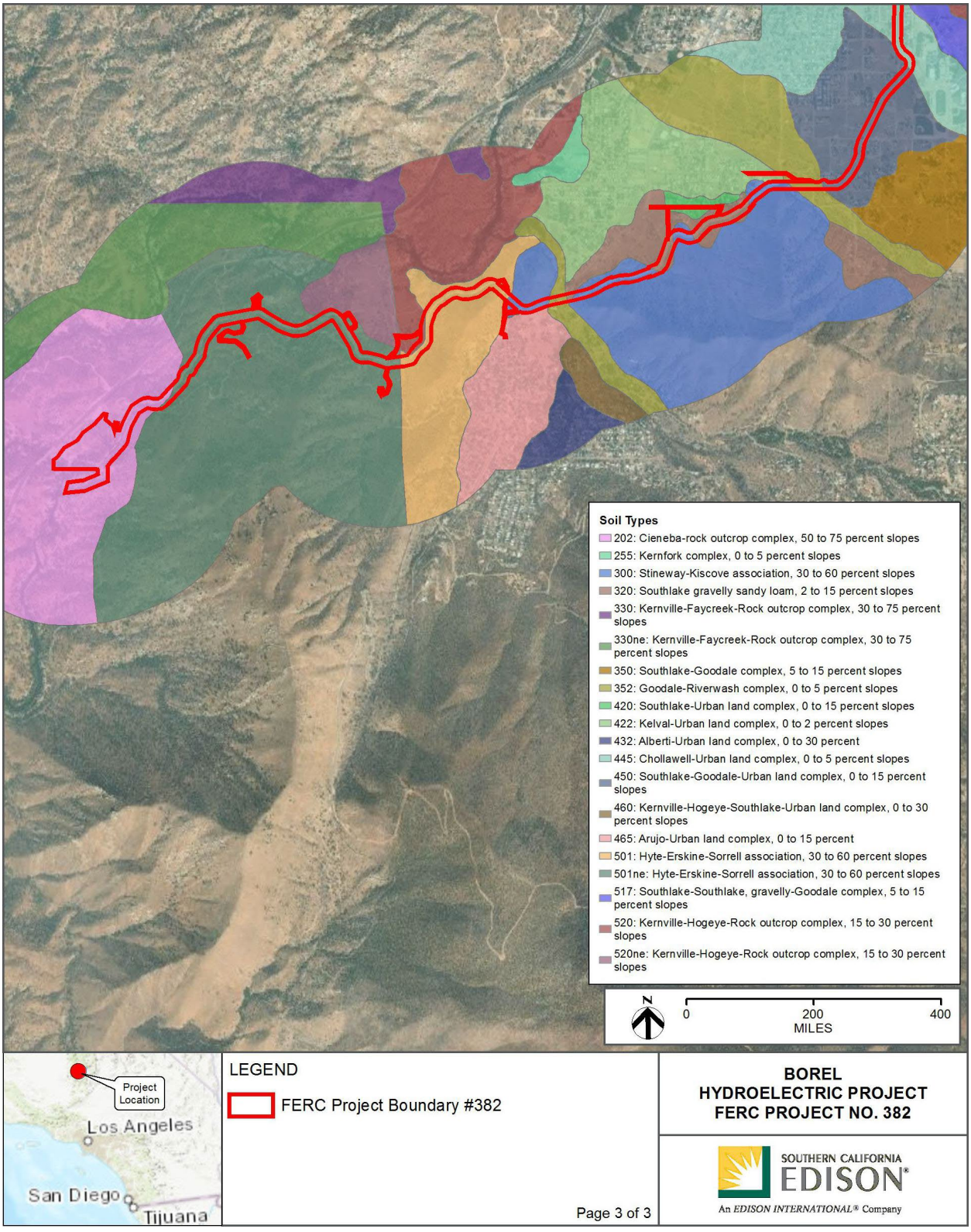



**Figure 3.3-6. Soils in the Borel Project Area (3 of 3)**

Soils in the Borel Project area are predominantly composed of loamy coarse sand, Urban Land complexes, and various rock outcrop complexes. Dominant soil series include Kernville, Chollawell, and Southlake (USDA-NRCS 2021). Additionally, minor deposits of alluvium and colluvium occur at scattered locations throughout the Borel Project area (SCE 2003a).

### *Borel Project Facility Soils*

Table 3.3-2 summarizes the soils found along facilities in the Borel Project area. Table 3.3-3 lists the soils found in the Borel Project area and summarizes key properties related to erosion potential, including soil type, percent slope, and drainage and runoff classes (where available). According to USDA-NRCS (2021a), all the soils located within Isabella Lake are classified as Water (W) and include the following Borel Project facilities: Diversion Dam and Intake (at Kern River); Overflow Dam at Settling Basin; Tilley Concrete Flumes No. 1, 2, and 3; Refugio Concrete Box Flume; Rich Gulch Concrete Siphon; the Kern River Concrete Siphon, and a portion of the Borel Canal.

| Map Unit Number | Map Unit Name | Summary Description | Associated Borel Project Facilities/Location |
|---|---|---|---|
| 310 | Stineway-Kiscove association, 5 to 30 percent slopes | The map unit composition consists of Stineway and similar soils at 50 percent, Kiscove and similar soils at 30 percent, and other minor components at 20 percent. Both soil series are well-drained soils with very high runoff classes and very low available water capacities and are formed in material weathered from metamorphic rock. | Access roads |
| 285 | Inyo-Kelval complex, 0 to 5 percent slopes, occasionally flooded | These soils are found on alluvial fans, floodplains, and mountain valleys and are dominated by alluvium derived from mixed rocks. These soils have very low surface runoff class and are excessively drained. | Access roads |
| 460 | Kernville-Hogeye-Southlake-Urban land complex, 0 to 30 percent slopes | This map unit occurs on hills and mountains. The map unit composition consists of Kernville, bouldery at 30 percent, Hogeye at 25 percent, Southlake at 15 percent, Urban Land at 15 percent, and other minor components at 15 percent. | Access roads |
| 450 | Southlake-Goodale-Urban land complex, 0 to 15 percent slopes | The map unit composition consists of Southlake, stony, and similar soils at 45 percent; Goodale and similar soils at 15 percent; Urban Land at 15 percent; and other minor components at 25 percent. Two percent of the map unit is classified as hydric soil. | Tilley No. 3 Concrete Flume Access Road, the Borel Canal both north and south of Lupine Road, and extending to the eastern side of the Erskine Steel Flume |
| 330 | Kernville-Faycreek-Rock outcrop complex, 30 to 75 percent slopes | The map unit composition consists of Kernville and similar soils at 35 percent, Faycreek and similar soils at 25 percent, Rock outcrop at 20 percent, and other minor components at 20 percent. Two percent of the map unit is classified as hydric soil. Minimum depth to bedrock is reported at 30 centimeters. | Dunivent Road/Sawmill Bridge Access Road |
| 520 | Kernville-Hogeye-Rock outcrop complex, 15 to 30 percent slopes | The map unit composition consists of Kernville at 50 percent, Hogeye at 20 percent, and Rock outcrop at 15 percent. Two percent of the map unit is classified as hydric soil. Minimum depth to bedrock is reported at 41 centimeters. | Rich Gulch Concrete Siphon/Kern River Concrete Siphon Access Road, the Dunivent Road/Sawmill Bridge Access Road, along the Borel Canal near Old Meadow Road, and immediately bordering the canal to the north near the Pioneer Steel Siphon |
| 590 | Xyno-Canebrake-Pilotwell complex, 5 to 30 percent slopes | Xyno series consists of shallow, somewhat excessively drained soils formed in material weathered mainly from granitic rocks. The Canebrake series consists of shallow, somewhat excessively drained soils that formed in material weathered from granitoid rock. The Pilotwell series consists of moderately deep, somewhat excessively drained soils formed in material weathered from granitic rock. Two percent of the map unit is classified as hydric soil. Minimum depth to bedrock is reported at 28 centimeters. | Overflow Weir Access Road |
| 154 | Dams | N/A | Auxiliary Dam |

| Map Unit Number | Map Unit Name | Summary Description | Associated Borel Project Facilities/Location |
|---|---|---|---|
| 245 | Chollawell gravelly loamy coarse sand, 2 to 5 percent slopes | This map unit is found on mountain valleys and fan remnants ranging in elevation from 3,200 to 4,200 feet. The soil is composed of alluvium derived from granitoid. The soil is well drained and has a very low runoff class and low available water capacity. | Borders the Auxiliary Dam to the south |
| 445 | Chollawell-Urban land complex, 0 to 5 percent slopes | These soils are found on fan remnants and mountain valleys ranging in elevation from 3,200 to 4,200 feet. The Chollawell series is composed of alluvium derived from granitoid. The soil is well drained and has a very low runoff class and low available water capacity. | Along the Borel Canal in the vicinity of the SR 178 canal crossing and south of the Erskine Creek Road canal crossing |
| 360 | Kernville-Hogeye-Southlake complex, 5 to 30 percent slopes | These soils are found on mountain slopes and hillslopes. The Kernville and Hogeye soil series are composed of residuum weathered from granitoid, and the Southlake series is dominated by alluvium. The Kernville soil series is somewhat excessively drained, and the Hogeye and Southlake soil series are well drained. | Borel Canal near Golden Spur Street |
| 517 | Southlake-Southlake, gravelly-Goodale complex, 5 to 15 percent slopes | These soils are found on fan remnants and mountain valleys ranging in elevation from 2,600 to 4,000 feet. The soil is composed of alluvium, is well drained, and has a medium runoff class. One percent of the map unit is classified as hydric soil. | Borel Canal north and south of the Erskine Creek Road canal crossing |
| 352 | Goodale-Riverwash complex, 0 to 5 percent slopes | This map unit consists of Goodale and similar soils at 65 percent, Riverwash at 20 percent, and minor components at 15 percent. The Goodale soils occur on mountain valleys, channels, and inset fans; the Riverwash soils occur on mountain valleys and drainageways. The Goodale soils are somewhat excessively drained and have a very low runoff class and a very low available water capacity. | Erskine Steel Flume |
| 300 | Stineway-Kiscove association, 30 to 60 percent slopes | This map unit consists of Stineway and similar soils at 50 percent, Kiscove and similar soils at 30 percent, and other minor components at 20 percent. The Stineway and Kiscove soil series occur on mountain slopes. The Stineway soils are well drained and have a very high runoff class and a very low available water capacity. | Along the Borel Canal west of the Erskine Steel Flume and both east and west of the Bodfish Siphon |
| 320 | Southlake gravelly sandy loam, 2 to 15 percent slopes | The soils are alluvium, well drained, have a medium runoff class, and a low available water capacity. Six percent of the map unit is classified as hydric soil. | East of the Bodfish Siphon |
| 501 | Hyte-Erskine-Sorrell association, 30 to 60 percent slopes | The map unit composition consists of Hyte and similar soils at 35 percent, Erskine and similar soils at 25 percent, Sorrell and similar soils at 25 percent, and other minor components at 15 percent. These soils occur on mountain slopes. | West of the Bodfish Siphon; extend southerly along the Borel Canal to just east of County Highway 214 |

| Map Unit Number | Map Unit Name | Summary Description | Associated Borel Project Facilities/Location |
|---|---|---|---|
| 501ne | Hyte-Erskine-Sorrell association, 30 to 60 percent slopes | This association shares similar characteristics and properties as described above. | Extends from County Highway 214 southerly along the Borel Canal to near the Powerhouse |
| 202 | Cieneba-rock outcrop complex, 50 to 75 percent slopes | The map unit composition consists of Cieneba and similar soils at 65 percent, Rock outcrop at 25 percent, and other minor components at 10 percent. These soils occur on hills. The Cieneba soils are somewhat excessively drained and have a medium runoff class and a very low available water capacity. | Located in the Powerhouse and Profanity Steel Flume vicinity |

Sources: USDA-NRCS 2021, n.d.; University of California, Davis (UCDAVIS) n.d.
Key: N/A = not applicable

**Table 3.3-3. Soil Characteristics in the Borel Project**

| Map Unit Symbol | Map Unit Name | Elevation (feet msl) | | Drainage Classification(s)[a] | Runoff Classification(s)[b] |
|---|---|---|---|---|---|
| | | Minimum | Maximum | | |
| 310 | Stineway-Kiscove association, 5 to 30 percent slopes | 2,600 | 3,200 | Well drained; well drained | Very high; very high |
| 285 | Inyo-Kelval complex, 0 to 5 percent slopes, occasionally flooded | 2,600 | 3,700 | Excessively drained; well drained | Very low; very low |
| 460 | Kernville-Hogeye-Southlake-Urban land complex, 0 to 30 percent slopes | 2,600 | 4,000 | Somewhat excessively drained; well drained; well drained | High; low; medium |
| 330 | Kernville-Faycreek-Rock outcrop complex, 30 to 75 percent slopes | 2,600 | 5,000 | Somewhat excessively drained; somewhat excessively drained | High; high |
| 590 | Xyno-Canebrake-Pilotwell complex, 5 to 30 percent slopes | 3,000 | 4,200 | Somewhat excessively drained; somewhat excessively drained; somewhat excessively drained | Very high; medium; low |
| 154 | Dams | -- | -- | -- | -- |
| 245 | Chollawell gravelly loamy coarse sand, 2 to 5 percent slopes | 3,200 | 4,200 | Well drained | Very low |
| 445 | Chollawell-Urban land complex, 0 to 5 percent slopes | 3,200 | 4,200 | Well drained | Very low |
| 360 | Kernville-Hogeye-Southlake complex, 5 to 30 percent slopes | 2,600 | 4,000 | Somewhat excessively drained; well drained; well drained | High; low; medium |
| 520 | Kernville-Hogeye-Rock outcrop complex, 15 to 30 percent slopes | 2,600 | 3,000 | Somewhat excessively drained; well drained | High; medium |

| Map Unit Symbol | Map Unit Name | Elevation (feet msl) | | Drainage Classification(s)[a] | Runoff Classification(s)[b] |
|---|---|---|---|---|---|
| | | Minimum | Maximum | | |
| 517 | Southlake-Southlake, gravelly-Goodale complex, 5 to 15 percent slopes | 2,600 | 4,000 | Well drained; well drained; somewhat excessively drained | Medium; medium; low |
| 450 | Southlake-Goodale-Urban land complex, 0 to 15 percent slopes | 2,600 | 3,000 | Well drained; Somewhat excessively drained | Medium; low |
| 352 | Goodale-Riverwash complex, 0 to 5 percent slopes | 2,600 | 4,000 | Somewhat excessively drained | Very low; high |
| 300 | Stineway-Kiscove association, 30 to 60 percent slopes | 2,600 | 5,000 | Well drained; well drained | Very high; very high |
| 320 | Southlake gravelly sandy loam, 2 to 15 percent slopes | 2,700 | 3,500 | Well drained | Medium |
| 501 | Hyte-Erskine-Sorrell association, 30 to 60 percent slopes | 3,000 | 5,000 | Well drained; well drained; well drained | High; high; medium |
| 501ne | Hyte-Erskine-Sorrell association, 30 to 60 percent slopes | 3,000 | 5,000 | Well drained; well drained; well drained | High; high; medium |

Sources: USDA-NRCS n.d., 2021
Notes:
[a] Drainage classifications are provided for each soil series.
[b] Runoff classifications are provided for each soil series.

### 3.3.2 Environmental Effects

The Borel Project is located in a region that historically has been seismically and volcanically active. While seismic and related concerns that culminated in the Corps' 2017 modification of the Auxiliary Dam have resulted in the Borel Project being non-operational, Project decommissioning itself will have no effect on faults, seismicity, and volcanic activity. Additionally, no new structures will be built that might result in future seismic-related hazards to local residents, wildlife, or infrastructure. Temporary disturbance of soil is expected as a result of some Borel Project decommissioning activities.

### 3.3.3 Measures

Proposed measures are summarized in Table 2.2-2. The measures associated with geological and soil resources include:

- SCE will consult with the applicable federal, state, and local agencies to obtain necessary permits and will comply with these permits during all decommissioning activities (Measure 1);
- Work area footprints will be confined as much as reasonably practicable. All parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities will be confined, to the greatest extent possible, to previously disturbed areas. Additionally, the Borel Project footprint/area will be clearly defined and marked to avoid working in areas outside of the approved boundary. Fences and flagging will be installed by the contractor in a manner that does not impact habitats and other sensitive areas to be avoided and such that it is clearly visible to personnel on foot and operating heavy equipment (Measure 2);
- All construction equipment and vehicles will drive no faster than 15 miles per hour on access roads and anywhere within the FERC Project boundary for reasons of public safety, avoidance of wildlife collisions, and to prevent excess dust. Vehicles will stay on designated roads to the extent reasonably possible. Construction truck trips will be minimized to the extent practicable, particularly in the community and on the grade between Bakersfield and Lake Isabella (Measure 5);
- All work-related materials will be properly stored and secured. Materials that are in any type of liquid or powder form will be stored in sealed leak-proof containers. In addition, all parked vehicles/equipment will be kept free of leaks, particularly antifreeze, as this could be fatal if consumed by wildlife (Measure 6);
- A WEAP will be established and implemented prior to the start of work activities in the field and cover biological and cultural resources. The program will be presented by a qualified biologist and a qualified archaeologist to all construction crew members. If new employees join the crew, they will receive formal, approved training prior to working on site. Upon completion of the orientation, employees will sign a form stating they attended the program and understand all protection measures. A fact sheet containing the presented information will also be prepared and distributed (Measure 13);

- Upon completion of work activities, temporarily disturbed areas will be revegetated with native plant species. A revegetation plan will be developed that addresses revegetating areas where Borel Project features have been removed (Measure 17);
- Natural landscape drainage patterns will be maintained to the extent practicable (Measure 30);
- SCE or the contractor will develop a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the State Water Resources Control Board General Construction Permit and local regulations. The SWPPP will include best management practices (BMPs) to reduce or eliminate construction impacts to stormwater runoff (Measure 32); and
- Footings will be left in place at siphons, flumes, and penstocks to minimize ground disturbance to the extent possible (Measure 36).

These measures will prevent significant impact to soils and downstream water quality both during and after construction activities are complete.

# 3.4 Water Resources

## 3.4.1 Existing Environment

### 3.4.1.1 Water Quantity

*Borel Project Upstream of Isabella Auxiliary Dam (Upper Borel)*

The Borel Canal upstream of the Auxiliary Dam (Upper Borel) extends approximately 24,000 feet from the Diversion Dam and Intake Structure to the condemned Canal Inlet Structures at the Auxiliary Dam (see Figure 1.1-1). Historic operation of this section of the Borel Project was dependent on the water levels in Lake Isabella. When water levels were high (i.e., above an approximate elevation of 2,550 feet North American Vertical Datum of 1988 [NAVD 88]), the canal was submerged in the lake and could not be used for conveyance. Lake Isabella storage would control flow through the Isabella Auxiliary Dam structure.

When the lake levels were low (i.e., below an approximate elevation of 2,550 feet NAVD 88), the canal was exposed and would be used to convey Kern River water diverted into the canal though the diversion dam and intake structure. Water resources or overland runoff that entered the reservoir were allowed to pass underneath the canal through a series of flumes.

*Borel Project Downstream of Isabella Auxiliary Dam (Lower Borel)*

The Borel Project downstream of the Auxiliary Dam (Lower Borel) historically conveyed water from the Auxiliary Dam to the Powerhouse. The Corps' Isabella Dam Safety Modification Project has rendered the Borel Project non-operational and as such, water is no longer conveyed in the canal for generation. In several locations, stormwater runoff is intercepted by the Borel Canal. Historically, this water would have been additive to flows in the canal and continue downstream to the powerhouse and discharge to the Kern River. Currently, stormwater runoff that is captured by the canal eventually evaporates.

The following section provides a detailed characterization of stormwater runoff interception and provides a quantification of the water quantity generated by the contributing drainage basins that drain toward this section of the Borel Project. A detailed study report of the hydrologic and hydraulic modeling conducted by SCE is provided in Appendix A – Stormwater and Drainage Report, of the Plan (Volume II).

The total contributing area that drains toward the Borel Project downstream of Lake Isabella is approximately 60 square miles, the majority of which drains without impedance along the Borel Project alignment because conveyance facilities (e.g., siphons, flumes and tunnels) were designed to pass these flows. The natural ground cover in these drainage areas is primarily chaparral and woodland, with residential or commercial landscaping in the urban areas. The runoff from the surrounding hillside slopes and upper drainage basins flows toward the valley floor until reaching the Kern River. Figure 3.4-1 shows the contributing drainage basins.

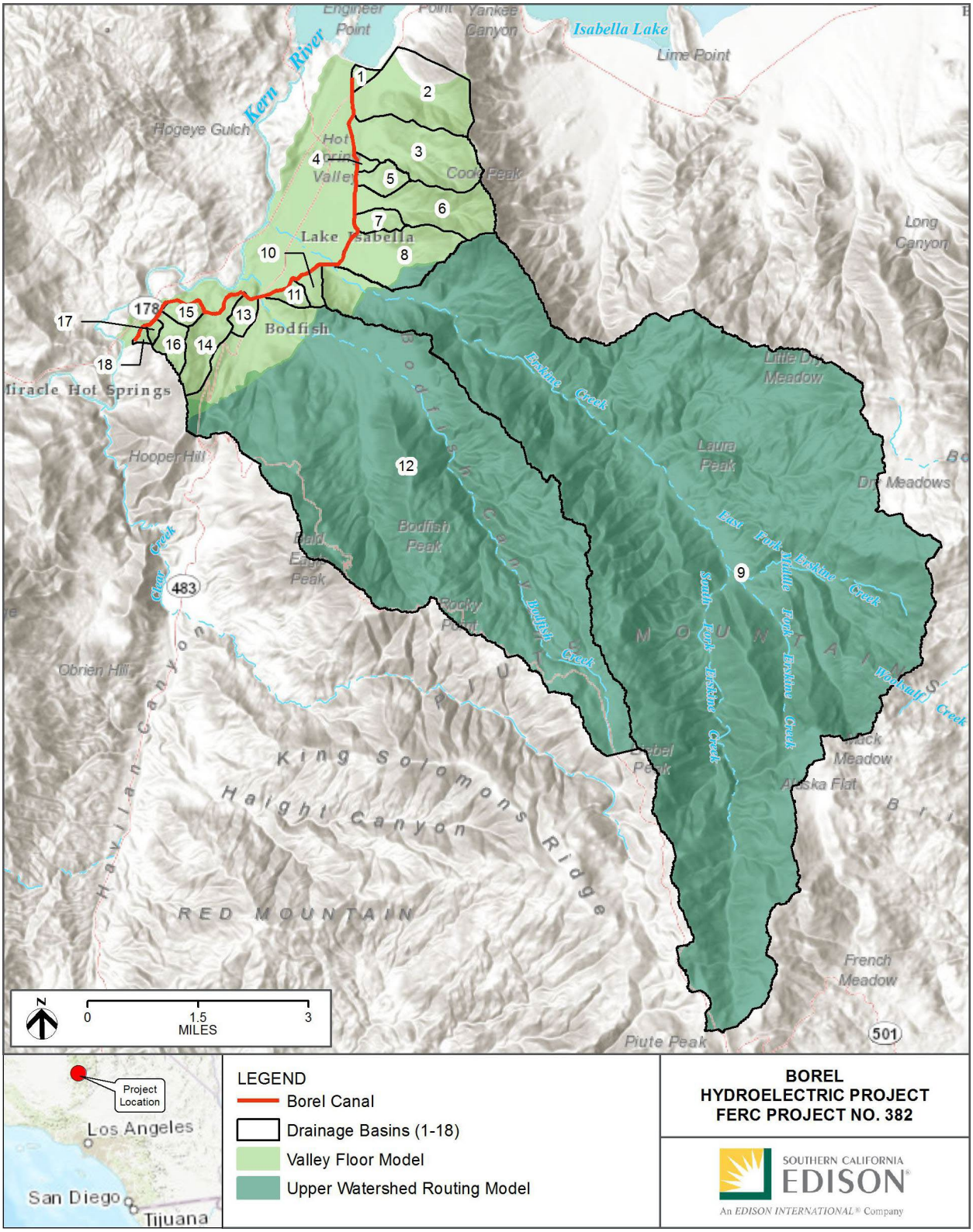



**Figure 3.4-1. Contributing Drainage Basins for the Borel Project between the Auxiliary Dam to Borel Powerhouse**

Of the total 60 square miles, drainage from approximately 50 square miles crosses the existing Borel Project alignment unimpeded and continues along the two principal drainages, Erskine and Bodfish Creeks (see Figure 3.4-1, drainage basins 9 and 12, respectively). Flow from Erskine and Bodfish Creeks continues past the Borel Project alignment along their natural course until reaching the Kern River. The drainage areas for Erskine and Bodfish Creeks are approximately 34 square miles and 16 square miles, respectively. The Borel Canal flows over Erskine Creek in an above-ground flume. Bodfish Creek flows over the Borel Project alignment on natural ground, in a section of the Borel Project where the project flow is contained in a siphon.

Under current conditions, drainage basins from the eastern portion of the watershed (see Figure 3.4-1, drainage basins 1 through 8, 10, 11, and 13 through 18) are intercepted by the Borel Canal. To evaluate the interaction between drainage basin stormwater and the Borel Project, SCE developed a rain-on-grid two-dimensional (2D) hydraulic model representing existing conditions using Hydrologic Engineering Center's Riverine Analysis System (HEC-RAS), Version 6.1. This model was used to estimate the amount of runoff intercepted by the Borel Canal and includes the current Borel Canal concrete canal, flume, penstock, and tunnel structures. The HEC-RAS model was used to simulate a 10-year design storm event, assuming the storm is centered over the eastern portions of the drainage basins. Hydrologic inputs for these simulations were developed using National Oceanographic and Atmospheric Administration Atlas 14-point precipitation data (Perica et. al 2011) and the Kern County Hydrology Manual (Hromadka 1995).

Modeling results show rainfall runoff patterns, which concentrate into small ravines and creeks as runoff travels downhill. Once the runoff makes it to the valley floor, it is either carried by Erskine or Bodfish Creeks, which flow unimpeded past the Borel Project, or is intercepted by the canal. **Error! Reference source not found.** summarizes the 10-year design storm peak flow results for drainage basins intercepted by the Borel Canal.

**Table 3.4-1. Draft Model Results – 10-Year Design Storm Peak Flows (Flow Intercepted by Borel Project Listed by Drainage Basin)**

| Drainage Basin No.[a] | Peak Flow (cfs) | Volume (acre-feet) | Intercepted by Borel Project |
|---|---|---|---|
| 1 | 106 | 36 | ✓ |
| 2 | 93 | 31 | ✓ |
| 3 | 92 | 31 | ✓ |
| 3 – School House No.1 Concrete Flume | 76 | 25 | Not intercepted |
| 4 | 40 | 6 | ✓ |
| 4 – School House Cut Flume | 72 | 3 | Not intercepted |
| 5 | 171 | 55 | ✓ |
| 6 | 24 | 7 | ✓ |
| 7 | 23 | 9 | ✓ |
| 8 | 84 | 36 | ✓ |
| 9 – Erskine Creek | 1,022 | 488 | Not intercepted |
| 10 | 52 | 10 | ✓ |
| 11 | 85 | 12 | ✓ |
| 12 – Bodfish Creek | 2,600 | 1,523 | Not intercepted |
| 13 | 6 | 1 | ✓ |
| 14 | 59 | 9 | ✓ |

**Table 3.4-1. Draft Model Results – 10-Year Design Storm Peak Flows (Flow Intercepted by Borel Project Listed by Drainage Basin)**

| Drainage Basin No.[a] | Peak Flow (cfs) | Volume (acre-feet) | Intercepted by Borel Project |
|---|---|---|---|
| 14 – Natural Drainage at Pioneer Steel Siphon | 120 | 33 | Not intercepted |
| 15 | 71 | 11 | ✓ |
| 15 – Natural Drainage at Flume No. 623 | 68 | 18 | Not intercepted |
| 16 | 6 | 1 | ✓ |
| 17 | 28 | 4 | ✓ |
| 17 – Natural Drainage at Profanity Steel Flume | 5 | 1 | Not intercepted |
| 18 | 6 | 2 | ✓ |

[a] See Figure 3.4-1 for drainage basin locations.

### 3.4.1.2 Water Quality

The California Regional Water Quality Control Board (CRWQCB), Central Valley Region governs issues involving water quality within this basin, in accordance with the provisions contained in their Water Quality Control Plan for the Tulare Lake Drainage Basin (Basin Plan; CRWQCB 2018).

The Basin Plan identifies several beneficial uses for each stream and river within the basin. Beneficial uses for the portion of the Kern River between Lake Isabella and SCE's KR-1 are identified in the Basin Plan as follows: hydropower generation (POW); water contact recreation (REC-1) and non-contact recreation (REC-2); warm (WARM) and cold (COLD) freshwater habitat; wildlife habitat (WILD); and rare, threatened, and endangered species habitats (RARE). Beneficial uses identified for Lake Isabella are similar, but also include freshwater replenishment of surface waters (FRSH) and do not include rare, threatened, or endangered species. These beneficial uses dictate water quality management along the Kern River and Lake Isabella (CRWQCB 2018).

#### *State Water Quality Standards*

Water quality must meet certain objectives contained in the Basin Plan. The Basin Plan objectives may be either narrative or numeric and are designed in either case to protect beneficial uses. Narrative surface water quality standards applicable to the Borel Project are listed in Table 3.4-2. Numeric surface water quality standards applicable to the Borel Project are listed in Table 3.4-3. Note that specific water quality standards exist for the Borel Project reach for conductivity and dissolved oxygen (DO) (CRWQCB 2018). Under the Porter Cologne Water Quality Control Act, water quality may be changed to some degree without unreasonably affecting beneficial uses.

**Table 3.4-2. Narrative Water Quality Standards Applicable to the Borel Project Area**

| Water Quality Parameter | Description |
|---|---|
| Biostimulatory Substances | Waters will not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses. |
| Chemical Constituents | Waters will not contain chemical constituents in concentrations that adversely affect beneficial uses. The Regional Water Board will consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for detrimental levels of chemical constituents developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the State Water Board Division of Drinking Water Programs, the U.S. Food and Drug Administration, the National Academy of Sciences, the U.S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective. |
| Color | Waters will be free of discoloration that causes nuisance or adversely affects beneficial uses. |
| Floating Material | Waters will not contain floating material, including but not limited to solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses. |
| Oil and Grease | Waters will not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses. |
| Pesticides | Waters will not contain pesticides in concentrations that adversely affect beneficial uses. There will be no increase in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses. For the purposes of this objective, the term pesticide is defined as any substance or mixture of substances used to control objectionable insects, weeds, rodents, fungi, or other forms of plant or animal life.<br><br>The Regional Water Board will consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for detrimental levels of chemical constituents developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the State Water Board Division of Drinking Water Programs, the U.S. Food and Drug Administration, the National Academy of Sciences, the U.S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective.<br><br>In waters designated COLD, total identifiable chlorinated hydrocarbon pesticides will not be present at concentrations detectable within the accuracy of analytical methods prescribed in *Standard Methods for the Examination of Water and Wastewater* (18th Edition) (Lipps et. al 1992) or other equivalent methods approved by the Executive Officer. |
| Radioactivity | Radionuclides will not be present in concentrations that are deleterious to human, plant, animal, or aquatic life nor result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life. |
| Sediment | The suspended sediment load and suspended sediment discharge rate of waters will not be altered in such a manner as to cause nuisance or adversely affect beneficial uses. |
| Settleable Material | Waters will not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses. |
| Suspended Material | Waters will not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses. |
| Taste and Odor | Waters will not contain taste- or odor-producing substances in concentrations that cause nuisance, adversely affect beneficial uses, or impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to domestic or municipal water supplies. |

**Table 3.4-2. Narrative Water Quality Standards Applicable to the Borel Project Area**

| Water Quality Parameter | Description |
|---|---|
| Toxicity | All waters will be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, biotoxicity tests of appropriate duration, or other methods as specified by the Regional Water Board. The Regional Water Board will also consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for toxic substances developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the State Water Board Division of Drinking Water Programs, the U.S. Food and Drug Administration, the National Academy of Sciences, the U.S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective.<br><br>The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality factors will not be less than that for the same water body in areas unaffected by the waste discharge, or, when necessary, for other control water that is consistent with the requirements for "dilution water" as described in *Standard Methods for the Examination of Water and Wastewater* (18th Edition). As a minimum, compliance will be evaluated with a 96-hour bioassay.<br><br>Additionally, effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate, additional numerical receiving water quality objectives for specific toxicants will be established as sufficient data become available, and source control of toxic substances will be encouraged. |

Source: CRWQCB 2018

**Table 3.4-3. Numeric Water Quality Standards Applicable to the Borel Project Area**

| Water Quality Parameter | Description |
|---|---|
| Ammonia | Waters will not contain un-ionized ammonia in amounts that adversely affect beneficial uses. In no case will the discharge of wastes cause concentrations of un-ionized ammonia (NH3) to exceed 0.025 milligrams per liter (mg/L) (as N) in receiving waters. |
| Bacteria | In waters designated REC-1, the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period will not exceed a geometric mean of 200/100 milliliters (ml), nor will more than 10 percent of the total number of samples taken during any 30-day period exceed 400/100 ml. |
| Dissolved Oxygen (DO) | Waste discharges will not cause the monthly median DO concentrations in the main water mass (at centroid of flow) of streams and above the thermocline in lakes to fall below 85 percent of saturation concentration, and the 95-percentile concentration to fall below 75 percent of saturation concentration.<br><br>The DO in surface waters will always meet or exceed the following minimum levels for all aquatic life:<br>• Waters designated WARM 5.0 mg/L<br>• Waters designated COLD or SPWN 7.0 mg/L<br><br>Where ambient DO is less than these objectives, discharges will not cause a further decrease in DO concentrations.<br><br>Lake Isabella to KR-1 powerhouse: DO will not fall below 8.0 mg/L |

**Table 3.4-3. Numeric Water Quality Standards Applicable to the Borel Project Area**

| Water Quality Parameter | Description |
|---|---|
| pH | The pH of water will not be depressed below 6.5, raised above 8.3, or changed at any time more than 0.3 units from normal ambient pH.<br><br>In determining compliance with the above limits, the Regional Water Board may prescribe appropriate averaging periods provided that beneficial uses will be fully protected. |
| Conductivity | Waters will be maintained as close to natural concentrations of dissolved matter as is reasonable considering careful use of the water resources.<br><br>Maximum electrical conductivity level for Lake Isabella and below Lake Isabella to KR-1 powerhouse: 300 micromhos/centimeter (µmhos/cm). |
| Temperature | Natural temperatures of waters will not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.<br><br>Elevated temperature wastes will not cause the temperature of waters designated COLD or WARM to increase by more than 5°F above natural receiving water temperature.<br><br>In determining compliance with the above limits, the Regional Water Board may prescribe appropriate averaging periods provided that beneficial uses will be fully protected. |
| Turbidity | Waters will be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors will not exceed the following limits:<br><br>• Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases will not exceed 1 NTU.<br>• Where natural turbidity is between 5 and 50 NTUs, increases will not exceed 20 percent.<br>• Where natural turbidity is equal to or between 50 and 100 NTUs, increases will not exceed 10 NTUs.<br>• Where natural turbidity is greater than 100 NTUs, increases will not exceed 10 percent.<br><br>In determining compliance with the above limits, the Regional Water Board may prescribe appropriate averaging periods provided that beneficial uses will be fully protected. |

Source: CRWQCB 2018

The Kern River between the Corps' Main Dam and SCE's KR-1 powerhouse is classified as both warm and cold-water habitat. Coldwater species include trout, which have an optimal temperature range of 55 to 65°F (Moyle 2002). However, as discussed in the 2003 License Application (SCE 2003a) and FERC's 2005 Environmental Assessment (EA) for the Borel Project (FERC 2005), water temperatures in Lake Isabella during summer exceed the upper limit of the range for trout (SCE 2007b). Therefore, water released into this reach are not capable of supporting a self-sustaining trout population regardless of the volume of water released from Lake Isabella. Water temperatures in this reach are more suitable for warm- or cool-water fish species such as hardhead, pikeminnows, and suckers, which have an optimal range of 66° F to 72°F (Moyle 2002; SCE 2007b).

Lake Isabella is listed on the State's Clean Water Act Section 303(d) List as impaired for DO, pH, and mercury. The Kern River is not listed as impaired for any segment (SWRCB 2021).

### *Water Quality Studies*

As presented in the 2003 License Application, water quality has been historically sampled in the Borel Project area by the Corps and SWRCB. Sites sampled in the 1950s through 1990s include Lake Isabella (surface near Isabella Main Dam), the Kern River at the Main Dam Campground, Hobo Campground, and the gauge station near the Isabella Main Dam. Historical water temperature profiles for Lake Isabella generally show only minor changes in temperature with depth and weak stratification. Lake Isabella temperature profiles suggest that the reservoir stratifies irregularly and mixes completely from the surface to the bottom many times and in all seasons of the year. However, DO concentrations have been found to decrease to approximately 2 milligrams per liter near the bottom in late summer (SCE 2003a).

Historical phytoplankton studies performed by the Corps in Lake Isabella have shown that the phytoplankton community is highly dynamic, and the reservoir is considered mesotrophic, or of intermediate trophic status (SCE 2003a).

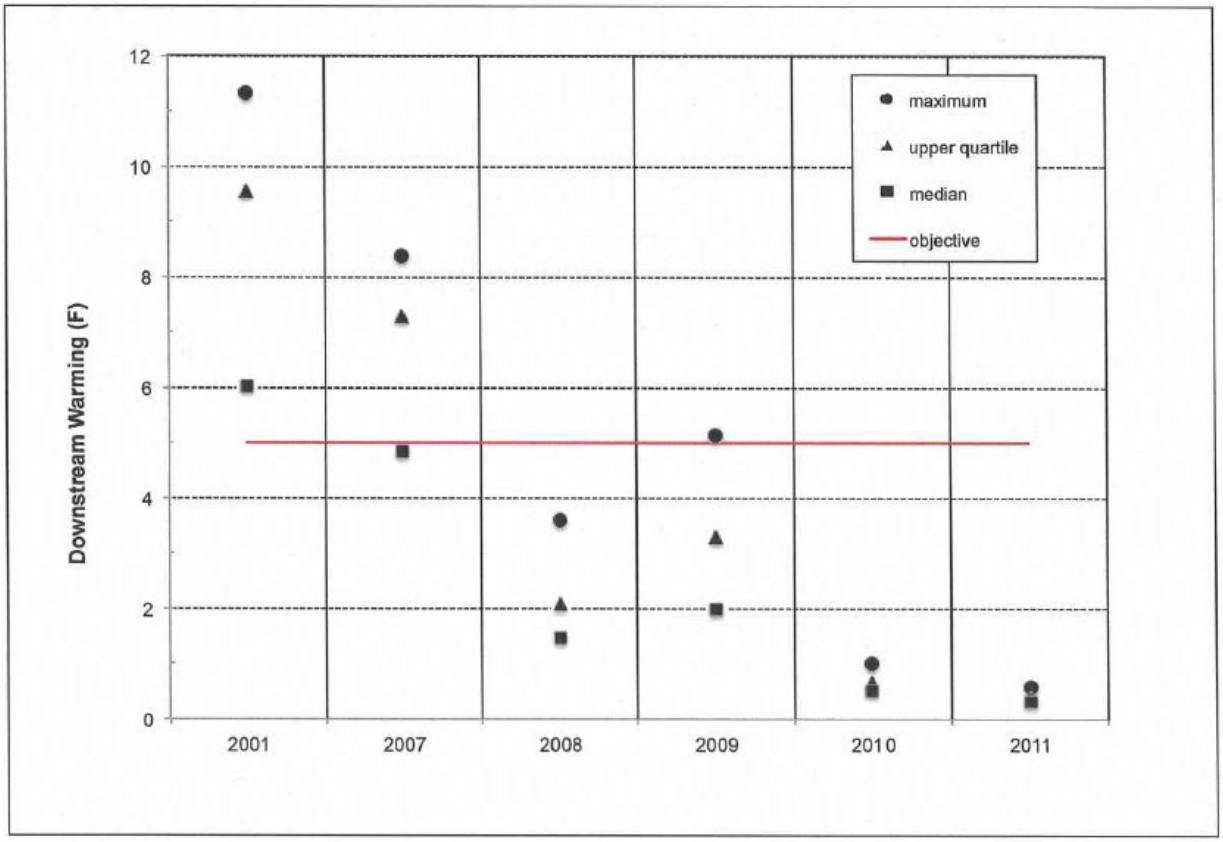
Water quality studies were also performed to support Borel Project relicensing prior to license issuance in 2006, including a comprehensive water quality study in 2001 in Lake Isabella and the Kern River, a limnology survey of Lake Isabella, and a non-point source pollution evaluation for the Borel Project area (SCE 2003a). In general, the results indicated that water quality in the Kern River and Lake Isabella is good and comparable to other Sierra Nevada streams and rivers. However, turbidity and concentrations of lead, zinc, and dissolved oxygen often failed to meet the objectives in the Basin Plan. With few exceptions, the other water quality parameters consistently conformed to the objectives (SCE 2003a).

**POST-LICENSING WATER TEMPERATURE MONITORING**

Article 406 of the 2006 FERC License required SCE to complete 5 years of water temperature monitoring during May to assess compliance of the Borel Project with the water temperature objectives of the Tulare Basin Plan as described in Table 3.4-3. SCE prepared yearly reports for the 5 years as required by Article 406 for water temperature monitoring between 2007 and 2011 in coordination with the U.S. Geological Survey (USGS), Forest Service, USFWS, BLM, California Department of Fish and Wildlife, formerly known as California Department of Fish and Game (CDFG), and SWRCB. May is an important month for spawning and rearing of principal fish species such as trout, hardhead, pikeminnows, and suckers in the lower Kern River, and temperature monitoring in May 2001 found that the bypassed reach experienced temperature increases up to 9.4°F from upstream to downstream within the reach (SCE 2007b).

Water temperature was measured during May 2007 through 2011 immediately below the Isabella Main Dam and just upstream of the Borel Powerhouse. The upstream site below the dam is more exposed with less riparian vegetation, providing more opportunity for daytime warming as compared to the downstream site. Results of the 5 years of post-licensing temperature monitoring as well as temperature monitoring in support of relicensing in 2001 found that the Basin Plan temperature standard of 5°F warming above natural receiving waters was exceeded several times and is related to periods of low flows and high air temperatures (SCE 2007b, 2008a, 2009, 2010, 2011).

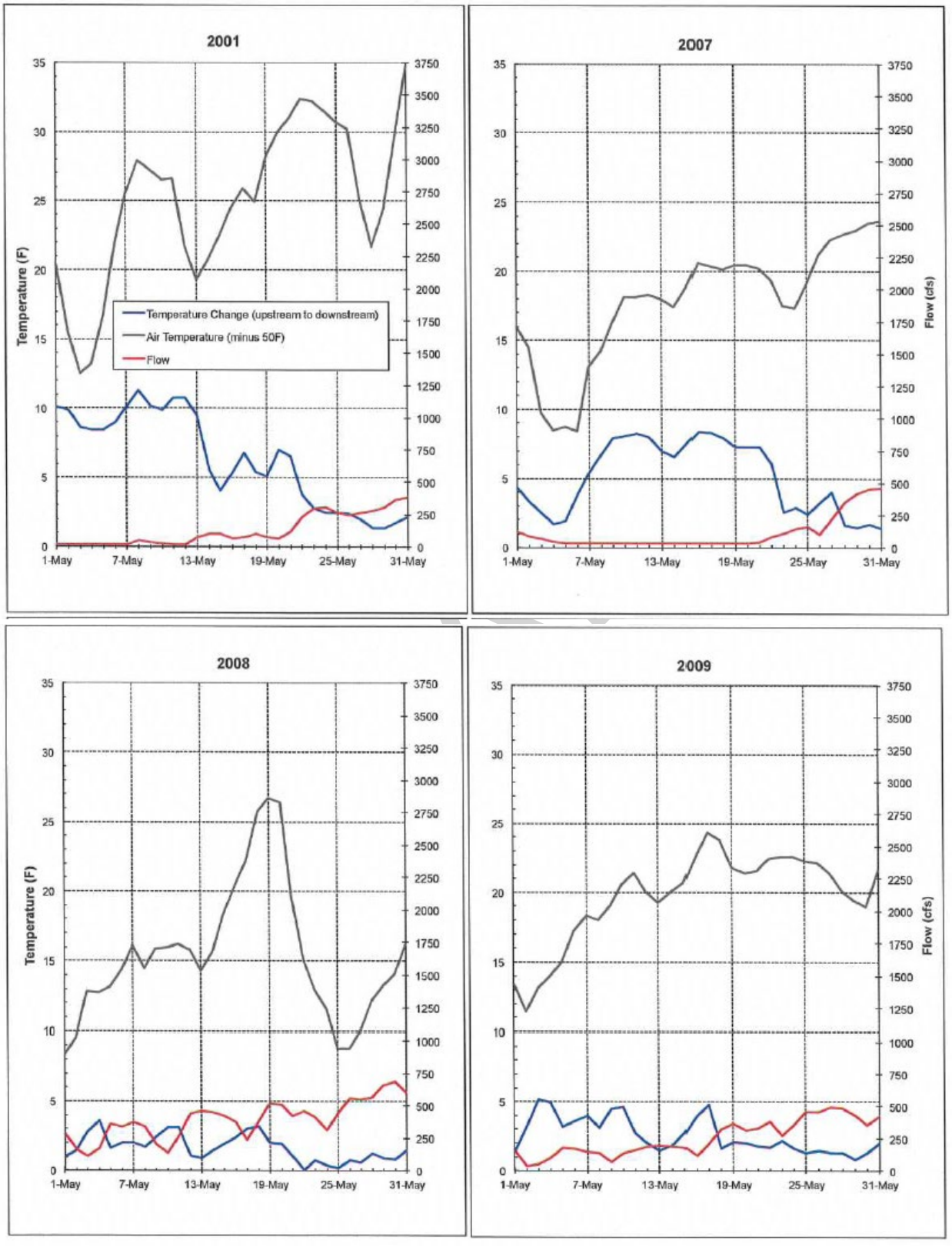
The daily average warming from the upstream to downstream site averaged 6.3°F in 2001, 5.0°F in 2007, 1.6°F in 2008, 2.6°F in 2009, 0.5°F in 2010, and 0.3°F in 2011. The Basin Plan temperature standard was exceeded several times in 2001 and 2007, on one day in 2009, and was not exceeded in 2008, 2010, or 2011 (SCE 2007b, 2008a, 2009, 2010, 2011). Figure 3.4-2 shows the median, upper quartile, and maximum downstream warming during May 2001 and 2007 through 2011.

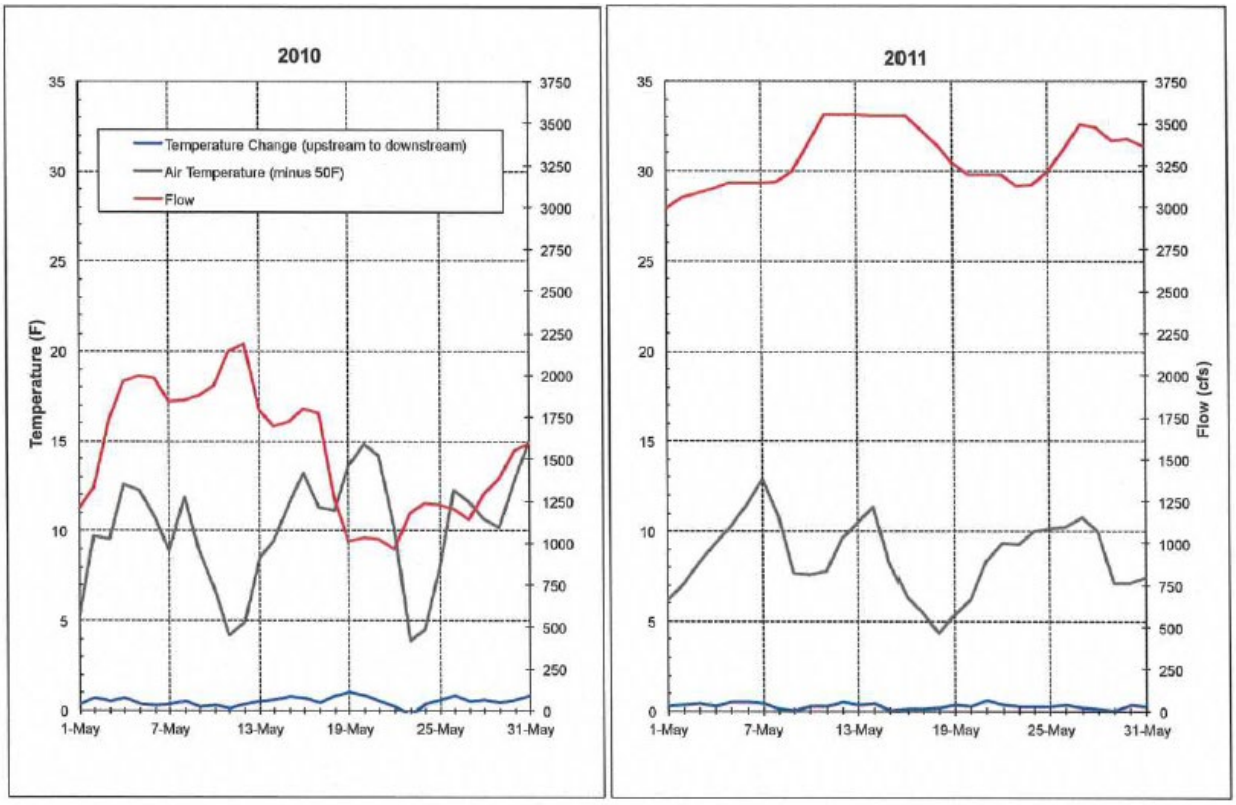



Source: SCE 2011

**Figure 3.4-2. Median, Upper Quartile, and Maximum Downstream Warming during May in the Borel Bypassed Reach during 2011 and 2007–2011**

The results of the 2001 and 5-year post-licensing May water temperature monitoring showed that downstream warming is positively related to air temperature and negatively related to flows. It was determined that flows greater than 100 cfs in the bypassed reach and air temperatures less than 75°F are likely required to prevent downstream warming from exceeding the Basin Plan standard of 5°F difference from natural receiving waters. If flows approach 50 cfs in the reach, air temperatures likely need to remain below 65°F to prevent downstream warming greater than 5°F. However, May experiences increased solar radiation and varying temperatures between days in the same year and across years. Flows also vary widely between years. Figure 3.4-3 shows the mean daily water temperature increases from the Isabella Main Dam to the Borel Powerhouse, air temperatures, and flow in each study year.


2001
2007
2008
2009
Temperature (F)
Flow (cfs)
Temperature Change (upstream to downstream)
Air Temperature (minus 50F)
Flow
1-May
7-May
13-May
19-May
25-May
31-May




Source: SCE 2011
Note: 50°F has been subtracted from air temperatures for clarity in comparison to temperature change from the upstream to downstream sites.

**Figure 3.4-3. Kern River Mean Daily Water Temperature Increases from the Main Dam to Borel Powerhouse Site, Air Temperatures, and Flow during May 2001 and 2007–2011**

## 3.4.2 Environmental Effects

### 3.4.2.1 Water Quantity

The Borel Project will be addressed in two parts—Upper Borel and Lower Borel—for the purpose of describing the environmental effects to water resources and hydrologic setting, particularly as they relate to Borel Project effects to water quantities.

#### *Borel Project Upstream of Isabella Auxiliary Dam (Upper Borel)*

Compared to current conditions, the proposed decommissioning actions for the Borel Canal and facilities within the Upper Borel area will have no effect on water quantity to the reservoir. The SCE proposal involves limited grading in **Segments 1 and 4.** The proposal for **Segments 1 and 2** involves limited grading and backfill because the canal has been partially backfilled already from sedimentation. Approximately 1,400 feet of **Segment 2** has filled in naturally from sedimentation over time and will require no action. The proposal for **Segments 3 and 4** involved excavations on the waterside bank and salvages the existing riprap from the face of the existing slopes. The riprap will be reused on the finished slopes to provide equivalent erosion protection from wind and wave effects.

### *Borel Project Downstream of Isabella Auxiliary Dam (Lower Borel)*

As described in Section 3.4.1.1, in several locations the Borel Project in Lower Borel intercepts stormwater runoff draining from east and south of the Borel Project alignment, effectively acting as a drainage facility. The proposed actions outlined in the Plan (Volume II) address this condition and provide stormwater drainage controls that meet Kern County Standards for Drainage – Division 4 (Hromadka 1995).

The proposed reconfiguration and grading of the Borel Project will continue to intercept storm runoff from the eastern portion of the contributing drainage basins. As described in the Plan (Volume II), SCE is proposing to convert the current conveyance canal into a series of linear detention basins, which will reduce the amount of impervious area within the watershed and detain and infiltrate intercepted stormwater runoff.

The stormwater drainage analyses consisted of using the hydraulic model to calculate the inflow into each of the basins, followed by calculations of the infiltration time based on soil infiltration rates and basin geometries. To perform these analyses, the model was updated with a surface representing the proposed detention basin configurations. The surface used to update the model was developed in Civil 3D as part of the conceptual design of the proposed Borel Project decommissioning. The detention basins were then assessed for their ability to contain the 10-year design rainfall runoff and to check whether they meet the infiltration and freeboard requirements described in the Kern County Standards for Drainage – Division 4 (Hromadka 1995).

The overall drainage design consisted of an iterative process for proper basin sizing. First, simulations were performed for the 10-year design storm using the rain-on-grid 2D hydraulic model modified to reflect conceptual detention basin geometry. The simulations produced total inflow volumes into the conceptual detention basins. Drainage basins were evaluated per stormwater requirements outlined in the Kern County Hydrology Manual and site characteristics such as soil types, basin configuration, and the resulting inflow volumes. If the basins did not meet required infiltration and freeboard requirements, the conceptual configurations of the basins were modified as necessary. The process was repeated iteratively until the drainage basins were adequately sized to manage drainage and meet county stormwater requirements. **Error! Reference source not found.,** above, shows 10-year design storm peak flows intercepted by the proposed decommissioning actions. Seven of the drainage basins flow past the canal alignment, unimpeded by the Borel Project.

The Plan (Volume II) includes removal of two flumes in Lower Borel, as well as sealing a siphon structure. The larger of the two flumes and the siphon structure were used to convey canal flows across the two largest cross drainage features (Erskine and Bodfish Creeks, respectively). The second flume was used to convey flow across another, smaller, cross drainage feature in the vicinity of the Scovern Hot Springs toward Oak Meadow Road. The function of these drainages, Erskine and Bodfish Creeks, and the small feature near Oak Meadow Road, will not change with the Plan (Volume II) since these were designed to allow stormwater at these drainages to cross the Borel Project alignment unimpeded.

### *Effects on Kern River*

The proposed decommissioning actions between the Corps' Isabella Auxiliary Dam and the Borel Powerhouse leave the hydrologic conditions of the lower Kern River fundamentally unchanged. Flow through the lower Kern River is controlled primarily by Lake Isabella operations of the Isabella Main Dam. Because the Borel Project is currently non-operational, the Borel Canal does not discharge flow into the Kern River at the Borel Powerhouse. In its current condition, the canal intercepts stormwater runoff and functions similar to the proposed condition except the infiltration of the intercepted rainfall runoff will be improved with the proposed decommissioning actions. The proposed actions incorporate linear detention/infiltration basins, significantly reducing the amount of impervious area within the FERC Project boundary. These proposed features will contain sediment and higher temperature surface runoff locally and reduce the amount of stormwater runoff that directly discharges into the Kern River, which will improve downstream water quality.

The Plan (Volume II) proposes to remove the Erskine Steel Flume at Erskine Creek. Removal of the existing structure will have negligible effect on the Kern River for small rainfall events. The piers of the flume create drag on the Erskine Creek water flowing below the existing flume structure. This has the potential to impede flow, slow down the water, and increase water surface elevations on the upstream side of the structure. However, the flume piers are a fraction of a percent of the cross-sectional area. Therefore, the change will be negligible. The proposed action to fill the Bodfish Siphon underneath Bodfish Creek with a concrete slurry, will not have an impact to Kern River flows.

For Borel Canal segments located downstream of Bodfish Creek, the canal's concrete liner will be removed and backfilled. Structures such as siphons, culverts, and flumes will be demolished and removed. The rain runoff previously intercepted by this section of Borel Canal will make its way to the Kern River. Because the amount of this runoff is negligible relative to Kern River flows, SCE anticipates that this additional rain runoff into the Kern River will not affect water resources.

#### 3.4.2.2 Water Quality

Borel Project decommissioning will be performed in accordance with Basin Plan water quality standards for Lake Isabella or the Kern River reach affected by the Borel Project. Work in Lake Isabella will be completed during dry conditions when the lake elevation is at 2,535 feet msl or below, preventing the need for in-water work and potential effects to water quality.

As the Borel Project is no longer operational, intercepted stormwater from off-site watersheds poses the only effect to water quality in the Kern River. The Borel Project appears to have historically affected DO in the Kern River because it transferred low DO water from the reservoir to the river downstream of the Powerhouse. As indicated above, the release of water from the Powerhouse during summer appears to have resulted in a minor depression of DO in the reach below the Powerhouse, a result that will be eliminated by decommissioning.

Turbidity could be temporarily increased in areas where erosion occurs as a result of decommissioning activities. Eroded sediment has the potential to enter the Kern River directly during construction or through stormwater runoff. Effects to water quality in Lake Isabella and the lower Kern River are not expected due to the implementation of measures, described in Table 2.2-2 and Section 3.4.3.

The linear detention/infiltration basins that SCE is proposing will improve water quality in the watershed by detaining and infiltrating stormwater runoff locally, which reduces the amount of stormwater runoff that directly discharges into the Kern River.

### 3.4.3 Measures

Proposed measures are summarized in Table 2.2-2. The measures associated with water resources include:

- SCE will consult with the applicable federal, state, and local agencies to obtain necessary permits and will comply with these permits during all decommissioning activities (Measure 1);
- Work area footprints will be confined as much as reasonably practicable All parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities will be confined, to the greatest extent possible, to previously disturbed areas. Additionally, the Borel Project footprint/area will be clearly defined and marked to avoid working in areas outside of the approved boundary. Fences and flagging will be installed by the contractor in a manner that does not impact habitats and other sensitive areas to be avoided and such that it is clearly visible to personnel on foot and operating heavy equipment (Measure 2);
- Work areas will be kept clear of garbage, including micro trash (small pieces of trash or smaller, broken-down pieces of trash). Trash and food will be stored in closed containers and removed daily to reduce attractiveness to opportunistic predators such as coyotes, domestic and feral dogs and cats, opossums, skunks, and raccoons. Littering of trash and food waste will be prohibited. Upon completion of a Borel Project activity, the work site will be inspected to ensure it is free of garbage and micro trash. If garbage or micro trash is detected at the site, it will be removed (Measure 3);
- All work activity-related materials will be properly stored and secured. Materials that are in any type of liquid or powder form will be stored in sealed leak-proof containers. In addition, all parked vehicles/equipment will be kept free of leaks, particularly antifreeze, as this could be fatal if consumed by wildlife (Measure 6);
- The contractor will be required to conduct vehicle refueling and maintenance in upland areas, where fuel cannot enter aquatic habitats or areas that have suitable habitat to support federally and/or state listed species. Equipment and containers will be inspected daily for leaks. Should a leak occur, contaminated soils and surfaces will be cleaned up and disposed of as required by the Borel Project's regulatory permits and materials safety data sheets (Measure 7);
- A designated qualified biologist will review final plans, designate areas that need temporary fencing, and monitor construction activities within and adjacent to areas with aquatic or other sensitive habitats. The qualified biologist will monitor activities within designated areas during critical times, such as initial ground-disturbing activities (e.g., ESA fencing installation), and check that all regulatory agency permit requirements, conservation measures, and mitigation measures are properly implemented and followed. The qualified biologist will check construction barriers or exclusion fencing and provide corrective measures to the contractor to keep the barriers or fencing maintained throughout construction (Measure 26);

- A WEAP will be established and implemented prior to the start of work activities in the field and cover biological and cultural resources. The program will be presented by a qualified biologist and a qualified archaeologist to all construction crew members. If new employees join the crew, they will receive formal, approved training prior to working on site. Upon completion of the orientation, employees will sign a form stating they attended the program and understand all protection measures. A fact sheet containing the presented information will also be prepared and distributed (Measure 13);

- A biological monitor will be on site during all ground-disturbing and vegetation removal activities associated with the decommissioning in areas of sensitive vegetation communities, ESA-listed species habitat, or known special-status species occurrences (Measure 15);

- Prior to the start of activities that may impact biological resources activities, in each specific segment of the Borel Project (see Volume II, Decommissioning Plan), pre-construction surveys for sensitive habitats and sensitive species, including ESA-listed species, will be conducted. Surveys will be conducted by qualified biologists and during the appropriate timeframe for detection of target species, within the given period for the activity (e.g., nesting bird surveys will not be performed for activities that will take place completely outside of the nesting bird season) (Measure 16);

- Upon completion of work activities, temporarily disturbed areas will be revegetated with native plant species. A revegetation plan will be developed that addresses revegetating areas where Borel Project features have been removed (Measure 17);

- A designated qualified biologist will review final plans, designate areas that need temporary fencing, and monitor construction activities within and adjacent to areas with aquatic or other sensitive habitats. The qualified biologist will monitor activities within designated areas during critical times, such as initial ground-disturbing activities (e.g., ESA fencing installation), and check that all regulatory agency permit requirements, conservation measures, and mitigation measures are properly implemented and followed. The qualified biologist will check construction barriers or exclusion fencing and provide corrective measures to the contractor to keep barriers or fencing maintained throughout construction (Measure 26);

- Natural landscape drainage patterns will be maintained; to prevent unintended or unnecessary impacts, high visibility orange barrier fencing or flagging will be erected to clearly define aquatic habitats to be avoided (Measure 30);

- Impacts to delineated aquatic resources, outside of the Borel Canal, will be limited to the amount necessary to successfully complete all work activities. To prevent unintended or unnecessary impacts, orange barrier fencing or flagging will be erected to clearly define the aquatic habitat to be avoided (Measure 31);

- SCE or the contractor will develop a SWPPP in accordance with the State Water Resources Control Board General Construction Permit and local regulations. The SWPPP will include BMPs to reduce or eliminate construction impacts to stormwater runoff (Measure 32); and

- Work in Lake Isabella will be completed during dry conditions when the lake elevation is at 2,535 feet msl or below (Measure 33).

# 3.5 Fish and Aquatic Resources

## 3.5.1 Existing Environment

A mixture of native and introduced fish species inhabit Lake Isabella and the Kern River in the Borel Project area. Lake Isabella fisheries include a mixture of native and stocked fish. Native species in Lake Isabella include Sacramento sucker (*Catostomus occidentalis*) and Sacramento pikeminnow (*Ptychocheilus grandis*), while other species have been planted as forage and game fish, such as centrarchids (sunfishes), catfish, rainbow trout (*Oncorhynchus mykiss*) and chinook salmon (*Oncorhynchus tshawytscha*) (SCE 2003a).

The native species in the lower Kern River include three species: Sacramento sucker, Sacramento pikeminnow, and hardhead (*Mylopharadon conocephalus*), which typically dominate undisturbed western Sierra Nevada streams at the altitude of the Borel Project. Hardhead has been classified by the CDFW as a Species of Special Concern (SSC) (CDFW 2015, 2022a) and by the Forest Service as a Sensitive Species (FSS) (Forest Service 2019a; CDFW 2022a). In addition to native species, fish include several introduced warmwater species, including smallmouth bass (*Micropterus dolomieu*), along with stocked coldwater species, such as rainbow trout (SCE 2003a). Hatchery-reared rainbow trout were last stocked in the Borel Project reach of the Kern River in 1993 but continue to be annually stocked in the river downstream of the powerhouse (CDFW 2021a).

Historically, the Kern River rainbow trout (*Onchorhynchus mykiss gilberti*), a CDFW SSC (CDFW 2015, 2022a) and Forest Service (FSS) (Forest Service 201, CDFW 2022a), seasonally resided in the lower Kern River. However, this fish no longer occurs in the Kern River downstream of Lake Isabella or in the upstream reaches within 10 or more miles of the reservoir. Introduction of hatchery rainbow trout are thought to be one of several factors originally responsible for the demise of the Kern River rainbow trout in the lower Kern River. The Kern River No. 3 (Fairview) Diversion Dam helps to protect the genetic integrity of the Kern River rainbow trout from the naturalized hatchery trout through implementation of the Closure Plan for Fish Ladders at the Fairview Dam (Closure Plan) in 1997. The Closure Plan placed steel barriers at the upstream and downstream ends of the dam's fish ladders to deny upstream migration to predatory Sacramento pikeminnow and non-native rainbow and brown trout (*Salmo trutta*) (SCE 2021a).

### 3.5.1.1 Aquatic Habitat

Many of the fish species that inhabit Lake Isabella primarily reside in protected shallow water habitats, such as pikeminnows and centrarchids. Lake Isabella fish that may inhabit deep, open water habitats include catfish, trout, Chinook salmon, Sacramento suckers, carp (*Cyprinidae*), white crappie (*Pomoxis annularis*) and threadfin shad (*Dorosoma petenense*) (SCE 2003a).

According to limnology studies conducted during the previous relicensing, Lake Isabella does not experience strong stratification and is moderately eutrophic. Lake Isabella experiences significant sunlight and high productivity, contributing to a high fish population (SCE 2003a). However, natural habitat in the lake is limited due to little recruitment of large wood, lack of submerged aquatic vegetation, and lack of course substrate (Corps 2012). Anecdotally, the canal features, including several areas of protective riprap along the outer bank, provide suitable aquatic structure for several fish species that is otherwise not found in the lake.

The Kern River extends approximately 7.1 miles from the base of the Isabella Main Dam to the Powerhouse. The river descends at a rate of approximately 25 feet per mile, from 2,530 feet msl at the Isabella Main Dam to 2,280 feet msl elevation at the powerhouse. This section of the Kern River tends to be steep, rocky, and generally confined within a relatively narrow granite canyon (SCE 2003a).

### *Instream Flows in the Kern River*

Instream flow has important effects on fish habitat, including the availability of suitable physical habitat and water quality conditions, particularly water temperature and DO. Water quality for the Borel Project reach is described in Section 3.4.1.2. Because the Borel Project is currently non-operational, instream flow in this reach is determined by storage releases from Lake Isabella, as designated by the Kern Watermaster. The reservoir stores inflow during the spring snowmelt period for water supply and flood control, and releases water in summer to meet downstream agricultural demand.

Minimum instream flows in the bypassed reach are provided by the Corps at the Isabella Main Dam into the Kern River (Sections 2.1.2 and 3.4.1.1). The required minimum releases from Lake Isabella are a 7-day average minimum flow of (1) 25 cfs from November through April; (2) 30 cfs in May and October; and (3) 60 cfs from June through September; and with instantaneous minimum flow requirements to the Kern River of: (1) 20 cfs from November through April; (2) 25 cfs in May and October; and (3) 50 cfs from June through September. This flow regime was established by FERC, in the 2006 license, with the goal of protecting and enhancing the native fishery while continuing to be protective of smallmouth bass, a locally important game fish (FERC 2006).

### *Physical Habitat in the Kern River*

The preferred physical habitat for fish is determined by the combination of instream flow, substrate type, and the morphology of the stream channel. In much of the upstream part of the Borel reach the channel morphology is bedrock controlled. Boulders and bedrock outcrops dominate the substrates throughout the reach, with overlying deposits of sand in slow velocity areas. The aquatic habitat consists predominantly of long, deep pools separated by cascades or rapids, with occasional short sections of shallow runs and riffles. Low gradient riffles with good trout spawning gravels are infrequent and short in length (SCE 2003a).

SCE used the results from a Physical Habitat Simulation study conducted during 1985 to evaluate physical habitat conditions for rainbow trout, smallmouth bass, Sacramento suckers, Sacramento pikeminnow, and hardhead at different instream flows up to 200 cfs in the Borel Project reach (SCE 1991). The computed population optimal flows (optimal flows for all life stages combined) were 50 cfs for rainbow trout, 20 cfs for smallmouth bass, and 100 cfs for the three native species. If flows that were nearly optimal (mean percentage within 2 percent of peak) are included, the optimal flow ranges were approximately 45 to 70 cfs for rainbow trout, approximately 15 to 20 cfs for smallmouth bass, and approximately 60 to 140 cfs for the native species. The optimal flows are particularly appropriate for evaluating conditions during spring and summer because all five of the species spawn in spring and early summer; therefore, all life stages occur in the river during spring and summer. In fall and winter, only older juveniles and adults are present (SCE 1991; SCE 2003a).

### 3.5.1.2 Fish Community

#### *Lake Isabella*

A number of fish species inhabit Lake Isabella. Based on twice-yearly surveys of fish populations in the reservoir conducted by the CDFW and Forest Service, the principal fish species are black crappie (*Pomoxis nigromaculatus*), white crappie, bluegill sunfish (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides*), Sacramento suckers, Sacramento pikeminnows, threadfin shad, channel catfish (*Ictalurus punctatus*), white catfish (*Ameiurus catus*), carp, rainbow trout, and Chinook salmon (CDFG Habitat Club and Forest Service 1999). Other than suckers and pikeminnow, which are native species, and carp, all of the species were planted in the reservoir as game or forage fish. The exception is trout and salmon, which are stocked annually and are self-sustaining (SCE 2003a).

#### *Kern River*

Several fish population surveys specific to the Borel Project area have been performed, including April 2001, February and March 2005, March 2006, March 2012, and October 2020. Summaries of these fishery surveys, performed to support Borel Project relicensing and post-licensing compliance, are provided in the following sections. Pursuant to the requirements of Article 405 (Article 401, as amended) and Appendix A, Condition 18 of the Borel Project license, SCE developed the Borel Project, Kern County, California FERC No. 382 Fish Monitoring Plan (WaterWise Consulting 2007) in consultation with the Forest Service, CDFW, SWRCB, and USFWS. The 2007 Plan was filed with the Commission on May 17, 2007 and supplemented on June 15, 2007. The Commission issued an order modifying and approving the 2007 Plan under Article 401 on September 25, 2007 (FERC 2007).

Table 3.5-1 provides numbers and percentages of fish species captured at three shallow-water and pool habitat sites in the Borel Project bypassed reach of the Kern River during the monitoring surveys conducted in 2001, 2005, 2006, and 2012. Results of the 2020 monitoring survey are presented separately in Table 3.5-2, as 2020 sampling methodology differed from previous survey years due to the Borel Project being currently non-operational.

**Table 3.5-1. Mean Numbers and Percentages of Fish Species Captured at Three Shallow-water and Pool Habitat Sites in the Borel Project Bypassed Reach of the Kern River during Four Monitoring Surveys**

| Fish Species | April 2001[a] | February 2005 | | March 2006 | | March 2012 | |
|---|---|---|---|---|---|---|---|
| | Shallow Water | Shallow Water | Pool | Shallow Water | Pool | Shallow Water | Pool |
| Sacramento sucker | 1,223 (98.6) | 352 (90.0) | 59 (85.5) | 1,431 (91.8) | 128 (74.0) | 1,351 (99.5) | 176 (85.9) |
| Sacramento pikeminnow | 9 (0.7) | 25 (6.4) | 0 | 11 (0.7) | 2 (1.2) | 0 | 0 |
| Hardhead | 7 (0.6) | 1 (0.3) | 2 (2.9) | 9 (0.6) | 15 (8.7) | 0 | 2 (1.0) |
| Rainbow trout | 0 | 0 | 2 (2.9) | 1 (0.1) | 9 (5.2) | 4 (0.3) | 9 (4.4) |
| White catfish | 0 | 0 | 1 (1.4) | 97 (6.2) | 12 (6.9) | 1 (0.1) | 17 (8.3) |
| Channel catfish | 0 | 0 | 1 (1.4) | 0 | 4 (2.3) | 0 | 1 (0.5) |
| Black crappie | 0 | 0 | 0 | 2 (0.1) | 0 | 1 (0.1) | 0 |
| White crappie | 0 | 3 (0.8) | 0 | 7 (0.4) | 0 | 0 | 0 |

**Table 3.5-1. Mean Numbers and Percentages of Fish Species Captured at Three Shallow-water and Pool Habitat Sites in the Borel Project Bypassed Reach of the Kern River during Four Monitoring Surveys**

| Fish Species | April 2001[a] | February 2005 | | March 2006 | | March 2012 | |
|---|---|---|---|---|---|---|---|
| | Shallow Water | Shallow Water | Pool | Shallow Water | Pool | Shallow Water | Pool |
| Largemouth bass | 1 (0.1) | 10 (2.6) | 3 (4.3) | 1 (0.1) | 3 (1.7) | 1 (0.1) | 0 |
| Smallmouth bass | 1 (0.1) | 0 | 1 (1.4) | 0 | 0 | 0 | 0 |

Source: SCE 2012
[a] No results available for pools from the April 2001 survey.

The Borel Project reach was subdivided into three areas: lower (river mile [RM] 67.1), middle (RM 71.2), and upper areas (RM 73.0). Within each of these three areas, an approximately 200-foot reach of shallow water habitat was sampled by electrofishing, and several pools were surveyed by direct observation (mask and snorkel) (SCE 2003a). The distribution and relative abundances of fish species found in the 2001, 2005, 2006, 2012, and 2020 surveys of the Borel Project bypassed reach were generally similar. Hardhead were present but not numerous in all surveys. Sacramento sucker was abundant in all surveys at all sites. The condition of rainbow trout as indicated by Fulton's Condition Factor was good. Variability in survey results between years may be attributable to differences in electrofishing and netting techniques, stream flow, and sampling season. No major change to the fisheries in the bypassed reach was observed between the surveys conducted when the Borel Project was in operation and the 2020 surveys after operation had ceased.

The results for the 4 years of fish population monitoring show a general consistency in the relative abundance of fish species in the Borel Project bypassed reach of the Kern River (Table 3.5-1). The mean number and percentage of Sacramento suckers were relatively high during the 2012 monitoring program period, while other species, in particular Sacramento pikeminnow, that were present in previous surveys were not found in 2012. Hardhead were collected in 2012, but their numbers were lower than in past years. Because abundances of hardhead and pikeminnow have been consistently low in the Borel Project reach, their reduced numbers in 2012 are difficult to evaluate. Year-to-year variations in recruitment and survival in the Borel Project reach, as in any stream environment, are expected. In the Borel Project reach, such variations may be attributed to natural fluctuations in environmental conditions and changes in operations of the Isabella Main Dam and the Borel Project, which affect flow in the reach. The periodic appearance of strong Sacramento sucker year classes in response to wet hydrologic conditions, as indicated by the length-frequency results, and the intrinsic longevity of the species (Moyle 2002) provide reasonable assurance that suckers will continue to dominate the fish assemblage.

Fish sampling as outlined in the Fish Monitoring Plan was not possible in 2017 or 2018 due to excessive flows in the bypassed reach during the specified sampling period. These changes in bypassed reach flows were a direct result of the non-operation of the Borel Project, which increased flows in the bypassed reach up to approximately 600 cfs (SCE 2021b). SCE conducted monitoring of fish populations in the Borel bypassed reach on October 19, 20, and 21, 2020. The agency-approved survey schedule targeted the fall period, when flows in the bypassed reach are predictable and suitable for sampling and when the summer recreation season (when the public is using the reach for rafting and swimming) is avoided. Fish are likely to be more mobile in fall, and more age classes are likely to be present. Streamflow below the Corps' Isabella Main Dam ranged from 146 to 152 cfs in the bypassed reach during the 3-day survey period (SCE 2021b).

Samples were collected at three sites: BLM South, BLM B (located approximately 0.3 mile downstream from the previous Havilah-Bodfish Exit site), and Black Gulch. BLM South and Black Gulch are in the same general area as past sampling efforts. The primary sampling method was electrofishing, using a portable inflatable cataraft electrofisher (e-cat), launched from existing raft "put-ins." The e-cat electrofished the full length of all sample locations, completing a minimum of three passes per site. Backpack electrofishing using Smith-Root™ LR-24 electrofishers was conducted by shore-based crew in all shallow shoreline areas accessible by wading (SCE 2021b).

Twelve species of fish were collected across all three sampling sites as shown in Table 3.5-2. This included five native species—Sacramento sucker, Sacramento pikeminnow, hardhead, riffle sculpin (*Cottus gulosus*) and rainbow trout—and seven non-native species—smallmouth bass, brown bullhead (*Ameiurus nebulosus*), channel catfish, white crappie, white catfish, green sunfish (*Lepomis cyanellus*), and largemouth bass. The fish community was dominated by Sacramento sucker, with smallmouth bass and Sacramento pikeminnow being the second and third most abundant species (SCE 2021b).

**Table 3.5-2. Mean Percentages of Fish Captured during 2001 and 2020 Surveys in the Borel Project Bypassed Reach of the Kern River**

| Fish Species | April 2001 | October 2020 |
|---|---|---|
| Sacramento sucker | 96.9 | 86.9 |
| Sacramento pikeminnow | 1.6 | 1.7 |
| Hardhead | 1.2 | 0.5 |
| Smallmouth bass | 0.1 | 7.8 |
| Largemouth bass | 0.1 | 0.3 |
| Riffle sculpin | 0.04 | 0 |
| Rainbow trout | 0 | 0.2 |
| Brown bullhead | 0 | 0.7 |
| Channel catfish | 0 | 0.5 |
| White crappie | 0 | 0.5 |
| White catfish | 0 | 0.3 |
| Green sunfish | 0 | 0.3 |

Source: SCE 2003a, 2021b

Sacramento suckers were present in high densities at all sites. Multiple year classes occupied all sites, indicating successful reproduction and sustained population density. At BLM B, young of the year (YOY) (i.e., less than 81 millimeters) were not captured. However, the absence of YOY at that site is likely due to the type of habitat. Channel shape at BLM B is deep and confined, with no shallow water or river margin habitat preferred by YOY Sacramento suckers. In general, the sampling indicates successful reproduction and a population that is in good condition (SCE 2021b).

Sacramento pikeminnow juveniles and adults were captured at both Black Gulch and BLM South. Although the number of fish captured was relatively low, the populations contained multiple year classes, indicating successful reproduction (SCE 2021b).

Hardhead were present but not numerous. Three hardhead were captured at the Black Gulch sampling site. The fish were in good condition and had fork lengths of 90, 141, and 319 millimeters. Both juvenile and adult hardhead were captured, indicating that some reproduction is occurring. This species is of management interest to the CDFW, which considers it a SSC, and the Forest Service,

which lists hardhead as a FSS in SQF. The presence of multiple age classes of hardhead is an important ecological indicator for the bypassed reach and the Kern River as a whole (SCE 2021b).

A single 298-millimeter rainbow trout was captured at site BLM B. The fish had an adipose fin, indicating that it is likely not a hatchery-raised fish. Based on a scale analysis, the fish was estimated to be more than 3 years of age. A second adult rainbow trout was observed at BLM B at the downstream end of the sample reach. No juvenile trout were captured or observed at any site (SCE 2021b).

Fisheries in the bypassed reach sampled in 2020 show no major changes since 2012 that are directly attributable to the cessation of diverted flows due to the Borel Project's non-operational status (SCE 2021b). The changes in methods and sampling season required by new flow conditions since the Borel Project became non-operational complicate any direct comparison between 2020 and previous years, but the broader trend that fisheries are sustained in good condition under the new flow regime is apparent: data from 2020 show that the fish assemblage in the bypassed reach is more diverse than 2012 data indicate. Furthermore, all native fish species (hardhead, Sacramento pikeminnow, rainbow trout, riffle sculpin and Sacramento sucker) have sustained a relative abundance in the bypassed reach that is similar to 2012. The sustained fish assemblage structure in the bypassed reach under a new flow regime is not surprising given that the impacts to the hydrograph were minor relative to the influence of Lake Isabella operations. The increased peak flows and increased average summer/fall flows since the Borel Project became non-operational are likely to have had a minor beneficial effect on many fish species and on native fish species in particular (Yarnell et al. 2015; SCE 2021b).

#### 3.5.1.3 Fish Stocking

SCE previously obtained records from CDFW about their fish stocking activities in the Kern River (SCE 2003a). According to these records, CDFW historically planted rainbow trout, smallmouth bass, and channel catfish at sites within the Borel Project reach and also planted rainbow trout, brown trout, and channel catfish in the reach between the Borel Powerhouse and Democrat Dam. Specifically, CDFW planted "catchable" rainbow trout (trout weighing approximately 0.5 pound) in the Borel Project reach from 1981 through 1993, planted smallmouth bass in 1972, and planted channel catfish in 1980. CDFW has planted no fish in the bypassed reach since 1993 but continues to plant catchable rainbow trout in the reach between the Borel Powerhouse and Democrat Dam. CDFW has stocked rainbow trout in this reach since 1950; planted brown trout in 1977; and planted catfish in 1972, 1979, and 1980. CDFW's closest current planting location to the Borel Project bypassed reach is Sandy Flat Campground, approximately 0.5 mile downstream of the Borel Powerhouse. CDFW continues to plant trout at this location during times of year when the campground is open, which is normally between April 1 and September 30 (SCE 2003a; CDFW 2021a).

CDFW continues to plant trout according to the Fish Planting Schedule published on the agency's website. CDFW planted trout in Section 4 of the Kern River (North Fork Kern River upstream of Lake Isabella in Kernville) and in Lake Isabella in December 2021 (CDFW 2021a).

#### 3.5.1.4 Fish Passage and Entrainment

The Borel Canal in Lower Borel historically entrained fish from the reservoir, possibly causing mortalities and reductions in reservoir fish population levels. During times of operation, the canal

was periodically dewatered for maintenance, and SCE removed fish from the canal to the reservoir whenever the canal was dewatered (SCE 2008b).

On February 10, 2004, SCE filed a plan to study fish entrainment in the Borel Canal with FERC. The entrainment study plan was developed in consultation with the Forest Service, CDFW, SWRCB, and USFWS. It called for evaluation of the fish species entrained in the Borel Canal to determine whether sensitive fish species were being adversely affected. The evaluations were to take place during the periodic fish rescues that SCE conducted when the canal was taken out of service for maintenance. SCE implemented the study plan twice in 2004 to assist FERC staff in preparing a comprehensive EA for Borel Project relicensing. SCE also implemented the study plan in April 2005 and March 2007 (SCE 2008b).

As shown in the reports filed with FERC, no species of concern, including hardhead, were found during the January 2004, June 2005, April 2005, or March 2007 entrainment studies.

During the January 2004 fish removal, approximately 2,300 fish were removed from the Borel Canal. The most abundant species rescued were white crappie, white catfish, and channel catfish. More than 2,400 fish were removed from the Borel Canal during the June 2004 dewatering and rescue. The most abundant species rescued were white catfish, black crappie, and carp (SCE 2008b).

The Forest Service received report of a fish kill in Lake Isabella shortly after the fish rescue was completed in 2004. The dead fish were likely rescued fish that had died following their release in the reservoir. The CDFW representative who observed the rescue made a number of recommendations to reduce fish mortality during future rescue efforts. SCE committed to a number of recommended improvements for future studies in March 2005, including larger holding tanks, a more powerful aeration system, additional technicians and transport trucks, measuring lengths and weights of only a subsample of the rescued fish, and modifying the configuration of the fish transfer pipe to allow more gentle transfer of fish from the flume to the transport truck. Approximately 2,500 fish were rescued from the canal in April 2005, similar to those species rescued in 2004 (SCE 2008b).

No fish rescue was conducted in 2006 because the Borel Canal was not drained at any time during that year. During March 2007, in addition to normal maintenance procedures to drain the Borel Canal, the conduits within the Auxiliary Dam that convey water from the reservoir to the canal were also drained to allow the Corps to conduct maintenance activities within the dam. A total of 3,612 fish were removed from the Borel Canal during the March 2007 dewatering and rescue. An additional 1,752 fish were removed from the Auxiliary Dam outlet conduits. The most abundant species rescued from the Borel Canal were white catfish and channel catfish. No hardhead were found in the Borel Canal or in the Auxiliary Dam outlet conduits (SCE 2008b).

The 2017 Auxiliary Dam modification sealed the intake and conduit which in turn eliminated the potential for fish entrainment into the canal and Borel Project facilities.

#### 3.5.1.5 Macroinvertebrates

SCE conducted a study of aquatic benthic macroinvertebrates in the Kern River during February 2001 during the Borel Project relicensing. The macroinvertebrates were sampled using the CDFW's California Stream Bioassessment (CSB) protocols. The objectives of the study were to describe the macroinvertebrate community in the portion of the Kern River affected by the Borel Project, to

assess the biotic integrity of the river ecosystem using CSB community metrics, and to evaluate the macroinvertebrate food resources for fish in the river. This APDEA focuses on the second objective, to assess the biotic integrity of the river ecosystem (SCE 2003a).

The CSB study included macroinvertebrate sampling at seven stations in the Kern River. The macroinvertebrate community at all the sampling stations in the Borel Project area included many taxa that are important prey of the fish species in the river. These taxa include true flies (Diptera), mayflies (Ephemeroptera), and caddisflies (Trichoptera) (Table 3.5-3). Stone flies (Plecoptera) are an important prey of trout but were absent or uncommon in the Borel Project area (SCE 2003a).

The total densities of macroinvertebrates at the four stations in the bypassed reach (Stations 2 through 5) were high relative to the densities at the two stations downstream of the Borel Powerhouse (Stations 6 and 7). Densities (organisms per square foot) were estimated from the number of individuals in the samples and the surface area of riffle substrate sampled (6 square feet per transect). Table 3.5-3 provides the mean density estimate for macroinvertebrates at each of the six stations in the Borel Project area. Results for Station 1, which was upstream of Lake Isabella, are not presented here. The total densities at the four Borel Project reach stations were at least twice those at the two downstream stations (SCE 2003a).

**Table 3.5-3. Macroinvertebrate Densities (organisms per square foot) Observed in the Borel Project Vicinity during the 2001 Survey**

| Major Group or Taxon | Bypassed Reach | | | | Downstream | |
|---|---|---|---|---|---|---|
| | Station 2 | Station 3 | Station 4 | Station 5 | Station 6 | Station 7 |
| ***Insects*** | | | | | | |
| Coleoptera | 0.0 | 3.0 | 5.3 | 9.6 | 0.0 | 0.0 |
| Diptera | 632.7 | 1234.0 | 652.9 | 1144.5 | 176.8 | 146.3 |
| Ephemeroptera | 200.3 | 278.0 | 100.9 | 280.7 | 8.3 | 13.7 |
| Plecoptera | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 0.5 |
| Trichoptera | 339.3 | 287.8 | 144.4 | 246.7 | 0.0 | 23.9 |
| Lepidoptera | 2.2 | 3.2 | 0.9 | 7.4 | 0.9 | 1.1 |
| ***Mites*** | | | | | | |
| Acari | 5.1 | 10.0 | 37.3 | 48.9 | 64.1 | 15.2 |
| ***Micro-crustaceans*** | | | | | | |
| Cladocera | 8.4 | 0.0 | 2.2 | 0.0 | 169.4 | 94.9 |
| Copepod | 96.1 | 0.0 | 0.9 | 0.0 | 32.6 | 69.7 |
| ***Mollusks*** | | | | | | |
| Gastropoda | 0.0 | 0.0 | 4.4 | 11.l | 3.6 | 0.5 |
| Bivalvia | 26.7 | 8.0 | 2.7 | 3.7 | 2.4 | 11.6 |
| Segmented worms | 238.0 | 48.0 | 31.6 | 93.3 | 88.4 | 37.3 |
| Round worms, flat worms, and others | 38.7 | 67.6 | 68.4 | 154.8 | 188.0 | 105.7 |
| **Totals** | **1,587.5** | **1,939.5** | **1,052.0** | **1,989.6** | **735.4** | **520.5** |

Source: SCE 2003a

The mean values for 11 CSB metrics from the samples collected at each station are presented in Table 3.5-4. The metrics are measures of the macroinvertebrate community's tolerance of ecosystem disturbance and therefore, provide indices of the level of impairment of a site's

ecosystem. The metrics are grouped in Table 3.5-4 according to whether increases in value indicate greater or lesser impairment of the ecosystem at a site. For instance, as the ecosystem becomes increasingly impaired, "EPT Taxa" (or Ephemeroptera [mayflies], Plecoptera [stoneflies], and Trichoptera [caddisflies] taxa) generally decreases and "Percent Tolerant Organisms" increases (SCE 2003a).

**Table 3.5-4. Statistical Groupings of Mean Station Metrics for Kern River Benthic Macroinvertebrates**

| Metric | Station | | | | | |
|---|---|---|---|---|---|---|
| | 2 | 3 | 4 | 5 | 6 | 7 |
| ***High Values for Less Impaired Sites*** | | | | | | |
| Taxonomic Richness | 16.7 | 17.0 | 21.0 | 19.7 | 18.7 | 20.0 |
| EPT Taxa | 4.0 | 5.0 | 5.0 | 5.7 | 2.3 | 3.7 |
| EPT Index | 35.1 | 30.3 | 23.7 | 25.5 | 1.4 | 7.3 |
| Sensitive EPT Index | 0.1 | 0.3 | 0.1 | 0.7 | 0.1 | 0.3 |
| Shannon Diversity | 2.1 | 2.0 | 2.1 | 2.1 | 2.2 | 2.3 |
| Percent Intolerant Organisms | 0.1 | 0.3 | 0.1 | 0.7 | 0.1 | 0.3 |
| ***High Values for More Impaired Sites*** | | | | | | |
| Tolerance Value | 5.5 | 5.2 | 5.2 | 5.3 | 5.5 | 5.8 |
| Percent Tolerant | 22.5 | 4.3 | 5.0 | 5.8 | 42.1 | 42.3 |
| Percent Dominant Taxon | 27.0 | 27.9 | 32.1 | 32.5 | 23.6 | 22.3 |
| Percent Collectors | 53.2 | 40.6 | 36.5 | 37.4 | 75.3 | 68.8 |
| Percent Filterers | 43.2 | 54.9 | 48.8 | 51.2 | 7.1 | 16.8 |

Source: SCE 2003a

**MOLLUSKS**

Mussels are not known to be common in the Borel Project Vicinity in the lower Kern River. In the North Fork Kern River, western pearlshell mussels (*Margaritifera falcata*), a State SSC (CDFW 2022a), have recently been observed in the vicinity of the Kern River No. 3 Project (SCE 2021a). The western ridge mussel (*Gonidea angulata*) and the western pearlshell mussel have historically been present in Lake Isabella and the lower Kern River but are thought to no longer be present in the Borel Project area (Howard 2010; SCE 2021a).

### 3.5.1.6 Aquatic Invasive Species

Quagga mussels (*Dreissena rostriformis*) and zebra mussels (*Dreissena polymorpha*) are invasive species capable of causing great damage to the aquatic ecology of lakes, streams, and water conveyance structures (CDFW 2021a); however, the Borel Project area is not known to be infested with either of these invasive species.

The invasive Asian clam (*Corbicula fluminea*) has been documented in Lake Isabella and the lower Kern River (Puzo 1992; USGS 2022). Additional aquatic invasive species present in Lake Isabella include the waterflea (*Daphnia lumholtzi*) and curly-leaf pondweed (*Potamogeton crispus*) (USGS 2022).

### 3.5.1.7 Special-Status Aquatic Species

Three special-status aquatic species have the potential to occur in the Borel Project area: the foothill yellow-legged frog (*Rana boylii*), the northwestern pond turtle (*Emys marmorata*), and hardhead. As

stated above, historically, the Kern River rainbow trout, a CDFW SSC and FSS (CDFW 2022a), seasonally resided in the lower Kern River. However, this fish no longer occurs in the Kern River downstream of Lake Isabella or in the upstream reaches within 10 or more miles of the reservoir.

### *Foothill Yellow-legged Frog (Rana boylii)*

The foothill yellow-legged frog (FYLF) is a Forest Service FSS and BLM Sensitive Species (BLM-S) (CDFW 2022a). The FYLF in the Borel Project area are part of the East/Southern Sierra clade, which was listed as endangered under the California Endangered Species Act (CESA) on March 20, 2020 (CDFW 2022a). The overall range off the species is from western Oregon to southern California, Los Angeles County near the coast, and Kern County inland from sea level to approximately 6,000 feet msl; it is absent in the Central Valley (Stebbins 1985).

The FYLF is aquatic and prefers gravelly or sandy streams with sunny banks and open woodlands nearby. It is found in a variety of habitats, including valley-foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadows. During cold weather, individuals seek cover under rocks in the streams or on shore within a few meters of water. They breed from March to May, when streams have slowed after winter runoff. Egg clusters are attached to downstream sides of submerged rocks in moving water near stream margins. Females deposit eggs in clusters of 200 to 300, which hatch in approximately 5 days. Tadpoles require water for at least 3 or 4 months while completing their aquatic development. FYLFs feed on aquatic and terrestrial invertebrates (Nafis 2022).

During the previous relicensing, habitat was mapped along the Kern River and along tributaries to the Kern River within the FERC Project boundary. No FYLF habitat occurs along the Borel Canal or in the areas of decommissioning activities. According to the established protocol, FYLF surveys were conducted along these waters between April and June 2001, and waters were swept with dip nets for tadpoles and eggs. No life stages of the FYLF were found along the Kern River or within its tributaries and calls of this species were not heard during any of the field surveys. Additionally, FYLF were not observed during the 2021 or 2022 Borel Project surveys.

Several historic California Natural Diversity Database (CNDDB) occurrences for FYLF occur within and adjacent to the FERC Project boundary. Occurrence #801 occurs near the town of Wofford Heights and dates back to 1940, Occurrence #2043 is near the town of Bodfish and dates back to 1911, and Occurrence #2042 is near Miracle Hot Springs south of the Borel Powerhouse and dates back to 1952 (CDFW 2022a). Based on surveys and upon historical records for the area, FYLF does not occur in the Borel Project area, as all known occurrences have been extirpated.

### *Northwestern Pond Turtle (Emys marmorata)*[4]

The northwestern pond turtle is a FSS and BLM-S, as well as a SSC (CDFW 2022b). The northwestern pond turtle range is from the California/Oregon border south into southern Kern County (Nafis 2022).

The northwestern pond turtle is generally found in ponds and small lakes with abundant vegetation, but may also be seen in marshes, slow moving streams, reservoirs, and occasionally brackish water

[4] The current Borel Hydroelectric Project license Article 411 refers to southwestern pond turtle, but the species in Kern County is currently described as the northwestern pond turtle.

(Earnst and Barbour 1989). They are associated with permanent or nearly permanent water in a wide variety of habitat types. The availability of basking sites is an important habitat characteristic and may include partially submerged logs, rocks, and mats of floating vegetation or open mud banks.

Hatchling and juvenile northwestern pond turtles have a specialized microhabitat consisting of shallow water (less than 30 cm deep) with emergent vegetation consisting of reeds, sedges, or cattails (Earnst and Barbour 1989). Breeding occurs from April to August (Brattstrom 1965; Bury 1979; Hutchison 1979). Some female pond turtles will return to the same nesting site year after year, while others tend to wander for 1 to 2 days, looking for suitable nesting habitat (SCE 2003a).

Northwestern pond turtles are food generalists, as they both forage and scavenge. They are omnivorous and feed on pond lilies, beetles, and a variety of aquatic invertebrates as well as fishes, frogs, and carrion (Earnst et al. 1994). Conversely, bullfrogs (*Rana catesbeiana*) may eat juvenile northwestern pond turtles.

Northwestern pond turtles appear to have a difficult time living with the changing conditions on regulated rivers. It is believed that river fluctuations have a significant adverse effect on northwestern pond turtles. Rapid water temperature fluctuations, scouring, lack of emergent vegetation, and inconsistent availability of basking sites are several detrimental factors associated with river management that could adversely affect establishment and maintenance of northwestern pond turtle populations. The presence of microhabitat requirements of hatchling and juvenile northwestern pond turtles is very limited on the Borel Project reach and may constitute a limiting factor to an abundant turtle population (SCE 2003a).

Two areas along the Kern River, in the Borel Project Vicinity of the Borel Project reach, are considered potential habitat for the northwestern pond turtle, but these two areas are outside the FERC Project boundary and will not be affected by Borel Project activities. No work will be conducted in the Kern River. The two areas are Black Gulch South (approximately 0.20 miles from the Borel Project footprint on the west side of State Route [SR] 178) and a 0.33- to 0.50-mile stretch of river extending southward from the Bodfish turnoff from SR 178. Although these areas are known to have potentially suitable habitat for northwestern pond turtles and multiple sightings have been recorded in 2001 and during previous relicensing studies (SCE 2003a), these areas will not be impacted by decommissioning activities.

The closest known CNDDB occurrence (Occurrence #861) for northwestern pond turtle is within 0.5 mile of the FERC Project boundary, below Lake Isabella Dam in Hot Spring Valley. Another CNDDB occurrence (Occurrence #874) is approximately 1 mile east of the town of Lake Isabella, which is just outside the FERC Project boundary at an elevation of 3,200 ft (CDFW 2022a).

Northwestern pond turtles were not observed during the 2021 or 2022 Borel Project surveys; however, appropriate habitat does occur along Lake Isabella, inundated parts of the canal, and other waters within the FERC Project boundary.

### *Hardhead (Mylopharadon conocephalus)*

Hardhead are a CDFW SSC and a Forest Service FSS (CDFW 2022a). Hardhead are large cyprinids native to the Sacramento and San Joaquin River drainages and are native to the upper

Kern River downstream of South Creek (Stephens et al. 1995). Hardhead have restrictive microhabitat preferences and prefer large, warm streams containing deep, rock-bottomed pools and runs with sand-gravel-boulder substrates, low turbidity, and low water velocities (0.66 to 1.3 feet per second; Moyle 2002; Moyle and Daniels 1982). They prefer warmer temperatures (greater than 20° Celsius [°C] for growth, and 24°C to 28°C for optimal physiological performance), and most often occur in streams with temperatures over 20°C. Hardhead belong to the pikeminnow-hardhead-sucker assemblage and are generally found with Sacramento pikeminnow (Moyle 2002). They are omnivorous; juveniles feed on aquatic macroinvertebrates and small snails, while adults feed on large invertebrates and plants such as filamentous algae (Moyle 2002).

Hardhead sexually mature after 3 years and primarily spawn in April and May (Moyle 2002). Adults located in larger rivers sometimes migrate upstream to spawn, while others move only short distances from their home pool (Moyle 2002; Grant and Maslin 1999). Females produce 7,000 to 24,000 eggs per year. Hardhead spawn over gravel and rocky substrate in riffles, runs, or at the heads of pools. Larval and post-larval fish utilize dense cover along stream margins and move into deeper habitats as they grow (CalFish 2020). Juveniles feed on plankton, cladocerans, insects, and small snails. In the intermittent pools of the upper San Joaquin River, they also feed on filamentous algae (Wang 1986).

While hardhead have been captured in the lower Kern River through Borel Project survey efforts, they are not numerous. However, they are not expected to occur in areas of decommissioning activities.

### 3.5.2 Environmental Effects

The Plan (Volume II) calls for the abandonment, modification, or removal of Borel Project facilities located in Upper Borel within Lake Isabella. These decommissioning activities could impact aquatic resources.

Decommissioning activities are not anticipated to have a negative impact on aquatic habitats. As the Borel Project is not operational, it does not modify flows or affect aquatic habitat in the lower Kern River. At present, flows in the lower Kern River are affected only by releases managed by the Corps at the direction of the Kern Watermaster, and by other downstream water users for agricultural uses and flood control. Decommissioning of the Borel Project will not change how flows are discharged into the lower Kern River.

The Borel Canal is an artificial concrete-lined structure with no shade, limited to no riparian vegetation, and no natural features such as riffles or cascades. Associated facilities also do not provide aquatic habitat, but there is habitat in Lake Isabella and in other delineated aquatic resources within or near the FERC Project boundary. Riprap in Lake Isabella that currently protects the outer bank of the Borel Canal from wave erosion will be retained in the same general vicinity and will continue to provide aquatic habitat structure. Additionally, the Borel Project decommissioning has been designed to reduce and control runoff from upslope areas that is currently intercepted and conveyed by the Borel Canal, which could impact water quality and subsequently fish and aquatic resources in the lower Kern River.

Native aquatic species, including special-status species, are not anticipated to be negatively impacted by decommissioning activities. Work in the lake will be done in the dry when lake elevation

is at 2,535 feet msl or below, such that fish and other aquatic species will not be present in the area. As the Borel Project is no longer operational, water does not flow through the sections of the canal outside of Lake Isabella except during and directly after rain events. Decommissioning activities along these areas of the canal will also be done, to the extent possible, in the dry. No fish or other aquatic species are anticipated to be present in the canal that will require relocation.

However, the area of the Tailrace may require installation of a cofferdam to minimize potential for sedimentation or turbidity impacts to the Kern River and associated aquatic species. Short-term disturbances to aquatic species in this area may include noise, but species would be anticipated to move out of the area temporarily of their own volition if present. Because the Borel Project does not provide aquatic habitat or currently alter the flow regime into the Kern River, the decommissioning will have no long-term impact on aquatic species.

Aquatic invasive species could be introduced to the Borel Project area by being carried on equipment during decommissioning activities. Additionally, disturbed areas are often more likely to be invaded.

Measures implemented during decommissioning activities will assist in preventing impacts to aquatic resources, including the introduction of aquatic invasive species, in and around the FERC Project boundary.

### 3.5.3 Measures

Proposed measures are summarized in Table 2.2-2. The measures associated with fish and aquatic resources include:

- SCE will consult with the applicable federal, state, and local agencies to obtain necessary permits and will comply with these permits during all decommissioning activities (Measure 1).
- Work area footprints will be confined as much as reasonably practicable. All parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities will be confined, to the greatest extent possible, to previously disturbed areas. Additionally, the Borel Project footprint/area will be clearly defined and marked to avoid working in areas outside of the approved boundary. Fences and flagging will be installed by the contractor in a manner that does not impact habitats and other sensitive areas to be avoided and such that it is clearly visible to personnel on foot and operating heavy equipment (Measure 2).
- Work areas will be kept clear of garbage, including micro trash (small pieces of trash or smaller, broken-down pieces of trash). Trash and food will be stored in closed containers and removed daily to reduce attractiveness to opportunistic predators such as coyotes, domestic and feral dogs and cats, opossums, skunks, and raccoons. Littering of trash and food waste will be prohibited. Upon completion of a Borel Project activity, the work site will be inspected to ensure it is free of garbage and micro trash. If garbage or micro trash is detected at the site, it will be removed (Measure 3).
- All work-related materials will be properly stored and secured. Materials that are in any type of liquid or powder form must be stored in sealed leak-proof containers. In addition, all

parked vehicles/equipment will be kept free of leaks, particularly antifreeze, as this could be fatal if consumed by wildlife (Measure 6).

- The contractor will be required to conduct vehicle refueling and maintenance in upland areas, where fuel cannot enter aquatic habitats or areas that have suitable habitat to support federally and/or state listed species. Equipment and containers will be inspected daily for leaks. Should a leak occur, contaminated soils and surfaces will be cleaned up and disposed of as required by the Borel Project's regulatory permits and materials safety data sheets (Measure 7).

- A WEAP will be established and implemented prior to the start of work activities in the field and cover biological and cultural resources. The program will be presented by a qualified biologist and a qualified archaeologist to all construction crew members. If new employees join the crew, they will receive formal, approved training prior to working on site. Upon completion of the orientation, employees will sign a form stating they attended the program and understand all protection measures. A fact sheet containing the presented information will also be prepared and distributed (Measure 13;.

- No decommissioning activities will take place upstream of the Canal Inlet Structure to prevent potential impacts to ESA-listed bird habitat and other sensitive natural communities present in this Borel Project segment (Measure 14);

- A biological monitor will be on site during all ground-disturbing and vegetation removal activities associated with the decommissioning in areas of sensitive vegetation communities, ESA-listed species habitat, or known special-status species occurrences (Measure 15);

- Prior to the start of activities that may impact biological resources, in each specific segment of the Borel Project (see Volume II, Decommissioning Plan), pre-construction surveys for sensitive habitats and sensitive species, including ESA-listed species, will be conducted. Surveys will be conducted by qualified biologists and during the appropriate timeframe for detection of target species, within the given period for the activity (e.g., nesting bird surveys will not be performed for activities that will take place completely outside of the nesting bird season) (Measure 16).

- Upon completion of work activities, temporarily disturbed areas will be revegetated with native plant species. A revegetation plan will be developed that addresses revegetating areas where Borel Project features have been removed (Measure 17).

- Riparian vegetation removal and trimming will be limited to the amount necessary to successfully complete all activities. To prevent unintended or unnecessary removal or trimming of riparian vegetation, orange barrier fencing, or flagging will be erected to clearly define the habitat to be avoided during work activities (Measure 24).

- A designated qualified biologist will review final plans, designate areas that need temporary fencing, and monitor construction activities within and adjacent to areas with aquatic or other sensitive habitats. The qualified biologist will monitor activities within designated areas during critical times, such as initial ground-disturbing activities (e.g., ESA fencing installation), and check that all regulatory agency permit requirements, conservation measures, and mitigation

measures are properly implemented and followed. The qualified biologist will check construction barriers or exclusion fencing and provide corrective measures to the contractor to keep the barriers or fencing maintained throughout construction (Measure 26).

- Prior to the first time any vehicles and equipment enter a work area, a qualified biologist will perform an inspection for non-native invasive plants (NNIP). All visible soil, plant materials, animal remnants, or any other signs of invasive species on vehicles and equipment will be removed prior to entering the Borel Project site. Removal and decontamination requirements of vehicles and equipment will be up to the discretion of a qualified biologist. If contamination is small enough to be managed on site, the qualified biologist may approve the decontamination of the vehicle or equipment at a proper staging area with adequate containment. Any materials removed at a containment site must be bagged and taken off site. If contamination is extensive, the contractor may be required to take the vehicle or equipment to an off-site wash station. Additionally, if a vehicle or piece of equipment must leave the v site for any length of time and has been exposed to a different project site or location, it must be re-inspected prior to re-entering the Borel Project site. Vehicles and equipment that perform work in known NNIP occurrences during work activities should be cleaned before leaving the site (Measure 27).

- If any ESA-listed or CESA-listed species are observed during pre-construction surveys or work activities, SCE will notify USFWS and/or CDFW. All ESA-listed and CSA-listed species will be allowed to leave a work area without harassment (Measure 29).

- Natural landscape drainage patterns will be maintained (Measure 30).

- To prevent unintended or unnecessary impacts, orange barrier fencing or flagging will be erected to clearly define aquatic habitats to be avoided (Measure 31).

- SCE or the contractor will develop a SWPPP in accordance with the State Water Resources Control Board General Construction Permit and local regulations. The SWPPP will include Best Management Practices to reduce or eliminate construction impacts to stormwater runoff (Measure 32).

- Work in Lake Isabella will be completed during dry conditions when the lake elevation is at 2,535 feet msl or below (Measure 33).

# 3.6 Terrestrial Resources

This section describes the terrestrial resources that have been documented within the FERC Project boundary. Section 3.6.1.1 describes botanical resources, including vegetation mapping, special-

status plants[5] and NNIP[6]. Section 3.6.1.2 describes wildlife resources, including potential and known special-status species.[7] Section 3.6.1.3 describes wetlands, riparian, and littoral habitats. Section 3.6.1.4 describes the Borel Canal. The effects of the decommissioning activities on and proposed measures for terrestrial resources are included in Sections 3.6.2 and 3.6.3 respectively.

## 3.6.1 Existing Environment

### 3.6.1.1 Botanical Resources

The Borel Project area supports vegetation typical of the southern Sierra Nevada, with influences from the Mojave Desert to the east and the San Joaquin Valley to the west. Borel Project facilities are located within the southern Sierra Nevada Foothill subregion of the California floristic province (Hickman 2012). The Borel Project area is entirely located within one ecological unit: the lower granitic foothills subsection (Forest Service 1994). The flora of this region is primarily Sierra Nevada-like but is strongly influenced by the inclusion of species associated with the San Joaquin Valley to the west and the Mojave Desert to the southeast.

#### *Plant Communities*

The Vegetation Classification and Mapping Program (VegCAMP) is a statewide vegetation mapping and classification program that is based on the National Vegetation Classification System and conforms to the Manual of California Vegetation (Sawyer et al. 2009). It is a standardized system that allows for vegetation mapping of stands that are at least 1 acre (0.25 acre for wetlands), with compositional and structural integrity based on dominant plant species by collecting data in the field following established protocols (CDFW 2020).

In 2021 and 2022, land within the FERC Project boundary was mapped using the VegCAMP classifications. A total of 27 sampling points, representing 16 vegetation communities, were randomly selected using Geographic Information System software within the FERC Project boundary (Table 3.6-1). These sampling points included 12 in tree-dominated habitats, 12 in shrub-dominated habitats, and 3 in herbaceous-dominated habitats. More sampling points were selected in vegetation communities that had a greater potential for special-status wildlife or more acreage inside the FERC Project boundary. Any points that were initially in inaccessible areas were re-generated until all sampling points were in accessible areas. The sampling locations are shown in Attachment A – CDFW VegCAMP Alliances, Figures A-1 through A-11.



[5] A special-status plant is a plant species that meets one or more of the following criteria: (1) listed by the CDFW as a California Rare (SR) species under the Native Species Plant Protection Act; (2) listed or proposed for listing as threatened or endangered under the CESA; (3) proposed for listing under the federal ESA as endangered or threatened; (4) found on National Forest System land and formally listed as Forest Service Sensitive Plant species (FSS) or as a Forest Service Watch List species (FW) for the SQF; (5) found on federal land administered by BLM and formally listed as a BLM sensitive species (BLM-S); or (6) listed on the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants. ESA-listed species are discussed in Section 3.7.1.

[6] An NNIP is defined as any California Department of Food and Agriculture A- or B-listed weed, included in the California Code of Regulations Section 4500 list of California State Noxious Weeds, and any NNIP of concern to the Forest Service located on National Forest System lands.

[7] A special-status wildlife species is a wildlife species that meets one or more of the following criteria: (1) listed or proposed for listing as threatened or endangered under the CESA; (2) proposed for listing under the federal ESA as endangered or threatened; (3) found on federal land administered by the Forest Service and formally listed as Forest Service Sensitive wildlife species (FSS) for the SQF; (4) found on federal land administered by BLM and formally listed as a BLM sensitive species (BLM-S); and/or (5) listed by the CDFW as a Species of Special Concern (SSC) of Fully Protected (FP) species. ESA-listed species are discussed in Section 3.7.1.

**Table 3.6-1. VegCAMP Types and Acreages Within the FERC Project boundary**

| VegCAMP Type | Acreage | Percentage of Borel Project Study Area | Number of Sampling Points |
|---|---|---|---|
| ***Tree-Dominated Habitats*** | ***85.87*** | ***23.62*** | ***12*** |
| Exotic Trees and Planted Trees | 1.39 | 0.38 | 1 |
| *Juniperus californica* Alliance (California juniper woodland) | 1.52 | 0.42 | 1 |
| *Pinus sabiniana* Alliance (Foothill pine woodland) | 2.74 | 0.75 | 1 |
| *Platanus racemosa – Quercus* spp. Alliance (California sycamore – oak riparian woodland)[a] | 0.23 | 0.06 | 1 |
| *Populus fremontii – Fraxinus velutina – Salix gooddingii* Alliance (Fremont cottonwood forest and woodland)[a] | 0.60 | 0.17 | 1 |
| *Quercus douglasii* Alliance (Blue oak woodland and forest) | 45.46 | 12.50 | 1 |
| *Quercus wislizeni* (tree) Alliance (Interior live oak woodland and forest) | 20.05 | 5.52 | 3 |
| *Salix gooddingii – Salix laevigata* Alliance (Goodding's willow – red willow riparian woodland and forest)[a] | 13.88 | 3.82 | 3 |
| ***Shrub-Dominated Habitats*** | ***13.08*** | ***3.60*** | ***12*** |
| *Ceanothus cuneatus* Alliance (buckbrush chaparral) | 1.95 | 0.54 | 2 |
| *Ceanothus leucodermis* Alliance (chaparral whitethorn chaparral) | 2.25 | 0.62 | 1 |
| *Ericameria nauseosa* Alliance (rubber rabbitbrush scrub) | 0.54 | 0.15 | 1 |
| *Eriogonum fasciculatum* Alliance (California buckwheat scrub) | 0.81 | 0.22 | 3 |
| *Eriogonum wrightii* Alliance (Wright's buckwheat scrub)[a] | 5.80 | 1.60 | 3 |
| *Lepidospartum squamatum* Alliance (Scale broom scrub)[a] | 0.10 | 0.02 | 1 |
| *Lotus scoparius – Lupinus albifrons – Eriodictyon* spp. Alliance (Deerweed – silver lupine – yerba santa scrub) | 1.63 | 0.45 | 1 |
| ***Herbaceous-Dominated Habitats*** | ***58.50*** | ***16.09*** | ***3*** |
| Agriculture Mapping Unit (Without fallow annual grasses dominating) | 0.16 | 0.04 | 0 |
| California Annual and Perennial Grassland Macro Group | 27.88 | 7.76 | 3 |
| Californian Warm Temperate Marsh/Seep Group | 30.46 | 8.38 | 0 |
| ***Non-vegetated Habitats*** | ***206.00*** | ***56.69*** | ***0*** |
| Built Up and Urban Disturbance Mapping Unit (includes development, mines and borrow pits) | 68.54 | 18.86 | 0 |
| Perennial Stream Channel Mapping Unit | 0.57 | 0.16 | 0 |
| Reservoirs Mapping Unit | 121.67 | 33.48 | 0 |
| River and Lacustrine Flats and Streambeds Mapping Unit | 8.85 | 2.46 | 0 |
| Water Mapping Unit | 6.37 | 1.75 | 0 |
| **Total** | **363.45** | **100** | **27** |

[a] Designated by CDFW as a Sensitive Natural Community

Prior to field verifications, maps with existing VegCAMP classifications were prepared for use by field survey teams using Environmental Systems Research Institute's (ESRI) Collector application on iPads. The maps included aerial imagery, Borel Project features, and VegCAMP classifications for

the Southern Sierra Nevada Foothills area (CDFW 2021b). Information on VegCAMP classifications was also considered from the 2013 Biological Evaluation for the Isabella Lake Borel Canal Reactivation Project (Corps 2013).

Field biologists ground verified the vegetation community type using the VegCAMP rapid assessment protocol (CDFW and CNPS 2019) and completed combined vegetation rapid assessment and Relevé Field Form. Field biologists also identified and recorded specific habitat characteristics using, in part, the California Wildlife Habitat Relationships (CWHR) habitat elements checklist (CDFW 2021c). If the mapped vegetation type did not match the actual habitat type found at a sampling point, field biologists made corrections to the vegetation community type at that location, and changes in the vegetation community boundaries were recorded using the iPad data collector.

Communities were then assessed to see if any met the definition of a sensitive natural community, which CDFW ranks as S1[8], S2[9], or S3[10] per the NatureServe Heritage Program Status Ranking system (Faber-Langendoen et al. 2012).

The following corrections were made to VegCAMP alliances at six sampling locations: (1) the three original *Eriogonum fasiciculatum* Alliance (California buckwheat scrub) sampling areas were determined to be *Eriogonum wrightii* Alliance (Wright's buckwheat scrub);[11] (2) the *Ericameria nauseosa* Alliance (rubber rabbitbrush scrub) sampling area was determined to be *Lepidospartum squamatum* Alliance (scale broom scrub); (3) a *Ceanothus cuneatus* Alliance (buckbrush chaparral) sampling area was determined to be *Ceanothus leucodermis* Alliance (chaparral whitethorn chaparral); and (4) the *Cercocarpus betuloides* Alliance (birch leaf mountain mahogany chaparral) sampling area was determined to be buckbrush chaparral.

Twenty-three VegCAMP habitat types were mapped within the FERC Project boundary. Five of the alliances are designated as a Sensitive Natural Community and cumulatively occupy a total of approximately 20.6 acres (or 5.7 percent of the FERC Project boundary):

- *Platanus racemosa* – *Quercus* spp. Alliance (California sycamore – oak riparian woodland)
- Populus fremontii – Fraxinus velutina – Salix gooddingii Alliance (Fremont cottonwood forest and woodland)
- *Salix gooddingii* – *Salix laevigata* Alliance (Goodding's willow – red willow riparian woodland and forest)
- *Eriogonum wrightii* Alliance (Wright's buckwheat scrub)

[8] CDFW defines a S1 special-status vegetation community as "Critically imperiled and at a very high risk of extinction or elimination due to extreme rarity, very steep declines, or other factors."

[9] CDFW defines a S2 special-status vegetation community as "Imperiled and at high risk of extinction or elimination due to a very restricted range, very few populations or occurrences, steep declines, or other factors."

[10] CDFW defines a S3 special-status vegetation community as "Vulnerable and at moderate risk of extinction or elimination due to a restricted range, relatively few populations or occurrences, recent and widespread declines, or other factors."

[11] Other areas mapped as *Eriogonum fasiciculatum* Alliance (California buckwheat scrub) were field checked in 2022 and determined to be correctly mapped.

- *Lepidospartum squamatum* Alliance (scale broom scrub)

Non-vegetated habitats account for 56.7 percent of the FERC Project boundary, tree-dominated habitats account for 23.6 percent, herbaceous-dominated habitats account for 16.1 percent, and shrub-dominated habitats account for 3.6 percent. The reservoirs mapping unit (33.5 percent of the FERC Project boundary) was the most common habitat type within the FERC Project boundary, and blue oak woodland (12.5 percent) was the most common vegetated habitat type within the FERC Project boundary. Vegetated alliances dominated by native plant species occupy 125.8 acres (or 34.6 percent of the FERC Project boundary), while alliances dominated by non-native plant species, predominantly annual grassland, occupy 29.4 acres (or 8.1 percent of the FERC Project boundary). Descriptions of the habitat types are provided below.

**TREE-DOMINATED HABITATS**

*Exotic Trees and Planted Trees (0.38% of FERC Project boundary)*

Within the FERC Project boundary, areas mapped as exotic trees and planted trees occupy 1.39 acres on federally owned land administered by the Forest Service within campgrounds along access roads in Upper Borel (Attachment A – CDFW VegCAMP Alliances, Figure A-2). Dominant tree species within the sampled area had 46 percent canopy cover and included interior live oak and the non-native Aleppo pine (*Pinus halepense*) and velvet ash (*Fraxinus velutina*). These trees ranged from 32 to 50 feet tall and measured from 6 to more than 24 inches diameter at breast height (DBH). The understory was sparsely vegetated with 5 percent cover and included western false indigo (*Amorpha fruticosa*) and common horehound (*Marrubium vulgare*).

*Juniperus californica Alliance (California Juniper Woodland) (0.42% of FERC Project boundary)*

California juniper woodland is typically found on ridges, slopes, valleys, alluvial fans, and valley bottoms with porous, rocky, coarse, sandy, or silty soils. It has an open to intermittent canopy of California junipers less than 15 feet tall, with an open to intermittent shrub layer and sparse or grassy herbaceous layer (Sawyer et al. 2009).

Within the FERC Project boundary, California juniper woodland occupies 1.52 acres west of Borel Canal in Upper Borel, with 1.23 acres on federally owned land administered by the Forest Service and 0.29 acre on SCE-owned land (Attachment A – CDFW VegCAMP Alliances, Figures A-2 and A-3). California juniper is the dominant species in this habitat type with 30 to 40 percent cover within the sampled area. Common shrub and herbaceous species in the understory had 40 percent cover and included Wright's buckwheat, Whipple's chaparral yucca (*Hesperoyucca whipplei*), cheat grass (*Bromus tectorum*), red brome (*Bromus rubens*), soft chess (*Bromus hordeaceus*), and wild oat (*Avena* sp.).

*Pinus sabiniana Alliance (Foothill Pine Woodland) (0.75% of FERC Project boundary)*

Foothill pine woodland is typically found on streamside terraces, valleys, slopes, and ridges with shallow, often stony, infertile, and moderately to excessively drained soils. It has an open to intermittent and one- or two-tiered canopy of foothill pine trees less than 65 feet tall, with shrubs being either common or infrequent and a sparse or grassy herbaceous layer (Sawyer et al. 2009).

Within the FERC Project boundary, foothill pine woodland occupies 2.74 acres east of the Borel Canal south of Nugget Avenue in Lower Borel, with 1.35 acres on SCE-owned land and 0.6 acre on federally owned land managed by BLM (Attachment A – CDFW VegCAMP Alliances, Figures A-7 and A-10). Foothill pine is the dominant tree species within the sampled area, with 55 to 60 percent canopy cover. These trees ranged from 15 to 35 feet tall and measured from 11 to 24 inches DBH.

The understory had 70 percent cover and included interior live oak shrubs, tarragon (*Artemisia dracunculus*), and brome grasses (*Bromus* spp.). This area was inaccessible due to steep terrain, so was surveyed from the western side of the canal.

*Platanus racemosa – Quercus spp. Alliance (California Sycamore – Oak Riparian Woodland) (0.06% of FERC Project boundary)*

California sycamore – oak riparian woodland is typically found in or growing along gullies, intermittent streams, springs, seeps, stream banks, and terraces adjacent to floodplains subject to high-intensity flooding. Soils generally consist of rocky or cobbly alluvium with permanent moisture. It has an open to intermittent canopy of California sycamore or oak trees less than 115 feet tall, an open to intermittent shrub layer, and a sparse or grassy herbaceous layer. California sycamore – oak riparian woodland is designated by CDFW as a sensitive natural community with a state rarity rank of S3 (Sawyer et al. 2009).

Within the FERC Project boundary, California sycamore – oak riparian woodland occupies 0.23 acre on federally owned land administered by the Forest Service along the banks of the Kern River in Lower Borel southwest of the Powerhouse (Attachment A –CDFW VegCAMP Alliances, Figure A-11). California sycamore is the dominant tree species within the sampled area with 40 percent canopy cover. Other tree species included Goodding's black willow and foothill pine. These trees had 20 percent cover, were over 50 feet tall, and measured from 11 to 24 inches DBH. Although oak trees are commonly associated with California sycamore in this habitat type, no oak trees were present near the sampled area. Understory shrubs and herbaceous plants had 33 percent cover and included rubber rabbitbrush (*Ericameria nauseosa*), soft orange monkeyflower (*Diplacus longiflorus*), ripgut brome (*Bromus diandrus*), cheat grass, Indian sweetclover (*Melilotus indicus*), Bermuda grass (*Cynodon dactylon*), and salt grass (*Distichlis spicata*).

*Populus fremontii – Fraxinus velutina – Salix gooddingii Alliance (Fremont Cottonwood Forest and Woodland) (0.17% of FERC Project boundary)*

Fremont cottonwood forest and woodland typically occurs on floodplains, along low-gradient rivers, perennial or seasonally intermittent streams, at springs, in lower canyons in desert mountains, in alluvial fans, and in valleys with a dependable subsurface water supply. It has a continuous to open tree canopy of Fremont cottonwood and other tree species less than 80 feet tall, an intermittent to open shrub layer, and a variable herbaceous layer. Fremont cottonwood forest and woodland is designated by CDFW as a sensitive natural community with a state rarity rank of S3 (Sawyer et al. 2009).

Within the FERC Project boundary, Fremont cottonwood forest and woodland occupies 0.6 acre on county land along two of the access roads in Upper Borel (Attachment A –CDFW VegCAMP Alliances, Figure A-1). Fremont cottonwood and Goodding's black willow are the dominant tree species within the sampled area with between 10 and 15 percent canopy cover each. Other tree species present included interior live oak with 5 percent cover. These trees were from 30 to more than 50 feet tall and measured from 11 to 24 inches DBH. Understory shrubs and herbaceous plants had 5 percent cover and included branching phacelia (*Phacelia ramosissima*), threadleaf ragwort (*Senecio flaccidus*), cheat grass, and shortpod mustard (*Hirschfelda incana*).

*Quercus douglasii Alliance (Blue Oak Woodland and Forest) (12.5% of FERC Project boundary)*

Blue oak woodland and forest typically occurs on valley bottoms, foothills, and rocky outcrops with shallow, low fertility, moderately to excessively drained soils with extensive rock fragments. The tree canopy is open to continuous or savanna-like with blue oak trees less than 65 feet tall. The shrub layer is sparse to intermittent, and the herbaceous layer is sparse or grassy, with forbs present seasonally (Sawyer et al. 2009).

Within the FERC Project boundary, blue oak woodland and forest occupies 45.46 acres in Lower Borel west of Erskine Creek Flume, with a small area also occurring north of Erskine Creek Road, with 31.28 acres on federal land administered by the Forest Service, 6.78 acres on federal land administered by BLM, 1.55 acres on SCE-owned land, and 0.30 acre on privately owned land (Attachment A – CDFW VegCAMP Alliances, Figures A-7 through A-11). Blue oak is the dominant tree species within the sampled area, with 25 to 30 percent canopy cover. Other tree species present included foothill pine with 5 to 10 percent cover. These trees were 6 to 32 feet tall and measured from 1 to 24 inches DBH. Understory shrubs had 26 percent cover and included the shrub form of interior live oak, chaparral whitethorn (*Ceanothus leucodermis*), and California coffee berry (*Frangula californica*). Understory herbaceous plants had 57 percent cover and included annual buckwheat (*Eriogonum* sp.), Fremont's buckwheat (*Eriogonum nudum* var. *pubiflorum*), filago-leaved sand aster (*Corethrogyne filaginifolia*), rib-fruited wand-like wire-lettuce (*Stephanomeria virgata* ssp. *pleurocarpa*), shortpod mustard, rattail sixweeks grass (*Festuca myuros*), cheat grass, soft chess, red brome, and ripgut brome.

Special-status plant species, including Kern Canyon clarkia (*Clarkia xantiana* ssp. *parviflora*), and Tracy's eriastrum (*Eriastrum tracyi*), were observed in this vegetation community.

*Quercus wislizeni (tree) Alliance (Interior Live Oak Woodland and Forest) (5.5% of FERC Project boundary)*

Interior live oak woodland and forest typically occurs on upland slopes or mesic lower to mid-slopes in valley bottoms and on terraces with shallow moderately to excessively drained soils. The tree canopy is open to continuous or savanna-like with interior live oak trees less than 98 feet tall. The shrub and herbaceous layers are sparse to intermittent (Sawyer et al. 2009).

Within the FERC Project boundary, interior live oak woodland and forest occupies 20.05 acres along two of the access roads in Upper Borel and in several locations on the slopes adjacent to the Borel Canal access road and by the Powerhouse in Lower Borel, including 16.38 acres on federal land administered by the Forest Service, 1.77 acres on SCE-owned land, 0.82 acre on federal land administered by BLM, and 1.08 acres on privately owned land (Attachment A – CDFW VegCAMP Alliances, Figures A-2, A-3, A-7, A-8, A-10 and A-11). Interior live oak is the dominant tree species within the sampled area, with 10 to 30 percent canopy cover. Other tree species present included blue oak and foothill pine with 2 to 5 percent cover each. These trees were from 6 to 50 feet tall and measured from 1 to 24 inches DBH. Understory shrubs and herbaceous plants included the shrub form of interior live oak, big sagebrush (*Artemisia tridentata*), mountain curl-leaf mountain-mahogany (*Cercocarpus ledifolius* var. *intermontanus*), rubber rabbitbrush, Fremont's buckwheat, green ephedra (*Ephedra viridis*), chaparral whitethorn, tarragon, filago-leaved sand aster, shortpod mustard, Russian thistle (*Salsola tragus*), Wright's jimsonweed (*Datura wrightii*), cheat grass, ripgut brome, red brome, and wild oat. Special-status plant species, including Kern Canyon clarkia, limestone dudleya (*Dudleya*

*abramsii* ssp. *calcicola*), rose-flowered larkspur (*Delphinium purpusii*) and Tracy's eriastrum, were observed in this vegetation community.

*Salix gooddingii – Salix laevigata Alliance (Goodding's Willow – Red Willow Riparian Woodland and Forest) (3.8% of FERC Project boundary)*

Goodding's willow – red willow riparian woodland and forest typically occurs on terraces along large rivers, canyons, floodplains of streams, seeps, springs, ditches, lake edges, and low-gradient depositions. Goodding's or red willow are dominant in the tree canopy, which is open to continuous with trees less than 65 feet tall. The shrub layer is sparse to continuous, and the herbaceous layer is variable. Goodding's willow – red willow riparian woodland and forest is designated by CDFW as a sensitive natural community with a state rarity rank of S3 (Sawyer et al. 2009).

Within the FERC Project boundary, Goodding's willow – red willow riparian woodland occupies 13.88 acres by the Diversion Dam and Intake Structure and along two of the access roads in Upper Borel, with 11.79 acres on SCE land and 2.09 acres on Forest Service land (Attachment A – CDFW VegCAMP Alliances, Figures A-1 and A-2). Goodding's willow is the dominant tree species within the sampled areas with 30 to 40 percent canopy cover. Only one of the sampled areas also had red willow, with 45 percent canopy cover. These trees ranged from 15 to 35 feet tall and measured from 6 to 24 inches DBH. There were no shrubs present, and the herbaceous understory had 7 to 30 percent cover of shortpod mustard, bracted vervain (*Verbena bracteata*), cocklebur (*Xanthium strumarium*), white lamb cudweed (*Pseudognaphalium luteoalbum*), horseweed (*Erigeron canadensis*), nightshade (*Solanum* sp.), red brome, seaside heliotrope (*Heliotropium curassavicum*), filago-leaved sand aster, Mexican rush (*Juncus* cf. *mexicanus*), white sweetclover (*Melilotus albus*), and telegraph weed (*Heterotheca grandiflora*).

**SHRUB-DOMINATED HABITATS**

*Ceanothus cuneatus Alliance (Buckbrush Chaparral) (0.54% of FERC Project boundary)*

Buckbrush chaparral typically occurs on ridges and upper slopes in shallow, rocky, well drained soils. Buckbrush is dominant or co-dominant in the shrub canopy, which is intermittent to continuous with shrubs less than 12 feet tall. The herbaceous layer is sparse to grassy (Sawyer et al. 2009).

Buckbrush chaparral occupies 1.95 acres within the FERC Project boundary on federal land administered by the Forest Service, southeast of the Powerhouse and at a couple of locations west of Lake Isabella Boulevard (Attachment A – CDFW VegCAMP Alliances, Figure A-11). One area that had been mapped as birchleaf mountain mahogany chaparral was determined during ground-sampling to be buckbrush chaparral. In the sampled areas, dominant shrub species had 40 to 45 percent cover and included buckbrush and California buckwheat (*Eriogonum fasciculatum* var. *foliolosum*). These areas also had low cover (5 to 10 percent) of foothill pine and interior live oak. Understory shrubs had 1 to 15 percent cover and included rubber rabbitbrush, green ephedra, and Wright's buckwheat. Herbaceous plants had 35 to 50 percent cover and included cheat grass, rattail sixweeks grass, shepherd's purse (*Capsella bursa-pastoris*), and red brome.

*Ceanothus leucodermis Alliance (Chaparral Whitethorn Chaparral) (0.6% of FERC Project boundary)*

Chaparral whitethorn chaparral is typically found on south-facing, steep slopes with alluvial, bedrock-derived, deep soils. Chaparral whitethorn is dominant in the shrub canopy, which includes shrubs

less than 13 feet tall, with an intermittent to continuous canopy. The herbaceous layer is sparse (Sawyer et al. 2009).

Within the FERC Project boundary, chaparral whitethorn chaparral occupies 2.25 acres on federal land administered by BLM on north-facing slopes along the Borel Canal access road west of Tunnel No. 1 in Lower Borel (Attachment A – CDFW VegCAMP Alliances, Figure A-10). This sampled area was incorrectly mapped as buckbrush chaparral. Chaparral whitethorn was the dominant plant species with 25 percent cover. Hairy yerba santa (*Eriodictyon trichocalyx*) was also present in the shrub layer, with 5 percent cover. The herbaceous layer had 66 percent cover and included cheat grass, shortpod mustard, and California fuchsia (*Epilobium canum*).

Special-status plant species, including Tracy's eriastrum, were observed in this vegetation community.

*Ericameria nauseosa Alliance (Rubber Rabbitbrush Scrub) (0.1% of FERC Project boundary)*

Rubber rabbitbrush scrub is found in all topographic settings, especially in disturbed areas, on well-drained sand and gravel soils. Rubber rabbitbrush is dominant or co-dominant in the shrub canopy, which is open to continuous and composed of shrubs less than 10 feet tall. The herbaceous layer is sparse or grassy (Sawyer et al. 2009).

Rubber rabbitbrush scrub is mapped in three locations within the FERC Project boundary, occupying 0.54 acre north of Erskine Creek Road, along Commercial Avenue, and northwest of Erskine Steel Flume, with 0.29 acre on SCE-owned land and 0.25 acre on privately owned land (Attachment A – CDFW VegCAMP Alliances, Figures A-8 and A-9). Within the sampling area, rubber rabbitbrush was the dominant shrub species, with 20 percent cover. The herbaceous layer had 80 percent cover and included ripgut brome, shortpod mustard, and wall barley (*Hordeum murinum*).

*Eriogonum fasciculatum Alliance (California Buckwheat Scrub) (0.2% of FERC Project boundary)*

California buckwheat scrub is found on upland slopes, intermittently flooded arroyos, channels, and washes, and rarely in flooded low-gradient deposits in areas with coarse, well-drained, and moderately acidic to slightly saline soils. California buckwheat is dominant or co-dominant in the shrub canopy, which is continuous or intermittent and composed of shrubs less than 7 feet tall. The herbaceous layer is variable and may be grassy (Sawyer et al. 2009).

A location near the Powerhouse was sampled on April 21, 2022 (Attachment A – CDFW VegCAMP Alliances, Figure A-11). California buckwheat is the dominant shrub in this community, with 55 percent cover. Other shrubs in this community included deerweed and chaparral whitethorn, with 1 percent cover each. Herbaceous plants had 1 to 10 percent cover and included red brome, cryptantha (*Cryptantha* sp.), and redstem filaree (*Erodium cicutarium*).

*Eriogonum wrightii Alliance (Wright's Buckwheat Scrub) (1.6% of FERC Project boundary)*

Wright's buckwheat scrub occurs on flats, ridgetops, and stony slopes that are nutrient poor and derived from granitic, volcanic, sedimentary, or serpentine substrates with loam or clay soils. The shrub canopy is open to intermittent and is composed of shrubs less than 3.5 feet tall. The herbaceous layer is open to intermittent. Wright's buckwheat scrub is designated by CDFW as a sensitive natural community with a state rarity rank of S3 (Sawyer et al. 2009).

Within the FERC Project boundary, Wright's buckwheat scrub occupies 5.80 acres along access roads in Upper Borel and east of Lake Isabella Boulevard in Lower Borel, as well as the areas described originally as California buckwheat scrub that were determined to be incorrectly mapped, with 1.98 acres on federally owned land administered by the Forest Service, 2.59 acres on privately owned land, 0.67 acre on SCE-owned land, and 0.56 acre on federally owned land administered by the Corps (Attachment A – CDFW VegCAMP Alliances, Figures A-1 through A-4, A-9, and A-10). Wright's buckwheat is the dominant shrub in this community. In the sampled areas, this species had between 15 and 50 percent cover. Other shrubs accounted for between 5 and 17 percent cover, including interior goldenbush (*Ericameria linearifolia*), rubber rabbitbrush, hairy yerba santa, Whipple's chaparral yucca, and green ephedra. In three of the sampling areas, either blue oak or foothill pine was present at under 5 percent canopy cover. Herbaceous plants had between 2 to 67 percent cover and included filago-leaved sand aster, shortpod mustard, eriastrum, Grinnell's figwort-like beardtongue (*Penstemon grinnellii* var. *scrophularioides*), cheat grass, red brome, redstem filaree (*Erodium cicutarium*), rattail sixweeks grass, and wild oat.

Special-status plant species, including Tracy's eriastrum, were observed in this vegetation community.

*Lepidospartum squamatum Alliance (Scale Broom Scrub) (0.02% of FERC Project boundary)*

Scale broom scrub occurs on intermittently or rarely flooded, low-gradient alluvial deposits along streams, washes, and fans. The shrub layer is dominated by scale broom, is open to continuous, and is composed of shrubs that are less than 6.5 feet tall. The herbaceous layer is variable and may be grassy. Scale broom scrub is designated by CDFW as a sensitive natural community with a state rarity rank of S3 (Sawyer et al. 2009).

Scale broom scrub occupies 0.1 acre within the FERC Project boundary along Commercial Avenue, south of Erskine Creek flume on privately owned land (Attachment A – CDFW VegCAMP Alliances, Figure A-9). The area had originally been mapped as rubber rabbitbrush scrub, but ground sampling determined it was scale broom scrub. Scale broom is the dominant shrub in this community, with 18 percent cover in the sampled area. Other shrubs and herbaceous plants in this community had 72 percent cover and included Acton encelia (*Encelia actoni*), Wright's jimsonweed, annual bur-sage (*Ambrosia acanthicarpa*), red brome, cheat grass, and ripgut brome.

*Lotus scoparius – Lupinus albifrons – Eriodictyon spp. Alliance (Deerweed – Silver Lupine – Yerba Santa Scrub) (0.4% of FERC Project boundary)*

Deerweed – silver lupine – yerba santa scrub is found on lower to upper slopes and ridges and in typically exposed, somewhat steep open settings. The shrub canopy is open to intermitted and can be two tiered, with shrubs less than 10 feet tall. The herbaceous layer is sparse to intermittent (Sawyer et al. 2009).

Deerweed – silver lupine – yerba santa scrub occupies 1.63 acres at one location within the FERC Project boundary north of Tunnel No. 1 in Lower Borel on federal land administered by BLM (Attachment A – CDFW VegCAMP Alliances, Figures A-9 and A-10). Deerweed (*Acmispon glaber*[12]) is the dominant shrub in this community, with 10 percent cover in the sampled area. Silver lupine and yerba santa were not observed within the FERC Project boundary. Other shrub species in this community had 13 percent cover and included rubber rabbitbrush and chaparral whitethorn.

[12] Formerly *Lotus scoparius*. Name of the Alliance has not been updated yet.

Herbaceous species had 55 percent cover and included dense flower woolly sunflower (*Eriophyllum confertiflorum* var. *confertiflorum*), Fremont's buckwheat, cheat grass, and shortpod mustard.

Special-status plant species, including Kern County clarkia, were observed in this vegetation community.

**HERBACEOUS-DOMINATED HABITATS**

*Agriculture Mapping Unit (without Fallow Annual Grasses Dominating) (0.04% of FERC Project boundary)*

The agriculture mapping unit occupies 0.16 acre at one location within the FERC Project boundary along Commercial Avenue on privately owned land (Attachment A – CDFW VegCAMP Alliances, Figure A-9). This area was not surveyed but appears to include orchard trees planted in rows.

*California Annual and Perennial Grassland Macro Group (7.7% of FERC Project boundary)*

The California annual and perennial grassland macro group includes the following groups: (1) California annual forb/grass vegetation, (2) California perennial grassland, and (3) Mediterranean California naturalized annual and perennial grassland (Sawyer et al. 2009). The grasslands within the FERC Project boundary are characterized by dominance of non-native plant species, which places them in the Mediterranean California naturalized annual and perennial grassland group.

California annual and perennial grassland occupies 27.88 acres within the FERC Project boundary throughout Upper and Lower Borel, with 17.43 acres on federal land administered by the Forest Service, 4.4 acres on federal land administered by BLM, 2.87 acres on SCE-owned land, 2.51 acres on privately owned land, 0.57 acre on county land, and 0.1 acre on federally owned land administered by the Corps (all Attachment A – CDFW VegCAMP Alliances figures). Within the sampled areas, dominant plant species ranged from 10 to 40 percent cover and included shortpod mustard, red brome, tarplant (*Holocarpha* sp.), soft chess, and white sweetclover (*Melilotus albus*). Other shrub and herbaceous plants had 15 to 23 percent cover and included filago-leaved sand aster, white lamb cudweed, telegraph weed, bracted vervain, Wright's buckwheat, cocklebur, annual buckwheat, redstem filaree, prickly lettuce (*Lactuca serriola*), rib-fruited wand-like wire-lettuce, cheat grass, and rattail sixweeks grass.

Special-status plant species, including Tracy's eriastrum, were observed in this vegetation community.

*Californian Warm Temperate Marsh/Seep Group (8.4% of FERC Project boundary)*

The Californian warm temperate marsh/seep group is typically dominated by one or more species of sedge (*Carex* spp.) or rush (*Juncus* spp.), beardless wild-rye (*Elymus triticoides*), or seep monkeyflower (*Erythranthe guttata*) (Sawyer et al. 2009). Within the FERC Project boundary, Californian warm temperate marsh/seep group occupies 30.46 acres in Upper Borel near the Kern River diversion dam and intake, with 25.68 acres on SCE-owned land and 4.78 acres on federal land administered by the Forest Service (Attachment A – CDFW VegCAMP Alliances, Figure A-1). This community was sampled as part of the jurisdictional delineation. Within those areas, total herbaceous cover ranged from 15 to 100 percent.

Dominant plant species in this community had between 20 and 75 percent cover and included marsh yellow cress (*Rorippa palustris* ssp. *palustris*), brook cinquefoil (*Potentilla rivalis*), cocklebur, white

lamb cudweed, willow weed (*Persicaria lapathifolia*), dock (*Rumex* spp.), and rounded-lead buttercup (*Ranunculus cymbalaria*). Other herbaceous species in this community included straw-colored cudweed (*Pseudognaphalium stramineum*), marsh cudweed (*Gnaphalium palustre*), curly dock (*Rumex crispus*), red-rooted flatsedge (*Cyperus erythrorhizos*), annual beard grass (*Polypogon monspeliensis*), and dagger rush (*Juncus ensifolius*).

**NON-VEGETATED HABITATS**

*Built-Up and Urban Disturbance Mapping Unit (includes Development, Mines, and Borrow Pits) (18.9% of FERC Project boundary)*

The built-up and urban disturbance mapping unit occupies 68.54 acres within the FERC Project boundary along access roads in Upper Borel and throughout much of the area south of the dam, with 27.03 acres on SCE-owned land, 17.27 acres on privately owned land, 2.335 acres on federally owned land administered by BLM, 5.78 acres on federally owned land managed by the Corps, 1.75 acres on federally owned land administered by the Forest Service, 0.64 acre on county land, and 13.02 acres on land with no identified landowner (Attachment A – CDFW VegCAMP Alliances, Figures A-1, A-3, and A-6 through A-11). It includes roads, highways, buildings, parking areas, residential and commercial areas, campgrounds, landscaping associated with those areas, active construction areas, and canals.

*Perennial Stream Channel Mapping Unit (0.16% of FERC Project boundary)*

Within the FERC Project boundary, the perennial stream channel mapping unit occupies 0.57 acre south of the Borel Powerhouse on federally owned land administered by the Forest Service (Attachment A – CDFW VegCAMP Alliances, Figure A-11). This area includes the unvegetated portions of the Kern River channel.

*Reservoirs Mapping Unit (33.5% of FERC Project boundary)*

The reservoirs mapping unit occupies 121.67 acres within the FERC Project boundary, with 63.78 acres on SCE-owned land, 52.08 acres on federally owned land administered by the Forest Service, and 5.81 acres on privately owned land (Attachment A – CDFW VegCAMP Alliances, Figures A-1 through A-6). This area includes the area that is inundated by Lake Isabella and was mapped using aerial photography. The area of inundation fluctuates every year. Water levels in 2021 and 2022 were lower than when the reservoir was mapped and included some areas of largely unvegetated exposed sand.

*River and Lacustrine Flats and Streambeds Mapping Unit (2.42.% of FERC Project boundary)*

The river and lacustrine flats and streambeds mapping unit occupies 8.85 acres within the FERC Project boundary in two locations in Upper Borel near the Diversion Dam and Intake Structure on SCE-owned land (Attachment A – CDFW VegCAMP Alliances, Figure A-1). These areas are primarily unvegetated and occur on benches elevated above the river.

*Water Mapping Unit (1.7% of FERC Project boundary)*

Within the FERC Project boundary, the water mapping unit occupies 6.37 acres in Upper Borel near the Diversion Dam and Intake Structure, with 5.90 acres on SCE-owned land and 0.47 acre on federally owned land administered by the Forest Service (Attachment A – CDFW VegCAMP Alliances, Figure A-1). This area of open water is separate from the reservoirs mapping unit.

### *Special-Status Plants*

Prior to conducting the botanical surveys, existing, relevant, and reasonably available information regarding special-status plants in the Borel Project Vicinity were reviewed.[13] As part of the process for determining special-status plant species with potential to occur in the FERC Project boundary, SCE reviewed the following sources:

1. 2003 Final Application for License for the Borel Project (SCE 2003a)
2. FERC's 2005 Final Multi Project EA for the Borel Project and Kern Canyon Hydroelectric Project (FERC 2005)
3. Borel Project Sensitive Species Protection Plan (SCE 2008c)
4. Borel Project Vegetation and Invasive Weed Management Plan (SCE 2008d)
5. CDFW's CNDDB (CDFW 2022b)[14]
6. CNPS Inventory of Rare and Endangered Plants of California (CNPS 2021)
7. USFWS' IPaC (USFWS 2021a, 2022b)
8. USDA-NRCS Web Soil Survey (USDA NRCS 2021b)

Forty-five special-status plants species known or with the potential to occur in the Borel Project Vicinity were identified prior to field surveys (Table 3.6-2), including four species that were previously documented during plant surveys conducted for the relicensing. These four species included Kern Canyon clarkia, rose-flowered larkspur, Shevock's golden-aster (*Heterotheca shevockii*), and Sierra monardella (*Monardella candicans*). The latter two species were found outside of the current FERC Project boundary. Occurrences of Kern River daisy (*Erigeron multiceps*), California alkali grass (*Puccinellia simplex*), alkali marsh aster (*Almutaster pauciflorus*), alkali mariposa lily (*Calochortus striatus*) and Kern River evening-primrose (*Camissonia integrifolia*) have also been recorded within the Borel Project Vicinity. This information was developed as a guide to species with the potential to occur within the FERC Project boundary prior to field surveys.

**Table 3.6-2. Special-status Plant Species Known or with the Potential to Occur in the FERC Project boundary Prior to Field Surveys**

| Common Name/ Scientific Name | (Federal / State/ CRPR)[a] | Flowering Period | Elevation Range (feet) | Habitat Requirements | Known From Borel Project Area? |
|---|---|---|---|---|---|
| Howell's onion (*Allium howellii* var. *howellii*) | None/ None/4.3 | Mar–Apr | 165–7,220 | Sometimes clay or serpentinite soils in valley and foothill grassland. | No |
| Alkali marsh aster (*Almutaster pauciflorus*) | None/ None/ 2B.2 | Jun–Oct | 785–2,625 | Alkaline soils in meadows and seeps | No, but nearby CNDDB occurrence |
| California androsace (*Androsace elongata* ssp. *acuta*) | None/ None/4.2 | Mar–Jun | 490–4,280 | Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland | No |

[13] "Project Vicinity," in this case, refers to the 0.5-mile area surrounding the FERC Project boundary.

[14] The following USGS quads were included in the inventory search: Tobias Peak, Kernville, Cannell Peak, Alta Sierra, Lake Isabella North, Weldon, Miracle Hot Springs, Lake Isabella South, and Woolstalf Creek.

**Table 3.6-2. Special-status Plant Species Known or with the Potential to Occur in the FERC Project boundary Prior to Field Surveys**

| Common Name/ Scientific Name | (Federal / State/ CRPR)[a] | Flowering Period | Elevation Range (feet) | Habitat Requirements | Known From Borel Project Area? |
|---|---|---|---|---|---|
| Palmer's mariposa lily (*Calochortus palmeri* var. *palmeri*) | BLM-S, FSS/ None/ 1B.2 | Apr–Jul | 2330–7840 | Mesic soils in chaparral, lower montane coniferous forests, and meadows and seeps | No |
| Alkali mariposa lily (*Calochortus striatus*) | BLM-S, FSS/ None/ 1B.2 | Apr–Jun | 230–5,235 | Alkaline and mesic soils in chaparral, chenopod scrub, Mojavean desert scrub, and meadows and seeps | No, but nearby CNDDB occurrence |
| Kern River evening-primrose (*Camissonia integrifolia*) | None/ None/ 1B.3 | (Apr)May | 2,295–3,280 | Chaparral | No |
| Kern County evening-primrose (*Camissonia kernensis* ssp. *kernensis*) | None/ None/4.3 | Mar–May | 2,590–6,990 | Granitic, sometimes gravelly or sandy soils in chaparral, Joshua tree woodland, and pinyon and juniper woodland | No |
| White pygmy-poppy (*Canbya candida*) | FSS/ None/4.2 | Mar–Jun | 1,970–4,790 | Granitic, gravelly, or sandy soils in Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland | No |
| Muir's tarplant (*Carlquistia muirii*) | BLM-S, FSS/ None/ 1B.3 | July–Aug (Oct) | 2,475–8,205 | Granitic soils in montane chaparral, and lower and upper montane coniferous forests | No |
| Fresno ceanothus (*Ceanothus fresnensis*) | None/ None/4.3 | (Apr)May–July | 2,955–7,250 | Openings in cismontane woodland, and lower montane coniferous forest | No |
| Palmer's spineflower (*Chorizanthe palmeri*) | None/ None/4.2 | Apr–Aug | 180–3,100 | Rocky and serpentine soils in chaparral, cismontane woodland, and valley and foothill grassland | No |
| Slender clarkia (*Clarkia exilis*) | None/ None/4.3 | Apr–May | 395–3,280 | Cismontane woodland | No |
| Kern Canyon clarkia (*Clarkia xantiana* ssp. *parviflora*) | None/ None/4.2 | May–Jun | 2,295–11,875 | Often sandy, sometimes rocky soils, slopes, and sometimes roadsides in chaparral, cismontane woodland, Great Basin scrub, and valley and foothill grassland | Yes |
| Short-bracted bird's-beak (*Cordylanthus rigidus* ssp. *brevibracteatus*) | None/ None/4.3 | Jul–Aug (Sep–Oct) | 2,000–8,500 | Granitic soils in openings in chaparral, lower and upper montane coniferous forests, and pinyon and juniper woodland | No |
| Clokey's cryptantha (*Cryptantha clokeyi*) | None/ None/ 1B.2 | Apr | 2,380–4,480 | Mojavean desert scrub | No |
| Mojave tarplant (*Deinandra mohavensis*) | BLM-S, FSS/SE/ 1B.3 | Jan–May (Jun–Oct) | 2,100–5,200 | Mesic areas in chaparral, coastal scrub, and riparian scrub | No |

**Table 3.6-2. Special-status Plant Species Known or with the Potential to Occur in the FERC Project boundary Prior to Field Surveys**

| Common Name/ Scientific Name | (Federal / State/ CRPR)[a] | Flowering Period | Elevation Range (feet) | Habitat Requirements | Known From Borel Project Area? |
|---|---|---|---|---|---|
| Rose-flowered larkspur (*Delphinium purpusii*) | BLM-S, FSS/ None/ 1B.3 | (Mar)Apr–May | 985–4,395 | Rocky, often carbonate soils in chaparral, cismontane, and pinyon and juniper woodland | Yes |
| Calico monkeyflower (*Diplacus pictus*) | BLM-S/ None/ 1B.2 | Mar–May | 330–4,690 | Granitic soils in disturbed areas in broadleafed upland forest and cismonane woodland | No |
| Limestone dudleya (*Dudleya abramsii* ssp. *calcicola*) | None/ None/4.3 | Apr–Aug | 1,640–8,530 | Carbonate soils in chaparral and pinyon and juniper woodland | No |
| Hoover's eriastrum (*Eriastrum hooveri*) | None/ None/4.2 | Mar–Jul | 165–3,000 | Chenopod scrub, pinyon and juniper woodland, and valley and foothill grassland | No |
| Tracy's eriastrum (*Eriastrum tracyi*) | FSS/SR/ 3.2 | May–Jul | 1,035–5,840 | Chaparral, cismontane woodland, and valley and foothill grassland | No |
| Kern River daisy (*Erigeron multiceps*) | FSS/ None/ 1B.2 | Jun–Sep | 4,920–8,315 | Meadows and seeps and openings in upper montane coniferous forest | Yes |
| Conejo buckwheat (*Eriogonum crocatum*) | None/SR/ 1B.2 | Apr–Jul | 165–1,905 | Chaparral, coastal scrub, and valley and foothill grassland | No |
| Kelso Creek monkeyflower (*Erythranthe shevockii*) | BLM-S, FSS/ None/ 1B.1 | Mar–May | 2,625–4,395 | Joshua tree woodland and pinyon and juniper woodland | No |
| Sierra Nevada monkeyflower (*Erythranthe sierrae*) | None/ None/4.2 | Mar–Jul | 605–7,495 | Openings in cismontane woodland and lower montane coniferous forest, and dry meadows and seeps | No |
| Kernville poppy (*Eschscholzia procera*) | None/ None/3 | Jun–Jul (Aug) | 2,660–3,365 | Sandy floodplains in cismontane woodland | No |
| Hot springs fimbristylis (*Fimbristylis thermalis*) | None/ None/ 2B.2 | Jul–Sep | 360–4,395 | Alkaline soils near hot springs in meadows and seeps | No |
| Coville's green-gentian (*Frasera tubulosa*) | None/ None/4.3 | Jul–Aug | 3,135–10,795 | Lower and upper montane coniferous forests | No |
| Striped adobe-lily (*Fritillaria striata*) | None/ST/ 1B.1 | Feb–Apr | 445–4,775 | Usually clay soils in cismontane woodland and valley and foothill grassland | No |
| Onyx Peak bedstraw (*Galium angustifolium* ssp. *onycense*) | BLM-S/ None/ 1B.3 | Apr–Jul | 2,820–7,545 | Cismontane woodland and pinyon and juniper woodland | No |
| Inland gilia (*Gilia interior*) | None/ None/4.3 | Mar–May | 2,295–5,580 | Cismontane woodland, Joshua tree woodland, and lower montane coniferous forest | No |

**Table 3.6-2. Special-status Plant Species Known or with the Potential to Occur in the FERC Project boundary Prior to Field Surveys**

| Common Name/ Scientific Name | (Federal / State/ CRPR)[a] | Flowering Period | Elevation Range (feet) | Habitat Requirements | Known From Borel Project Area? |
|---|---|---|---|---|---|
| Delicate bluecup (*Githopsis tenella*) | BLM-S/ None/ 1B.3 | Apr–Jun | 1,065–6,235 | Mesic, serpentinite soils in chaparral and cismontane woodland | No |
| Piute cypress (*Hesperocyparis nevadensis*) | BLM-S/ None/ 1B.2 | Not applicable | 2,360–6,005 | Closed-cone coniferous forest, chaparral, cismontane woodland, and pinyon and juniper woodland | No |
| Shevock's golden-aster (*Heterotheca shevockii*) | FSS/ None/ 1B.3 | Aug–Nov | 755–2,955 | Chaparral and cismontane woodland | Yes |
| Sylvan microseris (*Microseris sylvatica*) | None/ None/4.2 | Mar–Jun | 150–4,920 | Chaparral, cismontane woodland, Great Basin scrub, and pinyon and juniper woodland, and valley and foothill grassland; rarely in serpentinite soils | No |
| Shevock's copper moss (*Mielichhoferia shevockii*) | BLM-S/ None/ 1B.2 | Not applicable | 2,460–4,595 | Mesic, metamorphic, and rocky soils in cismontane woodland | No |
| Sierra monardella (*Monardella candicans*) | None/ None/4.3 | Apr–Jul | 490–2,625 | Sandy or gravelly soils in chaparral, cismontane woodland, and lower montane coniferous forest | Yes |
| Crowned muilla (*Muilla coronata*) | None/ None/4.2 | Mar–Apr (May) | 2,200–6,430 | Chenopod scrub, Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland | No |
| Piute Mountains navarretia (*Navarretia setiloba*) | BLM-S, FSS/ None/ 1B.1 | Apr–Jul | 935–6,890 | Clay or gravelly loam soils in cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland | No |
| Oak-leaved nemophila (*Nemophila parviflora* var. *quercifolia*) | None/ None/4.3 | May–Jun | 2,295–7,220 | Cismontane woodland and lower montane coniferous forest | No |
| Bacigalupi's yampah (*Perideridia bacigalupii*) | None/ None/4.2 | Jun–Aug | 1,475–3,395 | Serpentinite soils in chaparral and lower montane coniferous forest | No |
| Adobe yampah (*Perideridia pringlei*) | None/ None/4.3 | Apr–Jun (Jul) | 985–5,905 | Serpentinite, often clay soils in chaparral, cismontane woodland, coastal scrub, and pinyon and juniper woodland | No |
| Wine-colored tufa moss (*Plagiobryoides vinosula*) | None/ None/4.2 | None | 100-5,695 | Cismontane woodland, meadows and seeps, Mojavean desert scrub, pinyon and juniper woodland, and riparian woodland | No |

**Table 3.6-2. Special-status Plant Species Known or with the Potential to Occur in the FERC Project boundary Prior to Field Surveys**

| Common Name/ Scientific Name | (Federal / State/ CRPR)[a] | Flowering Period | Elevation Range (feet) | Habitat Requirements | Known From Borel Project Area? |
|---|---|---|---|---|---|
| California alkali grass (*Puccinellia simplex*) | BLM-S/ None/1B.2 | Mar–May | 5–3,050 | Alkaline, vernally mesic soils in sinks, flats, and lake margins of chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools | No |
| Mason's neststraw (*Stylocline masonii*) | FSS/ None/ 1B.1 | Mar–May | 330–3,935 | Sandy soils in chenopod scrub and pinyon and juniper woodland | No |

Sources: CDFW 2022b; CNPS 2021
Key: CRPR = California Rare Plant Rank
[a] Notes on protection status:
BLM-S = BLM sensitive
SE = State endangered
SR = State rare
FSS = Forest Service sensitive
California Rare Plant Rank:
1B = Plants rare, threatened, or endangered in California and elsewhere; species meet the definitions of the CESA and are eligible for state listing
2B = Plants rare, threatened, or endangered in California but common elsewhere
3 = Review List: Plants about which more information is needed
4 = Watch List: Plants of limited distribution or infrequent throughout a broader area in California, and their status should be monitored regularly
0.1 = Seriously threatened in California (more than 80% of occurrences threatened/high degree and immediacy of threat)
0.2 = Moderately threatened in California (20 to 80% occurrences threatened/moderate degree and immediacy of threat)
0.3 = Not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)



Special-status plant species surveys were conducted on April 19 through 23 and June 14 through 16, 2021 and on April 19 through 21 and May 18 and 19, 2022, generally following CDFW's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018). Land within the FERC Project boundary was surveyed for special-status plants. Some limited areas of the FERC Project boundary were not surveyed due to lack of access or safety issues, specifically the steep slopes on the eastern side of the Borel Canal between Pioneer Steel Siphon and the Forebay Structure. Soils in the FERC Project boundary were assessed for potential to support special-status plant species, including unique soils with high calcium carbonate, pH, clay, or gypsum content. Soils in the FERC Project boundary do not have unusual mineral compositions or pH values that would indicate the potential presence of special-status plant species.

Surveys were floristic in nature, documenting all species observed; taxonomy and nomenclature are based on the Jepson eFlora (Jepson Flora Project 2022). CNDDB forms were filled out when special-status plants were encountered; the occurrence was mapped using a Global Positioning System (GPS) unit, and digital photographs were taken.

An inventory of the 244 observed plant species occurring in the FERC Project boundary was prepared from these surveys, as well as from the wildlife habitat assessment conducted from June 16 to 18, 2021, and the aquatic resources delineation conducted from May 10 to 14 and June 16 to 18, 2021, and is provided in Attachment B – Botanical Compendium).

The period from October 2020 through June 2021, and October 2021 through April 2022, when the special-status plant species surveys were completed, was characterized by drought conditions. The nearest weather station in Kernville showed rainfall to be 3.6 percent of normal in 2020-21 and 58.0 percent of normal in 2021-22. The Isabella Dam region received 3.56 inches of precipitation between October 2020 and August 2021 and 9.94 inches of precipitation between October 2021 and April 2022 (data taken from Isabella Dam Station) (California Department of Water Resources 2022). The average annual precipitation for the period of record for this area (1946 to 2011) is 12.49 inches (Western Regional Climate Center 2021). These drought conditions in 2021 likely limited the germination and growth of annual plant species, including some special-status plants with the potential for occurrence.

Four special-status plant species were observed in the FERC Project boundary during 2021 and 2022 field surveys: (1) Kern Canyon clarkia, (2) rose-flowered larkspur, (3) limestone dudleya, and (4) Tracy's eriastrum. Numerous California milkweed (*Asclepias californica*) and narrow-leaf milkweed (*Aclepias fascicularis*) plants, host plants for special-status monarch butterfly (*Danaus plexippus*), were generally found in grassland and pine-oak woodland within the FERC Project boundary. No plant species listed on the ESA or CESA were observed or are expected to occur in the FERC Project boundary. Descriptions of the special-status plant species populations observed are provided below and locations of these occurrences are provided in Figures 3.6-1 to Figure 3.6-5.

**KERN CANYON CLARKIA**

This annual herb is known from Kern Canyon and is a California Rare Plant Rank (CRPR) 4.2 plant.

During surveys conducted in 2021, two individual Kern Canyon clarkia plants were found in Lower Borel, one on federal land administered by BLM and one on federal land administered by the Forest Service. One plant was observed growing in annual grassland on a north-facing, 1:1 slope adjacent to the Borel Canal access road west of Tunnel No. 1 (Figure 3.6-2). Associated species included Xantus' clarkia (*Clarkia xantiana* ssp. *xantiana*) (nine plants), cheat grass, and a desiccated plant in the mustard family. The other plant was observed growing in pine-oak woodland on a north-facing, 2:1 slope adjacent to the Borel Canal access road between Borel Road and Tunnel No. 3 (Figure 3.6-5). Associated species included Xantus' clarkia (hundreds of plants), cheat grass, and ripgut grass.

Although two Kern Canyon clarkia plants were observed in 2021, they were found growing with Xantus' clarkia, which is not a special-status species, but is very similar in appearance to Kern Canyon clarkia. It is difficult to distinguish between the two species early in the flowering period. Kern Canyon clarkia has smaller petals and a stigma that is not exserted beyond the anthers. Out of hundreds of clarkia plants that appeared to be one of these two subspecies, only two were identified as the special-status subspecies. However, surveys conducted in 2011 by SCE identified Kern Canyon clarkia northeast of the Powerhouse and along the access road north of Tunnel No. 2. Surveys conducted in 2021 identified Xantus' clarkia and another non-special-status species of clarkia, elegant clarkia (*Clarkia unguiculata*), in those locations, respectively. It is possible that prior

surveys misidentified the clarkia plants or there was lower germination in 2021 due to the low rainfall.

Because 2021 was a drought year, these areas were resurveyed in 2022. Fifteen additional Kern Canyon clarkia plants were found in Lower Borel on May 18 and 19, 2022. Three of these plants were observed on federal lands administered by the Forest Service growing on a slope adjacent to a dirt access road leading to the Powerhouse (Figure 3.6-5). Twelve plants were observed growing on federal lands administered by the Forest Service on a slope adjacent to a dirt access road south of Pioneer Steel Siphon (Figure 3.6-3). Associated species included chaparral whitethorn, Xantus' clarkia, cheat grass, red brome, and redstem filaree.

**ROSE-FLOWERED LARKSPUR**

This spring flowering perennial herb is BLM Sensitive, FSS, and a CRPR 1B.3 plant.

Two occurrences were identified on federal lands administered by the Forest Service on April 22, 2021 (Figure 3.6-5). One occurrence, totaling 40 individuals, was observed on a northwest-facing slope in pine-oak woodland approximately 445 feet east of and upslope from the Powerhouse. Associated species included red brome, rough bent grass (*Agrostis scabra*), and spring beauty (*Claytonia* sp.). The second occurrence, totaling eight plants, was found on a north-facing slope nestled among boulders in pine-oak woodland approximately 245 feet south of and upslope from the Powerhouse. Goose grass (*Galium* cf. *aparine*) was also growing in this area.

**LIMESTONE DUDLEYA**

This perennial herb is a CRPR 4.3 plant.

One occurrence, totaling 17 individuals, was identified on April 22, 2021, on federal land administered by the Forest Service approximately 150 feet northwest of the Powerhouse above a paved access road and 150 feet downslope from SR 178 (Figure 3.6-5). These plants were growing within interior live oak woodland habitat in rock crevices on an east-facing vertical granitic rock outcropping. Associated plant species included red brome and phacelia (*Phacelia* sp.).

**TRACY'S ERIASTRUM**

This annual herb is FSS, State Rare, and a CRPR 3.2 plant.

One occurrence, totaling approximately 100 individuals, was identified on June 14, 2021, on federal land administered by the Forest Service, growing on a dirt facility access road, consisting of compacted sand and pebbles that parallels the Borel Canal approximately 500 feet southeast of SR 178 (5). This plant species was observed in the same location in May 2022 and not observed outside of the road limit. Associated species included American deervetch (*Acmispon americanus* var. *americanus*) and valley spurge (*Euphorbia ocellata* ssp. *ocellata*).

There were several areas with desiccated eriastrum (*Eriastrum* sp.) plants that were not identifiable to species in 2021, so those areas were resurveyed in 2022. During surveys conducted on May 18 and 19, 2022, approximately 9,765 Tracy's eriastrum plants were observed on federal land and federal land administered by BLM in the following locations: (1) 415 individuals within and adjacent to dirt access roads north of the Penstocks (Figure 3.6-5); 2,675 individuals along both sides of the Tunnel No. 2 access road (Figure 3.6-4); 150 individuals along a dirt access road north of Tunnel

No. 2 (Figure 3.6-4); 2,000 individuals along both sides of the Pioneer Steel Siphon access road (Figure 3.6-3); 925 individuals south and east of Pioneer Steel Siphon (Figure 3.6-3); 450 individuals north of Pioneer Steel Siphon (Figure 3.6-3); 150 individuals along a dirt access road north of Tunnel No. 1 (Figure 3.6-2); and 3,000 individuals on the south side of the canal south of Canal Road between Bodfish Siphon and Erskine Steel flume (Figure 3.6-1). Associated species included cheat grass, red brome, soft chess, redstem filaree, shepherd's purse, cryptantha (*Cryptantha* sp.), shortpod mustard, deerweed, common fiddleneck (*Amsinckia menziesii*), filago-leaved sand aster, bunch leaf beardtongue (*Penstemon heterophyllus*), Wright's buckwheat, clover (*Trifolium* sp.), small-flowered leptosiphon (*Leptosiphon parviflorus*), and California goldfields (*Lasthenia californica*).

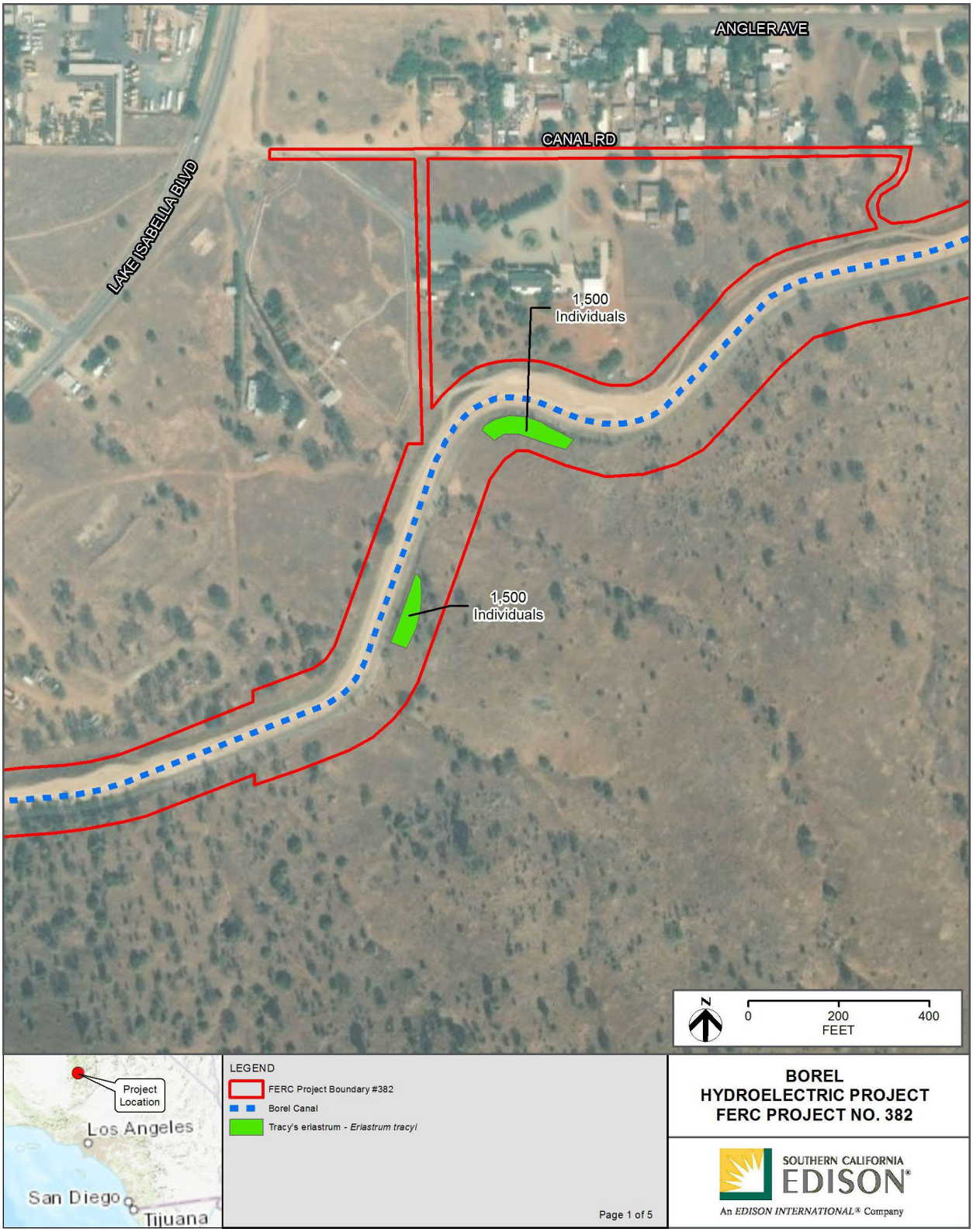



**Figure 3.6-1. Special-status Plant Occurrences (1 of 5)**

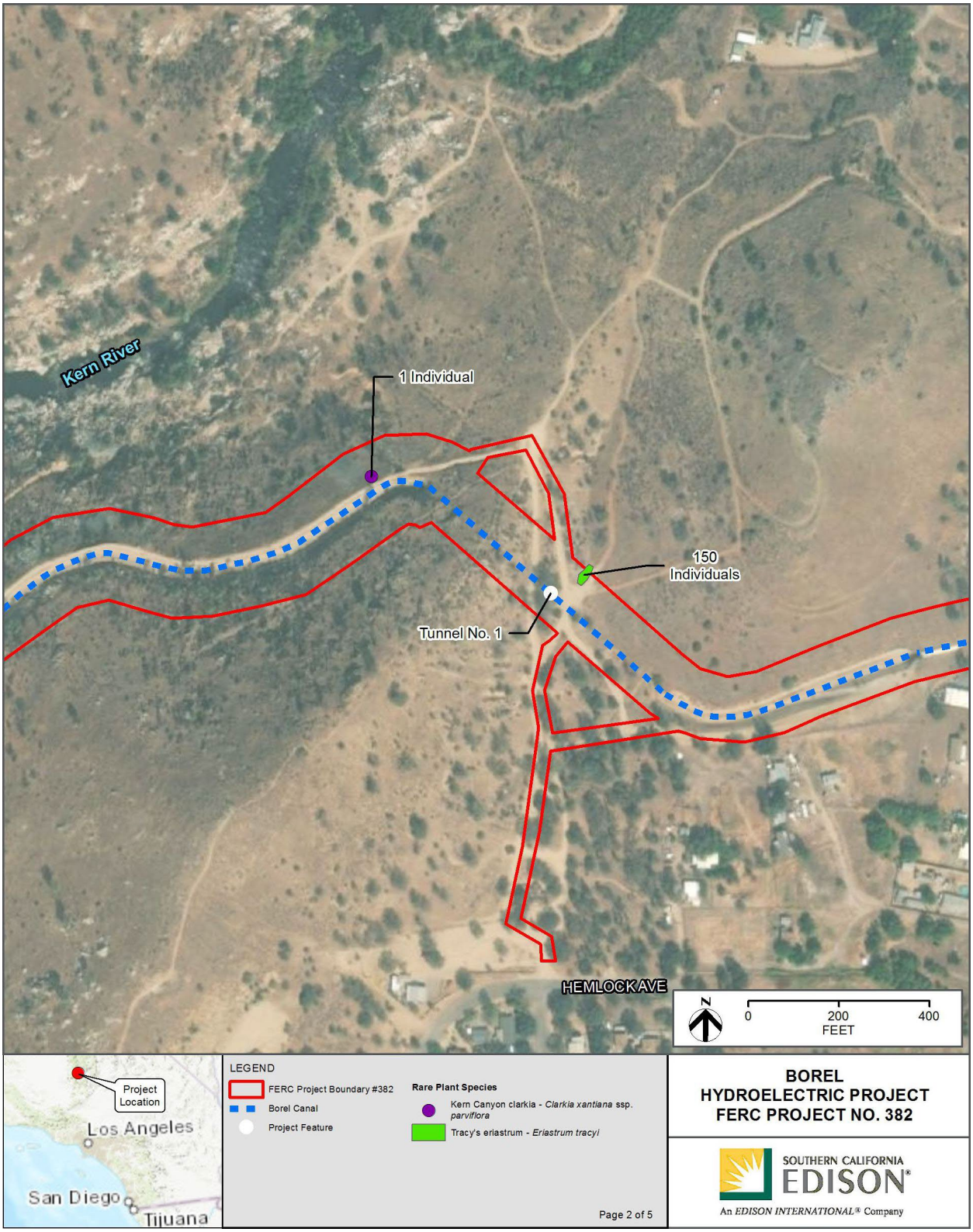



**Figure 3.6-2. Special-status Plant Occurrences (2 of 5)**

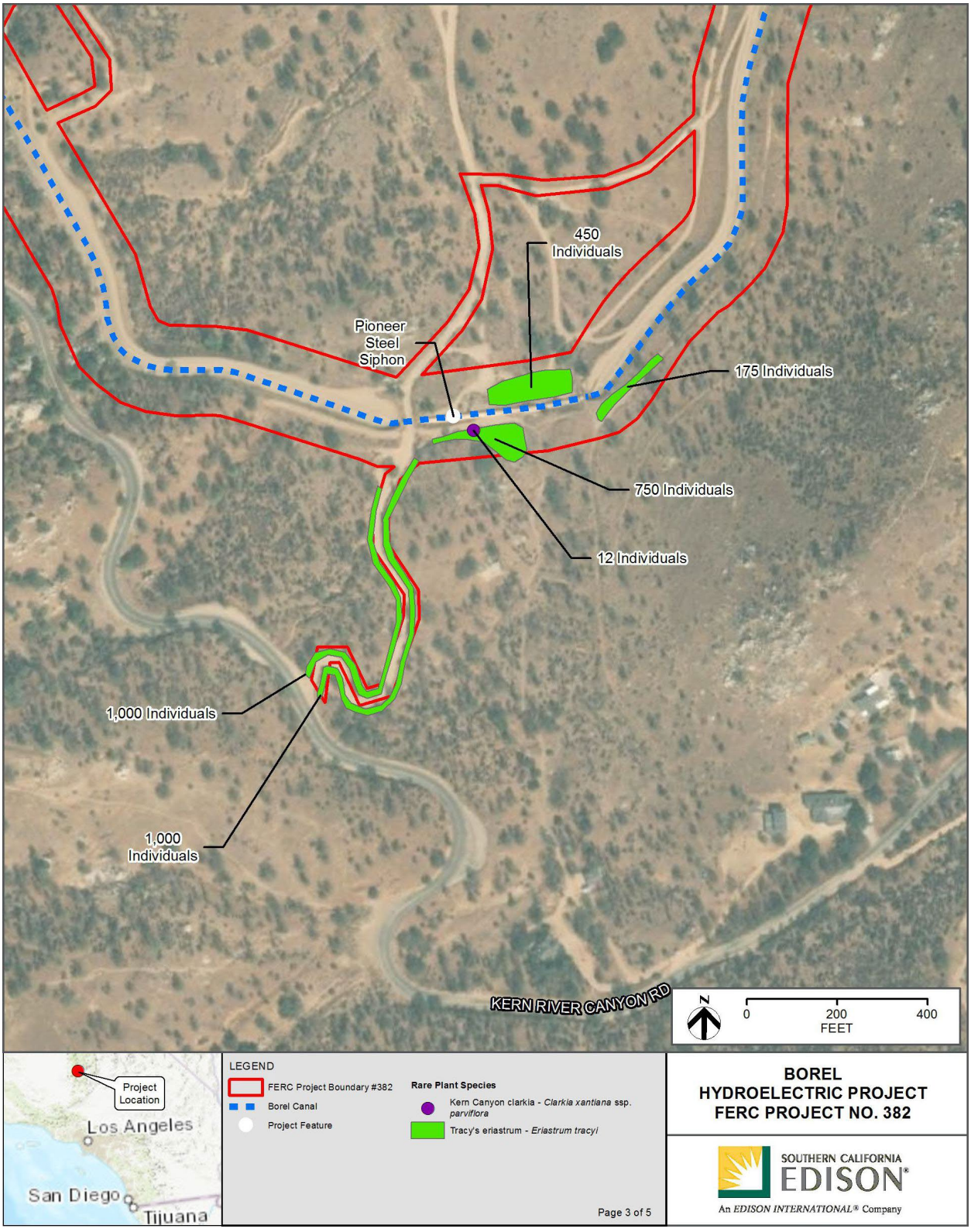



**Figure 3.6-3. Special-status Plant Occurrences (3 of 5)**

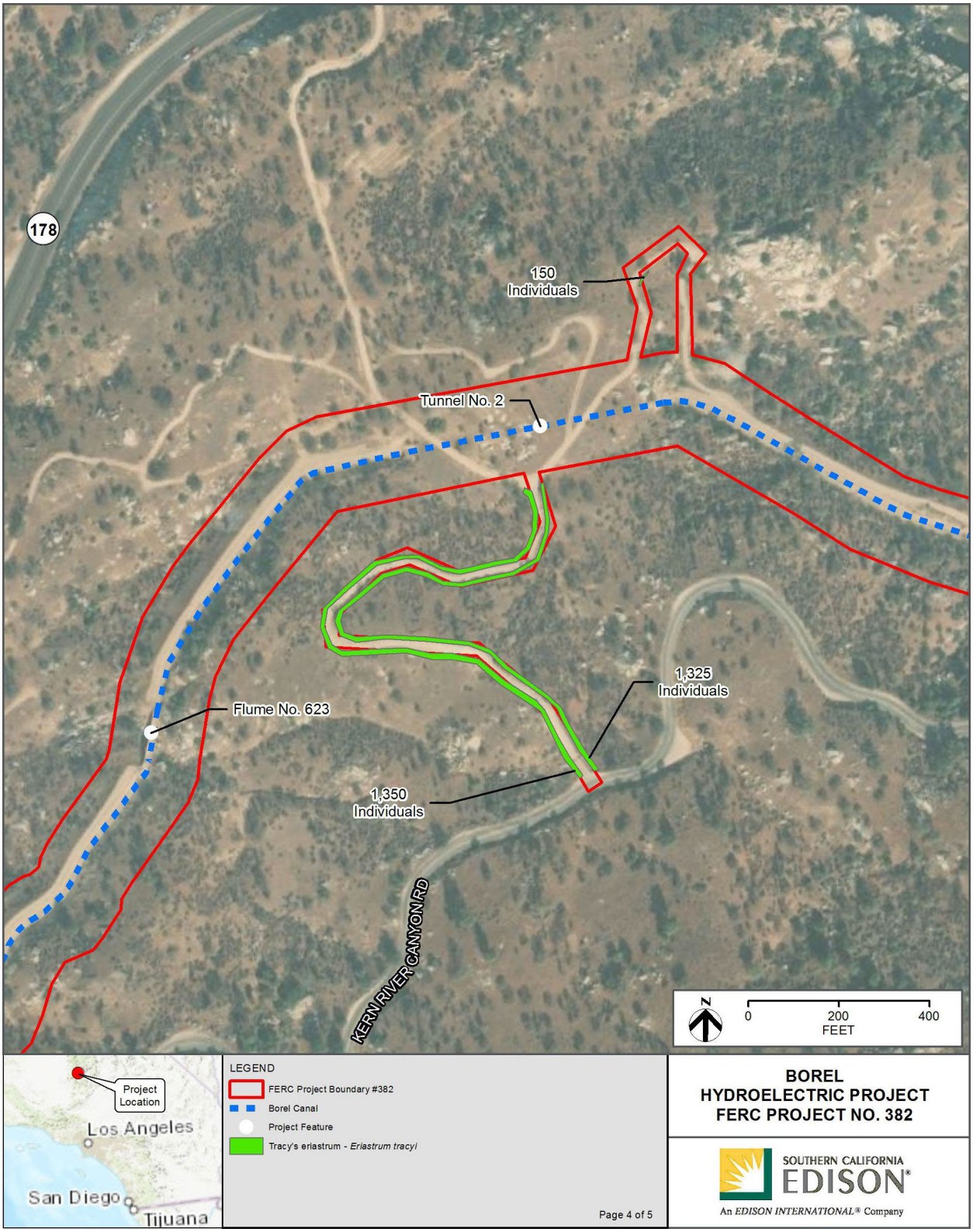



**Figure 3.6-4. Special-status Plant Occurrences (4 of 5)**

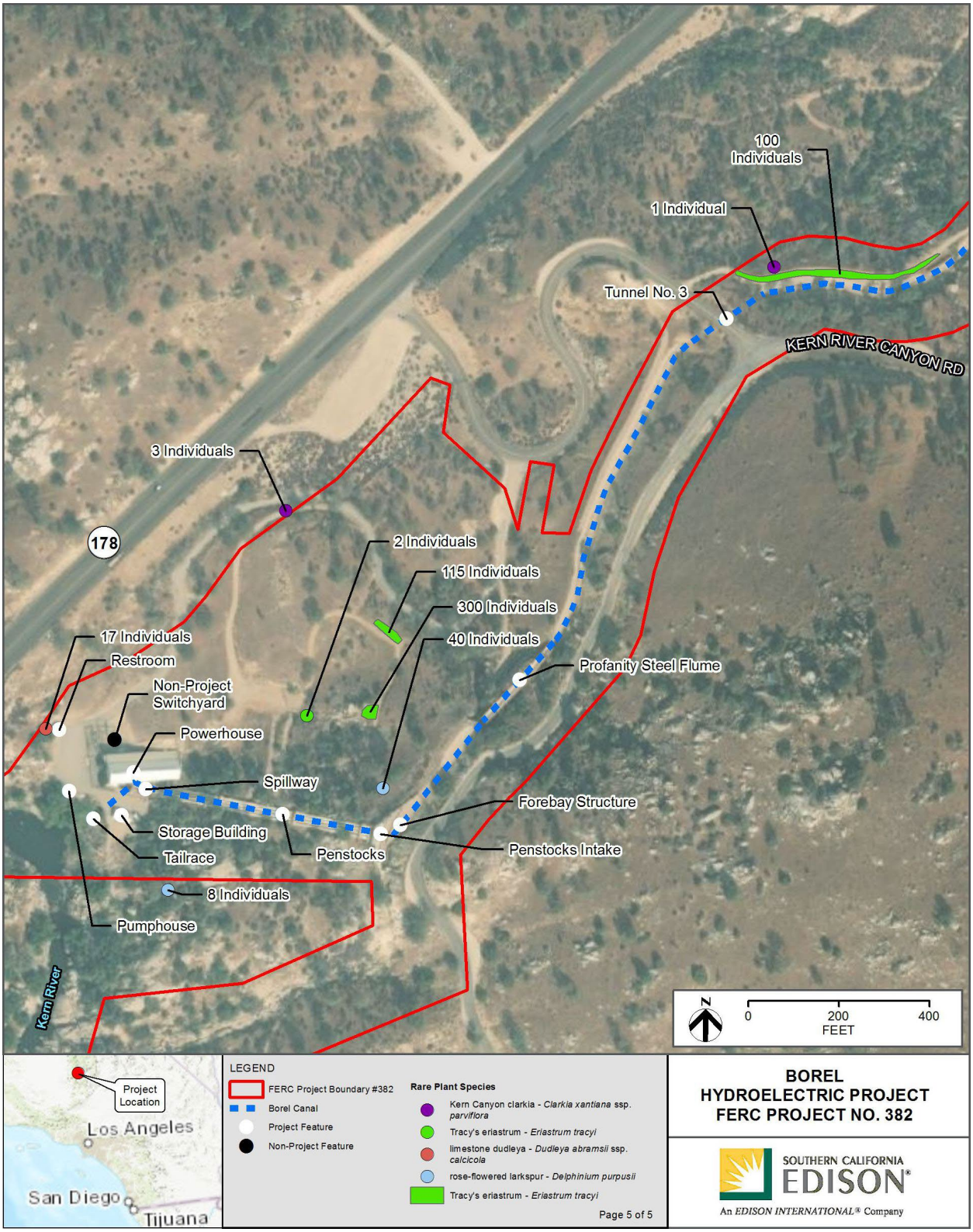



**Figure 3.6-5. Special-status Plant Occurrences (5 of 5)**

### *Invasive Plants*

Existing, relevant, and reasonably available information regarding NNIP, as defined at the beginning of Section 3.6, in the Borel Project Vicinity[15] was evaluated prior to field surveys. As part of the process for determining NNIP with potential to occur in the Borel Project area, SCE reviewed the following sources:

1. 2003 Final Application for License for the Borel Project (SCE 2003a)
2. FERC's 2005 Final Multi Project EA for the Borel Project and Kern Canyon Hydroelectric Project (FERC 2005)
3. Borel Project Vegetation and Invasive Weed Management Plan (SCE 2008d)
4. California Invasive Plant Council's CalWeedMapper (Cal-IPC 2021)

Based on a review of the above sources, SCE determined that there are 27 NNIP known or with the potential to occur in the FERC Project boundary (Table 3.6-3). Five of these species were previously documented during surveys conducted in 2001 and are of interest to SQF on federal lands managed by the Forest Service: tree of heaven (*Ailanthus altissima*), cheat grass, Bermuda grass, white horehound (*Marrubium vulgare*), and black locust (*Robinia pseudoacacia*).

**Table 3.6-3. NNIP Known or With Potential to Occur in the Borel Project Area**

| Common Name/ Scientific Name | CDFA[a] and Forest Service Status[b] | Flowering Period | Elevation (feet) | Habitat |
|---|---|---|---|---|
| Tree of heaven (*Ailanthus altissima*) | C, W, SeqNF | Jun | Below 6,250 | Disturbed areas, grassland, oak woodland, riparian areas |
| Giant reed (*Arundo donax*) | W | Mar–Sep | Below 5,000 | Moist places, seeps, ditch banks |
| Cheat grass (*Bromus tectorum*) | C, SeqNF | May–Aug | Below 11,500 | Open, disturbed areas |
| Woolly distaff thistle (*Carthamus lanatus*) | W | July–Aug | Below 3,600 | Disturbed areas |
| Purple star-thistle (*Centaurea calcitrapa*) | W | Jul–Oct | Below 3,300 | Disturbed areas |
| Meadow knapweed (*Centaurea jacea*) | W | Aug–Oct | Below 3,600 | Grassland, disturbed areas, montane forest |
| Yellow star-thistle (*Centaurea solstitialis*) | W, SeqNF | Jun–Dec | Below 4,300 | Pastures, roadsides, disturbed grassland, or woodland |
| Skeletonweed (*Chondrilla juncea*) | W | May–Dec | Below 2,000 | Disturbed areas |
| Canada thistle (*Cirsium arvense*) | W | Jun–Sep | Below 5,900 | Disturbed areas |
| Jubatagrass (*Cortaderia jubata*) | W | Sep–Feb | Below 2,600 | Disturbed areas, many habitats, especially coastal |
| Scotch broom (*Cytisus scoparius*) | W, SeqNF | Mar–Jun | Below 3,300 | Disturbed areas |
| Cape ivy (*Delairea odorata*) | W | Nov–Mar | Below 5,000 | Disturbed areas, riparian woodland, coastal scrub |
| Stinkwort (*Dittrichia graveolens*) | W | Sep–Nov | Below 2,300 | Disturbed areas |

[15] "Project Vicinity," in this case, refers to the 0.5-mile area surrounding the FERC Project boundary.

**Table 3.6-3. NNIP Known or With Potential to Occur in the Borel Project Area**

| Common Name/ Scientific Name | CDFA[a] and Forest Service Status[b] | Flowering Period | Elevation (feet) | Habitat |
|---|---|---|---|---|
| Eggleaf spurge (*Euphorbia oblongata*) | W | Apr–Aug | Below 3,300 | Waste areas, disturbed areas, roadsides, fields |
| Leafy spurge (*Euphorbia virgata*) | W | Jun–Sep | Below 4,600 | Waste areas, disturbed areas, roadsides, fields |
| French broom (*Genista monspessulana*) | C, W, SeqNF | Mar–May | Below 1,600 | Disturbed areas |
| Saltlover (*Halogeton glomeratus*) | B, W | Jul–Aug | 2,000-5,900 | Alkaline soils, open flats, scrub |
| Woad (*Isatis tinctoria*) | W | Apr–Jun | Below 3,300 | Roadsides, fields, disturbed areas |
| White-top (*Lepidium appelianum*) | W | Apr–Oct | Below 6,600 | Disturbed open areas, fields, pastures |
| Lens-podded hoary cress (*Lepidium chalepense*) | W | Apr–Aug | Below 5,000 | Disturbed open areas, fields, pastures |
| Perennial pepperweed (*Lepidium latifolium*) | W | Jun–Sep | Below 8,200 | Pastures, disturbed areas, fields, grassland, saline meadows, streambanks, sagebrush scrub, pinyon/juniper woodland, edge of marshes |
| Purple loosestrife (*Lythrum salicaria*) | W | Jun–Sep | Below 5,300 | Seasonal wetlands, ditches, cultivated fields |
| White horehound (*Marrubium vulgare*) | SeqNF | Mar–Nov | Below 2,000 | Disturbed areas, generally overgrazed pastures |
| Scotch thistle (*Onopordum acanthium* ssp. *acanthium*) | W | Jul–Sep | Below 5,300 | Disturbed areas |
| Russian knapweed (*Rhaponticum repens*) | W | May–Sept | Below 6,200 | Fields, roadsides, cultivated ground, disturbed areas |
| Black locust (*Robinia pseudoacacia*) | SeqNF | May–Jun | Below 6,200 | Roadsides, canyon slopes, streambanks |
| Tamarisk (*Tamarix* spp.) | B or W | Mar–Apr | Below 4,300 | Washes, streambanks, slopes, roadsides |

Sources: CDFA 2021
Key: CDFA = California Department of Food and Agriculture
Notes:
[a] CDFA ratings:
B = Pest of known economic or environmental detriment and, if present in California, is of limited distribution
C = Pest of known economic or environmental detriment and, if present in California, is usually widespread
W = Plant is included in the California Code of Regulations Section 4500 list of California State Noxious Weeds
[b] Forest Service status:
SeqNF: Weeds of concern on SQF lands

Surveys for NNIP were conducted from April 19 to 23 and June 14 to 16, 2021 and on April 19 through 21 and May 18 and 19, 2022, in conjunction with special-status plant surveys and generally following the same protocol. When NNIP were encountered, data forms were filled out, the occurrence was mapped using a GPS unit, and digital photographs were taken. The FERC Project boundary and FERC PARs were surveyed for target NNIP. Some areas of the FERC Project

boundary were not surveyed due to lack of access, including the access road, or safety issues, specifically the steep slopes on the eastern side of the Borel Canal in Lower Borel.

- Surveys identified five NNIP, including tree of heaven, giant reed, cheat grass, white horehound, and black locust. Information on the number of occurrences and whether the species were found on federal lands administered by Forest Service and BLM are included in Table 3.6-4. Descriptions of these species and where they were found within the Borel Project area are provided below, and locations of these occurrences are provided in Attachment C – Non-Native Invasive Plants, Figures C-1 to C-12.

**Table 3.6-4. NNIP Occurrences within FERC Project boundary**

| Common Name/ Scientific Name | Forest Service Occurrences | BLM Occurrences | Number of Occurrences in FERC Project boundary | Number of Plants |
|---|---|---|---|---|
| Tree of heaven (*Ailanthus altissima*) | Yes | Yes | 12 | 114 |
| Giant reed (*Arundo donax*) | No | No | 1 | 1 |
| Cheat grass (*Bromus tectorum*) | Yes | Yes | Throughout[a] | Not applicable[a] |
| White horehound (*Marrubium vulgare*) | Yes | Yes | 5 | 7 |
| Black locust (*Robinia pseudoacacia*) | Yes | No | 3 | 10 |

[a] Cheat grass was found throughout the Borel Project area, with too many plants to count. Percent cover ranged from 1 to 40 percent in the areas where it was found.



**TREE OF HEAVEN**

This rapid growing, deciduous tree was introduced from Asia. It forms dense monotypic colonies in riparian habitat, replacing native riparian trees (Cal-IPC 2021). It is also found in disturbed areas, grasslands, and oak woodland (Jepson Flora Project 2022). Tree of heaven produces thousands of seeds annually, as well as reproducing vegetatively. Seeds are spread via wind, water, birds, and vehicles and construction equipment. It is a California Department of Food and Agriculture (CDFA) C-rated weed and a weed of concern on federal land managed by the Forest Service.

Approximately 114 trees in 12 occurrences were found in Lower Borel from just north of Erskine Creek Road south to Bodfish Siphon (Attachment C – Non-Native Invasive Plants, Figures C-7 through C-9). These trees occurred as single individuals up to stands of 20 to 45 trees, mostly occupying disturbed habitat or annual grassland adjacent to the Borel Canal access road and residences. The trees at the Bodfish Siphon were growing next to mulefat scrub near willow riparian habitat.

**GIANT REED**

This tall perennial grass was introduced from Europe. It forms dense stands on disturbed sites, sand dunes, riparian areas, and wetlands. It is very effective at competing with native species for water and increases soil salinity. Giant reed produces seeds, which are spread by wind and water. Broken off rhizomes and pieces of rhizomes can also sprout and spread via water or contaminated soil (Cal-

IPC 2021). It is included in the California Code of Regulations Section 4500 list of California State Noxious Weeds.

- One giant reed stand was observed in Lower Borel along the fence line by residences east of the Erskine Steel Flume, growing near tree of heaven and black locust (Attachment C – Non-Native Invasive Plants, Figure C-8).

**CHEAT GRASS**

This annual grass species was introduced from Eurasia and the Mediterranean. It is common throughout California. It outcompetes native plants and increases the potential for wildfires. Cheat grass seeds most often adhere to human clothes or the fur of animals and are spread that way (Cal-IPC 2021). It is a CDFA C-rated weed and a weed of concern on federal land managed by the Forest Service.

Cheat grass was identified throughout the Borel Project. In Upper Borel, cheat grass occupied very low cover (around 1 percent) in an upper lake bench subject to periodic inundation west of the Overflow Dam at Settling Basin, where it was found growing with seaside heliotrope (*Heliotropium curassavicum* var. *oculatum*), cocklebur (*Xanthium strumarium*), red brome (*Bromus rubens*), and redstem filaree (*Erodium cicutarium*). Along the dirt access roads, cheat grass occupied between 2 and 20 percent cover in annual grassland and Wright's buckwheat scrub. Associated species in Upper Borel included deerweed (*Acmispon glaber*), shortpod mustard, and ripgut brome.

In Lower Borel, cheat grass occupied from 2 to 40 percent cover in annual grassland, foothill pine woodland, interior live oak woodland, chaparral whitethorn chaparral, and scalebroom scrub. Associated species in Lower Borel included deerweed, red brome, Wright's jimsonweed (*Datura wrightii*), blue dicks (*Dipterostemon capitatus*), redstem filaree, shortpod mustard, wall barley (*Hordeum murinum*), and cocklebur.

**WHITE HOREHOUND**

This perennial plant species is native to Europe, North Africa, and Central Asia and was introduced to California with miners and settlers in the mid-1800s. It is found in grasslands, scrub, and riparian areas and spread by adhering to fabric or fur (Cal-IPC 2021). It is a weed of concern on federal land managed by the Forest Service.

- Seven plants in five different occurrences were found in Lower Borel from the Pioneer Steel Siphon access road to just north of Alta Sierra Avenue (Attachment C– Non-Native Invasive Plants, Figures C-7, C-9, and C-10). These plants were observed mostly as single individuals growing in disturbed annual grassland, pine-oak woodland, and Great Basin rabbitbrush scrub habitat near the Borel Canal access road, and adjacent to willow riparian habitat at the Bodfish Siphon.

**BLACK LOCUST**

This deciduous tree species is native to the southeastern United States and was introduced to California by pioneers and settlers in the early 1800s. The seeds, leaves, and bark of this tree can be toxic. These trees can invade and colonize riparian habitats, displacing native riparian cover. They are mostly spread by deliberate planting but can also spread clonally via suckers (Cal-IPC 2021). It is a weed of concern on federal land managed by the Forest Service.

- Three total occurrences of black locust were recorded in the FERC Project boundary (Attachment C – Non-Native Invasive Plants, Figures C-2 and C-8). Ten trees were observed in Upper Borel in the campground and along the Evans Road leading to the Storehouse and the Diversion Dam and Intake Structure. An additional six trees were observed in Lower Borel in disturbed habitat along the fence line by residences east of the Erskine Steel Flume.

#### 3.6.1.2 Wildlife Resources

*Wildlife Habitat*

The lower Kern River watershed is an area influenced by its proximity to the Tehachapi Mountains to the southwest, the San Joaquin Valley to the west, and the Mojave Desert to the southeast. In this mix of floristic areas, the habitats are primarily Sierran but transitional, and species such as California juniper, rubber rabbitbrush, Acton encelia, green ephedra, and Whipple's chaparral yucca are indicators of the influence of these other bio-geographic regions. These floristic characteristics contribute to the complexity and diversity of the wildlife habitat in the Borel Project area and also help support a wildlife community representative of the montane and the more xeric desert and valley habitats (SCE 2003a).

Habitats within the Borel Project area are greatly influenced by natural biotic and abiotic features and elements, as well as human-related activities. Except near the Kern River, much of the Borel Project area is relatively dry. Vegetation varies from a relatively dense association of overstory foothill pines and oaks (*Quercus* spp.) and an understory of chaparral-related species on north-facing slopes due to greater soil moisture retention, to a sparse association of foothill pines and oaks and an open association of grasses, forbs, and shrubs in the understory on south-facing, drier slopes. Soils range from typically thin on steep slopes and forested areas, to deeper soils along the Kern River due to historical riverine activities (SCE 2003a).

The slopes above the powerhouse and along the canal south of the community of Bodfish are dominated by blue oak and interior live oak with an emergent canopy of widely spaced foothill pine and an understory of non-native annual grasses and forbs. Granite rock outcrops are common. Understory shrubs included the shrub form of interior live oak, chaparral whitethorn, and California coffee berry. Understory herbaceous plants included annual buckwheat (*Eriogonum* spp.), Fremont's buckwheat, filago-leaved sand aster, rib-fruited wand-like wire-lettuce, shortpod mustard, rattail sixweeks grass, cheat grass, soft chess, red brome, and ripgut brome. Wildlife species common to this habitat type include western fence lizard (*Sceloporus occidentalis*), coachwhip (*Masticophus flagellum*), common kingsnake (*Lampropeltus getula*), western rattlesnake (*Crotalis viridis*), acorn woodpecker (*Melanerpes formicivorus*), northern flicker (*Colaptes auratus*), mourning dove (*Zenaida macroura*), scrub jay (*Aphelocoma coerulescens*), California quail (*Callipepla californica*), several species of warblers, finches and sparrows, red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), Audubon's cottontail (*Sylivilagus audubonii*), California ground squirrel (*Otospermophilus beecheyi*), coyote (*Canis latrans*), and bobcat (*Felis rufus*), to name a few (SCE 2003a).

The canal and elevated flumes between the Auxiliary Dam to the Bodfish Siphon are mainly located within privately owned lands in the suburban developments of Lake Isabella and Bodfish. A highly disturbed creek with some riparian habitat runs over the buried Bodfish Siphon. Urban disturbance,

primarily development from active construction, is found in the area between the Auxiliary Dam and SR 178. Black mustard (*Brassica nigra*) and Great Basin rabbitbrush dominate the landscape in this area. Common and characteristic wildlife species of this habitat type include common garter snake (*Pituophis melanoleucus*), common raven (*Corvus corax*), European starling (*Sturnus vulgaris*), brown-headed cowbird (*Molothrus ater*), Brewer's blackbird (*Euphagus cyanocephalus*), western meadowlark (*Sturnella neglecta*), brush rabbit (*Sylvilagus bachmani*), black-tailed jackrabbit (*Lepus californicus*), California ground squirrel, coyote, and badger (*Taxidea taxus*) (SCE 2003a).

Goodding's willow – red willow riparian woodland and forest habitat is present along much of the Kern River where granitic bedrock does not preclude its establishment. This habitat is characterized by an overstory of Goodding's black willow and red willow with an understory of perennial herbs such as shortpod mustard, bracted vervain, cocklebur, white lamb cudweed, horseweed, nightshade, red brome, seaside heliotrope, filago-leaved sand aster, Mexican rush, white sweetclover, and telegraph weed. Many of the wildlife species that inhabit the upland habitats are also present in the riparian areas. Additionally, western toad (*Bufo boreas*), Pacific chorus frog (*Pseudacris regilla*), common garter snake, alligator lizard (*Gerrhonotus multicarinatus*), southwestern pond turtle (*Actinemys marmorata pallida*), black phoebe (*Sayornis nigricans*), and raccoon (*Procyon lotor*) are common to this habitat type. Bullfrogs, an invasive non-native frog, are abundant all along the Kern River (SCE 2003a).

Most of the habitats within the FERC Project boundary have been significantly affected by human-related activities, including substantial recreational use.

### *Wildlife Community and Special-Status Wildlife Species*

Potential special-status wildlife with the potential to occur in the FERC Project boundary was determined in part by reviewing the following sources:

- 2003 Final Application for License for the Borel Project (SCE 2003a)
- FERC's 2005 Final Multi Project EA for the Borel Project and Kern Canyon Hydroelectric Project (FERC 2005)
- Borel Project Sensitive Species Protection Plan (SCE 2008c)
- Borel Project Vegetation and Invasive Weed Management Plan (SCE 2008d)
- CDFW's CNDDB (CDFW 2022b)
- USFWS' IPaC (USFWS 2021a, 2022b)
    - Based on a review of the above sources, along with the known range and habitat for each potential species, SCE determined that there are 29 special-status wildlife species known to occur or with the potential to occur in the FERC Project boundary, including 1 insect, 2 amphibians, 3 reptiles, 16 birds, 6 bats, and 4 mammals. Attachment D – Special-Status Wildlife includes a table of all wildlife species that were considered as having potential to occur on the Borel Project, including those eliminated for lack of habitat or falling outside the known range.

**INSECTS**

*Monarch Butterfly (Danaus plexippus pop. 1)*

The monarch butterfly is a candidate for listing under the ESA (CDFW 2022a). The area of the Borel Project is considered a spring/summer breeding area for the species, with most of the individuals overwintering along the coast of California (WAFWA 2022). Monarch butterflies are reliant on milkweeds (*Asclepius* spp.) for larval development, and the botanical surveys noted milkweed in grassland and pine-oak woodland within the FERC Project boundary. However, roosting and nectar sources for the species are located throughout the Borel Project.

There are no known CNDDB occurrences of monarch butterfly within the FERC Project boundary (CDFW 2022b). There were two verified occurrences of monarch butterfly at Lake Isabella in 2007 and one from 2022 (California Academy of Science and National Geographic 2022). This species was not observed during 2021 or 2022 surveys.

**AMPHIBIANS**

*Kern County Slender Salamander (Batrachopseps simatus)*

The Kern County slender salamander is proposed for listing as threatened under the ESA, designated State Threatened under the CESA and FSS in Sequoia National Forest (DOI 2013, CDFW 2021b), has been reported along the northern edge of the canyon of the Kern River in deep canyons between 1,000 to 4,000 feet and from portions of Bodfish and Erskine Creek (Nafis 2022, USFWS 2022c). This species is quite small, with a speckled upper side and black underside. They spend much of their time under rocks, logs, and woody surface debris such as decaying logs and peeled bark. During drier time, they will find seeps and other areas of moisture for shelter (Nafis 2022).

There are no known CNDDB occurrences of Kern Canyon slender salamander within the FERC Project boundary (CDFW 2022b). According to USFWS 2022c, Kern Canyon slender salamander have not been located in the areas of the Kern River, Bodfish Creek or Erskine Creek within or directly adjacent to the Borel Project. This species was also not observed during 2021 or 2022 FERC Project surveys, nor during focused surveys for salamanders in the Borel Project between 2001 and 2002 (SCE 2008). However, areas around the Powerhouse and flumes, as well as on Erskine and Bodfish Creeks have been identified as potential habitat (SCE 2008, USFWS 2022c).

Appropriate CDFW VegCAMP habitat types for the species within the FERC Project boundary include *Platanus racemosa – Quercus spp.* Alliance*, Populus fremontii – Fraxinus velutina – Salix gooddingii* Alliance*, Salix gooddingii – Salix laevigata* Alliance along the Kern River, and in moist areas nearby. The potential is greatest within the fenced area of the Powerhouse and in ravines below flumes (SCE 2008). Proposed Critical Habitat for the species includes these areas, as well as Bodfish and Erskine Creeks directly adjacent to the Borel Project (USFWS 2022c).

*Yellow-blotched Salamander (Ensatina eschscholtzii croceater)*

The yellow-blotched salamander is a designated BLM-S and FSS in Sequoia National Forest (DOI 2013, CDFW 2021b), and has been reported along the southern end of Kern Canyon. The known range of this species overlaps Kern County and is adjacent to the FERC Project boundary (Nafis 2022; Los Padres ForestWatch Inc. 2013). This species is quite variable in body color and,

like most salamanders, is typically found in shaded areas of forests; near creeks; and under rocks, logs, and woody surface debris such as decaying logs and peeled bark. During cold or dry weather, this species will stay in moist logs, woodrat nests, under roots, and in animal burrows (Nafis 2022).

There are no known CNDDB occurrences of yellow-blotched salamander within the FERC Project boundary (CDFW 2022b). This species was not observed during 2021 or 2022 FERC Project surveys.

Appropriate CDFW VegCAMP habitat types for the species within the FERC Project boundary include *Juniperus californica* Alliance*, Pinus sabiana* Alliance*, Quercus douglasii* Alliance, and *Quercus wislizeni* (tree) Alliance*.* The potential is greatest within the fenced area of the Powerhouse and in ravines below flumes.

**REPTILES**

*Southern Sierra Legless Lizard (also known as Big Spring Legless Lizard, Anniella campi [formerly Anniella pulchra])*

Southern Sierra legless lizard is designated an SSC (CDFW 2022a). The southern Sierra legless lizard is found in loose soil that is warm and moist along the western edge of the Mojave Desert in Kern and Inyo counties in three localities. This lizard is most often found in leaf litter or just beneath the ground surface, rocks, driftwood, and logs in coastal dune and coastal scrub habitats but may also be found in chaparral. In chaparral, soils are generally hard, but the lizard may be found beneath chaparral shrubs where duff and fine sands accumulate to create suitable habitat conditions based on descriptions of *Anniella pulchra* (Miller 1944). The legless lizard is commonly found beneath the soil surface but may come to the surface to bask and forage.

During optimal soil conditions, the lizards may be found within the top 6 inches of the soil. However, as summer progresses and soil temperatures rise and available moisture subsides, they may be found at soil depths of 3 feet or greater (Brattstrom 1965). This lizard is associated with moist soils, where it may obtain its moisture by sucking it from within the interstitial areas (Fusari 1985). Lack of soil moisture may be the limiting factor to its distribution (Miller 1944).

The closest known CNDDB occurrence dating to 2008 (Occurrence #4) of the Southern Sierra legless lizard occurs along the Kern River, a few miles from the FERC Project boundary (CDFW 2022b). Southern Sierra legless lizards were not observed during the 2021 Borel Project surveys.

Legless lizards are mostly fossorial species associated with loose, sandy, or loamy soils; therefore, predicting this species' distribution requires more information than is available from general habitat mapping. The Southern Sierra legless lizard may inhabit the various suitable habitats within the FERC Project boundary as suitable habitat is present and the FERC Project boundary overlaps the known range of *Anniella* species (Nafis 2022).

*Southern California Legless Lizard (also known as San Diegan Legless Lizard, Anniella stebbinsi [formerly Anniella pulchra])*

Southern California legless lizard is an SSC and FSS (CDFW 2022a). It is found from southwestern California south of the Transverse Ranges south into northwestern Baja California, with separate populations to the north in the Tehachapi and Piute Mountains. Habitat types consist of areas with moist, warm, and loose soils that are sparsely vegetated, including grassland, beach dunes,

chaparral, pine-oak woodland, conifer woodland, desert scrub, sandy washes, and terraces of riparian areas containing sycamores, cottonwoods, or oaks. This lizard spends most of its time underground in burrows, foraging in loose soil, leaf litter, and fallen logs during the morning and evening (NatureServe 2022; Nafis 2022).

The closest known CNDDB occurrence (Occurrence #4) is of an unknown species of *Anniella*, identified as a California legless lizard, along the Kern River just north of Lake Isabella, a few miles from the FERC Project boundary but dates from 1959 (CDFW 2022b). Southern California legless lizard were not observed during the 2021 or 2022 Borel Project surveys.

Legless lizards are mostly fossorial species associated with loose, sandy, or loamy soils; therefore, predicting this species' distribution requires more information than is available from general habitat mapping. Despite no known occurrences within the FERC Project boundary, the Southern California legless lizard may use various habitats underlain by loose sandy, loamy soils within the FERC Project boundary.

*Coast Horned Lizard (Phrynosoma blainvillii)*

Coast horned lizard is designated SSC and BLM-S (CDFW 2022b). The coast horned lizard has a range throughout the southern half of California outside the desert, along the foothills of the Sierra Nevada Mountains to Butte County, and along the Central Coast ranges north to Contra Costa County. They are generally found at elevations ranging up to 6,000 feet in open grassland communities but also extend into mixed chaparral, sage scrub, dunes, alluvial scrub, saltbush scrub, riparian, Joshua tree woodland, and coniferous forest (Thomson et al. 2016). Coast horned lizard will often burrow into loose, sandy soil to escape from predators and extreme heat, or will use logs, rocks, mammal burrows, or crevices during periods of inactivity and winter hibernation (CDFW 2021c). The horned lizard is found close to ant colonies, as ants constitute the majority of its diet. Habitat loss, habitat conversion to urban development and agriculture, and collecting are important elements responsible for the decline in this species. Invasion of riparian areas in southern California by Argentinean ants have been shown to be displacing native ant species and are therefore, adversely affecting horned lizard populations.

The coast horned lizard is identified in the Borel Project Sensitive Species Protection Plan (SCE 2008a). No known CNDDB occurrences of coast horned lizard have been recorded within the FERC Project boundary and surrounding area. The closest known CNDDB occurrence is approximately 20 miles southwest of the Borel Project area near the community of Caliente (CDFW 2022b).

While this species was not observed during 2021 or 2022 Borel Project surveys, coast horned lizard is linked with all mapped CDFW VegCAMP habitat types within the FERC Project boundary, which overlaps the known range of this species.

**BIRDS**

*Kern Red-winged Blackbird (Agelaius phoeniceus aciculatus)*

Kern red-winged blackbird is a designated SSC (CDFW 2022b). The Kern red-winged blackbird is a fairly common bird species endemic to California and known to breed in only two mountain valleys: the Kern River Valley and the Walker Basin of east-central Kern County (Grinnell and Miller 1944).

Kern red-winged blackbird inhabit meadows and lagoons that support the growth of sedges and cattails and can use alfalfa fields for foraging activity. This species is known to nest in a variety of habitats, including emergent marsh vegetation and upland grasses, with breeding occurring in freshwater cattail and tule marshes. Diet of the Kern red-winged blackbird consists primarily of plant matter, including wild seeds, crop grains, and insects during the breeding season (Yasukawa and Searcy 1995).

There are no known CNDDB occurrences of Kern red-winged blackbird within the Borel Project area. Red-winged blackbird was observed during 2021 Borel Project surveys in the *Salix gooddingii – Salix laevigata* Alliance but surveyors were unable to determine if it was the Kern red-winged blackbird subspecies.

According to CDFW range maps, a portion of the FERC Project boundary overlaps with the breeding range for this species (Shuford and Gardali 2008). Appropriate CDFW VegCAMP habitat types within the FERC Project boundary include *Populus fremontii – Fraxinus velutina – Salix gooddingii* Alliance*, Salix gooddingii – Salix laevigata* Alliance, and any delineated wetlands.

*Tricolored Blackbird (Agelaius tricolor)*

Tricolored blackbird was granted emergency protection by CDFW under CESA on December 3, 2014 (CDFW 2022b). On August 23, 2018, the California Fish and Game Commission adopted and published the findings that listed the species as Threatened under CESA (CFGC 2018). This bird is also designated SSC and BLM-S (CDFW 2022b). This species is common locally throughout the Central Valley of California, and in coastal areas from Sonoma County southward (CDFW 2021c). The species is mostly associated with lowland areas of California and is considered absent from the Transverse Range. Tricolored blackbirds typically nest near fresh water, preferably in emergent wetlands with tall, dense cattails or tules, but are also known to nest in thickets of willow, blackberry (*Rubus* spp.), wild rose (*Rosa* spp.), and tall herbs (CDFW 2021c). A highly gregarious species, tricolored blackbird can be found roosting and foraging in flocks and nesting in large colonies (NatureServe 2022).

The closest known CNDDB occurrence (Occurrence #892) of this species was observed within 0.5-mile northeast of the lower Borel Project area, northeast of the town of Lake Isabella (CDFW 2022b). The species was identified as occurring in the area between the Diversion Dam and Intake Structure in the 2013 Biological Evaluation for the Lake Isabella Borel Canal Reactivation Project (Corps 2013). Additional observations at Lake Isabella were recorded in 2020 (eBird 2021). Tricolored blackbird species were not observed during 2021 or 2022 Borel Project surveys, and suitable nesting habitat was not identified during ESA/CESA surveys despite being within the known yearlong range of this species, as described below.

*Grasshopper Sparrow (Ammodramus savannarum)*

Grasshopper sparrow is designated SSC (CDFW 2022a). This sparrow is an uncommon and local summer resident in foothills and lowlands west of the Cascade-Sierra Nevada crest, from Mendocino and Trinity counties south to San Diego County (CDFW 2021c). It prefers grassland habitat, but can also be found in fallow fields, savannas, and shortgrass prairies. Clumped vegetation of intermediate height interspersed in grasslands is required for breeding (NatureServe 2022).

There are no known CNDDB occurrences of grasshopper sparrow within the FERC Project boundary (CDFW 2022b).

Appropriate CDFW VegCAMP habitat types within the FERC Project boundary include California Annual and Perennial Grassland Macro Group, which could provide potential nesting habitat.

*Golden Eagle (Aquila chrysaetos)*

Golden eagle is protected under the Bald and Golden Eagle Protection Act (BGEPA; 16 U.S.C. 668–668d) and is designated FP and BLM-S (CDFW 2022a). This species ranges up to 11,500 feet elevation and can be found throughout California, except in the middle of the Central Valley. Golden eagles are typically associated with rolling foothills, mountainous areas, sage-juniper flats, and desert habitats (CDFW 2021c). Cliffs, large trees, and human-made structures (e.g., electric transmission towers) with a commanding view are used for nesting. Breeding occurs between late January and August, with most eggs laid between early February and mid-May (NatureServe 2022).

The golden eagle is included in the Borel Project Raptor Protection Program (SCE 2003b). There are no known CNDDB occurrences of golden eagle within the FERC Project boundary. The closest known occurrence (Occurrence #110) is located approximately 10.5 miles from the FERC Project boundary, south of Breckenridge Mountain (CDFW 2022b). Golden eagles were not observed during the 2021 or 2022 Borel Project surveys.

Appropriate CDFW VegCAMP habitat types for golden eagles include all mapped habitat types within the FERC Project boundary.

*Short-eared Owl (Asio flammeus)*

Short-eared owl is designated SSC (CDFW 2022a). This species inhabits open areas, including annual grasslands, prairies, dunes, meadows, irrigated lands, and saline and fresh emergent wetlands. Nests are depressions on dry ground that are lined with grasses, forbs, sticks, and feathers, concealed by surrounding grasses and shrubs. This species is known to breed in the coastal areas of Del Norte and Humboldt Counties, the San Francisco Bay Delta, northeastern Modoc Plateau, eastern side of the Sierra Nevada between Lake Tahoe and Inyo Counties, and in the San Joaquin Valley (CDFW 2021c). The short-eared owl migrates from breeding areas in September or October to wintering areas in the Central Valley, western Sierra Nevada foothills, and along the California coast. According to CDFW range maps, the FERC Project boundary overlaps the wintering range for short-eared owl (CDFW 2021c).

The short-eared owl is included in the SCE Raptor Protection Program (SCE 2003b). There are no known CNDDB occurrences of short-eared owl within the FERC Project boundary (CDFW 2022b). No short-eared owls were observed during the 2021 or 2022 Borel Project surveys conducted within the FERC Project boundary.

Appropriate CDFW VegCAMP habitat types within the FERC Project boundary include all mapped habitat types.

*Long-eared Owl (Asio otus)*

Long-eared owl is designated SSC (CDFW 2022a). In California, this species can be found throughout the state year-round, excluding the Central Valley and desert regions, where it is only

found in winter. For roosting and nesting, long-eared owls require dense riparian or live oak thickets, or other stands of densely canopied trees. At higher elevations, this species can also be found in dense stands of conifers. The long-eared owl hunts in open areas for voles and other rodents (CDFW 2021c).

The long-eared owl is included in the SCE Raptor Protection Program (SCE 2003b). There are no recent CNDDB occurrences of long-eared owl within the FERC Project boundary (CDFW 2022b). The most recent observation dates to 2021 at Lake Isabella (eBird 2021). Long-eared owls were not observed during the 2021 or 2022 Borel Project surveys conducted within the FERC Project boundary.

Appropriate CDFW VegCAMP habitat types within the FERC Project boundary include *Quercus douglasii* Alliance and *Quercus wislezini* (tree) Alliance, with the potential for long-eared owls to fly through all mapped Borel Project habitats.

*Redhead (Aytha americana)*

Redhead is designated SSC (CDFW 2022a). It is an uncommon to locally common species during winter and a common breeder during summer in lacustrine waters from Modoc County to Mono County in eastern California. During winter, it can also be found in the Central Valley and central California foothills and coastal lowlands, and along the coast from Monterey County to Ventura County during winter. Breeding also occurs locally in the Central Valley, coastal southern California, and eastern Kern County (CDFW 2021c). Its habitat includes large marshes, lakes, lagoons, rivers, and bays. Nesting sites can be found in dense bulrush or cattail stands that are interspersed with areas of deep, open water (Shuford and Gardali 2008). Necessary foraging habitat includes large freshwater marshes with persistent emergent vegetation (NatureServe 2022). Redheads dive for food, primarily eating leaves, stems, seeds, and tubers of aquatic plants and smaller amounts of aquatic insects (CDFW 2021c).

The nearest recorded CNDDB occurrence is north of Sacramento (CDFW 2022b); however, the CDFW recognizes the northern portion of Los Angeles County, extending up into the northeast portion of Kern County, as current breeding habitat for redhead (Shuford and Gardali 2008). Per eBird, redheads were observed at Lake Isabella in 2012 (eBird 2021). Redheads were not observed during the 2021 or 2022 Borel Project surveys.

Appropriate CDFW VegCAMP habitat types for redhead within the FERC Project boundary include the Reservoirs Mapping Unit and associated wetlands.

*Swainson's Hawk (Buteo swainsoni)*

Swainson’s hawk is listed as ST and BLM-S (CDFW 2022a). This species is an infrequent breeding resident and migrant in the Central Valley, Klamath Basin, Modoc Plateau, Lassen County, and Mojave Desert. Swainson’s hawks breed in stands with sparse trees in juniper-sage flats, riparian areas, and oak woodlands. They are known to forage in neighboring grasslands, alfalfa fields, or livestock pastures (CDFW 2021c).

A single CNDDB occurrence was recorded (Occurrence #2527) within the Lake Isabella portion of the FERC Project boundary (CDFW 2022b). No Swainson’s hawks were observed during the 2021 or 2022 Borel Project surveys conducted within the FERC Project boundary.

Suitable CDFW VegCAMP habitat types within the FERC Project boundary include California Annual and Perennial Grassland Macro Group, *Quercus douglasii* Alliance, and *Quercus wislezini* (tree) Alliance.

*Northern Harrier (Circus hudsonius)*

Northern harrier is designated SSC (CDFW 2022a). In California, this species ranges up to 5,700 feet in elevation and can be found throughout most of the state, with the exception of the far northern central portion of California and the higher elevations of the Sierra Nevada. Suitable habitat for this species includes meadows, grasslands, open rangelands, desert sinks, and fresh and saltwater emergent wetlands (CDFW 2021c). Northern harrier may also be found in wheat fields, ungrazed or lightly grazed pastures, and some croplands (NatureServe 2022). Nesting habitat includes shrubby vegetation along the edges of marshes, emergent wetlands, or along rivers and lakes. This species has been known to nest in grasslands and grain fields, or on sagebrush flats several miles from water. Nests are constructed of a large mound of sticks in wet areas or of a smaller cup of grasses in drier areas (CDFW 2021d).

The Northern harrier is included in the Borel Project Raptor Protection Program (SCE 2003b). The CNDDB indicates no recorded occurrences of northern harrier within the FERC Project boundary and surrounding quads (CDFW 2022b). However, an eBird sighting recorded one individual at Lake Isabella in 2021 (eBird 2021). Northern harrier was not observed during the 2021 or 2022 Borel Project surveys.

Appropriate CDFW VegCAMP habitat types within the FERC Project boundary include California Annual and Perennial Grassland Macro Group, the Reservoirs Mapping Unit, and delineated wetlands.

*White-tailed Kite (Elanus leucurus)*

White-tailed kite is designated FP and BLM-S (CDFW 2022a). It is a common to uncommon, year-round resident in the Sierra Nevada foothills and adjacent valley lowlands within California. This species has increased in numbers and has extended its range in recent decades (CDFW 2021c). White-tailed kites forage in undisturbed, open grasslands, meadows, farmlands, and emergent wetlands. Trees with dense canopies provide cover and suitable nesting habitat. Nests are usually placed near the top of dense oaks, willows, or other tree stands near foraging areas. Breeding occurs from February to October, with the peak from May to August (CDFW 2021c).

There are no known CNDDB occurrences of white-tailed kite within the FERC Project boundary (CDFW 2022b). An eBird observation recorded a white-tailed kite at Lake Isabella in 2021 (eBird 2021). No white-tailed kites were observed during the 2021 or 2022 Borel Project surveys conducted within the FERC Project boundary.

Appropriate CDFW VegCAMP habitat types for white-tailed kite include *Quercus douglasii* Alliance, *Quercus wislizeni* (tree) Alliance, *Platanus racemosa* – *Quercus* spp. Alliance, *Populus fremontii* – *Fraxinus velutina* – *Salix gooddingii* Alliance, and *Salix gooddingii* – *Salix laevigata* Alliance for nesting as well as all mapped habitats for foraging.

*American Peregrine Falcon (Falco peregrinus anatum)*

The American peregrine falcon is designated FP. This species was removed from the federal endangered species list on August 25, 1999 and delisted in California in 2009 (CDFW 2022a). Known active nesting sites are located along the California coast, in the Sierra Nevada, and in other mountains of northern California. Nests typically are covered for protection and utilize scrapes or depressions along ledges and cliffs; they will also nest on human-made structures, and occasionally use a tree or snag cavity, or old nests of other raptors. Peregrines breed from early March to late August, with a clutch size of three to seven eggs. Peregrine falcons feed on a variety of birds up to ducks in size, occasionally taking mammals, insects, and fish. In winter, peregrine falcon are found throughout the central valley; migrants occur along the coast and in the western Sierra Nevada. Breeding occurs mostly in woodland, forest, and coastal habitats; however, riparian and wetland areas are important year-round, especially outside the breeding season (CDFW 2021c).

The American peregrine falcon is identified in Borel Project Sensitive Species Protection Plan (SCE 2008c). There are no known CNDDB occurrences of American peregrine falcon within the FERC Project boundary or surrounding quads, although peregrines are known to fly over the Borel Project area during foraging (CDFW 2022b). One eBird observation of a single individual at Lake Isabella was recorded on January 3, 2021 (eBird 2021). They were not observed during the 2021 or 2022 Borel Project surveys.

Appropriate CDFW VegCAMP habitat types for American peregrine falcon within the FERC Project boundary include *Quercus douglasii* Alliance, *Quercus wislizeni* (tree) Alliance, and *Pinus sabiniana* Alliance habitats as well as delineated wetlands and the Reservoirs Mapping Unit for foraging.

*Bald Eagle (Haliaeetus leucocephalus)*

Bald eagle is designated SE, FP, BLM-S, and FSS in Sequoia NF (CDFW 2022b; USFWS 2013). Bald eagle is also protected under the BGEPA (16 U.S.C. 668–668d). Bald eagles breed and winter throughout California, excluding desert areas, and typically require large, old-growth trees or snags in remote, mixed stands (CDFW 2021c). It typically nests within 1 mile of water bodies, preferring large lakes or rivers with abundant fish populations. Bald eagles often choose the largest tree in a stand, usually located near a permanent water source. Between mid-October and December, migratory birds from areas north and northeast of California arrive in the state. Wintering populations remain through March or early April. Breeding takes place February through July; can be initiated as early as January via courtship, pair bonding, and territory establishment; and normally ends around August 31 (CDFW 2021c). Clutch size is usually between one and three eggs. Large bodies of water or free-flowing rivers with abundant fish and adjacent snags are required for feeding.

The bald eagle is included in Borel Project Sensitive Species Protection Plan and the SCE Raptor Protection Program (SCE 2003b, 2008c). There are no known CNDDB occurrences for bald eagles within the FERC Project boundary (CDFW 2022b). However, bald eagles are known to overwinter along Lake Isabella and have been observed along the Kern River (Corps 2013). Lake Isabella hosts a wintering population of approximately 10 to 12 eagles. These eagles have been observed to fly along the Kern River. Depending on weather conditions during any given year, the eagles generally migrate out of the area annually between March and May (SCE 2003b). Bald eagles were not observed during the 2021 or 2022 Borel Project surveys.

Appropriate CDFW VegCAMP habitat is limited to the Reservoirs Mapping Unit.

*Loggerhead Shrike (Lanius ludovicianus)*

Loggerhead shrike is designated SSC (CDFW 2022a). It is a common resident and winter visitor in lowlands and foothills throughout California. This species prefers habitats that include open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley-foothill and desert riparian, pinyon-juniper, and Joshua tree habitats (CDFW 2021c). Loggerhead shrikes often perch on poles, wires, or fenceposts (Shuford and Gardali 2008). Loggerhead shrikes feed on mostly large insects but can consume small birds, mammals, amphibians, reptiles, fish, carrion, and a variety of invertebrates (CDFW 2021c).

There are no known CNDDB occurrences for loggerhead shrike within the FERC Project boundary (CDFW 2022b). The closest known observation of loggerhead shrike occurs at Lake Isabella in 2021, when a single individual was recorded (eBird 2021). Additionally, loggerhead shrike was not identified during the 2021 Borel Project surveys.

Appropriate CDFW VegCAMP habitat types for this species within the FERC Project boundary include *Eriogonum wrightii* Alliance, *Ericameria nauseosa* Alliance, *Juniperus californica* Alliance, *Lotus scoparius – Lupinus albifrons – Eriodictyon* spp. Alliance*, Pinus sabiana* Alliance, *Quercus douglasii* Alliance, and *Quercus wislizeni* (tree) Alliance.

*Summer Tanager (Piranga rubra)*

Summer tanager is a designated SSC (breeding) (CDFW 2022a). This species breeds throughout the southern United States while wintering from central mainland Mexico south to northern South America. Summer tanager arrives in California as early as mid-April and departs in early October, with breeding between mid-May through July (Robinson 1996; AOU 1998). In California, summer tanagers breed primarily in mature riparian woodland with extensive Fremont cottonwood canopy cover, which provide a microclimate cool enough for nesting (Rosenberg et al. 1991). Summer tanagers forage on large insects including cicadas, bees, wasps, grasshoppers, spiders, beetles, and flies, and occasionally fruit (Robinson 1996).

There are no known CNDDB occurrences of summer tanager within the FERC Project boundary (CDFW 2022b). The nearest observation of a summer tanager occurs at Lake Isabella in 2020, when a single individual was recorded (eBird 2021). Summer tanagers were not observed during the 2021 or 2022 Borel Project surveys.

Suitable CDFW VegCAMP habitat types for summer tanagers include *Populus fremontii – Fraxinus velutina – Salix gooddingii* Alliance*, Platanus racemosa– Quercus* spp. Alliance*,* and *Salix gooddingii – Salix laevigata* Alliance.

*Purple Martin (Progne subis)*

Purple martin is designated SSC (CDFW 2022a). This species is a long-distance migrant, arriving in California from South America in late March and departing by late September. Purple martin is an uncommon to rare local summer resident of various wooded, low-elevation habitats comprising various hardwood and mixed hardwood conifer woodlands and riparian habitats. Purple martin also occurs in coniferous habitats, including closed-cone pine-cypress, ponderosa pine, Douglas-fir, and redwood (*Sequoia sempervirens*). These habitats vary structurally and may be old growth, multi-layered, or open, and may also have snags. Purple martin most often nests in old woodpecker cavities found in tall, old, isolated trees or snags in open forests or woodlands. However, this

species may also utilize human-made structures, such as bridges and culverts, for nesting (CDFW 2021c).

There are no known CNDDB occurrences of purple martin within the FERC Project boundary (CDFW 2022b). Additionally, purple martin was not observed during the 2021 or 2022 Borel Project surveys.

Appropriate CDFW VegCAMP habitat types within the FERC Project boundary include *Populus fremontii – Fraxinus velutina – Salix gooddingii* Alliance*, Platanus racemosa – Quercus* spp. Alliance*, Salix gooddingii – Salix laevigata* Alliance*, Quercus douglasii* Alliance*, Quercus wislizeni* Alliance, and *Pinus sabiniana* Alliance.

*Yellow Warbler (Setophaga petechia)*

Yellow warbler is designated SSC (CDFW 2022a). It is a migrant, found in California between April and October. Yellow warblers construct nests from 2 to 16 feet above ground in riparian deciduous habitats that comprise cottonwoods, willows, alders, and other small trees and shrubs found in low, open-canopy woodlands. Yellow warblers feed primarily on insects and spiders. Territories occupied by yellow warblers usually contain tall trees for singing and foraging, and heavy brush in the understory for nesting (CDFW 2021c).

A single yellow warbler was observed in May, during the 2021 Borel Project surveys within the *Salix gooddingii – Salix laevigata* Alliance along the northern half of the FERC Project boundary. Nesting or breeding behavior was not observed. The species was also identified as occurring in the area between the Diversion Dam and Intake Structure in the 2013 Biological Evaluation for the Lake Isabella Borel Canal Reactivation Project (Corps 2013).

Appropriate CDFW VegCAMP habitat types within the FERC Project boundary include *Populus fremontii – Fraxinus velutina – Salix gooddingii* Alliance*, Platanus racemosa – Quercus* spp. Alliance, and *Salix gooddingii – Salix laevigata* Alliance.

*Yellow-headed Blackbird (Xanthocephalus xanthocephalus)*

The yellow-headed blackbird is designated SSC (CDFW 2022a). This species breeds in freshwater marshes with cattail, tule, or bulrush east of the Cascade Range and Sierra Nevada (CDFW 2021c). Nests, which are basketlike structures comprising wet grasses, reeds, and cattails woven around stems, are placed within a male's territory and always overhang the water (Twedt and Crawford 1995). During migration and winter, open, cultivated lands, pastures, and fields are used. The yellow-headed blackbird feeds on insects, seeds, and grains in fields, on muddy ground near water, or at the water's surface during the breeding season (NatureServe 2022), and forages on grains and weed seeds outside the breeding season (Twedt and Crawford 1995).

There are no known CNDDB occurrences of yellow-headed blackbird within the FERC Project boundary. The closest known occurrence (Occurrence #3) is located approximately 50 miles southwest of the FERC Project boundary at Buena Vista Lake (CDFW 2022b).

Suitable CDFW VegCAMP habitat types within the FERC Project boundary include the delineated wetlands. Although the FERC Project boundary does not directly overlap with the summer range for this species, the upper portion of Lake Isabella contains suitable habitat. Therefore, there is a potential for yellow-headed blackbird to use wetlands within the FERC Project boundary for nesting.

**MAMMALS – BATS**

*Pallid Bat (Antrozous pallidus)*

The pallid bat is a designated SSC, BLM-S and FSS in SQF (CDFW 2022a;). This species occurs throughout California. Preferred habitats include low elevation (below 6,000 feet) rocky arid deserts and canyonlands, shrub-steppe grasslands, karst formations, and coniferous forests above 7,000 feet elevation. Common roost locations include crevices in rocky outcrops and cliffs, caves, mines, trees, and various human structures, such as bridges, barns, porches, and attics. Roosts may be occupied by one or up to hundreds of pallid bats. Pallid bats typically breed from October to February, with one or two pups born between late April and July and weaned in August. Pallid bats feed on hard-shelled prey such as beetles, centipedes, crickets, grasshoppers, and cicadas but can also consume moths; termites; and occasionally small geckos, lizards, skinks, and rodents (WBWG 2017).

This species is identified in the Borel Project Sensitive Species Protection Plan (SCE 2008c). The closest known occurrence (Occurrence #174) is located approximately 0.5-mile northeast of the town of Lake Isabella (CDFW 2022b).

Appropriate CDFW VegCAMP habitat types within the FERC Project boundary include all mapped habitat with snags for roosts, caves, crevices, and identified human-made structures, including the Canal Inlet Structures, Storehouse, cement bridge near Tilley No.1 Flume, Sawmill Bridge, Eva Avenue Bridge, SR 178 Bridge 1, SR 178 Bridge 2, Erskine Steel Flume, Tunnel No. 1, Pioneer Steel Siphon, Tunnel No. 1 1/2, Tunnel No. 2, Flume No. 623, Tunnel No. 3, the Powerhouse, and the Tailrace (discussed below).

*Townsend's Big-eared Bat (Corynorhinus townsendii)*

The Townsend's big-eared bat is a designated SSC, BLM-S and FSS in Sequoia NF (CDFW 2022a). They occur throughout California, with the exception of the highest elevations of the Sierra Nevada crest (CDFW 2021c). Townsend's big-eared bat requires caves, mines, tunnels, buildings, or other human-made structures. Maternity colonies vary in size and can have a few individuals up to several hundred individuals. Maternity roosts must be warm, and roosting sites are their most important limiting resource. Mating occurs from October to February, and ovulation occurs in spring. A single litter of one is produced annually, born between May and June (WBWG 2017). Small moths are the principal food of this species. They capture their prey in flight using echolocation or by gleaning from foliage (SCE 2003a).

Preferred habitats include coniferous forests, mixed mesophytic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. This species forages along edge habitats associated with streams and wooded habitats (WBWG 2017). Caves and abandoned mines are primary roosting habitat, but roosts in buildings, bridges, rock crevices, and hollow trees have been reported.

Townsend’s big-eared bat is identified in Borel Project Sensitive Species Protection Plan (SCE 2008c). There are known CNDDB occurrences of Townsend’s big-eared bat near the FERC Project boundary. Occurrence #326 is located approximately 3.3 miles southwest of Wofford Heights; Occurrences #78 and #61 are located less than 1 mile northeast of Bodfish; and

Occurrence #41 is approximately 0.3 mile south of Borel Road, near Miracle Hot Springs (CDFW 2022b).

Appropriate habitat within the FERC Project boundary include all VegCAMP types and human-made structures, including Canal Inlet Structures, Storehouse, cement bridge near Tilley No. 1 Flume, Sawmill Bridge, Eva Avenue Bridge, SR 178 Bridge 1, SR 178 Bridge 2, Erskine Steel Flume, Tunnel No. 1, Pioneer Steel Siphon, Tunnel No. 1 1/2, Tunnel No. 2, Flume No. 623, Tunnel No. 3, the Powerhouse, and the Tailrace (discussed below).

*Spotted Bat (Euderma maculatum)*

The spotted bat is a designated SSC and BLM-S (CDFW 2022a). In California, this species ranges across the eastern and southern portions of the state (CDFW 2021c). Individuals are nocturnal and are known to use crevices and caves for roosting. Additionally, they are known to use conifer and aspen stands for night roosting. Meadows, riparian areas, shrub-steppe, and open stands of forest are typical foraging habitat (Gervais 2016). Spotted bats typically breed in late summer, with females giving birth to a single pup in early summer. This bat species appears to be solitary, but occasionally can be found roosting or hibernating in small groups (WBWG 2017).

There are no known CNDDB occurrences of spotted bat within the FERC Project boundary or in Kern County. The closest known occurrence (Occurrence #12) is documented in Red Rock Canyon State Park, approximately 35 miles southeast from the FERC Project boundary (CDFW 2022b).

Suitable habitat within the FERC Project boundary includes human-made structures, such as Canal Inlet Structures, Storehouse, cement bridge near Tilley No. 1 Flume, Sawmill Bridge, Eva Avenue Bridge, SR 178 Bridge 1, SR 178 Bridge 2, Erskine Steel Flume, Tunnel No. 1, Pioneer Steel Siphon, Tunnel No. 1 1/2, Tunnel No. 2, Flume No. 623, Tunnel No. 3, the Powerhouse, and the Tailrace (discussed below).

*Western Mastiff Bat (Eumops perotis californicus)*

The western mastiff bat is a designated SSC and BLM-S (CDFW 2022a). This species is primarily found in the San Joaquin Valley, the Coast Range south of San Francisco, and throughout southern California (CDFW 2021c). This species occupies a variety of open, arid to semi-arid, conifer, woodland, coastal scrub, grasslands, chaparral, palm oases, and urban habitats. Suitable roosts and cover include rock crevices with vertical faces, in large boulders and buildings, trees, and tunnels. Maternity colonies typically have fewer than 100 individuals. Western mastiff bats mate between late winter and early spring, and a single pup is born in early to mid-summer. Foraging typically occurs from below tree level but can occur at much greater heights depending on terrain (CDFW 2021c).

There are no known CNDDB occurrences of western mastiff bat within the FERC Project boundary. The closest known occurrence (Occurrence #185) is located approximately 6.2 miles from the FERC Project boundary along the Kern River, south of Lake Isabella (CDFW 2022b).

Appropriate habitat within the FERC Project boundary includes human-made structures, such as Canal Inlet Structures, Storehouse, cement bridge near Tilley No. 1 Flume, Sawmill Bridge, Eva Avenue Bridge, SR 178 Bridge 1, SR 178 Bridge 2, Erskine Steel Flume, Tunnel No. 1, Pioneer Steel Siphon, Tunnel No. 1 1/2, Tunnel No. 2, Flume No. 623, Tunnel No. 3, the Powerhouse, and the Tailrace (discussed below).

*Western Red Bat (Lasiurus blossevillii)*

Western red bat is designated SSC (CDFW 2022a). In California, this species can be found along most of the California coast and west of the Sierra Nevada crest (CDFW 2021c). Western red bats are often solitary and roost primarily among foliage of trees or shrubs adjacent to streams; open fields; and, occasionally, in urban areas. This species migrates in groups and forages in close proximity with one another. Males and females appear to occupy different summer ranges and differ in the timing of their migration. Winter behavior is poorly understood, but it is believed that red bats occasionally wake from hibernation on warm days to feed. Mating occurs in late summer or early fall, and females postpone pregnancy until spring. Gestation is approximately 80 to 90 days, and up to 5 pups may be born (WBWG 2017). Based on documentation of eastern red bat hibernating in leaf litter during winter, western red bat may also do the same (Texas Parks and Wildlife 2019).

Western red bat occurrences are not included in the CNDDB. There are no other known reported occurrences of the species in the Borel Project Vicinity.

Appropriate habitat within the FERC Project boundary includes all human-made structures, such as Canal Inlet Structures, Storehouse, cement bridge near Tilley No. 1 Flume, Sawmill Bridge, Eva Avenue overcrossing, SR 178 overcrossings, Erskine Steel Flume, Tunnel No. 1, Pioneer Steel Siphon, Tunnel No. 1 1/2, Tunnel No. 2, Flume No. 623, Tunnel No. 3, the Powerhouse, and the Tailrace (discussed below).

*Yuma Myotis (Myotis yumanensis)*

Yuma myotis is designated BLM-S (CDFW 2022a). It is known to be widespread and extremely common in California, occurring from sea level to 11,000 feet elevation. Preferred habitats include open woodlands and forests with adequate access to water. The species is known to feed heavily over water on small insects using echolocation. Individuals are known to roost in various infrastructures, mines, caves, and other natural crevices. Maternity roosts typically consist of several thousand females and young in similar roost locations with preferred temperatures no greater than 40°C (CDFW 2022b).

Within the FERC Project boundary, a nursery colony of Yuma myotis within the Borel Powerhouse was discovered during the 2001 Borel Project surveys. Evening bat movement in and out of the Powerhouse was determined through the use of night vision scopes, a night shot video camera, and echolocation systems (Anabat and Pettersson D240x). No other species of bats were observed within the Powerhouse during the surveys, but a large bat seen on the "night shot" video may have been a big brown bat (*Epfesicus fuscus*). The 2001 surveys of the Powerhouse found a population of 250 to 300 female and young Yuma myotis occupying the upper rooms along the northern side of the Powerhouse during the summer breeding season. Several bats were also captured for positive species identification. Bat signs were still present in the Powerhouse during the 2021 Borel Project surveys (discussed below).

Suitable habitat within the FERC Project boundary includes all human-made structures, such as Canal Inlet Structures, Storehouse, cement bridge near Tilley No. 1 Flume, Sawmill Bridge, Eva Avenue Bridge, SR 178 Bridge 1, SR 178 Bridge 2, Erskine Steel Flume, Tunnel No. 1, Pioneer Steel Siphon, Tunnel No. 1 1/2, Tunnel No. 2, Flume No. 623, Tunnel No. 3, the Powerhouse, and the Tailrace (discussed below).

**MAMMALS – OTHERS**

*Ring-tailed Cat (Bassaricus astutus)*

Ring-tailed cat is designated FP (CDFW 2022a). It is a common to uncommon, widely distributed permanent resident of California (CDFW 2021c). This species is nocturnal and can be found in low to mid-elevation (up to 5,000 feet) riparian, forest, and shrub habitats in close proximity to water (less than 0.6 mile). Important elements of ring-tailed cat habitat include rocky areas with cliffs or crevices, hollow trees, logs, and snags, all of which are used for daytime shelter. Ring-tailed cats den in rock crevices, hollow trees, logs and snags, burrows dug by other animals, and remote buildings. They breed between February and May, with gestation lasting between 51 and 54 days. Litters contain between 1 and 4 young; at 60 to 100 days, young begin to forage with their mother. By the end of their first summer, young are weaned and leave their mother. Both adult and young ring-tailed cats are omnivorous but prefer animal matter (NatureServe 2022).

Ring-tailed cat occurrences are not included in the CNDDB, and no observations of this species within the FERC Project boundary have been recorded; however, the FERC Project boundary overlaps with the known range of this species (CDFW 2022b).

Appropriate CWHR habitat types within the FERC Project boundary include all mapped habitats except the Built-Up and Urban Disturbance Mapping Unit and California Annual and Perennial Grassland Macro Group.

*San Diego Desert Woodrat (also known as Bryant's woodrat, Neotoma lepida intermedia)*

San Diego desert woodrat is a designated SSC (CDFW 2022a). It occurs in southwestern California from San Luis Obispo County south to northwestern Baja California, as well as in the southern San Joaquin Valley and southern Sierra Nevada. Habitat types include sagebrush scrub and chaparral. This nocturnal animal is active year-round and eats fruits and seeds (NatureServe 2022). It builds houses used for nesting, caching food, and escaping from predators; these houses are built with twigs, sticks, and rocks positioned against a rock crevice, at the base of a shrub, or in the lower branches of trees (Zeiner et al. 1988–1990).

There are no known CNDDB occurrences of San Diego desert woodrat within the FERC Project boundary. No San Diego desert woodrats were observed during 2021 or 2022 Borel Project surveys.

Suitable habitat within the FERC Project boundary for the woodrat includes *Juniperis californica* Alliance*, Ceanothus cuneatus* Alliance*, Eriogonum wrightii* Alliance, and *Ericameria nauseosa* Alliance.

*Southern Grasshopper Mouse (Onychomys torridus ramona)*

Southern grasshopper mouse is designated SSC (CDFW 2022a). This mouse is found along the San Joaquin Valley floor and foothills between Merced and San Benito Counties to the north and the Tehachapi and San Emigdio mountains to the south. This species inhabits a variety of low, open, and semi-open flat, sandy, valley floor scrub habitats, including coastal sage scrub, mixed chaparral, low sagebrush, riparian scrub, and annual grassland with scattered shrubs. This nocturnal animal is active year-round and eats invertebrates such as beetles, crickets, and grasshoppers, and occasionally seeds, small mice, and reptiles (Bolster 1998).

There are no known CNDDB occurrences of southern grasshopper mouse within the FERC Project boundary. None were observed during 2021 or 2022 Borel Project surveys.

Appropriate CDFW VegCAMP habitat types within the FERC Project boundary include California Annual and Perennial Grassland Macro Group, *Ceanothus cuneatus* Alliance*, Eriogonum wrightii* Alliance*, Ericameria nauseosa* Alliance, and *Juniperus californica* Alliance.

*American Badger (Taxidea taxus)*

American badger is designated SSC (CDFW 2022a). This species is an uncommon but permanent resident throughout most of California, except in the North Coast area (CDFW 2021c). It is found most abundantly in drier open stages of most shrub, forest, and herbaceous habitats with friable soils for burrow digging. This species' diet consists mostly of rodents, including rats, mice, chipmunks, pocket gophers, and ground squirrels. The American badger will also eat reptiles, insects, earthworms, eggs, birds, and carrion when ground squirrel populations are low (NatureServe 2022).

There are no known CNDDB occurrences of American badger within the FERC Project boundary despite being located within the yearlong range (CDFW 2022b). American badger was not observed during 2021 Borel Project surveys.

Appropriate CDFW VegCAMP habitat types within the FERC Project boundary include all mapped habitats.

**TRICOLORED BLACKBIRD HABITAT ASSESSMENT**

Potential nesting habitat for tricolored blackbird, as well as birds listed under the ESA, was assessed in the FERC Project boundary. Three riparian VegCAMP alliances mapped in the FERC Project boundary contained potentially suitable nesting habitat: Fremont cottonwood forest and woodland, Goodding's willow – red willow riparian woodland and forest, and California sycamore – oak riparian woodland. Tricolored blackbirds typically nest near fresh water, preferably in emergent wetlands with tall, dense cattails or tules, but are also known to nest in thickets of willow, blackberry, wild rose (*Rosa* spp.), and tall herbs (CDFW 2021c). The tri-colored blackbird nests in communal areas where nests are closely spaced (Audubon 2021a).

Prior to the habitat assessment, aerial imagery of the entire project was examined to determine where potentially suitable habitat might occur. This analysis included an evaluation of mapped riparian areas, vegetation density, proximity to water, and habitat patch size. Any areas that were obviously not vegetated, were not near water, or were not riparian areas were excluded.

Qualified biologists performed habitat assessment on May 25 and 26, 2021. All potential nesting habitat, including stream crossings and riparian vegetation areas within 25 feet of the FERC Project boundary and access roads, was evaluated for species composition, tree canopy structure, proximity to water, habitat patch width, and vegetation density. Potentially suitable nesting habitat was mapped using ESRI's ArcGIS Collector application, and representative photographs were taken. All habitat that was determined during the survey to not be suitable nesting habitat was also recorded on the ArcGIS Collector application with a photograph and description of why the habitat was not suitable.

There was no suitable nesting habitat for tricolored blackbird identified within the FERC Project boundary. Some areas that appeared to be potentially suitable nesting habitat from aerial imagery were later determined to be unsuitable during field verification. Most areas were patches of vegetation in dry ravines that lacked certain habitat characteristics, such as vegetation species composition, nearby water, and canopy composition. Although these areas are not suitable for nesting by the tricolored blackbird, they could potentially be used during foraging or during migration as stop-over areas.

### BAT HABITAT SURVEYS

Project structures (e.g., buildings, tunnels, bridges, flumes) within 25 feet of the FERC Project boundary that might be suitable roosting habitat for bats were inspected on May 25, 2021, by qualified biologists to determine which structures would need a more detailed habitat suitability assessment.

On October 6 through 8, 2021, qualified biologists conducted bat habitat assessment surveys at 24 Borel Project structures (e.g., buildings, tunnels, bridges, flumes). Surveyors examined the exterior (and interior, as permissible, applicable, safe, and accessible) of each Borel Project structure for signs of active and past bat roosts, including guano and urine staining, generally following the *Range-wide Indiana Bat Survey Guidelines* (USFWS 2020a). During external building structure visual inspections, surveyors looked for evidence of staining or grease marks, any defects (e.g., holes, cracks, crevices) in the building's structure for possible bat entry and exit points, and any potential droppings or feeding remains. The internal structure areas were visually inspected for evidence of staining, defects in the structure, potential droppings, feeding remains, and auditory bat noises. Any observed bat activity was documented with digital photographs and GPS.

Sixteen of the 26 facilities assessed had suitable habitat for bats, including the Canal Inlet Structures, Storehouse, cement bridge near Tilley No. 1 Flume, Sawmill Bridge, Eva Avenue Bridge, SR 178 Bridge 1, SR 178 Bridge 2, Erskine Steel Flume, Tunnel No. 1, Pioneer Steel Siphon, Tunnel No. 1 1/2, Tunnel No. 2, Flume No. 623, Tunnel No. 3, the Powerhouse, and the Tailrace.[16] Of these, there were signs of bat use in nine structures inspected during the survey, including Eva Avenue Bridge, SR 178 Bridge 1, SR 178 Bridge 2, Tunnel No. 1, Pioneer Steel Siphon, Tunnel No. 1 1/2, Tunnel No. 2, Tunnel No. 3, and the Powerhouse. There was one roosting bat of indeterminate species observed during the survey in Tunnel No. 2. The other five structures with potentially suitable habitat showed no sign of bat use. The remaining 10 structures, including Lake Isabella Boulevard Bridge, Lakeland Walk Bridge, School House No. 1 Concrete Flume, Erskine Creek Road Bridge, Webb Avenue School Bridge, Kern County Emergency Bridges, Bodfish Siphon, Flume No. 623, Profanity Steel Flume, and the Powerhouse had no suitability for bat roosting.

Some structures, including the Eva Avenue Bridge, SR 178 Bridge 1, SR 178 Bridge 2, Lake Isabella Boulevard Bridge, Erskine Creek Road Bridge, Tunnel No. 2, and the Erskine Creek Steel Flume had signs of bird nesting, predominantly cliff swallows (*Petrochelidon pyrrhonota*).

[16] The Canal Inlet Structures, Storehouse, Erskine Steel Flume, Tunnel No. 1, Pioneer Steel Siphon, Tunnel No. 1 1/2, Tunnel No. 2, Flume No. 623, Tunnel No. 3, the Powerhouse and the Tailrace are Project facilities.

Attachment E – Bat Habitat Suitability, Figures E-1 to E-20, depict the location of each structure and the nature of the survey results. Representative photographs of surveyed facilities are included below (Figure 3.6-6 to Figure 3.6-12).


**Figure 3.6-6. Outside of the Canal Inlet Structures**

**Figure 3.6-7. Outside of the Storehouse**


**Figure 3.6-8. Erskine Creek Steel Flume**

**Figure 3.6-9. Interior of Bodfish Siphon**

**Figure 3.6-10. Granite Ceiling of Tunnel No. 2**

**Figure 3.6-11. Tunnel No. 3**


**Figure 3.6-12. Staining under Roof at Main Entrance to the Powerhouse**

### 3.6.1.3 Wetland, Riparian, and Littoral Habitats

Wetlands are defined by federal policy as “areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and which, under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (USEPA 2021). Wetland habitats include marshes, shallow swamps, lakeshores, wet meadows, and riparian areas, and often occur along or adjacent to perennial or intermittent water bodies.

Riparian areas are vegetated zones that form a transition between permanently saturated areas and upland areas, and that typically exhibit vegetation and physical characteristics associated with permanent sources of surface or groundwater (Environmental Laboratory 1987). Littoral areas, per Cowardin et al. (1979), are those with standing water of depths less than 6.6 feet. These areas typically support aquatic bed or emergent vegetation. Lotic habitat includes flowing water bodies, such as streams and rivers, and can vary in size, shape, and velocity of flow.

When on federal lands managed by the Forest Service, wetlands, drainages, and riparian areas are subject to land management measures as dictated by Forest Service and are outlined in Forest Service’s SCF Land Management Plan (Forest Service 1988).

#### *Aquatic Resources Delineation Survey*

An aquatic resources delineation survey was conducted on May 11 to 13 and June 16 and 17, 2021, in which all aquatic habitats within the FERC Project boundary and a surrounding 25-foot buffer (survey area) were mapped and various data were collected to further describe and analyze wetland, riparian, littoral, and lotic habitats. The survey area is discussed below in two sections: Upstream of the Auxiliary Dam (Upper Borel) and Downstream of the Auxiliary Dam (Lower Borel). These two sections are hydrologically connected by the Kern River but are influenced by independent and somewhat distinct hydrological inputs. Water levels in Lake Isabella are controlled by various human-made structures which influence the flow regime and inundation periods of aquatic resources. The North Fork Kern River also influences the flow regime and inundation periods of aquatic resources in Lake Isabella. The hydrological conditions in Lower Borel function independently from those within Lake Isabella. Aquatic habitats in Lower Borel are influenced primarily by precipitation and stormwater flows from the adjacent hills and mountains and by the Kern River.

All wetland, riparian, littoral, and lotic habitats within the survey area were analyzed for the following indicators: hydrology (e.g., salt crust, surface water, soil saturation, iron deposits, soil cracking, and saturation or inundation visible on aerial imagery), hydric soils, and hydrophytic vegetation (Corps 2008). Lotic features were mapped to the farthest extent of the channel banks. Additionally, wetland, riparian, littoral, and lotic habitats were mapped to the boundary of the resource or to the elevation of the reservoir’s maximum pool depth (approximately 5,280 feet) where they occur within the Upper Borel survey area. All wetland, riparian, littoral, and lotic habitats are represented on the maps provided in Attachment F – Wetland, Riparian, and Littoral Habitats, Figures 1 through 26. Riparian boundaries were mapped based on VegCAMP spatial data for the Southern Sierra Nevada Foothills area (CDFW 2021b) and further refined based on the results of the 2021 aquatic resources delineation. A description of the VegCAMP alliances is included in Section 3.6.1.1.

Prior to performing a field investigation, the following data sources were reviewed for information on vegetative patterns, topography, hydrology, or drainage patterns as well as potential or known wetland, riparian, littoral, and lotic habitats within the survey area:

- ESRI World Imagery (ESRI 2021)
- Lake Isabella North, Lake Isabella South, and Miracle Hot Springs USGS 7.5 minute topographic quadrangle maps
- Google Earth Pro current and historical aerial photography from 2012 through 2015 for vegetative, topographic, and hydrologic signatures (Google Earth Pro 2021)
- USFWS National Wetland Inventory maps (USFWS 2021b)
- USDA-NRCS Web Soil Survey (NRCS 2021b)
- National Hydrography Dataset (USGS 2021)
- 2013 Biological Evaluation for the Isabella Lake Borel Canal Reactivation Project (Corps 2013)

Approximately 244.60 acres of aquatic habitat occurs within the survey area, of which 58.10 acres consist of wetland, 35.80 acres consist of riparian, 116.70 acres consist of littoral, and 34.00 acres consist of lotic habitats. Approximately 104 acres of wetland, riparian, and littoral habitat occurs on federal lands managed by the Forest Service within the survey area. A summary of aquatic habitats identified within the survey area during surveys is provided in Table 3.6-5.

**Table 3.6-5. Wetland, Riparian, Littoral, and Lotic Habitats within the Survey Area**

| Habitat Type | Land Ownership Type | | | Total Area (acres) |
|---|---|---|---|---|
| | Private/Other (acres) | National Forest Service (acres) | Bureau of Land Management (acres) | |
| Wetland | 38.46 | 19.64 | 0.00 | 58.10 |
| Riparian | 26.32 | 9.38 | 0.10 | 35.80 |
| Littoral | 49.82 | 66.88 | 0.00 | 116.70 |
| Lotic | 19.36 | 7.90 | 6.74 | 34.00 |
| **Total** | **133.96** | **103.8** | **6.84** | **244.60** |

## *Wetlands*

Wetlands were mapped where hydrophytic vegetation, hydrology, and hydric soils were present and include both herbaceous and forested wetland habitat types. Within surveyed areas, the dominant hydrophytic plant species within herbaceous wetland include marsh yellow cress (*Rorippa palustris* ssp. *palustris*), brook cinquefoil (*Potentilla rivalis*), cocklebur, white lamb cudweed, and dock (*Rumex* spp.). Dominant plant species within forested wetland habitat consist primarily of mature riparian trees such as black willow and arroyo willow (*Salix lasiolepis*), with a sparse to dense herbaceous understory dominated by cocklebur, white lamb cudweed, and Mexican rush.

Wetlands occur as a mosaic throughout the Upper Borel survey area, interspersed with non-wetlands, including riparian, littoral, and lotic (Attachment F – Wetland, Riparian, and Littoral

Habitats, Figures 1 through 26). Herbaceous wetlands occur within the Kern River floodplain, along the fringes of Lake Isabella, and in portions of the canal where sediment has built up from fluctuating lake levels. Forested wetland occurs primarily within the Kern River floodplain.

Within the Lower Borel survey area, a small area of herbaceous wetland is located at the southern terminus of the FERC Project boundary along the banks of the Kern River. Moderate soil and vegetation disturbance, such as trash, foot paths, and vehicle tracks, were observed throughout wetlands in the survey area.

### *Riparian*

Riparian habitat was mapped in Upper Borel adjacent to the North Fork Kern River active channel. In Lower Borel, riparian habitat was mapped along the Kern River active channel and adjacent to ephemeral channels. Within the Upper and Lower Borel survey areas, riparian habitat is dominated by an overstory of mature riparian trees, such as willows (*Salix* spp.), sycamore (*Platanus racemosa*), and oaks (*Quercus* spp.), with a sparse understory consisting of either hydrophytic or upland herbaceous species.

Unvegetated areas in the riverine floodplain are also considered riparian and occurred along the floodplain of the Kern River in Upper and Lower Borel where vegetation was absent, but signs of floodplain activity were observed (e.g., water marks, sediment deposition, debris jams, flow patterns). Moderate soil and vegetation disturbance, such as trash, foot paths, and vehicle tracks, were in riparian areas throughout the survey area.

### *Lotic (Riverine)*

Lotic habitat occurs within Upper and Lower Borel and consists of perennial, ephemeral, and human-made (i.e., Borel Canal) lotic habitat types. These habitat types are described below.

#### PERENNIAL

Perennial lotic areas occur in Upper and Lower Borel and are associated with the active channel of the Kern River. The North Fork Kern River enters the survey area along the northeastern boundary of Upper Borel and discharges into Lake Isabella. This perennial aquatic feature supports gently to steeply sloped sandy banks vegetated with riparian and/or herbaceous aquatic plant species and moderate to high velocity flow over a cobble riverbed substrate.

The Kern River enters the survey area again at the southernmost FERC Project boundary in Lower Borel. Here, the Kern River active channel supports steep, rocky banks vegetated with riparian and/or herbaceous aquatic plant species and moderate to high velocity flows.

#### EPHEMERAL

In general, ephemeral riverine occurs as Erskine and Bodfish Creeks, and unnamed tributaries (i.e., low-order streams) occur within the Upper and Lower Borel survey area. In Upper Borel, several unnamed tributaries intersect the survey area on the upland slopes of the outer reservoir. These tributaries have been affected by urban development, such as culverts at road crossings, outside the survey area. Ephemeral tributaries mapped within Upper Borel ultimately discharge into the reservoir.

Erskine Creek, Bodfish Creek, and several unnamed tributaries occur throughout the Lower Borel survey area. These features do not discharge into the Borel Canal but either pass underneath the Borel Canal where there is a flume or culvert, or flow over the canal where the canal occurs as an underground siphon. Erskine and Bodfish creeks discharge directly into the Kern River, and several[17] of the mapped unnamed tributaries discharge indirectly into the Kern River through a series of swales, culverts, or other tributary confluences. Within the survey area, ephemeral channels are subject to moderate human disturbance, such as trash and debris, trespass by vehicle or foot, or from channel modification (e.g., culvert), which may affect the vegetative structure, channel structure, and/or flow patterns of the feature. Vegetation within the ephemeral features ranges from sparse to densely vegetated with upland herbaceous and woody species, such as bromes (*Bromus* spp.), shortpod mustard (*Hirschfeldia incana*), coyote brush (*Baccharis pilularis* ssp. *consanguinea*), and blue oak (*Quercus douglasii*). Mulefat (*Baccharis salicifolia* ssp. *salicifolia*) was observed in lesser amounts.

#### 3.6.1.4 Borel Canal

Within the Upper Borel survey area, the Borel Canal occurs primarily along the western lakeshore. A portion of the canal's concrete-lined bed and/or banks are exposed and are generally intact. However, some sections of the canal banks have degraded and crumbled over time, which has resulted in sedimentation and inundation from fluctuating lake levels and storm events. Herbaceous wetland habitat has established throughout portions of the canal where sediment has built up naturally from fluctuating lake levels. Littoral habitat also occurs in areas between the canal banks.

South of the Auxiliary Dam (Lower Borel), the canal was constructed in upland habitat and is entirely concrete lined. Borel Canal also crosses over and under several natural ephemeral drainages (e.g., Erskine and Bodfish Creeks). However, these natural features do not contribute water flow to the canal, which primarily collects precipitation and sheet flow/overland flow from the abutting hill slopes. South of the Auxiliary Dam (Lower Borel), the canal was dry at the time of the surveys. Precipitation from storm events and collected stormwater runoff is captured by the existing canal and eventually evaporates.

##### *Littoral*

Upper Borel supports littoral habitat associated with Lake Isabella. Within the survey area, littoral habitat includes open water and the vegetated and unvegetated shoreline of Lake Isabella. Although the shoreline is largely unvegetated, a mix of native and non-native herbaceous upland species dominate the vegetated portions. Sparse trees and shrubs, such as willow (*Salix* spp.) and oak (*Quercus* sp.), also occur sporadically throughout the vegetated portions of littoral habitat. Inundated littoral habitat does not support aquatic vegetation where it occurs within the survey area. Additionally, portions of the Borel Canal are submerged within the littoral zone of Lake Isabella.

[17] Several of the ephemeral channels that occur within the survey area continue offsite and the final discharge location is not known.

## 3.6.2 Environmental Effects

### 3.6.2.1 Botanical Resources

#### *VegCAMP Communities*

Decommissioning activities will include the removal of existing facilities, including the fill and regrading of sections of the canal, regrading and improvement of unpaved roads, access facilities, development of staging and lay down areas, and other ground-disturbing activities. These activities would be anticipated to disturb all or most of the existing vegetation communities within the FERC Project boundary. These communities include five alliances that are designated as a Sensitive Natural Community and cumulatively occupy a total of approximately 20.6 acres (or 5.7 percent of the FERC Project boundary). Some decommissioning activities may impact these areas by way of grading or more temporary disturbance.

Measures, described in Section 3.6.3, were designed to minimize impacts to sensitive VegCAMP communities.

#### *Special-status Plants*

Kern Canyon clarkia was located at four locations, but all except one are away from planned decommissioning activities. The occurrence near the Pioneer Steel Siphon could be impacted during demolition and removal. Equipment and/or vehicles could damage the occurrence by way of running over or packing on the occurrence during work.

Tracy's eriastrum was found at eight locations: 1) on a dirt facility access road on federal land managed by the Forest Service near Tunnel No. 3; 2) within and adjacent to dirt access roads north of the Penstocks; 3) along both sides of the Tunnel No. 2 access road; 4) along a dirt access road north of Tunnel No. 2; 5) along both sides of the Pioneer Steel Siphon access road; 6) south and east of Pioneer Steel Siphon; 6) north of Pioneer Steel Siphon; 7) along a dirt access road north of Tunnel No. 1; and 8) on the south side of the canal, south of Canal Road, between Bodfish Siphon and Erskine Steel Flume.

Decommissioning activities will impact occurrences in and along roads by way of vehicles and equipment driving over them. However, as the occurrences were already growing in the road, the individuals are anticipated to be acclimatized to being run over by vehicles and equipment. The occurrences near and along Pioneer Steel Siphon could be impacted during the demolishment and removal of the siphon. These impacts would also likely be by equipment and vehicles running over the occurrences.

Limestone dudleya was found at one location on federal land managed by the Forest Service approximately 150 feet northwest of the Powerhouse above a paved access road and 150 feet downslope from SR 178. Decommissioning activities will not take place at or near this occurrence, so it will not be impacted.

Rose-flowered larkspur was found at two locations on federal land managed by the Forest Service. One occurrence, totaling 40 individuals, was observed on a northwest-facing slope in pine-oak woodland approximately 445 feet east of and upslope from the Powerhouse. The second occurrence, totaling eight plants, was found on a north-facing slope nestled among boulders in pine-

oak woodland approximately 245 feet south of and upslope from the Powerhouse. Decommissioning activities will not take place at or near these occurrences, so they will not be impacted.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status plant species.

### *Non-native Invasive Plants*

Although a limited number of NNIP were found during surveys, decommissioning activities could lead to the introduction and spread of new or existing NNIP if seeds are brought in on construction equipment. In addition, clearing of vegetation and associated soil disturbance creates conditions suitable for NNIP, many of which are aggressive colonizers that can displace native plants.

Measures, described in Section 3.6.3, were designed to minimize the introduction and spread of new and existing occurrences of NNIP.

## 3.6.2.2 Wildlife Resources

This section discusses the potential environmental effects of the Plan (Volume II) on sensitive wildlife resources.

### *Monarch Butterfly*

Decommissioning activities may affect monarch butterflies, should they be present. The species has the potential to occur in a variety of habitats within and adjacent to the FERC Project boundary, and the host plant of their larvae, milkweed, was found in multiple locations. Decommissioning activities that remove or damage milkweed will reduce habitat and could kill any present young monarch butterflies. Additionally, individuals may be driven out of areas of roosting and foraging by decommissioning activities.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including monarch butterflies. With these in place, decommissioning activities may impact individuals by way of temporarily driving them away from areas, but these activities are not expected to have an overall impact on the viability of monarch butterflies or their habitat.

### *Kern Canyon Slender Salamander*

Decommissioning activities could affect Kern Canyon slender salamander, should they be present. This species has the potential to occur in a variety of habitats within and adjacent to the FERC Project boundary near the Kern River Canyon, Bodfish Creek and Erskine Creek, specifically those with moist refugia or loose litter rocks. Decommissioning activities that disturb the ground in the area of loose soils, such as the removal of the Powerhouse and flumes, could directly impact salamanders using the area, as well as their habitat.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including Kern Canyon slender salamander. Through these measures, impacts will be isolated to the occasional individual, should they be present, and are anticipated not to cause ‘take’ or impacts to species viability or habitat. However, this could change if the species were reintroduced into potential habitat in Critical Habitat Unit 4, around Bodfish Creek, Erskine Creek and the Kern River near the Powerhouse.

### *Yellow-blotched Salamander*

Decommissioning activities may affect yellow-blotched salamander, should they be present. Yellow-blotched salamander has the potential to occur in a variety of habitats within and adjacent to the FERC Project boundary, specifically those with loose soils they can easily burrow in, refugia such as fallen logs, woodrat nests, root cover, and in animal burrows. Decommissioning activities that disturb the ground in the area of loose soils, such as the removal of the Powerhouse and flumes, could directly impact salamanders using the area, as well as their habitat.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including yellow-blotched salamander. With these in place, decommissioning activities may impact individuals, but these activities are not expected to have an overall impact on the viability of yellow-blotched salamander or their habitat.

### *Southern Sierra Legless Lizard and Southern California Legless Lizard*

Decommissioning activities may affect legless lizards, should they be present. Southern Sierra legless lizard has the potential to occur in a variety of habitats within and adjacent to the FERC Project boundary, specifically those with loose, sandy, or loamy soils in which they can easily burrow.

Decommissioning activities that may affect legless lizards include earthwork during the removal of project facilities; expansion, improvement, and removal of access roads; vegetation removal necessary for access and facility decommissioning; and other ground-disturbing activities that can lead to disturbances of habitat, including underground burrows, should they be present.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including legless lizards. With these in place, decommissioning activities may impact individuals, but these activities are not expected to have an overall impact on the viability of legless lizards or their habitat.

### *Coast Horned Lizard*

Coast horned lizard has the potential to occur in a variety of habitats within and adjacent to the FERC Project boundary, specifically those with loose, sandy, or loamy soils they can easily burrow in.

Coast horned lizard has the potential to occur in most habitat types within and adjacent to the FERC Project boundary. Decommissioning activities that may potentially affect coast horned lizard include ground-disturbing activities (e.g., grading of dirt roads, grading of soils in and around the canal, removal of Borel Project facilities) that can lead to disturbances of habitat features. However, because this species is wary and highly mobile much of the year, most individuals would likely flee work areas when decommissioning activities begin.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including coast horned lizard. With these in place, decommissioning activities may impact individuals, but these activities are not expected to have an overall impact on the viability of coast horned lizard or their habitat.

### *Kern Red-winged Blackbird*

The Kern red-winged blackbird has the potential to nest in riparian habitats within and adjacent to the FERC Project boundary.

Any riparian habitat removed will be anticipated to require mitigation for impacts through regulatory processes; therefore, no habitat for Kern red-winged blackbird is anticipated to be lost. Effects on nesting birds may include mortality of young through forced fledging or nest abandonment by adult birds. Effects from decommissioning activities outside of the nesting season are limited to temporary disturbances of occasional individuals.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including Kern red-winged blackbird. Through these measures, impacts to Kern red-winged blackbirds will be minimized, and there will be no overall impacts to the species viability or its habitat.

### *Tricolored Blackbird*

No suitable nesting habitat within or directly adjacent to the FERC Project boundary was located during the 2021 CESA-listed bird surveys (as described above); therefore, the Borel Project will have no effect on nesting tricolored blackbirds.

Effects from decommissioning activities would therefore be limited to temporary disturbances of occasional individuals who may be foraging or traveling through the FERC Project boundary.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including tricolored blackbird. Through these measures, impacts to tricolored blackbirds will be minimized to the occasional individual, should they be present, and will have no ‘take’ or overall impacts to the species viability or its habitat.

### *Grasshopper Sparrow*

Grasshopper sparrow has the potential to nest in grassland habitats within and adjacent to the FERC Project boundary.

Decommissioning activities within and immediately adjacent to suitable grassland nesting habitat may affect grasshopper sparrow. Effects on nesting birds could include mortality of young through forced fledging or nest abandonment by adult birds. Grasslands within the FERC Project boundary also provide foraging value for grasshopper sparrow; however, any effects on foraging birds would be limited to flushing, as there would be limited habitat modification associated with decommissioning.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including grasshopper sparrow. Through these measures, impacts to grasshopper sparrow will be limited to the occasional individual, should they be present, and will have no overall impacts to the species viability or its habitat.

### *Golden Eagle*

The FERC Project boundary may provide suitable habitat for nesting golden eagles, but none are known from the Borel Project. The species may also forage throughout the area.

Decommissioning activities within and immediately adjacent to suitable nesting habitat could affect golden eagle via mortality of young through forced fledging or nest abandonment by adult eagles. Decommissioning activities outside of the nesting season would be limited to temporary disturbances of occasional individuals. Minimal habitat modification would be anticipated from decommissioning activities.

Through measures, described in Section 3.6.3, impacts to golden eagle would be limited to the occasional individual avoiding or moving away from work areas, will not rise to the level of 'take,' and will have no overall impacts to the species viability or its habitat.

### *Short-eared Owl*

Short-eared owl has the potential to occur within a wide variety of suitable habitats within and adjacent to the FERC Project boundary; however, it is likely this species only uses this area for wintering as it does not overlap with this species' breeding range. Various habitats within the FERC Project boundary also provide foraging value for short-eared owl; however, any effects on foraging habitats would be temporary in nature and limited to developed areas.

Decommissioning activities may temporarily flush animals from wintering areas, should they be present. These effects would be temporary and minimal and would not result in adverse effects to the species.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including short-eared owl. Through these measures, impacts to short-eared owl will be limited to the occasional individual, should they be present, and will have no overall impacts to the species viability or its habitat.

### *Long-eared Owl*

Long-eared owl has the potential to nest in riparian habitats within and adjacent to the FERC Project boundary.

Decommissioning activities outside developed areas within and immediately adjacent to suitable nesting habitat may affect long-eared owl. Effects on nesting owls could include mortality of young through forced fledging or nest abandonment by adult owls. The effect of decommissioning activities outside of the nesting season are limited to temporary disturbances of occasional individuals. Various habitats within the FERC Project boundary also provide foraging value for long-eared owl; however, any effects on foraging habitats would be temporary in nature and limited to developed areas. Any riparian habitat removed will be anticipated to require mitigation for impacts through regulatory processes; therefore, no nesting habitat for long-eared owl is anticipated to be lost.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including long-eared owl. Through these measures, impacts to long-eared owl will be limited to the occasional individual, should they be present, and will have no overall impacts to the species viability or its habitat.

### *Redhead*

Redhead has the potential to nest in emergent wetlands within and adjacent to the FERC Project boundary.

Any wetlands removed will be anticipated to require mitigation for impacts through regulatory processes; therefore, no nesting habitat for redhead is anticipated to be lost. Decommission activities within and immediately adjacent to suitable freshwater wetland nesting habitat may affect redhead if present. Effects on nesting birds may include mortality of young through forced fledging or nest abandonment by adult birds, if present. Decommission activities outside of the nesting season would be limited to temporary disturbances of occasional individuals.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including redhead. Through these measures, impacts to redhead will be limited to the occasional individual, should they be present, and would have no overall impacts to the species viability or its habitat.

### *Swainson's Hawk*

Swainson's hawk is known to forage and has the potential to nest in a variety of wooded habitats within and adjacent to the FERC Project boundary, mostly limited to valleys and other lowland areas.

Decommissioning activities within and immediately adjacent to suitable nesting habitat may affect Swainson's hawk. Effects on nesting hawks may include mortality of young through forced fledging or nest abandonment by adults. Decommission activities outside of the nesting season would be limited to temporary disturbances of occasional individuals. Grasslands within the FERC Project boundary also provide low level foraging habitat for Swainson's hawk (the species typically prefers croplands, which are relatively absent); however, any effects on foraging habitats would be temporary in nature.

Measures, described in Section 3.6.3 were designed to minimize impacts to special-status wildlife species, including Swainson's hawk. Through these measures, impacts to Swainson's hawk will be limited to the occasional individual, should they be present, will not rise to the level of 'take' and will have no overall impacts to the species viability or its habitat.

### *Northern Harrier*

Potential nesting and foraging habitats for northern harrier occur within the FERC Project boundary.

Decommissioning activities within and immediately adjacent to suitable nesting habitat may affect northern harrier. Effects on nesting harriers may include mortality of young through forced fledging or nest abandonment by adults. Decommissioning activities outside of the nesting season are limited to temporary disturbances of occasional individuals. Various habitats within the FERC Project boundary also provide foraging value for Northern harrier; however, any effects on foraging habitats would be temporary in nature and limited to work areas, which are mostly already developed.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including Northern harrier. Through these measures, impacts to Northern harrier will be

limited to the occasional individual, should they be present, and will have no overall impacts to the species viability or its habitat.

### *White-tailed Kite*

White-tailed kite has the potential to nest in a variety of habitats within and adjacent to the FERC Project boundary.

Decommissioning activities within and immediately adjacent to suitable nesting habitat may affect white-tailed kite. Effects on nesting kites may include mortality of young through forced fledging or nest abandonment by adults. Decommissioning activities outside of the nesting season would be limited to temporary disturbances of occasional individuals. Various habitats within the FERC Project boundary also provide foraging value for white-tailed kite; however, any effects on foraging habitats would be temporary in nature.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including white-tailed kite. Through these measures, impacts to white-tailed kite will be limited to the occasional individual, should they be present, and will have no overall impacts to the species viability or its habitat.

### *American Peregrine Falcon*

While the American peregrine falcon has the potential to occur within a wide variety of suitable habitats within the FERC Project boundary, it is likely this species only uses this area for wintering as it does not overlap with this species' current breeding range.

Decommissioning activities may temporarily flush individuals from wintering areas should they be present. These effects would be temporary and minimal. Various habitats within the FERC Project boundary may also provide foraging value for American peregrine falcon; however, any effects on foraging habitats would be temporary in nature and would be limited to small areas around the reservoirs and developed Borel Project facilities.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including American peregrine falcon. Through these measures, impacts to American peregrine falcon will be limited to the occasional individual, should they be present, and will have no overall impacts to the species viability or its habitat.

### *Bald Eagle*

Bald eagles use areas with considerable daily human activity, particularly around Lake Isabella, in the area of the Borel Project and may be present in the FERC Project boundary, though there are no known nests.

Decommissioning activities within and immediately adjacent to suitable nesting habitat may affect bald eagles, should they nest in the within the FERC Project boundary. Effects on nesting birds could include mortality of young through forced fledging or nest abandonment by adult birds. Decommissioning activities outside of the nesting season would be limited to temporary disturbances of occasional individuals. Any effects on foraging habitats would be minimal and temporary in nature.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including bald eagle. Through these measures, impacts to bald would be limited to the occasional individual avoiding or moving away from work areas, would not rise to the level of 'take' and would have no overall impacts to the species viability or its habitat.

### *Loggerhead Shrike*

Loggerhead shrike has the potential to nest in a variety of tree-dominated habitats within and adjacent to the proposed FERC Project boundary.

Decommissioning activities within and immediately adjacent to suitable nesting habitat may affect loggerhead shrike, should they be present. Effects on nesting birds may include mortality of young through forced fledging or nest abandonment by adult birds. Impacts from decommissioning activities outside of the nesting season would be limited to temporary disturbances of occasional individuals. Habitats in the Borel Project area also provide foraging value for loggerhead shrike; however, any effects on foraging habitats would be temporary in nature.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including loggerhead shrike. Through these measures, impacts to loggerhead shrike will be limited to the occasional individual, should they be present, and will have no overall impacts to the species viability or its habitat.

### *Summer Tanager*

Summer tanager has the potential to nest in riparian habitats within and adjacent to the FERC Project boundary. Decommissioning activities within and immediately adjacent to suitable riparian nesting habitat may affect summer tanager, should they be present. Effects on nesting birds may include mortality of young through forced fledging or nest abandonment by adult birds. Effects from decommissioning activities outside of the nesting season would be limited to temporary disturbances of occasional individuals. Habitats within the FERC Project boundary also provide foraging value for summer tanager; however, any effects on foraging habitats would be temporary in nature. Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including summer tanager. Through these measures, impacts to summer tanager will be limited to the occasional individual, should they be present, and will have no overall impacts to the species viability or its habitat.

### *Purple Martin*

Purple martin has the potential to nest in a variety of wooded habitats within and adjacent to the FERC Project boundary.

Decommissioning activities within and immediately adjacent to suitable woodland and forest nesting habitat may affect purple martin, should they be present. Effects on nesting birds may include mortality of young through forced fledging or nest abandonment by adult birds. Effects from decommissioning activities outside of the nesting season would be limited to temporary disturbances of occasional individuals. Habitats within the FERC Project boundary also provide foraging value for purple martin; however, any effects on foraging habitats would be temporary in nature.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including purple martin. Through these measures, impacts to purple martin will be limited to the occasional individual, should they be present, and will have no overall impacts to the species viability or its habitat.

### *Yellow Warbler*

Yellow warbler is known to be present and have the potential to nest in riparian habitats within and adjacent to the FERC Project boundary.

Decommissioning activities within and immediately adjacent to suitable riparian nesting habitat may affect yellow warbler. Effects on nesting birds may include mortality of young through forced fledging or nest abandonment by adult birds. Decommissioning activities outside of the nesting season would be limited to temporary disturbances of occasional individuals, as would year-round recreation effects. Habitats within the proposed FERC Project boundary also provide foraging value for yellow warbler; however, any effects on foraging habitats would be temporary in nature. Impacts to riparian habitat are anticipated to be mitigated for through regulatory processes, so no nesting habitat is anticipated to be lost.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including yellow warbler. Through these measures, impacts to yellow warbler will be limited to the occasional individual, should they be present, and will have no overall impacts to the species viability or its habitat.

### *Yellow-headed Blackbird*

Yellow-headed blackbird has the potential to nest in wetland habitats within and adjacent to the FERC Project boundary.

Decommissioning activities such as canal and canal structure removal within and immediately adjacent to suitable wetland nesting habitat may affect yellow-headed blackbird, should they be present. Effects on nesting birds may include mortality of young through forced fledging or nest abandonment by adult birds. Outside of the nesting season, effects would be limited to temporary disturbances of occasional individuals. Grassland habitats within the FERC Project boundary also provide foraging value for yellow-headed blackbird; however, any effects on foraging habitats would be temporary in nature. Additionally, any impacts to wetland habitat are anticipated to be mitigated for through regulatory processes, so there would be no loss of nesting habitat.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including yellow-headed blackbird. Through these measures, impacts to yellow-headed blackbird will be limited to the occasional individual, should they be present, and will have no overall impacts to the species viability or its habitat.

### *Pallid Bat*

Pallid bat has the potential to roost in a variety of habitats with suitable cover within and adjacent to the FERC Project boundary.

Decommissioning activities will affect pallid bat individuals should they be present. This species is sensitive to various disturbances and can be directly or indirectly affected by human activities at roost sites, including maternity roosts. Potential roost sites include rocky outcrops and crevices, trees, tunnels, and various human-made structures. Removal/fill of Borel Project tunnels and buildings will result in the loss of potential habitat for the species. Roosts in rocky areas, vegetation, or human-made structures have the potential to be affected should they be present.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including pallid bat. And although potential habitat will be lost through the removal of Borel Project facilities (Canal Inlet Structures, Storehouse, Erskine Steel Flume, Tunnel No. 1, Pioneer Steel Siphon, Tunnel No. 1 1/2, Tunnel No. 2, Flume No. 623, Tunnel No. 3, the Powerhouse, and the Tailrace), this should not impact the overall availability of habitat for pallid bat.

### *Townsend's Big-eared Bat*

Townsend's big-eared bat has the potential to roost in a variety of habitats with suitable cover within and adjacent to the FERC Project boundary.

Decommissioning activities may affect Townsend's big-eared bat individuals. This species is sensitive to various disturbances and can be directly or indirectly affected by human activities at roost sites, including maternity roosts. Potential roost sites include rocky outcrops and crevices, trees, and various human-made structures. Removal or demolition of Borel Project tunnels and buildings will result in the loss of potential habitat for the species. Habitats within the proposed FERC Project boundary also provide foraging value for Townsend's big-eared bats; however, any effects on foraging habitats would be limited to temporary disturbance.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including Townsend's big-eared bat. And although potential habitat will be lost through the removal of Borel Project facilities (Canal Inlet Structures, Storehouse, Erskine Steel Flume, Tunnel No. 1, Pioneer Steel Siphon, Tunnel No. 1 1/2, Tunnel No. 2, Flume No. 623, Tunnel No. 3, the Powerhouse, and the Tailrace), this should not impact the overall availability of habitat for Townsend's big-eared bat.

### *Spotted Bat*

Spotted bat has the potential to roost in a variety of habitats with suitable cover within and adjacent to the FERC Project boundary.

Decommissioning activities may affect spotted bat individuals. This species is sensitive to various disturbances and can be directly or indirectly affected by human activities at roost sites, including maternity roosts. Potential roost sites include rocky outcrops and crevices, trees, and various human-made structures. Removal or demolition of Borel Project tunnels and buildings will result in the loss of potential habitat for the species. Habitats within the proposed FERC Project boundary also provide foraging value for spotted bats; however, any effects on foraging habitats would be limited to temporary disturbance.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including spotted bat. And although potential habitat will be lost through the removal of Borel Project facilities (Canal Inlet Structures, Storehouse, Erskine Steel Flume, Tunnel No. 1,

Pioneer Steel Siphon, Tunnel No. 11/2, Tunnel No. 2, Flume No. 623, Tunnel No. 3, the Powerhouse, and the Tailrace), this should not impact the overall availability of habitat for spotted bat.

### *Western Mastiff Bat*

Western mastiff bat has the potential to roost in a variety of habitats with suitable cover within and adjacent to the FERC Project boundary.

Decommissioning activities may affect western mastiff bat individuals. This species is sensitive to various disturbances and can be directly or indirectly affected by human activities at roost sites, including maternity roosts. Potential roost sites include rocky outcrops and crevices, trees, and various human-made structures. Removal or demolition of Borel Project tunnels and buildings will result in the loss of potential habitat for the species. Habitats within the proposed FERC Project boundary also provide foraging value for western mastiff bats; however, any effects on foraging habitats would be limited to temporary disturbance.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including western mastiff bat. And although potential habitat will be lost through the removal of Borel Project facilities (Canal Inlet Structures, Storehouse, Erskine Steel Flume, Tunnel No. 1, Pioneer Steel Siphon, Tunnel No. 1 1/2, Tunnel No. 2, Flume No. 623, Tunnel No. 3, the Powerhouse, and the Tailrace), this should not impact the overall availability of habitat for western mastiff bat.

### *Western Red Bat*

Western red bat has the potential to roost in a variety of habitats with suitable cover within and adjacent to the FERC Project boundary.

Decommissioning activities may affect western red bat individuals. This species is sensitive to various disturbances and can be directly or indirectly affected by human activities at roost sites, including maternity roosts. Potential roost sites include rocky outcrops and crevices, trees, and various human-made structures. Removal or demolition of Borel Project tunnels and buildings will result in the loss of potential habitat for the species. Habitats within the proposed FERC Project boundary also provide foraging value for western red bats; however, any effects on foraging habitats would be limited to temporary disturbance.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including western red bat. And although potential habitat will be lost through the removal of Borel Project facilities (Canal Inlet Structures, Storehouse, Erskine Steel Flume, Tunnel No. 1, Pioneer Steel Siphon, Tunnel No. 1 1/2, Tunnel No. 2, Flume No. 623, Tunnel No. 3, the Powerhouse, and the Tailrace), this should not impact the overall availability of habitat for western red bat.

### *Yuma Myotis*

Yuma myotis is known to have a maternity roost within the Borel Powerhouse and has the potential to roost in a variety of additional habitats with suitable cover within and adjacent to the FERC Project boundary.

Decommissioning activities will affect Yuma myotis. This species is sensitive to various disturbances and can be directly or indirectly affected by human activities at roost sites, including maternity roosts. Potential roost sites include rocky outcrops and crevices, trees, and various human-made structures. The removal of the Borel Powerhouse will cause the loss of the site as a maternity roost. Removal or demolition of other Borel Project tunnels and buildings will result in the loss of potential habitat for the species. Habitats within the proposed FERC Project boundary also provide foraging value for Yuma myotis; however, any effects on foraging habitats would be limited to temporary disturbance.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including Yuma myotis. And although potential habitat will be lost through the removal of Borel Project facilities (Canal Inlet Structures, Storehouse, Erskine Steel Flume, Tunnel No. 1, Pioneer Steel Siphon, Tunnel No. 1 1/2, Tunnel No. 2, Flume No. 623, Tunnel No. 3, the Powerhouse, and the Tailrace), this should not impact the overall availability of habitat for Yuma myotis.

### *Ring-tailed Cat*

Ring-tailed cat has the potential to occur throughout a variety of different habitats within and adjacent to the FERC Project boundary.

Decommissioning activities that lead to disturbance of habitat within and immediately adjacent to suitable habitat, may affect ring-tailed cats by resulting in the displacement of individuals and modifications to habitat necessary for shelter, breeding, or foraging. While these activities are not likely to impact individuals, they can still pose an impact if they occur during the reproductive season or result in damage or destruction of a ring-tailed cat den. Vegetation removal, including trees, could cause a loss of habitat for the species.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including ring-tailed cat. Through these measures, effects to ring-tailed cat will be limited to flushing the occasional individual, should they be present, and will have no overall effects to the species viability. The removal of trees will be minimized and should not affect the overall availability of habitat for ring-tailed cat.

### *San Diego Desert Woodrat*

San Diego desert woodrat has the potential to occur in a variety of habitats within and adjacent to the FERC Project boundary.

Decommissioning activities that lead to disturbance of habitat within and immediately adjacent to suitable habitat, may affect San Diego woodrat by resulting in the displacement of individuals and modifications to habitat necessary for shelter or foraging. While these activities are not likely to impact individuals, they can still pose an impact if they occur during the reproductive season or result in damage or destruction of a woodrat nest. Overall, habitat modifications will be temporary in nature, and there will be no overall loss for the species.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including San Diego desert woodrat. Through these measures, effects to San Diego desert woodrat may affect the occasional individual, should they be present, and will have no overall effects to the species viability or its habitat.

### *Southern Grasshopper Mouse*

Southern grasshopper mouse has the potential to occur in a variety of habitats within and adjacent to the FERC Project boundary.

Decommissioning activities that lead to disturbance of habitat within and immediately adjacent to suitable habitat, may affect Southern grasshopper mouse by resulting in the displacement of individuals and modifications to habitat necessary for shelter or foraging. While these activities are not likely to impact individuals, they can still pose an impact if they occur during the reproductive season or result in damage or destruction of a den. Overall, habitat modifications will be temporary in nature, and there will be no overall loss for the species.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including Southern grasshopper mouse. Through these measures, effects to Southern grasshopper mouse may affect the occasional individual, should they be present, and will have no overall effects to the species viability or its habitat.

### *American Badger*

American badger has the potential to occur in all habitats within and adjacent to the FERC Project boundary.

Decommissioning activities that lead to disturbance of habitat within and immediately adjacent to suitable habitat, may affect American badger by resulting in the displacement of individuals and modifications to habitat necessary for shelter or foraging. While these activities are not likely to impact individuals, they can still pose an impact if they occur during the reproductive season or result in damage or destruction of a den. Overall, habitat modifications will be temporary in nature, and there will be no overall loss for the species.

Measures, described in Section 3.6.3, were designed to minimize impacts to special-status wildlife species, including American badger. Through these measures, effects to American badger may affect the occasional individual, should they be present, and will have no overall effects to the species viability or its habitat.

#### 3.6.2.3 Wetland Resources

SCE's studies identified approximately 244 acres of wetland (including riparian, littoral, and lotic) habitats within a survey area including the entirety of the FERC Project boundary during 2021. In the Upper Borel segments of the Borel Project, all canal infrastructure occurring near Lake Isabella supports or is adjacent to these habitats; as a result, all decommissioning activities occurring within the maximum pool depth of Lake Isabella have the potential to permanently or temporarily affect them. In Lower Borel, wetland habitats occurring within or adjacent to canal or other Borel Project infrastructure that is proposed for modification or demolition may be temporarily or permanently affected by decommissioning activities. For example, temporary effects on aquatic habitat may result from the removal of existing infrastructure within the habitat (e.g., flume foundations and piers), which would subsequently be restored by grading to conform to adjacent topography and revegetated, as detailed in the SCE Plan (Volume II).

SCE will consult with the Corps and CDFW during the course of the License Surrender process regarding their concurrence with SCE's information-gathering results and will secure appropriate permits regarding work in areas potentially affecting wetland, riparian, and littoral habitats. Additionally, SCE will implement a suite of measures to protect resources potentially affected by decommissioning activities. As a result, no detrimental effects on wetland, riparian, and littoral resources are expected.

### 3.6.3 Measures

Proposed measures are summarized in Table 2.2-2. The measures associated with terrestrial resources include:

- SCE will consult with the applicable federal, state, and local agencies to obtain necessary permits and will comply with these permits during all decommissioning activities (Measure 1).
- Work area footprints will be confined as much as reasonably practicable. All parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities will be confined, to the greatest extent possible, to previously disturbed areas. Additionally, the Borel Project footprint/area will be clearly defined and marked to avoid working in areas outside of the approved boundary. Fences and flagging will be installed by the contractor in a manner that does not impact habitats to be avoided and such that it is clearly visible to personnel on foot and operating heavy equipment (Measure 2).
- Work areas will be kept clear of garbage, including micro trash. Trash and food will be stored in closed containers and removed daily to reduce attractiveness to opportunistic predators such as coyotes, domestic and feral dogs and cats, opossums, skunks, and raccoons. Littering of trash and food waste will be prohibited. Upon completion of a Borel Project activity, the work site will be inspected to ensure it is free of garbage and micro trash. If garbage or micro trash is detected at the site, it will be removed (Measure 3).
- All construction equipment and vehicles will drive no faster than 15 miles per hour on access roads and anywhere within the FERC Project boundary for reasons of public safety, avoidance of wildlife collisions, and to prevent excess dust. Vehicles will stay on designated roads to the extent reasonably possible. Construction truck trips will be minimized to the extent practicable, particularly in the community and on the grade between Bakersfield and Lake Isabella (Measure 5).
- All work-related materials will be properly stored and secured. Materials that are in any type of liquid or powder form will be stored in sealed leak-proof containers. Additionally, all parked vehicles/equipment will be kept free of leaks, particularly antifreeze, as this could be fatal if consumed by wildlife (Measure 6).
- The contractor will be required to conduct vehicle refueling and maintenance in upland areas where fuel cannot enter aquatic habitats or areas that have suitable habitat to support federally and/or state listed species. Equipment and containers will be inspected daily for leaks. Should a leak occur, contaminated soils and surfaces will be cleaned up and disposed of as required by the Borel Project's regulatory permits and materials safety data sheets (Measure 7).

- Use certified weed-free straw or rice straw for all construction, erosion control, or restoration needs. Use gravel and sand from local and weed-free sources where possible. Whenever possible, dispose of any spoils on site, graded to match local contours, and use fill collected on site (Measure 8).

- A WEAP will be established and implemented prior to the start of work activities in the field and cover biological and cultural resources. The program will be presented by a qualified biologist and a qualified archaeologist to all construction crew members. If new employees join the crew, they will receive formal, approved training prior to working on site. Upon completion of the orientation, employees will sign a form stating they attended the program and understand all protection measures. A fact sheet containing the presented information will also be prepared and distributed (Measure 13).

- No work activities will take place upstream of the Canal Inlet Structure to prevent potential impacts to ESA-listed bird habitat and other sensitive natural communities present in this Borel Project segment (Measure 14).

- A biological monitor will be on site during all ground-disturbing and vegetation removal activities associated with the decommissioning in areas of sensitive vegetation communities, ESA-listed species habitat, or known special-status species occurrences (Measure 15).

- Prior to the start of activities that may impact biological resources, in each specific segment of the Borel Project (see Volume II, Decommissioning Plan), pre-construction surveys for sensitive habitats and sensitive species, including ESA-listed species, will be conducted. Surveys will be conducted by qualified biologists and during the appropriate timeframe for detection of target species, within the given period for the activity (e.g., nesting bird surveys will not be performed for activities that will take place completely outside of the nesting bird season) (Measure16).

- Upon completion of work activities, temporarily disturbed areas will be revegetated with native plant species. A revegetation plan will be developed that addresses revegetating areas where Borel Project features have been removed (Measure 17).

- All decommissioning staff will report any instances of injured, notably diseased, or deceased wildlife observed within the FERC Project boundary to the SCE authorized representative or designee, who will report the information to the appropriate jurisdictional agency(ies) (Measure 18).

- To protect native breeding birds, work activities will avoid to the extent possible the general avian breeding season of February 1 through September 15. If decommissioning activities cannot be avoided during this time period, a focused survey for active nests within the area proposed for work will be conducted prior to the commencement of Borel Project activities. If no nests are located within the buffer, work may proceed as planned. If nesting activity is detected, a protective buffer will be established as determined by a qualified biologist (Measure 19).

- The year prior to the proposed start of the removal of Borel Project facilities with suitable bat habitat, humane exclusion devices will be placed on all Project facilities that will be

removed/filled and have known bat occupation, signs of bat occupation or potential bat habitat. The humane exclusion device will be installed at the appropriate time of year, outside of maternal season (April and late August) and outside of hibernation season (between November and February). Typically, humane devices should be left in place for a minimum of 7 nights, and in some cases 2 full weeks, to ensure that all bats have left the building. Surveys will be completed by a qualified biologist to make sure humane exclusion devices have worked properly and that all bats have left before permanent exclusion devices are installed. A permanent exclusion device must follow a humane exclusion immediately after the area is bat free (Measure 20).

- No more than 7 days prior to the removal/fill of Borel Project features where permanent bat exclusion devices have been placed, a qualified biologist will perform a survey of the feature(s) to ensure no bats are present and exclusion devices are still functional. Exclusion devices will only be removed, if necessary, no more than 1 day before decommissioning activities on the feature commence (Measure 21).

- If special-status species are detected, those individuals will be allowed to move from the area of their own volition. If impacts to special-status species cannot be avoided, the agency(ies) with jurisdiction will be consulted and any necessary permits or approvals will be acquired prior to the commencement of decommissioning activities (Measure 22).

- For any activities requiring an excavation, if excavations are to be left open and unattended for more than 12 hours, they will either be covered, surrounded with exclusion fencing, or an escape ramp will be constructed to the bottom of the pit with less than a 2:1 slope, to provide an escape route to prevent small wildlife species (e.g., lizards, rodents) in the area from getting trapped in the excavation. To the extent feasible, excavations will not be left open at the end of the day and will be covered after confirming absence of trapped individuals. Prior to commencement of work activity each day, staff will check excavations to ensure no animals are trapped. Before backfilling or permanently closing any excavation, it will be checked to ensure no wildlife are present within the excavated area. If wildlife has become trapped, it will be removed prior to closure or backfilling (Measure 23).

- Riparian vegetation removal and trimming will be limited to the amount necessary to successfully complete work activities. To prevent unintended or unnecessary removal or trimming of riparian vegetation orange barrier fencing or flagging will be erected to clearly define the habitat to be avoided during work activities (Measure 24).

- Tracy's eriastrum and Kern Canyon clarkia occurrences will be flagged and avoided to the extent feasible. If work is completed during reproductive life stages, a biological monitor should be present periodically to determine if there is damage or removal of the clarkia and eriastrum due to work activities (Measure 25).

- A designated qualified biologist will review final plans, designate areas that need temporary fencing, and monitor construction activities within and adjacent to areas with aquatic or other sensitive habitats. The qualified biologist will monitor activities within designated areas during critical times, such as initial ground-disturbing activities (e.g., ESA fencing installation), and check that all regulatory agency permit requirements, conservation measures, and mitigation measures are properly implemented and followed. The qualified biologist will check

construction barriers or exclusion fencing and provide corrective measures to the contractor to keep the barriers or fencing maintained throughout construction (Measure 26).

- Prior to the first time any vehicles and equipment enters a work area a qualified biologist will perform an inspection for NNIP. All visible soil, plant materials, animal remnants, or any other signs of invasive species on vehicles and equipment will be removed prior to entering the Borel Project site. Removal and decontamination requirements of vehicles and equipment will be up to the discretion of a qualified biologist. If contamination is small enough to be managed on site, the qualified biologist may approve the decontamination of the vehicle or equipment at a proper staging area with adequate containment. Any materials removed at a containment site must be bagged and taken off site. If contamination is larger, the contractor may be required to take the vehicle or equipment to an off-site wash station. Additionally, if a vehicle or piece of equipment must leave the Borel Project site for any length of time and has been exposed to a different project site or location, it must be re-inspected prior to re-entering the Borel Project site. Vehicles and equipment that perform work in known NNIP occurrences during work activities should be cleaned before leaving the site (Measure 27).

- No work activities will take place within approximately 0.5 mile of any of the mapped potential nesting habitat patches for least Bell's vireo, southwestern willow flycatcher and yellow-billed cuckoo during the avian breeding season (February 1–September 1). (Measure 28).

- If any ESA-listed or CESA-listed species are observed during pre-construction surveys or work activities, SCE will notify USFWS and/or CDFW. All ESA-listed and CSA-listed species will be allowed to leave a work area without harassment (Measure 29).

- Natural landscape drainage patterns will be maintained to the extent practicable (Measure 30).

- Impacts to delineated aquatic resources, outside of the Borel Canal, will be limited to the amount necessary to successfully complete all work activities. To prevent unintended or unnecessary impacts, orange barrier fencing or flagging will be erected to clearly define the aquatic habitat to be avoided (Measure 31).

- SCE or the contractor will develop a SWPPP in accordance with the State Water Resources Control Board General Construction Permit and local regulations. The SWPPP will include Best Management Practices to reduce or eliminate construction impacts to stormwater runoff (Measure 32).

- Work in Lake Isabella will be completed during dry conditions when the lake elevation is at 2,535 feet msl or below (Measure 33).

# 3.7 Species Listed Under the Endangered Species Act

This section discusses species listed under the federal ESA as threatened, endangered, proposed, or candidates for listing and their critical habitats that could be affected by the Borel Project. Section 3.7.1 describes information on ESA-listed species that are known or may occur on the Borel Project. The effects of the decommissioning activities on and proposed measures for species listed under the ESA are included in Sections 3.7.2 and 3.7.3, respectively.

## 3.7.1 Existing Environment

This section is divided into three subsections. Section 3.7.1.1 identifies ESA-listed species and their critical habitats that could be affected by the Borel Project. Section 3.7.1.2 provides a general life history for each ESA-listed species. Section 3.7.1.3 contains available information regarding the distribution, abundance, and condition of the ESA-listed species and their critical habitat within the FERC Project boundary and in other areas that may be impacted by Borel Project decommissioning, such as access roads and laydown/staging areas. The ESA-listed species section of the APEA is written to allow it to be used as a Biological Assessment.

### 3.7.1.1 Federal Endangered Act Listed Species

On October 21, 2021 and again on October 3, 2022, SCE generated a list of candidate and ESA-listed species for the Borel Project using the USFWS' IPaC (USFWS 2021a, 2022b). The list included 10 species: 1 plant, 1 amphibian, 1 fish, 4 birds, and 3 mammals. All of the species are listed as threatened or endangered under the ESA. These are:

- Threatened
    - Yellow-billed cuckoo – western DPS
    - Delta smelt
    - California red-legged frog
- Endangered
    - Tipton kangaroo rat
    - Southwestern willow flycatcher
    - California condor
    - Bakersfield cactus
    - Fisher
    - Least Bell's vireo
    - San Joaquin kit fox

Some species were removed from further consideration based on species range or absence of suitable habitat within the Borel Project Vicinity, or because the species did not occur on site. SCE eliminated Delta smelt from further consideration because this species does not occur in the Borel Project Vicinity (CDFW 2022c). California red-legged frog was eliminated from further consideration because the Borel Project is not within the current or historical range of the species (Nafis 2022). Tipton kangaroo rat was removed from further consideration because the Borel Project is not within their range, and the open valley habitat necessary for this species does not occur (USFWS 2015). Bakersfield cactus was removed from further consideration as the elevation range of up to 500 feet is well below the Borel Project's minimum elevation of 2,366 feet and the species was not located during botanical surveys (Jepson Flora Project 2022). The fisher was eliminated from further consideration because suitable habitat, which includes mature forest with heavy canopy cover and snags over a large area, is not present in the FERC Project boundary or other areas potentially impacted by the decommissioning (USFWS 2020b). Finally, San Joaquin kit fox was eliminated because the Borel Project is outside its range (USFWS 2020c).

SCE searched several additional sources to identify further ESA-listed species and compiled the following for each of the ESA-listed species: (1) a description of the species' habitat requirements, (2) any known occurrences of the species in the Borel Project Vicinity, and (3) references to any recovery plans or status reports pertaining to that species. The information sources included CDFW's CNDDB (CDFW 2022b), and USFWS and NMFS online database and recovery plans. For plants, the sources also included the CNPS' database (CNPS 2021; CDFW 2021b), which were queried for the Glennville, Tobias Peak, Kernville, Cannell Peak, Alta Sierra, Lake Isabella North, Weldon, Democrat Hot Springs, Miracle Hot Springs, Lake Isabella South, Woolstalf Creek, Mount Adelaide, Breckenridge Mountain, Piute Peak, and Claraville USGS topographic quadrangles, which include the Borel Project Vicinity.

No additional ESA-listed species were identified during these searches. As a result, SCE concluded four ESA-listed species—yellow-billed cuckoo, southwestern willow flycatcher, California condor, and least Bell's vireo–have the potential to be affected by Borel Project decommissioning.

Information regarding ESA listing, suitable habitat, known occurrences, proximal reports of the species to the Borel Project, and relevant status reports and recovery plans for these four species is described in Section 3.7.1.2.

### 3.7.1.2 Life Histories of ESA-listed Species

#### *Yellow-billed cuckoo*

The western DPS of yellow-billed cuckoo was listed as threatened on October 3, 2014 (USFWS 2021a). The listing rule applies to the breeding range of yellow-billed cuckoo west of the crest of the Rocky Mountains in the United States, Canada, and Mexico. Critical habitat was designated on December 2, 2014 (USFWS 2021a). There is no critical habitat within the FERC Project boundary, and the nearest critical habitat is approximately 7 miles east of the Borel Project, near the town of Weldon, California. USFWS has not issued a recovery plan. A petition to delist the western DPS of yellow-billed cuckoo on the basis that the population segment is not distinct was received by USFWS on May 4, 2017. USFWS published a 90-day finding that the action proposed in the petition "may be warranted" on June 27, 2018 (USFWS 2021a) and will consider issues raised by the petitioner as part of the 5-year review that was initiated on June 18, 2018 (USFWS 2021a). This review is not complete.

The yellow-billed cuckoo is a medium-sized migratory bird, which winters primarily in South America, east of the Andes Mountains. The species is closely associated with open, deciduous woodlands where there is dense, low cover and nearby water. Although the species is not regarded as at risk, populations in western North America (i.e., those that historically nested from British Columbia to northern Mexico, west of the Continental Divide) have declined or disappeared in much of their range. Nesting occurrences of the western DPS are now largely limited to sites in Arizona, California, and New Mexico. The current status of western DPS yellow-billed cuckoo is largely the result of loss and degradation of riparian habitat, including increased non-native vegetation and effects of long droughts. In California, critical habitat is designated in six units, including units in Kern, Inyo, and Riverside Counties (National Archives 2014).

Western DPS yellow-billed cuckoo nests in low- to moderate-elevation riparian woodlands, mostly composed of native broadleaf trees and shrubs of various species in patches that are 50 acres or

more in extent within arid to semiarid landscapes (USFWS 2014). Patches smaller than 37 acres are regarded as unsuitable, although use of smaller patches has been rarely documented (USFWS 2014, Halterman et al. 2016), including only rare use of patches less than 325 feet wide. Breeding habitat in California occurs mostly in large patches (i.e., greater than 200 acres in size) of Fremont cottonwood and willows, reflecting the large home ranges characteristic of this species (Halterman et al. 2016).

As summarized by Halterman et al. (2016), nesting has not been documented in small, isolated riparian patches of 2 acres or less, or linear patches less than 30 feet in width, although such patches may be used as stop-over habitat during migration. The general habitat is described as "broad, lower flood-bottoms of larger river systems" and micro-habitats such as "riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape (*Vitis* spp.)" (CDFW 2022b).

Primary prey includes large insects, especially insects that are periodically abundant such as caterpillars, cicadas, katydids, and grasshoppers. Other prey includes frogs, lizards, and eggs of other birds (Halterman et al. 2016).

Western DPS yellow-billed cuckoo typically do not complete migration to breeding grounds and begin nesting until at least mid-June, with nesting activity sometimes occurring into September. Clutch size typically ranges from two to four eggs, which may be laid asynchronously, with rapid development and growth. The young may fledge in as little as 17 days after eggs are laid but are still attended to and fed by the parents 28 to 32 days after hatching (Halterman et al. 2016).

There are no verified occurrences of yellow-billed cuckoo within the FERC Project boundary. There are numerous documented observations of breeding pairs in the area from the 1970s through 1990s, with the last reported pair recorded during the 2014 breeding season (CDFW 2022b). Although these occurrences do not have specific location data, they are all centered around the riparian habitat located where the South Fork Kern River enters Lake Isabella, approximately 3 miles east of the FERC Project boundary.

In 2013, the area around the Diversion Dam and Intake Structure was identified as likely to be excellent yellow-billed cuckoo habitat in the next year and beyond, as the area developed more riparian habitat (Corps 2013).

### *Southwestern Willow Flycatcher*

The southwestern willow flycatcher was listed as endangered effective March 29, 1995 (USFWS 1995). The listing applies to the southwestern willow flycatcher subspecies that occurs in portions of Arizona, Nevada, California, Colorado, Utah, New Mexico, and Texas. Critical habitat was designated effective on February 4, 2013 (USFWS 2013). There is no critical habitat designated within the FERC Project boundary. The nearest designated critical habitat is located approximately 3 miles east of the Borel Project, where the East Fork Kern River enters Lake Isabella.

The southwestern willow flycatcher is a small, insectivorous passerine that migrates north in spring from South America, Central America, and Mexico to breed in the southwestern desert riparian habitats of California, Arizona, New Mexico, and Texas. This subspecies of southwestern willow flycatcher has a grayish-green back, whitish throat, pale yellowish belly, and two white wingbars.

The southwestern willow flycatcher occurs in riparian woodland habitat with vegetation cover, usually willows or tamarisk, which is dense from the ground to 9.8 feet or more in height and may occur as shrub stands or broadleaf trees with a dense shrub layer that is between 6.5 and 16.4 feet in height. Habitats may be associated with either low gradient streams or lentic habitat. Other characteristic species include mule fat, arrowweed (*Pluchea sericea*), boxelder (*Acer negundo*), Russian olive (*Elaeagnus angustifolia*), cottonwood, western sycamore, ash (*Fraxinus* spp.), alder (*Alnus* spp.), and buttonbush (*Cephalanathus occidentalis*). Population decline is primarily due to habitat loss and fragmentation, invasive vegetation proliferation, and the expansion of brown-headed cow birds (*Molothrus ater*), which are known to parasitize southwestern willow flycatcher nests (Sogge et al. 1993).

The southwestern willow flycatcher depends primarily on insects for food, although it occasionally eats seeds and berries in the fall. Prey include a wide variety of insects, including moths, bees, spiders, ants, damselflies, and other flying insects. Prey are usually caught mid-air or gleaned from vegetation leaves and bark (The Cornell Lab 2021).

Territorial displays and nesting occur in April or May, with young fledging in June and July. The southwestern willow flycatcher usually lays between three and five eggs per clutch (The Cornell Lab 2021).

There are no verified occurrences of southwestern willow flycatcher within the FERC Project boundary. There are verified observations from 2016 of breeding southwestern willow flycatcher in the riparian area located where the South Fork Kern River enters Lake Isabella (CDFW 2021d). The nearest part of this riparian area is located approximately 4 miles east of the FERC Project boundary.

Per the 2013 Biological Evaluation for the Isabella Lake Borel Canal Reactivation Project, there is very good habitat for southwestern willow flycatcher around the Diversion Dam and Intake Structure area (Corps 2013).

### *California Condor*

The California condor was listed as endangered on March 11, 1967 (USFWS 1967). Critical habitat was designated on September 24, 1975 (USFWS 1975). There is no designated critical habitat within the FERC Project boundary, and the nearest critical habitat is located approximately 10 miles east of the Borel Project.

The California condor is a large carrion feeder with a wingspan of more than 9 feet. It has black plumage with white feathers on the underside of the wings. Like other carrion eaters, the neck and head have no feathers. The historical range included most of the western United States; however, it is now found mostly in California, with some individuals in Nevada, Arizona, and Utah. The decline in population was noted as early as the late 1800s and reached a low of 25 individuals in the 1980s, when the remaining wild condors were captured to initiate a captive breeding program. The successful release of captive-reared condors has occurred in recent decades, establishing flocks in California and Arizona (Audubon Society 2021b).

California condors nest in crevices in large cliffs or in large snags with access to wide open grasslands, deserts, and open country. They forage for carrion, feeding mainly on larger animals

such as deer or cattle. Historically, condors also fed near the coast on large marine mammals that washed up on shore (Audubon Society 2021b).

One egg is laid on a nest of sticks, gravel, and other debris within caves or crevices on cliffs. Incubation typically takes approximately 56 days, and the young are usually capable of flight by 6 months of age. However, the young are typically dependent on the parents for 6 months after flight. This long incubation period and dependency means that condors only breed every other year (Audubon Society 2021b).

There are no verified occurrences of California condors within the FERC Project boundary. The nearest CDFW-confirmed observations are approximately 34 miles northwest of the Borel Project, near the town of Porterville, California, on the western slopes of the Sierra Nevada Mountains (CDFW 2021d).

### *Least Bell's Vireo*

The least Bell's vireo was listed as a state endangered species in June 1980, and federally listed as endangered effective May 2, 1986 (USFWS 1986). Critical habitat for this species was designated on February 2, 1994 (USFWS 1994). There is no critical habitat in the FERC Project boundary. The nearest designated critical habitat is located approximately 80 miles south of the Borel Project in the Santa Clara River (Conservation Biology Institute 2021). The most recent status review was initiated on May 20, 2021 (USFWS 2022).

The least Bell's vireo is a small, greenish-gray, migratory songbird with a white underbelly, two white wingbars, and white spectacles across the lores. Preferred habitats are riparian areas dominated by willows of mixed age composition. These areas frequently include other trees species such as Fremont cottonwood and western sycamore, with a dense understory of young willows, mule fat, California wild rose (*Rosa californica*), and other shrubby species. Population decline is due primarily to habitat loss and fragmentation as well as nest parasitism from the brown-headed cowbird (USFWS 1986).

Nest building usually occurs low in willow thickets, vines, and other vegetation along riparian areas. Nests are constructed relatively low in vegetation, usually within 3 feet of the ground. Least Bell's vireo arrive in breeding habitat in March or April, and depart in August or September for winter habitat in Mexico. Clutch size is usually four eggs, which are incubated for approximately 14 days (USFWS 1986).

Least Bell's vireo forages for insects in riparian and chapparal habitat. Prey include a wide variety of insects: bugs, beetles, grasshoppers, moths, and especially caterpillars. Prey are usually gleaned from vegetation that is relatively low to the ground (Kus 2021).

There are no verified observations of least Bell's vireo within the FERC Project boundary. There are three verified occurrences to the east of the Borel Project, where the South Fork Kern River enters Lake Isabella. The nearest of those three occurrences is located approximately 3 miles from the FERC Project boundary (CDFW 2022b).

Potential suitable habitat for least Bell's vireo was identified in the area between the Diversion Dam and Intake Structure in the 2013 Biological Evaluation for Isabella Lake Borel Reactivation Project (Corps 2013).

### 3.7.1.3 ESA-listed Species Study Results

#### *ESA-listed Bird Habitat Assessment*

Potential nesting habitat for yellow-billed cuckoo, southwestern willow flycatcher, and least Bell's vireo, was assessed within the FERC Project boundary. All of these species require riparian habitat, though their specific requirements vary. Three riparian VegCAMP alliances mapped in the FERC Project boundary contained potentially suitable nesting habitat: Fremont cottonwood forest and woodland, Goodding's willow – red willow riparian woodland and forest, and California sycamore – oak riparian woodland.

Prior to the habitat assessment, aerial imagery of the entire Borel Project was examined to determine where potentially suitable habitat might occur. This analysis included an evaluation of mapped riparian areas, vegetation density, proximity to water, and habitat patch size. Any areas that were obviously not vegetated, were not near water, or were not riparian areas were excluded (Figure 3.7-1).

Qualified biologists performed a habitat assessment on May 25 and 26, 2021. All potential nesting habitat, including stream crossings and riparian vegetation areas, within 25 feet of the FERC Project boundary was evaluated for species composition, tree canopy structure, proximity to water, habitat patch width and vegetation density. Potentially suitable nesting habitat was mapped using ESRI's Collector application, and representative photographs were taken. All habitat that was determined during the survey to not be suitable nesting habitat was also recorded on the Collector application with a photograph and description of why the habitat was not suitable. Although these areas are not likely to support nesting habitat, they may still provide forage and shelter during migration and the nesting season.

In total, three separate habitat patches were mapped as potentially suitable nesting habitat for least Bell's vireo and one habitat patch was mapped as potentially suitable for yellow-billed cuckoo, southwestern willow flycatcher, and least Bell's vireo (Figure 3.7-1).

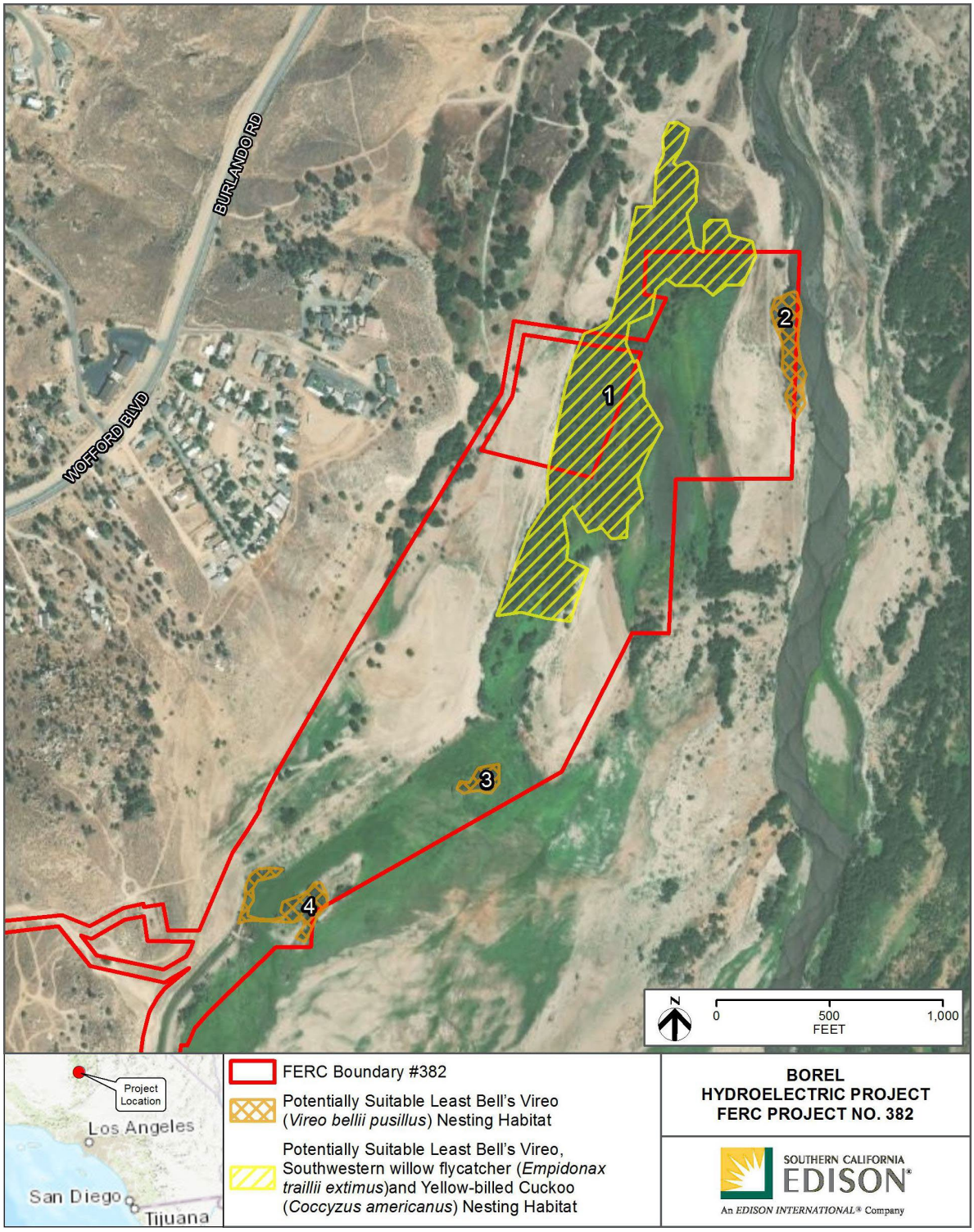



**Figure 3.7-1. Suitable Habitat for ESA-listed Birds**

### *Suitable Habitat Patches*

Potentially Suitable for least Bell's vireo, southwestern willow flycatcher, and yellow-billed cuckoo: Habitat Patch 1 (Figure 3.7-1 and Figure 3.7-2) is approximately 15.26 acres, measuring approximately 250 feet wide and 2,000 feet long VegCAMP vegetation associations included in this habitat patch were identified as Californian Warm Temperate Marsh/Seep Group, River and Lacustrine Flats and Streambeds Mapping Unit, Salix gooddingii – Salix laevigata Alliance, and Water Mapping Unit. The vegetation density at the time of the survey was approximately 100 percent. The tree canopy height is approximately 30 feet, with the nearest surface water 200 feet to the east. This is a relatively large section of densely vegetated riparian habitat, consisting mainly of Fremont cottonwood trees and willow trees.

The canopy structure includes an upper canopy of mature trees, as well as a dense understory consisting of smaller willow trees. This canopy structure, proximity to surface water, vegetation species composition, and the large habitat patch size is consistent with nesting suitability for least Bell's vireo and southwestern willow flycatcher. Due to its relatively small size, this area would not be ideal for yellow-billed cuckoo, but there is some documentation of the species using these kinds of smaller areas infrequently for nesting. Yellow warbler, an SSC, was observed in this habitat patch. There was no nesting or breeding behavior observed; however, this species is often referenced as an indicator of habitat suitability for other ESA-listed species in riparian habitats. Additionally, brown-headed cowbird, a known parasite of southwestern willow flycatcher and least Bell's vireo nests, was also observed within Habitat Patch 1.

**Figure 3.7-2. Habitat Patch 1 – Larger, Mature Trees, Taken from Outside Habitat Patch**

Potentially Suitable for least Bell's vireo: Habitat Patch 2 (Figure 3.7-1 and Figure 3.7-3) is approximately 1.05 acres in size, measuring approximately 100 feet wide and 550 feet long. VegCAMP vegetation associations included in this habitat patch were identified as Californian Warm Temperate Marsh/Seep Group, Perennial Stream Channel Mapping Unit, River and Lacustrine Flats and Streambeds Mapping Unit, and *Salix gooddingii – Salix laevigata* Alliance. The tree canopy is approximately 20 feet tall, with the nearest surface water immediately adjacent to the east. This is a relatively small section of densely packed willow trees. This habitat patch is inconsistent with suitability for nesting for southwestern willow flycatcher or yellow-billed cuckoo. The continual patch is not large enough for nesting yellow-billed cuckoo, nor is it wide enough or contain sufficient canopy structure to be used by nesting southwestern willow flycatcher. The vegetation thickness, vegetation species composition, and proximity to flowing water are consistent with suitability for nesting for least Bell's vireo.

**Figure 3.7-3. Habitat Patch 2 – Thick Willow Understory**

Potentially Suitable for least Bell's vireo: Habitat Patch 3 (Figure 3.7-1 and Figure 3.7-4) is approximately 0.34 acre in size, measuring approximately 60 feet wide and 80 feet long. VegCAMP identified the vegetation association as Reservoirs Mapping Unit, although this is likely due to seasonal inundation of the area by Lake Isabella. The tree canopy is approximately 20 feet tall, with surface water within the habitat patch or immediately adjacent, depending on the water level in Isabella Lake. This is a relatively small section of densely packed, mature and immature willow trees. This habitat patch is inconsistent with suitability for nesting for southwestern willow flycatcher or yellow-billed cuckoo. The continual patch is not large enough for nesting yellow-billed cuckoo, nor is it wide enough to be used by nesting southwestern willow flycatcher. The vegetation thickness, vegetation species composition, and proximity to flowing water are consistent with suitability for nesting for least Bell's vireo.

**Figure 3.7-4. Habitat Patch 3 – Small Habitat Patch with Mature and Immature Trees**

Potentially Suitable for least Bell's vireo: Habitat Patch 4 (Figure 3.7-1 and Figure 3.7-5) is approximately 0.92 acre in size, measuring approximately 70 feet wide and 200 feet long. This habitat patch is directly adjacent to the concrete intake structure and beginning of the concrete canal. VegCAMP vegetation associations included in this habitat patch were identified as Californian Warm Temperate Marsh/Seep Group, Reservoirs Mapping Unit, and *Salix gooddingii – Salix laevigata* Alliance. Tree canopy is approximately 15 feet tall, with surface water within the habitat patch or immediately adjacent, depending on the water level in Isabella Lake. This is a relatively small section of densely packed, mature and immature willow trees. This habitat patch is inconsistent with suitability for nesting for southwestern willow flycatcher or yellow-billed cuckoo. The continual patch is not large enough for nesting yellow-billed cuckoo, nor is it wide enough to be used by nesting southwestern willow flycatcher. The vegetation thickness, vegetation species composition, and proximity to surface water are consistent with suitability for nesting for least Bell's vireo.

**Figure 3.7-5. Habitat Patch 4 – Small Habitat Patch with Mature and Immature Trees**

### *Non-suitable Habitat*

Some areas that appeared to be potentially suitable nesting habitat from aerial imagery were determined to be unsuitable during field verification. Most such areas were patches of vegetation in dry ravines that lacked certain habitat characteristics, such as vegetation species composition, nearby water, and lack of canopy composition. Figure 3.7-6 and Figure 3.7-7 are examples of areas that were assessed and found to be inconsistent with suitable nesting habitat. Although these areas are not suitable for nesting by the species listed in this report, they could potentially be used during foraging or during migration as stop-over areas.

**Figure 3.7-6. Non-suitable Habitat Area of Vegetation Adjacent to Canal near Northern Portion of Borel Project**

**Figure 3.7-7. Non-suitable Habitat along Lake Isabella Boulevard and the Bodfish Siphon**

## 3.7.2 Environmental Effects

### 3.7.2.1 Yellow-billed Cuckoo

There was one area of suitable yellow-billed cuckoo nesting habitat defined within the FERC Project boundary (patch #1). No decommissioning activities are planned within 0.34 mile of habitat patch #1. Outside of patch #1, yellow-billed cuckoo potentially impacted by Borel Project activities would be limited to individuals flying through or foraging.

Direct impacts on flying/foraging individuals would be limited to inadvertent startlement/flushing out of the area due to decommissioning activities. Some small areas of prey habitat may also be temporarily unavailable during decommissioning activities, but no prey habitat will be removed permanently. The revegetation of sections of the Borel Project may ultimately increase the amount of habitat for prey species.

Measures, found in Section 3.7.3, will be put in place for the protection of ESA-listed species, including yellow-billed cuckoo, such as the implementation of activity restrictions within 0.5 mile of all mapped potential nesting habitat for ESA-listed birds during general avian breeding season, avoidance of the area above the canal inlet structure, minimization of riparian vegetation removal and impacts to delineated waters and wetlands, minimization of the Borel Project footprint, worker training, pre-construction surveys for sensitive species, biological monitoring, garbage clean-up, vehicle speed limits, revegetation, and reporting ESA-listed species if seen.

Therefore, decommissioning activities may affect, but are not likely to adversely affect, yellow-billed cuckoo.

#### 3.7.2.2 Southwestern Willow Flycatcher

There was one area of suitable southwestern willow flycatcher nesting habitat defined within the FERC Project boundary (patch #1). No decommissioning activities are planned within 0.34 mile of this habitat patch. Outside of patch #1, impacts to southwestern willow flycatcher would be limited to individuals flying through or foraging.

Direct impacts on flying/foraging individuals would be limited to inadvertent startlement/flushing out of the area due to decommissioning activities. Some small areas of prey habitat may also be temporarily unavailable during decommissioning activities, but no prey habitat will be removed permanently. The revegetation of sections of the Borel Project may ultimately increase the amount of habitat for prey species.

Measures, found in Section 3.7.3, will be put in place for the protection of ESA-listed species, including southwestern willow flycatcher, such as the implementation of activity restrictions within 0.5 mile of all mapped potential nesting habitat for ESA-listed birds during general avian breeding season, avoidance of the area above the canal structure, minimization of riparian vegetation removal and impacts to delineated waters and wetlands, minimization of the Borel Project footprint, worker training, pre-construction surveys for sensitive species, biological monitoring, garbage clean-up, vehicle speed limits, revegetation, and reporting ESA-listed species if seen.

Therefore, decommissioning activities may affect, but are not likely to adversely affect, southwestern willow flycatcher.

#### 3.7.2.3 California Condor

Although the nearest occurrence is more than 34 miles away, California condors may fly high over the Borel Project. No California condor nests or roosts are known to occur within the FERC Project boundary. However, locations of natural foraging are unpredictable and could occur in open areas near the Borel Project. The primary threats to California condors feeding on carrion include ingestion of lead ammunition, the use of which is illegal in California in areas occupied by California condor, and ingestion of micro trash. Micro trash could be generated by decommissioning activities but will be cleaned up during and directly after decommissioning activities. Additionally, there will be no alteration of habitat due to decommissioning activities that will limit foraging, except for short periods in the exact locations where activities are occurring. However, this is not anticipated to cause more than a *de minimus* reduction in foraging potential in the area of the FERC Project boundary during that time.

Proposed decommissioning activities will therefore have no effect on California condor or its designated critical habitat.

#### 3.7.2.4 Least Bell's Vireo

There are four areas of suitable nesting habitat for least Bell's vireo defined within the FERC Project boundary. No decommissioning activities are planned within 0.34 mile of habitat patch #1 and 0.57 mile of habitat patch #2. The canal inlet structure will be backfilled with imported, clean fill to eliminate fall hazards, and hazardous steel and fencing will be removed from the facility and hauled off site. The canal inlet is within 0.23 mile of habitat patch #3 and is directly adjacent to habitat patch #4. Additionally, the start of the concrete-lined canal is within 0.01 mile of habitat patch #4 and 0.24

mile of habitat patch #3. Clean fill will be imported for placement in the concrete-lined canal, which will otherwise be left in place. There will be no ground-disturbing activities at the canal inlet or in this area of the concrete-lined canal. Outside of the suitable nesting habitat patches, impacts to least Bell's vireo would be limited to individuals flying through or foraging.

If work was conducted during nesting bird season, it could disturb nesting birds and potentially cause nest abandonment, egg loss, and chick death in areas of suitable nesting habitat. No nesting habitat would be lost due to decommissioning activities, though some limited trimming of the riparian vegetation may be required in the area of the canal inlet. Direct impacts on flying/foraging individuals would be limited to inadvertent startlement/flushing out of the area due to decommissioning activities. Some small areas of prey habitat may also be temporarily unavailable during decommissioning activities, but no prey habitat will be removed permanently. The revegetation of sections of the Borel Project may ultimately increase the amount of habitat for prey species.

Measures, found in Section 3.7.3, will be put in place for the protection of ESA-listed species, including least Bell's vireo, such as the implementation of activity restrictions within 0.5 mile of all mapped potential nesting habitat for ESA-listed birds during general avian breeding season, avoidance of the area above the canal structure, minimization of riparian vegetation removal and impacts to delineated waters and wetlands, minimization of the Borel Project footprint, worker training, pre-construction surveys for sensitive species, biological monitoring, garbage clean-up, vehicle speed limits, revegetation, and reporting on ESA-listed species if seen.

Therefore, decommissioning activities may affect, but are not likely to adversely affect, least Bell's vireo.

### 3.7.3 Measures

Proposed measures are summarized in Table 2.2-2. The measures associated with ESA-listed species include:

- SCE will consult with the applicable federal, state, and local agencies to obtain necessary permits and will comply with these permits during all decommissioning activities (Measure 1).
- Work area footprints will be confined as much as reasonably practicable. All parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities will be confined, to the greatest extent possible, to previously disturbed areas. Additionally, the Borel Project footprint/area will be clearly defined and marked to avoid working in areas outside of the approved boundary. Fences and flagging will be installed by the contractor in a manner that does not impact habitats to be avoided and such that it is clearly visible to personnel on foot and operating heavy equipment (Measure 2).
- Work areas will be kept clear of garbage, including micro trash (small pieces of trash or smaller, broken-down pieces of trash). Trash and food will be stored in closed containers and removed daily to reduce attractiveness to opportunistic predators such as coyotes, domestic and feral dogs and cats, opossums, skunks, and raccoons. Littering of trash and food waste will be prohibited. Upon completion of a Borel Project activity, the work site will be inspected to ensure it is free of garbage and micro trash. If garbage or micro trash is detected at the site, it will be removed (Measure 3).

- All construction equipment and vehicles will drive no faster than 15 miles per hour on access roads and anywhere within the FERC Project boundary for reasons of public safety, avoidance of wildlife collisions, and to prevent excess dust. Vehicles will stay on designated roads to the extent reasonably possible. Construction truck trips will be minimized to the extent practicable, particularly in the community and on the grade between Bakersfield and Lake Isabella (Measure 5).

- All work-related materials will be properly stored and secured. Materials that are in any type of liquid or powder form will be stored in sealed leak-proof containers. In addition, all parked vehicles/equipment will be kept free of leaks, particularly antifreeze, as this could be fatal if consumed by wildlife (Measure 6).

- The contractor will be required to conduct vehicle refueling and maintenance in upland areas, where fuel cannot enter aquatic habitats or areas that have suitable habitat to support federally and/or state listed species. Equipment and containers will be inspected daily for leaks. Should a leak occur, contaminated soils and surfaces will be cleaned up and disposed of as required by the Borel Project's regulatory permits and materials safety data sheets (Measure 7).

- Use certified weed-free straw or rice straw for all construction, erosion control, or restoration needs. Use gravel and sand from local and weed-free sources where possible. Whenever possible, dispose of any spoils onsite, graded to match local contours, and use fill collected onsite (Measure 8).

- A WEAP will be established and implemented prior to the start of work activities in the field and cover biological and cultural resources. The program will be presented by a qualified biologist and a qualified archaeologist to all construction crew members. If new employees join the crew, they will receive formal, approved training prior to working on site. Upon completion of the orientation, employees will sign a form stating they attended the program and understand all protection measures. A fact sheet containing the presented information will also be prepared and distributed (Measure 13).

- No construction will take place upstream of the Canal Inlet Structure to prevent potential impacts to ESA-listed bird habitat and other sensitive natural communities present in this Borel Project segment (Measure 14).

- A biological monitor will be on site during all ground-disturbing and vegetation removal activities associated with the decommissioning in areas of sensitive vegetation communities, ESA-listed species habitat, or known special-status species occurrences (Measure 15).

- Prior to the start of activities that may impact biological resources, in each specific segment of the Borel Project (see Volume II, Decommissioning Plan), pre-construction surveys for sensitive habitats and sensitive species, including ESA-listed species, will be conducted. Surveys will be conducted by qualified biologists and during the appropriate timeframe for detection of target species, within the given period for the activity (e.g., nesting bird surveys will not be performed for activities that will take place completely outside of the nesting bird season) (Measure 16).

- Upon completion of work activities, temporarily disturbed areas will be revegetated with native plant species. A revegetation plan will be developed that addresses revegetating areas where Borel Project features have been removed (Measure 17).

- All decommissioning staff will report any instances of injured, notably diseased, or deceased wildlife observed within the FERC Project boundary to the SCE authorized representative or designee, who will report the information to the appropriate jurisdictional agency(ies) (Measure 18).

- To protect native breeding birds, work activities will avoid to the extent possible the general avian breeding season of February 1 through September 15. If decommissioning activities cannot be avoided during this period, a focused survey for active nests within the area proposed for work will be conducted prior to the commencement of Borel Project activities. If no nests are located, work may proceed as planned. If nesting activity is detected, a protective buffer will be established, as determined by a qualified biologist (Measure 19).

- Riparian vegetation removal and trimming will be limited to the amount necessary to successfully complete work activities. To prevent unintended or unnecessary removal or trimming of riparian vegetation, orange barrier fencing, or flagging will be erected to clearly define the habitat to be avoided during work activities (Measure 24).

- A designated qualified biologist will review final plans, designate areas that need temporary fencing, and monitor construction activities within and adjacent to areas with aquatic or other sensitive habitats. The qualified biologist will monitor activities within designated areas during critical times, such as initial ground-disturbing activities (e.g., ESA fencing installation), and check that all regulatory agency permit requirements, conservation measures, and mitigation measures are properly implemented and followed. The qualified biologist will check construction barriers or exclusion fencing and provide corrective measures to the contractor to keep the barriers or fencing maintained throughout construction (Measure 26).

- Prior to the first time any vehicles and equipment enters a work area, a qualified biologist will perform an inspection for NNIP. All visible soil, plant materials, animal remnants, or any other signs of invasive species on vehicles and equipment will be removed prior to entering the Borel Project site. Removal and decontamination requirements of vehicles and equipment will be up to the discretion of a qualified biologist. If contamination is small enough to be managed on site, the qualified biologist may approve the decontamination of the vehicle or equipment at a proper staging area with adequate containment. Any materials removed at a containment site must be bagged and taken off site. If contamination is larger, the contractor may be required to take the vehicle or equipment to an off-site wash station. Additionally, if a vehicle or piece of equipment must leave the Borel Project site for any length of time and has been exposed to a different project site or location, it must be re-inspected prior to re-entering the Borel Project site. Vehicles and equipment that perform work in known NNIP occurrences during work activities should be cleaned before leaving the site (Measure 27).

- No work activities will take place within approximately 0.5 mile of any of the mapped potential nesting habitat patches for least Bell's vireo, southwestern willow flycatcher and yellow-billed cuckoo during the avian breeding season (February 1–September 1). (Measure 28).

- If any ESA-listed or CESA-listed species are observed during pre-construction surveys or work activities, SCE will notify USFWS and/or CDFW. All ESA-listed and CSA-listed species will be allowed to leave a work area without harassment (Measure 29).

- Impacts to delineated aquatic resources, outside of the Borel Canal, will be limited to the amount necessary to successfully complete all work activities. To prevent unintended or unnecessary impacts, orange barrier fencing or flagging will be erected to clearly define the aquatic habitat to be avoided (Measure 31).

# 3.8 Recreation and Land Use

## 3.8.1 Existing Environment

The Borel Project is located along the Kern River, the most southern river in the Sierra Nevada, and the area is a popular recreation destination. Visitors traveling from southern California typically recreate along the Kern River. Additionally, the Kern River Canyon provides access to popular recreation areas, including Sequoia National Park, SQF, Lake Isabella, and three nearby Wilderness Areas: the Dome Land Wilderness, the South Sierra Wilderness, and the Golden Trout Wilderness. The SQF is one of the most heavily used National Forests in the nation; in 2017, it received nearly 611,000 visits (Forest Service 2019a).

The Borel Project facilities are situated on private land that is under Kern County's jurisdiction, and on federal lands managed by the Corps, SQF, and BLM. Figure 3.1-2 shows the location of the Borel Project with respect to Lake Isabella and depicts the public and private land boundaries in the Borel Project Vicinity. Each of these jurisdictional agencies has specific management objectives regarding recreation and land use in the Borel Project area, as described below.

### 3.8.1.1 Forest Service Management Objectives

The lower portion of the bypassed reach and Borel Canal traverse SQF-managed lands. The SQF manages these public lands in accordance with the objectives, goals, and prescriptions outlined in its 1988 Land and Resource Management Plan (LRMP) which is currently being updated in a revised LRMP (Forest Service 1988, 2019b). The revised 2019 (not final) LRMP indicates that the lower Kern River and the Powerhouse, Penstocks, and portions of the flowline lie within a management area that emphasizes "water-oriented recreation" in "'blue oak savanna" (BO2). The Recreation Opportunity Spectrum (ROS)[18] along the Old Kern Canyon Road to the Powerhouse is "rural" and "roaded natural" along the bypassed reach from the SQF boundary to Sandy Flat Campground.

According to the SQF, management emphasis for the BO2 area is for recreational opportunities in developed sites and concentrated use areas adjacent to streams, rivers, or reservoirs. Campgrounds and picnic areas are favored in roaded natural and rural areas. In the rural class, driving for pleasure and viewing scenery are also emphasized. All developments are managed to

[18] The ROS is "a framework used to define and categorize recreation settings into six distinct opportunity classes: primitive, semi-primitive nonmotorized, semi-primitive motorized, roaded natural, rural, and urban" (Forest Service 2019c).

enhance and emphasize dispersed recreation activities such as rafting, sunbathing, swimming, and fishing in adjacent water bodies. Specific management prescriptions include:

- Develop picnic grounds and campgrounds when need increases, in the following priority: rehabilitate existing, expand existing, and develop new;
- Perpetuate large tree cover and revegetate openings when any developed recreation site is capable of growing trees;
- Establish system trails that provide for access between developed facilities and water/streamside;
- Manage developed sites to increase dispersed recreation opportunities;
- Design new constructed or reconstructed facilities to a standard conducive to recreational type vehicles;
- Develop and manage opportunities for increasing public enjoyment and benefit, with emphasis on driving for pleasure and viewing scenery;
- Maintain and develop trails to meet user needs and protect resource values; and
- Maintain trailhead access roads and primary access routes to developed facilities at the minimum of Level 3.

In addition to managing the river and surrounding land in accordance with the direction contained in the LRMP, the Forest Service manages whitewater recreation on the lower Kern River in accordance with the goals and direction contained in the Kern River Floating Plan and its amendments (Forest Service 1986; SCE 2003a).

#### 3.8.1.2 BLM Management Objectives

The upper 3.5 miles of the lower Kern River flows through public federal land administered by BLM (SCE 2003a). This land lies within a Special Management Area (SMA) referred to by the BLM as either the Keysville SMA or the Keysville Special Recreation Management Area (SRMA). Management of the Keysville SMA is dictated by the guidelines contained in the BLM's Bakersfield Field Office ROD and Approved Resource Management Plan (RMP) (BLM 2014); the decisions included in this ROD and Approved RMP supersedes the 1997 Caliente Resource Management Plan and its subsequent amendments, as well as the relevant portions of the 1984 Hollister RMP (BLM 2014). The Approved Bakersfield RMP indicates that the Keysville SRMA should be managed in accordance with the following administrative actions:

- Support competitive and commercial activities through the Special Recreation Permit process, including maintaining the designated “Keysville Classic” racecourse;
- Manage in coordination with adjacent National Forest;
- Establish partnerships and collaborate with local interest/user groups; and
- Promote volunteerism and friend groups for the area.

The Keysville SRMA is subdivided into four Recreational Management Zones (RMZs): French Gulch, Gold Fever, Dam, and Wallow Rock. Specific recreation-related management objectives contained in the Approved Bakersfield RMP within the above listed RMZs include the following (BLM 2014):

- French Gulch RMZ:
    - This RMZ will be managed to provide opportunities for visitors to engage in dispersed camping and off-highway vehicle (OHV) recreation. The French Gulch RMZ will also serve as a staging area for long-range OHV touring of both BLM- and federal lands managed by the Forest Service.
    - Targeted activities include trail use (motorized, mechanized, and non-mechanized uses), cultural discovery, dispersed camping, and recreational gold prospecting.
- Gold Fever RMZ:
    - This RMZ will be managed to provide opportunities for visitors to engage in personal and guided (interpreted) discovery of the historical significance of the area. This RMZ will be managed to provide opportunities for community residents and regional, national, and international visitors who use the area for sustainable day use and camping, OHV touring opportunities, opportunities to learn about historical mining, and to gain appreciation of the natural setting of the greater Keysville region through self-discovery.
    - Targeted activities include cultural/historical discovery, trail use (motorized, mechanized, and non-mechanized uses), and recreational gold prospecting.
- Dam RMZ:
    - This RMZ will be managed in coordination with the Forest Service, with cooperation from local permitted outfitters and guides to provide opportunities to access the lower Kern River for high-adventure activities while promoting visitor health and safety.
    - Targeted activities include whitewater boating, water play, and fishing.
- Wallow Rock RMZ:
    - This RMZ will be managed to provide visitors with access to a wide variety of recreational opportunities in the area and to enjoy camping in a developed setting, specifically tailored to larger group camping experiences.
    - Targeted activities include camping/group camping.

#### 3.8.1.3 Kern County Management Objectives

Most of the Borel Canal traverses private land associated with the towns of Lake Isabella and Bodfish. Additionally, two short portions of the bypassed reach cross private parcels. Private land falls under Kern County's jurisdiction and is managed in accordance with the provisions outlined in the 2009 General Plan for Kern County. The plan includes the following relevant topics, elements, provisions, and policies regarding recreation use and development within the county (Kern County 2009):

- The open space element details plans and measures for preserving open space for natural resources; the managed production of resources, outdoor recreation, public health, and safety; and the identification of agricultural land.
    - Open space for outdoor recreation includes, but is not limited to, areas of outstanding scenic, historic, and cultural value; areas particularly suited for park and recreation purposes, including access to lakeshores, beaches, rivers, and streams; and areas that serve as links between major recreation and open space reservations, including utility easements, banks of rivers and streams, trails, and scenic highway corridors.
- Map Code 3.1 (Parks and Recreation Areas) – Existing public and private recreation facilities and park areas. The purpose of this designation is to provide a wide variety of facilities to serve the many recreational interests of county residents. Permitted uses include, but are not limited to, public and private parks containing facilities for day use, hiking, camping, walking, picnicking, riding, and other recreational activities.
- The provision of parks and recreational facilities of varying size, function, and location to serve county residents will be encouraged. Special attention will be directed to providing linear parks along creeks, rivers, and streambeds in urban areas.

#### 3.8.1.4 Recreation

There are no FERC-approved recreational facilities associated with the Borel Project. The reservoir upstream of the powerhouse, Lake Isabella, is operated by the Corps and is not part of the FERC-approved Borel Project. The recreation facilities in the Borel Project Vicinity are managed by the Forest Service, BLM, and private entities, but not SCE; each are described below.

The diversion dam and intake structure and first 5 miles of flowline are situated within Lake Isabella. The other facilities are located on, or adjacent to, the lower Kern River, downstream of Lake Isabella. Therefore, this section includes information about the recreation resources associated with both Lake Isabella and the lower Kern River.

##### *Lake Isabella Recreation*

The Corps created Lake Isabella in 1953 with the construction of Isabella Dam. The reservoir can store up to 550,000 acre-feet of water, most of which is used to irrigate approximately 700,000 acres of cultivated land in Kern County (SCE 2003a). Water stored during spring is generally released for use downstream from approximately May through September. Releases from Lake Isabella create reliable flows in the lower Kern River during summer, when recreation activity peaks.

Lake Isabella was constructed for the principal purpose of flood control for lands and residents of the Central Valley in Kern County. The Kern River water rights holders, who are represented by the Kern River Watermaster, contracted with the United States for 535,000 acre-feet of storage space, subject only to flood control. The United States was paid, in cash, for this space. The storage of water by the downstream irrigators and water users has provided significant opportunities for lake fishing and broadening the season over the past 48 years, primarily during summer for recreational activities downstream in the bypassed reach and through the canyon. Additionally, the regulated operation of Lake Isabella has enhanced hydroelectric generation of five downstream power plants (SCE 2003a).

**DEVELOPED RECREATION AREAS**

Day and overnight uses occur at numerous developed recreation areas situated at various locations around Lake Isabella. Lake Isabella provides recreation opportunities such as camping, flatwater boating, water skiing, jet-skiing, fishing, swimming, wading, and nature viewing (SCE 2021a). To facilitate these activities, a number of overnight campsites, marinas, and boat launches have been constructed along the lake's shore. The location of the developed recreation areas around Lake Isabella, including campgrounds, marinas, and boat access points, are shown in Figure 3.8-1, and federal recreation areas managed by the Forest Service are described below in Table 3.8-1.

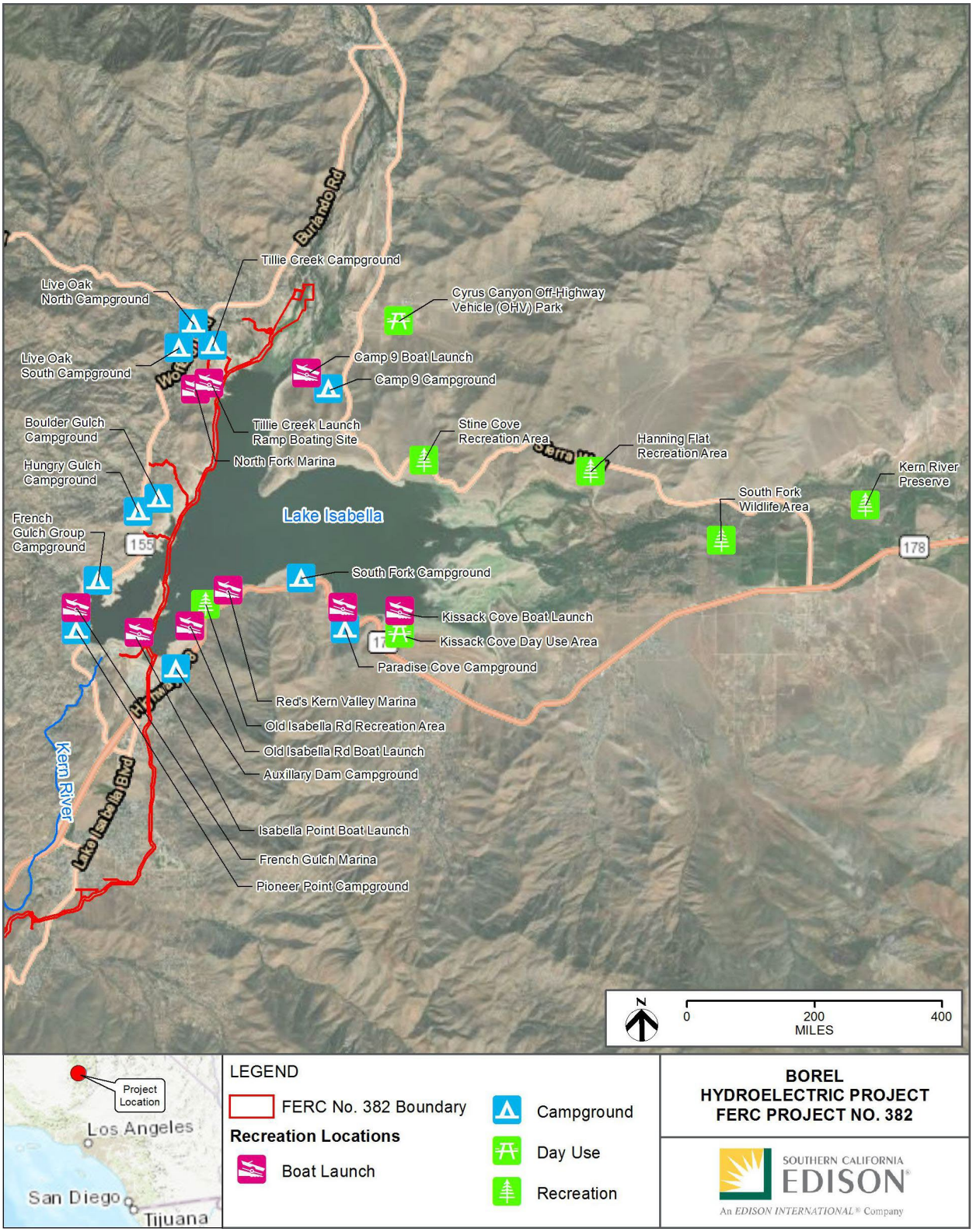



**Figure 3.8-1. Lake Isabella Recreation**

**Table 3.8-1 Federal Recreation Areas Around Lake Isabella Managed by the Forest Service**

| Recreation Area | Description |
|---|---|
| Camp 9 Campground | Located on the eastern side of Lake Isabella, off Sierra Way, and sometimes referred to as "East Side Campground." Sequoia Recreation, a division of California Land Management, operates the campground for SQF, and the Forest Service collects the self-service fees, which are used to manage and service the site. It consists of more than 100 single campsites, available on a first-come, first-served basis, and 11 group sites available by reservation (Recreation.gov 2021). The recreation area includes restrooms with flush and vault toilets, potable water, a RV dump station, a public boat launch, and dock. Campsites include picnic tables and fire rings with grill. The campsites are situated along a series of paved roads that traverse the slope parallel to the shoreline, along terraced terrain. This area is the largest public use area on the eastern side of the lake. |
| Stine Cove Recreation Area | Located on the eastern side of Lake Isabella, along the South Fork arm of the lake. The area does not contain any designated campsites, but day-use and dispersed camping are allowed year-round. An accessible single-unit vault toilet and dumpsters are provided near the entrance. There is no water provided at this site. Unpaved roads traverse the recreation area and provide access to the shoreline. |
| Hanning Flat Recreation Site | Located on the eastern side of Lake Isabella, along the South Fork arm of the lake. This area does not contain any designated campsites, but day-use and dispersed camping is allowed year-round, free of charge. The Forest Service provides a portable toilet and dumpster near the entrance; otherwise, there are no facilities. Unpaved roads traverse the recreation area and provide access to the shoreline. |
| Kissack Cove | Located on the southern shore of Lake Isabella, just west of the town of Mountain Mesa. An accessible single-unit vault toilet is available for day users near the eastern entrance. Additionally, two portable toilets and a dumpster are provided near the main entrance. A boat ramp is located in Kissack Cove. Boats can also be launched from the gently sloping shoreline. This area is known as a good fishing spot. |
| Paradise Cove Campground | Located on the southern shore of Lake Isabella. The campground is managed by a concessionaire under permit with the Forest Service. This popular recreation area includes a day-use area, campsites, parking areas, and boat launch. The campground is open year-round and includes 58 family units and 80 RV sites. The day-use area is located along the shoreline and includes portable toilets and dumpsters. The family campsites include paved parking, picnic tables, grills, and potable water. Boats can be launched from various locations along the gently sloping shoreline. Other amenities include a fish-cleaning station; dumpsters; an RV dump station; and two restrooms with flush toilets, one with showers. |
| South Fork, Old Isabella Road, and Auxiliary Dam Recreation Areas | Located on the southern shore of Lake Isabella, slightly east of Engineer Point, and considered "semi-developed." Public services provided at these facilities include potable water; paved access roads; trash collection; and flush, vault, and portable toilets. Boat launches are located at the South Fork Recreation Area and Old Isabella Road. An RV dump station is located at the Auxiliary Dam Recreation Area. These sites are open for camping year-round. |
| Pioneer Point Campground | Located on the western side of Lake Isabella, just north of the Isabella Main Dam. The campground is managed by a concessionaire under permit with the Forest Service. It includes 78 family units and is open year-round. Other amenities include a fish-cleaning station, flush toilets, potable water, showers, and a playground. The family units have paved parking, picnic tables, and fire rings with grills. |
| French Gulch Group Campground and French Gulch Recreation Area | Located on the western side of Lake Isabella, north of the Isabella Main Dam and Pioneer Point. The campground is managed by a concessionaire under permit with the Forest Service. It includes one group use area, which can accommodate a maximum of 100 people. The campground can also accommodate RVs and is open year-round. Other amenities include a large group fire ring, picnic tables, grills, a paved area with a shade gazebo, potable water, flush toilets, and showers. Paved pathways provide access through the site. The French Gulch Recreation Area includes two parking areas; one parking area has a portable toilet and the other has a flush toilet. There are no developed or designated boat launch ramps; however, boats can be launched from the shoreline. |

**Table 3.8-1 Federal Recreation Areas Around Lake Isabella Managed by the Forest Service**

| Recreation Area | Description |
|---|---|
| Hungry Gulch Campground | Located on the western side of Lake Isabella, between Wofford Heights and the Isabella Main Dam. The campground is managed by a concessionaire under permit with the Forest Service. It includes 78 family units and is open from May through September. The family units have a paved parking area, picnic tables, and fire rings with grills. The campground includes potable water, flush toilets, showers, and a playground. |
| Boulder Gulch Campground | Located on the western side of Lake Isabella, between Wofford Heights and the Isabella Main Dam. The campground is managed by a concessionaire under permit with the Forest Service. It includes 78 family units and is open from April through September. The family units have paved parking, picnic tables, and fire rings with grills. The campground includes potable water, flush toilets, showers, a fish-cleaning station, and a playground. |
| Tillie Creek Campground and Group Area | Located on the western shore of Lake Isabella, near Wofford Heights. The campground is managed by a concessionaire under permit with the Forest Service. The campground includes 159 family units, 4 of which can accommodate persons with disabilities. Additionally, it includes four group areas, one of which is an accessible site. The family campsites and one of the four group sites are open year-round. The remaining three group sites are open from April through November. The family campsites have paved parking, picnic tables, and fire rings with grills and include potable water, flush toilets, showers, a fish-cleaning station, and a playground. The group sites include potable water; portable toilets; and group shade shelters, tables, and grills. |
| Live Oak North and South Campgrounds and Live Oak Group Area | Located on the western side of Lake Isabella, just south of Wofford Heights. The campground is managed by a concessionaire under permit with the Forest Service. Live Oak North includes 60 family units and Live Oak South includes 90 family units. The group area can accommodate a maximum of 100 people. The family campsites are only open on holidays for overflow purposes. The group area is open year-round. The family campsites and group areas include potable water, flush toilets, and showers. |
| Cyrus Canyon OHV Track[a] | Located on the eastern side of Lake Isabella, off Sierra Way. The Cyrus Canyon OHV Track is open year-round. It is open for use by all-terrain vehicles, quads, and motorcycles. The area consists mainly of a 1.5-mile motorcycle/motocross track and a flat area for beginners. The motocross track offers a variety of challenges for novice to expert riders, and several motocross races are held each year. |

Source: SCE 2003a
Key: RV = recreational vehicle
[a] Additional OHV use areas and road classifications are discussed in the lower Kern River recreation section below.

**DISPERSED RECREATION AREAS**

With the exception of a few private parcels, most of the shoreline surrounding Lake Isabella consists of public SQF-managed lands. The SQF allows dispersed day and overnight use on most of these lands. Numerous trails and unpaved pioneered roads are present along large portions of the shoreline and provide access for dispersed recreation (SCE 2003a).

**BOATING ACCESS AREAS**

There are several opportunities to launch both motorized and hand-carry boats on Lake Isabella. Boat access is available at three marinas and six public boat launches at various locations around the lake, as follows:

- Red's Kern Valley Marina;
- French Gulch Marina;
- North Fork Marina;
- Tillie Creek Launch Ramp Boating Site (two ramps);
- Old Isabella Road Boat Launch (two ramps);
- Isabella Point Boat Launch;
- Paradise Cove Campground;
- Kissack Cove Boat Launch; and
- Camp 9 Boat Launch (sometimes referred to as East Side Recreation Area).

Each of the marinas is open seven days per week during spring, summer, and fall, and on a limited basis during winter. All three marinas rent fishing and pleasure boats, pontoon boats, personal watercraft, ski boats and rowboats. Additionally, the marinas offer gas, motor repairs, moorings, slips, bait, food, and beverages. Each of the marinas includes slips, which are available for long- and short-term mooring.

**OTHER RECREATION AREAS**

Aside from the developed campgrounds, dispersed use areas, marinas, and boat launches described above, a variety of other recreation facilities surround Lake Isabella, including a target range, a golf course, a small park located in Wofford Heights, and a visitor center. Additionally, the following notable recreation areas are located along the shores of Lake Isabella.

The Kern River Preserve is located along the South Fork of the Kern River, near the eastern end of Lake Isabella. The Kern River Preserve is managed by the National Audubon Society. It covers 1,127 acres of lush riparian forest, meadow, and wetlands. More than 330 bird species have been documented on and in the vicinity of the preserve, 200 of which nest in the preserve. It is open year-round, from dawn to dusk, and is popular for bird watching and nature viewing. The preserve also hosts two festivals each year: the Bioregions Festival, which is held in April, and the Turkey Vulture Festival, which is held in late September and early October (SCE 2003a).

The South Fork Wildlife Area, also located on the South Fork of the Kern River at its confluence with Lake Isabella, provides recreational opportunities such as fishing, hunting, canoeing, hiking, and birdwatching (SCE 2021a). The Forest Service manages and studies the South Fork Wildlife Area in partnership with Audubon-California, CDFW, Kern River Research Center, the South Fork Resource District, and private landowners. It is considered one of the most extensive riparian woodlands in California. More than 315 bird species have been observed using the area, including a large number of neotropical migratory birds, birds of prey, and waterfowl. The wildlife area is also home to mule deer (*Odocoileus hemionus*), beaver (*Castor canadensis*), coyote, gray fox (*Urocyon cinereoargenteus*), bobcat, and raccoon, and occasionally black bear (*Ursus americanus*) and mountain lion (*Puma concolor*) (SCE 2003a).

### *Lower Kern River Recreation*

The lower Kern River is a popular recreation destination. The following recreation activities occur along the lower Kern River within the Borel Project Vicinity: whitewater boating, fishing, hiking, biking, horseback riding, camping, nature and/or scenery viewing, picnicking, recreational mining, swimming and wading, and OHV use. Water-dependent activities, such as whitewater boating and fishing, are particularly popular in the lower Kern River. As noted above, there are no formal FERC-approved Borel Project recreation facilities.

#### RECREATION AREAS WITHIN THE BOREL PROJECT VICINTY BELOW LAKE ISABELLA

Seven recreation areas are located on the lower Kern River within 0.5 mile of the FERC Project boundary. The locations of these recreation areas are shown in Figure 3.8-2 and briefly described in Table 3.8-2.

These include two developed campgrounds, managed by a concessionaire under permit from the SQF and referred to as Main Dam and Sandy Flat; three developed day use areas on federal land administered by BLM, called Slippery Rock, BLM South, and BLM North; and three dispersed recreation areas, called Keysville SMA, BLM south and BLM at Keysville Bridge.

Access to the lower Kern River between Lake Isabella and Democrat Dam is relatively limited. The river parallels SR 178, but road access from the highway is difficult due to the steep terrain and distance between the river and highway. Additionally, aside from the parking at the designated day-use and overnight facilities discussed previously, there is no legal parking for access to the river. Unimproved and secondary roads provide access to the river from the Old Kern Canyon Road to the river, southwest of Bodfish. Both day- and overnight-dispersed use is allowed on most of the public BLM- and SQF-managed lands, but overnight camping is not allowed within 100 feet of a freshwater source (SCE 2003a).

From the Powerhouse downstream, where the river traverses the SQF, the Old Kern Canyon Road provides the best access to the Kern River. The Old Kern Canyon Road parallels SR 178 on the southern side of the Kern River and can be accessed near Democrat Station, near the Powerhouse, and from the western end of Bodfish. Several small roads and trails lead from the Old Kern Canyon Road to a few river access points and trailheads that are used for dispersed recreation (SCE 2003a).

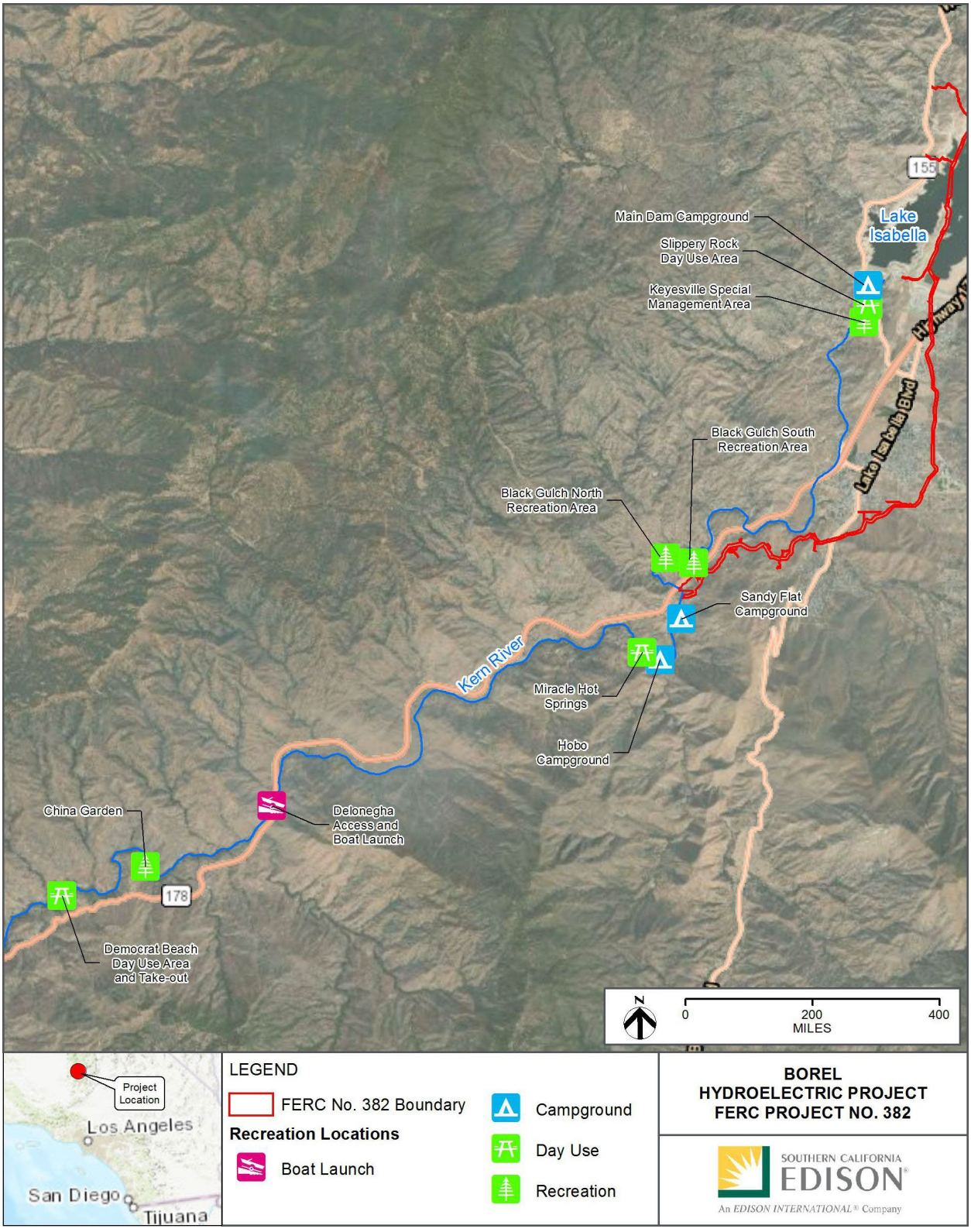



**Figure 3.8-2. Lower Kern Recreational Facilities**

**Table 3.8-2. Recreation Areas within the Borel Project Vicinity**

| Recreation Area | Description |
|---|---|
| ***Developed Overnight Campgrounds*** | |
| Main Dam Campground | Located on the northern side of the Kern River, just below the Isabella Main Dam, off SR 155. The campground is located on a small parcel of SQF-managed land that is enveloped to the west and south by federal land administered by BLM and to the east by privately owned parcels. It consists of 82 family units with fire rings, tables, and grills. Water, flush, and vault toilets and a RV dump station are also available. The campground is generally open Memorial Day through the second Tuesday following Labor Day. |
| Sandy Flat Campground | Located on the southern side of the Kern River, approximately 0.5 mile downstream of the Borel Powerhouse. The campground is managed by a concessionaire under permit with the Forest Service and includes 35 family camping units, each of which include paved parking, tables, and fire rings or grills. The campground is accessible by vehicle via the Old Kern Canyon Road or from the river by boat. The campground also includes accessible vault toilets and drinking water. Six of the sites are walk-in sites, and two are suitable for persons with disabilities. Sandy Flat Campground is open from April through November.<br><br>A developed day-use and boat launch area are located adjacent to the campground and are accessed by the same road. The Sandy Flat area provides good river access for anglers and boaters. The site now serves as a designated launch site. |
| ***Developed Day Use Areas*** | |
| Slippery Rock | Located on the northern side of the Kern River, just south of SR 155. Slippery Rock is located on federal land administered by BLM. Slippery Rock can be accessed from SR 155 by a short, paved road, which leads to a relatively large, paved unloading area. The paved unloading area provides access to a sandy slope, which has been graded and terraced to facilitate boat launching. Other amenities at the site include double-vault, accessible toilets; information signs; garbage bins; and large, unpaved but graded parking areas. The entire site has been fenced to direct traffic and pedestrian flow and to protect the surrounding soils and vegetation from damage.<br><br>Slippery Rock is heavily used by commercial and private boaters. Additionally, it accommodates visitors participating in dispersed streamside activities such as fishing and is used for overnight camping, although no designated campsites are present. |
| BLM South | Located on the southern side of the Kern River, just below Lake Isabella. BLM South is located on BLM- managed land. The site can be reached via an unpaved road that begins at SR 155, approximately 0.5 mile north of its intersection with SR 178. The unpaved road traverses gently sloping terrain for approximately 0.5 mile, where it intersects a short, paved road, which leads to a small, paved unloading area. The paved unloading area provides access to a natural bedrock slope that is used as a boat launch. Other amenities at the site include double-vault, accessible toilets; information signs; garbage bins; and large, unpaved but graded parking areas. BLM South is heavily used by commercial and private boaters. Additionally, it accommodates visitors participating in dispersed streamside activities such as fishing.<br><br>The area immediately upstream of the BLM South day-use area and boat launch is usually referred to as "Keysville South." This area is used for day use but is also a popular dispersed camping area, and the BLM recently began delineating campsites to reduce resource impacts. A network of unimproved roads traverses the hillsides between SR 155 and the Kern River. These roads provide access to segments of the Kern River immediately upstream and downstream of the BLM South site. |

**Table 3.8-2. Recreation Areas within the Borel Project Vicinity**

| Recreation Area | Description |
|---|---|
| BLM at Keysville Bridge (BLM North) | Located on the northern side of the Kern River, approximately 3.5 miles downstream of Lake Isabella at the end of Pearl Harbor Drive, an unpaved road that diverges from Keysville Road. BLM North is located on federal land administered by BLM. The access site is located immediately below a SR 178 bridge crossing but is not accessible from the highway. The site is unimproved, but the BLM provides portable toilets during some low water years. This site is a designated whitewater boat launch site but is usually only used during dry-water years, when flows in the lower Kern River are low. |
| ***Dispersed Recreation Areas*** | |
| Keysville SMA | Keysville South: In addition to the double vault toilet at the main boat launch, a single-vault, wheelchair-accessible toilet is located on the opposite end of the recreation area, often referred to as the "A+" site. Dispersed camping is allowed along the river, with access via dirt roads. OHV use is not allowed in this area.<br><br>Keysville Road: Prior to 2003, the BLM installed two accessible vault toilets in the Keysville Flats area, which is located on the northern side of the river, west of the Slippery Rock put-in site. Dispersed camping is allowed along the river, with access via dirt roads. OHV use is allowed in this area, but it is confined to designated trails. |
| Black Gulch South Area | Located on the southeastern side of the lower Kern River, just upstream of the Powerhouse, between the river and SR 178. It is accessible from SR 178 via Forest Service Road No. 27S08. The entrance is paved and gated, but the main road is unpaved from the gate to the river. Although unpaved, the main road to the river is passable by two-wheel-drive vehicles. Several four-wheel-drive roads branch off the main road, providing access to the river. The Forest Service provides three portable toilets, which are located on a prominent knob near the river. The Forest Service also provides portable dumpsters, which are located at the two most accessible recreation areas. The area is open for overnight use from May through October and receives heavy use during summer holiday weekends |
| Black Gulch North Area | Located on the northwestern side of the Kern River, across the river from Black Gulch South. It is accessible via Forest Service Road No. 27S30, an unpaved road, and other four-wheel-drive roads, which branch off Keysville Road. The site has not been improved and does not include toilets, water, or dumpsters. The area is open year-round. |

Source: SCE 2003a
Key: RV = recreational vehicle

**TRAILS AND ROADS**

Two trails traverse the Borel Project Vicinity. These trails are used by hikers, mountain bikers, and equestrians, and are maintained by the SQF and BLM. The trails are identified on USGS 7.5-minute topographic maps and in Forest Service and BLM information pamphlets. The trails maintained by the Forest Service are briefly described in Table 3.8-3 below.

**Table 3.8-3 Recreation Trails in the Borel Project Vicinity**

| Trail | Description |
|---|---|
| Hobo Fishing Trail | This trail is approximately 0.5 mile long and begins at Hobo Campground and parallels the Kern River northward to Sandy Flat Campground. The trail traverses relatively gentle slopes and provides good river access for fishing and other streamside activities. |
| East Kern Canyon Trail | This trail is 8.5 miles long, begins at the intersection of SR 178 and Delonegha Road, and ends at Keysville. The trail parallels the Kern River through open hillsides of grass and oak and provides good wildflower viewing opportunities, particularly from mid-March through late April. |

Source: SCE 2003a

Mountain biking is popular in the Borel Project Vicinity. Most of the use occurs during two mountain biking festivals that are held each year. Mountain & River Adventures stages the annual Fat Tire Festival on the last weekend in October. The Southern Sierra Fat Tire Association sponsors a stage race called the Keysville Classic during spring. The Keyesville Classic Mountain Biking Race has drawn hundreds of participants and thousands of spectators each year since 1988 (BLM 1996; Keysville Classic 2020).

**WHITEWATER BOATING AND BOATING ACCESS AREAS**

Whitewater boating is a popular recreation activity on the lower Kern River. Boaters generally access the lower Kern River between Isabella Dam and Democrat Dam via six designated sites, established by the BLM and SQF. The location of these sites are generally referred to as: (1) Slippery Rock, (2) BLM South, (3) BLM at Keysville Bridge (BLM North), (4) Sandy Flat, (5) Miracle Hot Springs, and (6) Delonegha. Democrat Beach, located approximately 1 mile upstream of Democrat Dam, is used as a designated take-out. The lower Kern River between the uppermost launch site, Slippery Rock, and the take-out at Democrat Beach is 18.7 miles long. With the exception of one portage, Royal Flush, the entire river from Slippery Rock to Democrat Beach is boatable, depending on flow (SCE 2003a).

Between Slippery Rock and Democrat Beach, the stream gradient averages approximately 29 feet per mile. The gradient in the Borel Project reach, between the Slippery Rock put-in and the Powerhouse, averages approximately 27 feet per mile. Between the Borel Powerhouse and Democrat Beach, the stream gradient is steeper and averages approximately 30 feet per mile. In general, the steeper gradient creates more difficult rapids (SCE 2003a, 2021a).

Local boaters indicate that the reach between Slippery Rock and the Powerhouse (the bypassed reach) is generally easier to boat than the not-bypassed reach downstream of the Powerhouse. The local boaters rate the bypassed reach Class II to III and the not-bypassed reach Class IV, with a mandatory portage, Royal Flush (SCE 2003a). This information is consistent with information contained in a Forest Service information pamphlet and in two published whitewater guidebooks: *A Guide to the Best Whitewater in the State of California* (Holbeck and Stanley 1998) and *California Whitewater* (Cassidy and Calhoun 1990).

The Kern River is boated both privately and commercially. Presently, four commercial outfitters operate on the lower Kern River under Special Use Permit: Kern River Tours, Chuck Richards Whitewater, Whitewater Voyages, and Outdoor Adventures. The commercial outfitters commonly run 2-day trips on the lower Kern River, with camping overnight. As such, the Forest Service has assigned four large camping areas along the lower Kern River to the commercial outfitters. These four sites are accessible by unpaved roads that are gated and locked to discourage use by non-commercial boaters or other visitors (SCE 2003a).

According to Cassidy and Calhoun (1990), the lower Kern River between Lake Isabella and Democrat Dam is runnable in kayaks at flows greater than approximately 400 cfs and in rafts at flows ranging from approximately 700 to 5,000 cfs. According to the BLM, rafters need a minimum of 1,000 cfs to put-in at Slippery Rock and boat the upper 2 miles of the river. “Specifically, a raft must have a streamflow of at least 1,000 cfs in order to pass through the lower portion of [Wallow Rock] rapid” (SCE 2003a). Flows above 400 cfs are typically present year-round during wet and average water years, and from March through August during dry years, both upstream and downstream of the Powerhouse, due to releases from Lake Isabella. Downstream of the Powerhouse, rafting flows (greater than 1,000 cfs) are typically present year-round during average and wet years.

**2001–2002 ANGLER CREEL SURVEY**

The lower Kern River is a popular fishing destination and is open to anglers in the Borel Project area year-round. There are no size restrictions on the fish, but trout are subject to a bag limit of five fish (CDFW 2021a; SCE 2021e). Largemouth and smallmouth bass previously had bag limits of five fish, but these species are no longer subject to bag limits (SCE 2003a; CDFW 2021a).

A creel census and angler survey conducted from June 2001 through May 2002 collected information by interviewing anglers in the Borel Project area and examining their catches. The anglers were questioned concerning: (1) hours fished; (2) fishing method; (3) county of residence; (4) number and size of fish caught and kept, by species; and (5) number and estimated sizes of fish released, by species. If permission was granted, the angler's catch was examined, and the species and lengths of fish were recorded (SCE 2003a).

Results of the angler creel survey indicated fishing pressure in the Borel Project area was primarily focused on the Borel Canal (1,161 angler hours) and sites below the Powerhouse (1,179 angler hours). Fishing pressure in the Borel Project reach was much lower (162 angler hours). Table 3.8-4 shows combined catch rates for each species captured in the three survey areas (SCE 2003a).

**Table 3.8-4 Angler Catch Rates (Fish per Hour) from Three Survey Areas**

| Fish Species | Borel Canal | Bypassed Reach | Powerhouse to Miracle Springs |
|---|---|---|---|
| Rainbow Trout | 0.249 | 0.056 | 0.572 |
| Silver Salmon (likely Chinook Salmon) | 0.003 | 0.012 | 0.005 |
| Channel Catfish | 0.102 | 0.012 | 0.008 |
| Smallmouth Bass | 0.003 | 0.019 | 0.003 |
| Largemouth Bass | 0.012 | 0.031 | 0.008 |
| Crappie | 0.003 | 0.012 | 0.001 |
| Bluegill | 0.006 | 0.012 | 0.003 |
| Sacramento Sucker | 0.003 | 0.062 | 0.009 |
| Carp | 0.009 | 0.012 | 0.024 |
| Sacramento Pikeminnow | 0.003 | 0.012 | 0.002 |
| Unknown | 0.009 | 0.031 | 0.001 |

Source: SCE 2003a

Rainbow trout were the most abundant species caught in the three survey sections, but catch rates were highest in the canal and below the Powerhouse (Table 3.8-4). The total numbers of rainbow trout caught were 674 below the Powerhouse, 289 in the canal, and only 9 in the bypassed reach. As indicated above, anglers fished much less in the bypassed reach than in the other survey sections. Channel catfish were second in numbers caught and were harvested almost exclusively in the canal (118 fish), while largemouth bass were taken in small numbers in the canal (14 fish) and downstream of the Powerhouse (10 fish). Ten Sacramento suckers were caught within the Borel Project reach (SCE 2003a).

### *National Wild and Scenic Rivers*

Two rivers in the Borel Project region were designated as Wild and Scenic Rivers in 1987: the North Fork Kern River and the South Fork Kern River (SCE 2021a). The North Fork Kern River is listed from the Tulare County line to its headwaters in SQF (78.5 miles) and is designated “recreational” from the county line upstream to the Giant Sequoia National Monument and designated “scenic” upstream to the headwaters (SCE 2021a). The South Fork Kern River is listed from its headwaters in the Inyo National Forest to the southern boundary of the Domeland Wilderness (72.5 miles), and includes “recreational,” “scenic,” and “wild” designations (NPS 2021a; SCE 2021a).

Although the lower Kern River has been found to be eligible for study under the Wild and Scenic Rivers Act, no suitability studies have been conducted for any of the lower Kern River segments by any party. Accordingly, none of the lower Kern River and no portions of the Borel Project have been designated Wild and Scenic nor incorporated into the Wild and Scenic Rivers System.

### *Nationwide Rivers Inventory*

The lower Kern River is listed on the National Park Service Nationwide Rivers Inventory, as of 1993, for 21 miles below Lake Isabella to Democrat Dam. This river segment is listed for its diversity of recreation opportunities, scenic contrast of canyon gorge to adjacent valley, and unique habitat for Kern Canyon slender salamander (*Batrachoseps simatus*). The lower Kern River is classified as “scenic” but is also designated for its recreational, scenic, and wildlife values (NPS 2021b).

### *Designated Wilderness Areas*

There are no Wilderness or Special Interest Areas along the lower Kern River or in the immediate Borel Project Vicinity. The Kern River Canyon provides access to several Wilderness Areas, including the Domeland Wilderness Area, the Golden Trout Wilderness Area, and the South Sierra Wilderness Area, which are bisected by the South Fork of the Kern River and are located to the north and east of Lake Isabella (SCE 2003a, 2021a).

## 3.8.1.5 Land Use and Management

### *Existing Land Jurisdictions*

The Borel Project is located in central Kern County. The government agencies that have administrative responsibility over lands in the Borel Project Vicinity include the Corps, Forest Service administered by the SQF, and BLM. Kern County lands in the Borel Project Vicinity also include the unincorporated communities of Kernville, Lake Isabella, Wofford Heights, Bodfish, and Mountain Mesa. The Borel Project facilities are situated on private land that is under Kern County's jurisdiction, and on Corps-, SQF-, and BLM- managed lands (SCE 2003a). Figure 3.1-2 displays land ownership within the Borel Project Vicinity.

The original diversion dam and intake structure, approximately 5 miles of flowline, and the inlet structure at the Auxiliary Dam are located within the high-water boundaries of Lake Isabella. The land bordering Lake Isabella is National Forest, administered by the SQF. The dam structures, gates, and land immediately downstream from the dams (including gauging stations) are owned/managed and operated by the Corps. Below the Lake, the Borel Canal traverses a short segment of federally owned land administered by the Corps, private lands managed by Kern County, and BLM- managed land. Approximately 1.5 miles of the canal and various access roads as well as the Penstocks and Powerhouse are situated on SQF- managed land. Additionally, approximately 3 miles of the bypassed segment of the lower Kern River traverses the SQF (SCE 2003a).

### *Land Uses*

Land use within the FERC Project boundary is generally limited to hydroelectric generation as well as limited recreation. The existing hydroelectric facilities are described in Section 2.1.1 and the Plan (Volume II).

The Kern Integrated Regional Water Management Plan (IRWMP; Kern County Water Agency 2020) states land use in the Kern Region is divided among urban and rural areas, predominately agricultural areas. Agriculture is an important land use in Kern County; it is the third largest agricultural county in the state. Kern County produces more than 250 different crops, as well as lumber, nursery stock, livestock, poultry, and dairy. Mineral and petroleum resources are also fundamental parts of Kern County's economy and land use (Provost & Pritchard Consulting Group 2020).

#### TRANSPORTATION

Access in the Borel Project area is provided by a limited number of state, county, and SQF roads. Access is provided to various parts of the Borel Project via SR 178. This highway is the major transportation route between the City of Bakersfield, the nearest large city, and Lake Isabella. The

highway is primarily used by recreationists traveling to the SQF and the Lake Isabella recreational area (SCE 2003a).

At the southern end of Lake Isabella, SR 178 continues eastward, skirting the southern side of the lake, and is joined by SR 155, which generally parallels the western boundary of the lake through the community of Wofford Heights. A county road provides access to the Powerhouse from SR 178. It connects SR 178 with Old Kern Canyon Road and ends at a private SCE access road (SCE 2003a).

**RESIDENTIAL AND COMMERCIAL USES**

Lake Isabella and the Kern River are bordered mostly by BLM- and SQF-administered land, which is used for recreation or grazing. Recreation uses around Lake Isabella and the lower Kern River are discussed in Section 3.8.1.4. There are several minor population centers in the Borel Project Vicinity: Kernville, Wofford Heights, Mountain Mesa, Lake Isabella, and Bodfish. There are also scattered housing units outside these communities. Wofford Heights and Lake Isabella, which have better access to the lake, have developed recreation facilities (SCE 2003a).

All of these communities are unincorporated and subject to Kern County planning and zoning regulations. Residential units in this part of the county are served by septic tanks for wastewater disposal, restricting the potential future development density (number of units per lot) in the area. Additionally, much of the area has a Steep Zone Slope Overlay that further restricts development density, particularly on hillside lots (SCE 2003a).

Kernville, Wofford Heights, and Lake Isabella are particularly active during May to September, providing accommodations for recreationists. Many of the private housing units are used only during summer as second homes. The local economy is strongly influenced by the recreation activities connected to the SQF, Lake Isabella, and the Kern River. These communities are described below (SCE 2003a).

- Kernville: Located at the northern end of Lake Isabella, this community is recreation-based and contains rural residential and commercial uses. Residential uses range from housing on small lots (four units/acre) to dispersed larger homes on 2-acre or larger lots. Commercial and service uses include resort hotel/motel accommodations, restaurants, and several souvenir shops. Retail establishments are concentrated at the intersection of Kernville Road, Big Blue Road, and Tobias Street in the center of Kernville (SCE 2003a).

- Mountain Mesa: This community is located on the southeastern side of the lake. It is the smallest of the five communities and is mainly residential with a few convenience service establishments (SCE 2003a).

- Wofford Heights: The largest community in the Borel Project area is located on the western side of Lake Isabella. It consists mostly of residential uses, including housing units on a diverse range of lot sizes and in mobile home parks. Residents are retirees and service workers in the tourist industry related to Kern River and Lake Isabella recreation activities (SCE 2003a).

- Lake Isabella: This community has developed a range of residential and commercial uses with the latter being concentrated mainly on Lake Isabella Boulevard. The town developed on both sides of the Borel Canal; as a result, the Wallace Elementary and Middle schools

and Kern Valley High School are on the eastern side of the canal, while most of the residential areas are on the western side of the canal (SCE 2003a). Several pedestrian bridges and vehicular bridges cross over the canal to connect the schools to the residential areas on the opposite side.

- Bodfish: This community is contiguous to the Lake Isabella community development and mostly consists of small lots and mobile home parks. There are also some larger houses on large lots in the hillside areas (SCE 2003a).

**AGRICULTURE**

Lands east of the lake and on most of the land adjacent to the Kern River are used for grazing and are managed by the BLM and SQF. Grazing in the lower Kern Canyon generally takes place from March 1 to November 15. On lands along the eastern portion of the lake, grazing generally takes place from September 15 through February 15 and from May to June (SCE 2003a).

## *Land Planning and Policies*

**FOREST SERVICE – SQF LRMP AND POLICIES**

The majority of the lands within the Borel Project area are under SQF's jurisdiction. Relevant policies guiding the use and development of these lands are described in the SQF LRMP (Forest Service 1988, 2019c), which sets forth forest-wide land management prescriptions and guidelines. These prescriptions describe the desired uses and land management policies within Forest Service lands (Forest Service1988; SCE 2003a, 2021a).

The prescription applied to the Borel Project area is BO2 (i.e., water-oriented recreation in blue oak savanna). The prescription encompasses 6,000 acres (most of which are outside the Borel Project area). The area adjacent to the BO2 designation, beyond the river corridor, is designated Grazing (Forest Service 1988; SCE 2003a).

The relevant SQF-specific management prescriptions within the Borel Project area are as follows (Forest Service 1988; SCE 2003a):

- Recreational opportunities will range from Semi-Primitive Motorized to Rural, occurring on developed sites and concentrated use areas adjacent to streams, rivers, or reservoirs;
- Emphasis will be on Semi-Primitive Motorized and Roaded Natural;
- In the Rural class, driving for pleasure and viewing scenery will also be emphasized;
- All developments will be managed to enhance and emphasize dispersed recreation activities such as rafting, sunbathing, swimming. and fishing in adjacent water bodies;
- Trailhead access roads and primary access routes to developed facilities will be maintained at a minimum of Level 3;
- Firebreaks and fuel breaks will be constructed, and prescribed burning will be used primarily to protect forest users;

- Watershed improvements, which enhance recreational opportunities, will receive priority;
- Transportation system planning and management will favor recreational, interpretive, and visual needs; and
- Livestock management techniques will be used to reduce direct conflict with recreational uses.

**CALIENTE RMP/BAKERSFIELD RMP**

The land within the Borel Project area under BLM jurisdiction is managed according to BLM's Caliente RMP (BLM 1997) and the Bakersfield Approved RMP (BLM 2014). As noted above, the decisions included in the ROD and Approved Bakersfield RMP and its subsequent amendments, supersedes the Caliente RMP, as well as the relevant portions of the 1984 Hollister RMP (BLM 2014). The area is within the Keysville SMA, which covers 7,133 acres (most of which is outside the Borel Project area) (BLM n.d.; SCE 2003a).

At present, mountain biking is a major activity in the Keysville area, and OHVs of all types use the trail system in the area. According to the BLM, this has resulted in damage to resources and some hazards to trail riders.

BLM's management objective for the Keysville SMA is to provide for multiple recreational uses, with particular emphasis on Recreational Mining (BLM 1996; SCE 2003a). The relevant portions of the Management Prescription in the plan for the area includes the following provisions relevant to land use:

- Open for leasing of oil, gas, and geothermal resources;
- Portions limited to day-use only;
- Routes designated in the Keysville SMA for OHV and bicycle travel;
- Livestock grazing available; and
- Recreational mining may be allowed within areas near Keysville that are withdrawn from the general mining laws, subject to permit.

**KERN COUNTY**

The Kern County General Plan was developed to provide long-range guidance to decision-making county officials (SCE 2021a). The objectives of the plan include encouraging economic development; ongoing consultation with federal, state, and local agencies; and maintaining compliance with all state planning and zoning laws (Kern County 2009).

The portion of the Kern County General Plan that applies to the Borel Project area is the Isabella (East and West) Priority Area. This priority area includes the areas surrounding Lake Isabella, the Kern River Valley, and Greenhorn Mountain (SCE 2003a; Kern County 2009). The Priority Area land use designations largely reflect existing uses and consider non-jurisdictional land controlled by other agencies. The main land designations in the Borel Project Vicinity include the following categories:

Resource, Resource Reserve, Extensive Agriculture, Mineral and Petroleum, Resource Management, Public Facilities, Residential, and Commercial (SCE 2003a).

The county has developed policies for the interface of lands in county jurisdiction with lands that are outside its jurisdiction, namely those lands under the control of the SQF or BLM. Kern County's goal for non-jurisdictional land use is "to promote harmonious and mutually beneficial uses of land among the various jurisdictions and land management entities present in Kern County" (Kern County 2009). The county plans to establish a "Review Area" around each federal jurisdiction in order to review proposals or General Plan amendments within the established area with the adjacent agency (Kern County 2009).

## 3.8.2 Environmental Effects

As noted in Section 1.2, the Borel Project is currently non-operational. Flows in the lower Kern River are controlled by the Corps at the direction of the Kern Watermaster; decommissioning of the Borel Project is likely to have no effect on the agricultural or mining industries because none occur within the FERC Project boundary. There may be short-term and minor effects on recreation and land use during decommissioning activities; however, no long-term impacts are expected from Borel Project decommissioning because recreational access will not be impeded, and no non-Project land uses will be modified.

### 3.8.2.1 Recreation

There are no FERC-approved recreation facilities associated with the Borel Project. SCE does not operate or maintain any recreation facilities at Lake Isabella or the lower Kern River. Recreation use associated with the facilities in the Borel Project Vicinity are managed by a combination of the SQF, BLM, and private entities. Both developed and semi-developed recreation areas are heavily used, particularly during summer weekends and holidays.

The Borel Project does not draw recreation visitors to the Kern River or Lake Isabella, although the canal was popular for fishing when it carried water. However, as the Borel Project is no longer operational, water is not present in the canal in the same way as it was before, so it was not the same draw for recreational fishing.

Because the Borel Project does not induce recreation use or increase recreational opportunities, its presence has no effect on existing recreation facilities. Decommissioning of the Borel Project is not expected to affect current or future recreational opportunities or uses in the area. Therefore, no long-term impacts to recreation are expected.

There are six recreation sites located near the Borel Project or access roads that could be temporarily impacted by decommissioning construction traffic:

- Tillie Creek Campground is located near the FERC Project boundary access road at Station 79+00
- Tillie Creek Boat Launch is located near Station 95+00
- Boulder Gulch Campground is located near the FERC Project boundary access road at Station 174+00

- French Gulch Campground is located near potential access roads at Station 255+00
- Pioneer Point Campground is located near potential access roads at Station 272+00
- A boat launch is located near the FERC Project boundary access road at Station 272+00

Additional short-term impacts to nearby recreational facilities include increased noise and dust.

The presence of the Borel Project does not currently affect the Kern River's Wild and Scenic River eligibility status because the Borel Project was present when the eligibility determination was made and was constructed before Congress passed the Wild and Scenic River Act. Moreover, presence of the Borel Project facilities does not conflict with the Forest Service planning direction regarding Wild and Scenic Rivers. The same scenic, recreation, and wildlife conditions existed when the eligibility determination was made (SCE 2003a) and would continue to exist when the Borel Project is decommissioned. Therefore, decommissioning and surrender of the Borel Project would not affect any special interest or other recreation areas.

#### 3.8.2.2 Land Use

As discussed above, the Borel Project is no longer operational, and flows in the bypassed reach are controlled by the Corps, the Kern Watermaster, and downstream water users. Decommissioning of the Borel Project is not likely to affect the agricultural, mining, or recreational industries, which are vital industries to the Kern County area.

The Plan (Volume II) has been developed to be consistent with federal and local management plans, and SCE has been coordinating with the appropriate land management agencies throughout the design process. Project decommissioning and surrender will not affect adjacent land uses; therefore, no long-term effects on land use associated with Borel Project decommissioning would occur.

Short-term effects of Borel Project decommissioning on nearby land uses include construction traffic, noise, and dust. Approximately 1,000 truck trips will be required during Borel Project construction (65 for Upper Borel and 935 for Lower Borel). The majority of truck trips will be required for work in Segments 9 through 11. However, the potential impacts of construction vehicle traffic will be minimized using the measures described in Section 3.8.3. A detailed decommissioning schedule is provided in Appendix D – Anticipated Schedule of the Plan (Volume II).

Scenic resources will be generally improved as facilities are removed and landscape is rehabilitated to match natural conditions. See Section 3.10 for more details on aesthetic resources.

### 3.8.3 Measures

Proposed Measures are summarized in Table 2.2-2. The measures associated with recreation and land use include:

- SCE will consult with the applicable federal, state, and local agencies to obtain necessary permits and will comply with these permits during all decommissioning activities (Measure 1).
- Work area footprints will be confined as much as reasonably practicable. All parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities will be confined, to the greatest extent possible, to previously disturbed areas. Additionally, the

Borel Project footprint/area will be clearly defined and marked to avoid working in areas outside of the approved boundary. Fences and flagging will be installed by the contractor in a manner that does not impact habitats and other sensitive areas to be avoided and such that it is clearly visible to personnel on foot and operating heavy equipment (Measure 2).

- Work areas will be kept clear of garbage, including micro trash (small pieces of trash or smaller, broken-down pieces of trash). Trash and food will be stored in closed containers and removed daily to reduce attractiveness to opportunistic predators such as coyotes, domestic and feral dogs and cats, opossums, skunks, and raccoons. Littering of trash and food waste will be prohibited. Upon completion of a Borel Project activity, the work site will be inspected to ensure it is free of garbage and micro trash. If garbage or micro trash is detected at the site, it will be removed (Measure 3).

- Impacts to the community will be minimized, to the extent possible, through the use of seasonally-appropriate construction windows (Measure 4).

- All construction equipment and vehicles will drive no faster than 15 miles per hour on access roads and anywhere within the FERC Project boundary for reasons of public safety, avoidance of wildlife collisions, and to prevent excess dust. Vehicles will stay on designated roads to the extent reasonably possible. Construction truck trips will be minimized to the extent practicable, particularly in the community and on the grade between Bakersfield and Lake Isabella (Measure 5).

- All work-related materials will be properly stored and secured. Materials that are in any type of liquid or powder form will be stored in sealed leak-proof containers. In addition, all parked vehicles/equipment will be kept free of leaks, particularly antifreeze, as this could be fatal if consumed by wildlife (Measure 6).

- SCE or the contractor will develop a suite of plans that the contractor will be required to follow throughout the decommissioning process. These plans are expected to include, but are not limited to, a traffic control plan, a staging and haul route plan, a materials handling plan, a fire safety plan, a dewatering plan, and a SWPPP (Measure 9).

- Upon completion of work activities, temporarily disturbed areas will be revegetated with native plant species. A revegetation plan will be developed that addresses revegetating areas where Borel Project features have been removed (Measure 17).

- Natural landscape drainage patterns will be maintained to the extent practicable (Measure 30).

- SCE or the contractor will develop a SWPPP in accordance with the State Water Resources Control Board General Construction Permit and local regulations. The SWPPP will include BMPs to reduce or eliminate construction impacts to stormwater runoff (Measure 32).

Measures that will be included in the SWPPP (Measure 30, above) are anticipated to include:

- Erosion control around the work perimeter, at toe of slopes, and at limits of excavation (e.g., silt fencing)

- Construction entrances at access points from public roadways and other stormwater track-off measures
- Care and control of water both entering and exiting the construction site to reduce erosion and siltation
- Dust control of access and haul routes to reduce airborne dust and dirt, including street sweeping and application of water
- Construction equipment fueling and maintenance areas
- Inspection, testing, and reporting
- Hydroseeding, drill seeding, or use of straw or straw blankets in disturbed areas

These measures will prevent significant impact to recreational resources and land use as a result of the proposed action.

# 3.9 Cultural and Tribal Resources

This section, which contains CUI/CEII/ Privileged Information, will be provided separately in electronic format and only to those entities with jurisdiction over those resources.

# 3.10 Aesthetic Resources

## 3.10.1 Existing Environment

### 3.10.1.1 Regional Aesthetics

The lower Kern River descends through a long canyon that is broad and gentle at the upper end where the Borel Project is located. The landscapes are within the blue oak savanna vegetative type where blue oaks, gray pines, canyon live oak, and California buckeye are scattered over the annual grassland. Chaparral is seen on the mid-slopes, and the silhouette of pines on the ridgelines. During spring, the canyon comes alive with the color of wildflowers as orange California poppy ( *Eschscholzia californica*) contrasts with purple lupines (*Lupinus* spp.) and yellow fiddlenecks (*Amsinckia* spp.). As the hills dry, so does the vegetation; before long, the flowers are gone, and the grasses are a golden brown (SCE 2003a).

In contrast to the backdrop of canyon mid-slopes, the river itself is lined with cottonwood, willow, and sycamore trees, some of which overhang the water, creating a cool oasis-like setting in an otherwise hot climate (SCE 2003a).

The contrasting shades of green, the ever-present rock outcrops, and the smooth textured grasses combine with the flowing water to present a scene unique to the Southern Sierra Nevada. The lower Kern River and adjacent landscapes have been classified as "distinctive" by the SQF (SCE 2003a).

The North Fork Kern River and South Fork Kern River are designated as Wild and Scenic Rivers, while the Kern River below Lake Isabella to approximately the Borel Powerhouse area is designated

as eligible for listing as a Wild and Scenic River for recreational values. The Kern River below the Borel Project is designated as eligible for listing as a Wild and Scenic River for scenic values (Forest Service 2019b). The South Fork Kern River is listed on the Nationwide Rivers Inventory for its cultural, scenic, and fishery resource values as a free-flowing river that descends through deep gorges interspersed with open meadows, waterfalls, and diverse vegetation (NPS 2021b). The lower Kern River from below Lake Isabella is also listed on the Nationwide Rivers Inventory for its recreational, scenic, and wildlife resource values as it provides a variety of recreational opportunities, unique habitat, and scenic contrast of canyon gorge with adjacent valley (NPS 2021b).

#### 3.10.1.2 Aesthetics of the Borel Project Area and Facilities

The landscape of the Borel Project area is mottled, created by the variety of vegetation and rock formations. The Borel Project facilities are located in the foothills of the Sierra Nevada Mountains, at elevations ranging from 2,366 and 2,689 feet msl (Psomas 2007). The facilities have been in place since 1904, and have been periodically upgraded, repaired, and painted over the years (SCE 2003a). The facilities generally have a utilitarian appearance consistent with similar hydropower facilities in other rural areas across California and have become a historical part of the landscape.

The northern segment of the Borel Canal from the Diversion Dam and Intake Structure to the Auxiliary Dam is underwater during wet and normal water years. However, when the lake is below 110,000 acre-feet, the Upper Borel facilities are exposed. The Borel Canal extending from the Auxiliary Dam to the Powerhouse crosses a foothills landscape composed primarily of grasses, evergreen shrubs, patches of oak woodland, boulders, and rock outcrops. The canal is constructed of concrete, and a dirt service road typically parallels the canal. The canal passes near the communities of Lake Isabella and Bodfish, in addition to scattered rural residences. The community of Lake Isabella has developed around the canal, which is visible to local residents. Scattered rural development surrounds the remaining upper and lower segments of the canal, which includes fencing and a service road. The rural development along the upper few miles of the canal contrasts with the open space, which characterizes the land adjacent to the canal from the edge of town toward the powerhouse (SCE 2003a; Psomas 2007).

The Penstocks and steel siphons are painted a sand/buff color and the Forebay Structure and equipment are painted a brown color; the paint colors were chosen in coordination with the Forest Service. The Powerhouse is a multi-story natural concrete structure that is not painted, but ivory planters provide some screening. The roof is composed of reflective metal. The Powerhouse also has a small, paved parking area that is visible from SR 178. A fenced electrical switchyard that is not part of the Borel Project is located next to the powerhouse. The metal structures are galvanized, and the transformers are a blue-green color (Psomas 2007).

SCE uses several roads for the routine operation and maintenance of the Borel Project. These roads are owned and maintained by several entities: SCE, Forest Service, Kern County, and the communities of Wofford Heights, Lake Isabella, and Bodfish. Some of these roads are paved and some are unimproved. From a visual perspective, no areas of slope scarring, erosion, or vegetation clearing are attributable to these access roads (Psomas 2007).

Passersby on SR 178, particularly northbound passengers, may see a portion of the Powerhouse, Forebay Structure, and Penstocks, but this is not a clear and prominent view. This viewshed, from

SR 178 looking east, is formed by V-shaped canyon walls that open into a valley in the center, framed by ranges of mountains converging on both sides. The tree cover is a mixture of blue (deciduous) oak, live oak (evergreen), gray pine, sycamore, and willow (SCE 2003a).

These Borel Project facilities present a moderate to high contrast in line, color, texture, and form as compared with the features of the surrounding landscape. Because the Visual Quality Objective (VQO; discussed below) is "Retention," the existing facilities are judged to have high adverse effects upon the visual resources in this area. However, the Powerhouse, Forebay Structure, canal, and Penstocks have been a part of this landscape since 1905 and are accepted elements within the scenic management guidelines of a cultural landscape (SCE 2003a).

No designated state scenic highways are located within the Borel Project Vicinity (Caltrans 2021). Three “Eligible State Scenic Highways” pass through Kern County; however, none are located in the Borel Project Vicinity (Kern County 2009).

#### 3.10.1.3 Visual Resources Management

The Borel Project is located on federal lands administered by the Forest Service within the SQF, federal lands administered by BLM (Caliente Management Area; now referred to as the Bakersfield Field Office Planning Area), and Kern County-managed lands. The BLM parcels are managed as “Unallocated Land Available for Grazing” and “Land Available for Grazing” (BLM 1996). Under the Forest Service LRMP, land around the Borel Powerhouse and lower Borel Canal are managed as “Water Oriented Recreation” and “Grazing” (Forest Service 1988). The Kern County General Plan provisions for aesthetic resources are generally related to preservation of oak woodlands and smart growth policies for growth and development, such as upgrading visual character of industrial areas through landscaping and screening (Kern County 2009; SCE 2021a).

The BLM Visual Resource Management (VRM) System provides a way to identify and evaluate scenic resources and determine appropriate management policies for federal lands administered by BLM (BLM 2012). BLM lands around Lake Isabella and in the Borel Project Vicinity are generally classified in the Visual Resource Inventory as Class III and IV. VRM class objectives are described in Table 3.10-1. Through consultation with the BLM during Borel Project relicensing and post-licensing coordination, the BLM noted that aesthetic resources were not of concern regarding the existing Borel Project features (SCE 2003a; Psomas 2007).

**Table 3.10-1. BLM Visual Resource Management Class Descriptions**

| VRM Class | Class Objective |
|---|---|
| I | Preserve landscape character. This class provides for natural ecological changes but does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention. |
| II | Retain existing landscape character. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract a casual observer's attention. Any changes must repeat the basic elements of line, form, color, and texture found in the predominant natural features of the characteristic landscape. |
| III | Partially retain existing landscape character. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate a casual observer's view. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape. |
| IV | Provide for management activities that require major modification of the landscape character. The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic landscape elements. |
| Rehabilitation Areas | Areas in need of rehabilitation should be flagged during the inventory process. The level of rehabilitation is determined through the RMP process by assigning the VRM approved for that particular area. |

Source: BLM 2012

The Powerhouse and adjacent 1.5-mile segment of the Borel Canal are located within the SQF, which is managed by the Forest Service, and would be directly subject to the Forest Service Scenery Management System (SMS) (Forest Service 1995; SCE 2021a). However, License Article 413 extends the area of consideration to the entire FERC Project boundary. The Forest Service has been transitioning from the Visual Management System (VMS) to the newer SMS, which uses different scenery evaluation terminology (Forest Service 2019a). Each terminology is referenced in this application for clarity, with the VMS terminology referenced first.

VQOs under the VMS, or Scenic Integrity Objectives (SIOs) under the SMS, are measurable standards for the visual management of SQF public lands (SCE 2021a). Established VQOs (SIOs) include the land designations correlated to the values set forth in a variety of classes and sensitivity levels shown in Table 3.10-2.

**Table 3.10-2. Crosswalk between the Visual Management System and Scenery Management System Terminology and Definitions**

| VMS Terminology (Visual Quality Objectives) | SMS Terminology (Scenic Integrity Objectives) | Definition |
|---|---|---|
| Preservation | Very High | The valued scenery appears natural or unaltered. Only minute visual disturbances to the valued scenery, if any, are present. |
| Retention | High | The valued scenery appears natural or unaltered, yet visual disturbances are present; however, they remain unnoticed because they repeat the form, line, color, texture, pattern, and scale of the valued scenery. |
| Partial Retention | Moderate | The valued scenery appears slightly altered. Noticeable disturbances are minor and visually subordinate to the valued scenery because they repeat its form, line, color, texture, pattern, and scale. |
| Modification | Low | The valued scenery appears moderately altered. Visual disturbances are co-dominant with the valued scenery and may create a focal point of moderate contrast. Disturbances may reflect, introduce, or "borrow" valued scenery attributes from outside the landscape being viewed. |

**Table 3.10-2. Crosswalk between the Visual Management System and Scenery Management System Terminology and Definitions**

| VMS Terminology (Visual Quality Objectives) | SMS Terminology (Scenic Integrity Objectives) | Definition |
|---|---|---|
| Maximum Modification | Very Low | The valued scenery appears heavily altered. Disturbances dominate the valued scenery being viewed; they may only slightly borrow from, or reflect, valued scenery attributes within or beyond the viewed landscape. |

Source: Forest Service 2019a

Forest Service VQOs, or SIOs, are established on the basis of a classification of landscape types from: Minimal – areas whose features have little change in form, line, color, or texture, which can be modified; Common – areas which contain features with variety in form, line, color, or texture, but which tend to be common throughout the character type and are not outstanding in visual sensitivity that can be considered for partial retention; and Distinctive – areas whose features of landform, vegetation patterns, water forms, and rock formations are of unusual or outstanding visual quality that should be preserved or retained in their present condition (SCE 2003a, 2021a).

Through consultation with the Forest Service during Borel Project relicensing, the VQOs for the Borel Project area and its surroundings in the Forest Service Plan have been designated as Type II (Retention, High) and Type III (Partial Retention, Moderate). For Retention (High), any visual changes should not be evident along the lower Kern River. For Partial Retention (Moderate), visual changes are noticed, but do not attract attention in adjacent areas (Psomas 2007).

Article 413 of the Borel Project license and Forest Service Section 4(e) Condition 21(b) required SCE to develop a Visual Management Plan in consultation with the Forest Service. SCE filed the Visual Management Plan with FERC in 2007. The goal of this plan is to ensure that continued operation, maintenance, and any new activities associated with the Borel Project do not degrade visual quality, `and when possible, improve aesthetics of current facilities to higher visual standards (Psomas 2007). The objectives of the plan are as follows:

- Ensure that ongoing Borel Project operation and maintenance activities more closely conform to VQOs established in the Sequoia Forest Management Plan;
- Evaluate potential screening of Borel Project facilities from SR 178; and
- Ensure that any disturbed areas resulting from future Borel Project operation and maintenance actions are re-graded and re-vegetated to be visually harmonious with the surrounding landscape.

### 3.10.1.4 Visual Resource Assessment

The visual compatibility of the Borel Project facilities with the surrounding landscape was assessed during the previous relicensing in 2001 based on the SQF VMS. The purpose of the evaluation was to provide a basis for understanding the aesthetic consequences of the existing Borel Project facilities on scenic views by members of the public using representative active recreation, drive-by, and residential sites within the Borel Project area. Several Key Observation Points (KOPs) were

assessed in coordination with the Forest Service regarding where the Borel Project facilities are visible and what visual characteristics comprise these viewsheds.

The selection of KOPs was largely based on the Forest Service's existing visual conditions database and extensive knowledge of the Borel Project and its surroundings. The KOPs that were selected are: (1) Camp Nine, (2) French Gulch Native American Interpretive Center and Parking, (3) Keysville South, (4) SR 178, (5) Black Gulch, and (6) Sandy Flat. The Borel Project facilities are not visible from any of the recreation areas, and it was determined that the Borel Project facilities have no adverse effects on aesthetics for recreationists. However, as stated above, the Powerhouse, Forebay Structure, and Penstocks are visible momentarily by passersby on SR 178 (SCE 2003a).

## 3.10.2 Environmental Effects

Some common developments in the SQF that alter scenic integrity include power lines, communication sites, substations, propane tank storage, geothermal development, ski areas, hydropower facilities, reservoirs, recreation facilities, resorts, and temporary conditions like dust and smoke (Forest Service 2019a). The removal and modification of Borel Project facilities, as well as revegetation and rehabilitation of disturbed areas, is expected to have a long-term beneficial impact to aesthetic resources in the Borel Project Vicinity as natural conditions are restored in the majority of the Borel Project area.

However, construction activities related to Borel Project decommissioning, such as construction vehicles and traffic, dust, and staging areas, will have a temporary short-term negative impact on aesthetic resources in the Borel Project area. No scenic resources, such as forests, distinct landscapes, or rock outcroppings, will be affected by the proposed action. All work areas will be rehabilitated and revegetated to pre-existing conditions and areas where facilities are removed will be graded to conform to natural topography and rehabilitated/revegetated to match adjacent areas. Certain areas will be noticeably barren until revegetation takes hold, particularly the area where the Penstocks are planned to be removed above the Powerhouse, which is visible from SR 178.

The exterior of the Powerhouse is currently illuminated with a sodium light for safety and security reasons. This is the only portion of the Borel Project that is illuminated at night. The existing lighting is not considered to have an adverse effect because sightseeing occurs during the daylight hours, and the lighting is relatively subdued. The reflective aluminum roof can produce glare during the daytime, and the glare can accentuate contrasts in the landscape presented by the Powerhouse.

The Powerhouse, Forebay Structure, and Penstocks are visible from SR 178 and are judged to have high adverse effects because of the VQO (SIO) of Retention (High) and the relatively high contrast in line, form, texture, and color with the surrounding landscape. All Borel Project facilities visible from SR 178 are proposed to be removed (Powerhouse, Forebay Structure, and Penstocks). The existing Powerhouse lighting and roof glare will no longer affect aesthetics on SR 178.

From the previous visual resource assessment, no other Borel Project facilities were found to create visual contrast from the other KOPs, which included a variety of recreation sites (SCE 2003a). It can therefore be expected that the decommissioning of those Borel Project facilities may positively affect the aesthetic resources or scenic views from these nearby recreation areas.

The Borel Canal is visible from the local communities of Lake Isabella and Bodfish and other smaller rural developments. With the exception of the Diversion Dam and Intake Structure and Overflow Dam at Settling Basin upstream of the Canal Inlet Structures which are all proposed to be abandoned in place, the Borel Canal will be abandoned with modification (e.g., bridges, siphons, tunnels), demolished and buried or backfilled, or demolished and hauled off site (e.g., penstocks, flumes). Construction to decommission the canal will include removal of the concrete lining of the canal segments, removal of flume structures, backfilling the canal, and grading to conform to natural topography. All disturbed areas will be rehabilitated and revegetated to match the existing nearby conditions. Decommissioning of the canal will cause temporary short-term impacts to aesthetic resources of local communities through construction vehicle traffic, dust, and staging areas. However, restoration of the canal areas will be a positive long-term permanent impact to the aesthetics of local communities.

### 3.10.3 Measures

Proposed Measures are summarized in Table 2.2-2. The measures associated with aesthetic resources include:

- SCE will consult with the applicable federal, state, and local agencies to obtain necessary permits and will comply with these permits during all decommissioning activities (Measure 1).
- Work area footprints will be confined as much as reasonably practicable. All parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities will be confined, to the greatest extent possible, to previously disturbed areas. Additionally, the Borel Project footprint/area will be clearly defined and marked to avoid working in areas outside of the approved boundary. Fences and flagging will be installed by the contractor in a manner that does not impact habitats to be avoided and such that it is clearly visible to personnel on foot and operating heavy equipment (Measure 2).
- Work areas will be kept clear of garbage, including micro trash (small pieces of trash or smaller, broken-down pieces of trash). Trash and food will be stored in closed containers and removed daily to reduce attractiveness to opportunistic predators such as coyotes, domestic and feral dogs and cats, opossums, skunks, and raccoons. Littering of trash and food waste will be prohibited. Upon completion of a Borel Project activity, the work site will be inspected to ensure it is free of garbage and micro trash. If garbage or micro trash is detected at the site, it will be removed (Measure 3).
- Impacts to the community will be minimized, to the extent possible, through the use of seasonally appropriate construction windows (Measure 4).
- All construction equipment and vehicles will drive no faster than 15 miles per hour on access roads and anywhere within the FERC Project boundary for reasons of public safety, avoidance of wildlife collisions, and to prevent excess dust. Vehicles will stay on designated roads to the extent reasonably possible. Construction truck trips will be minimized to the extent practicable, particularly in the community and on the grade between Bakersfield and Lake Isabella (Measure 5).

- Use certified weed-free straw or rice straw for all construction, erosion control, or restoration needs. Use gravel and sand from local and weed-free sources where possible. Whenever possible, dispose of any spoils onsite, graded to match local contours, and use fill collected onsite (Measure 8).
- Upon completion of work activities, temporarily disturbed areas will be revegetated with native plant species. A revegetation plan will be developed that addresses revegetating areas where Borel Project features have been removed (Measure 17).
- Natural landscape drainage patterns will be maintained to the extent practicable (Measure 30).
- SCE or the contractor will develop a SWPPP in accordance with the State Water Resources Control Board General Construction Permit and local regulations. The SWPPP will include BMPs to reduce or eliminate construction impacts to stormwater runoff (Measure 32).

# 3.11 Socioeconomic Resources

## 3.11.1 Existing Environment

The Borel Project is located within Kern County. With a total land area of more than 5.2 million acres, Kern County is the third largest county in the State of California. Kern County has an abundance of natural resources, open space, and productive farmland, which are important to its growth and economic prosperity (Kern County 2009; SCE 2021a). Small unincorporated towns such as Lake Isabella and Bodfish are located nearest to the Borel Project.

### 3.11.1.1 Power Generation

In 2020, hydropower represented 11.22 percent of California's in-state power generation portfolio (California Energy Commission 2021). California has a total of 274 hydroelectric facilities, with a total installed capacity of 14,042 MW. In 2020, solar generated 15.43 percent of in-state power, wind generated 7.18 percent, geothermal generated 5.94 percent, and biomass generated 2.45 percent.

Power generation from biomass has increased locally in Kern County, while the solar energy potential in the region has been largely untapped (Provost & Pritchard Consulting Group 2020). Kern County also produces approximately one-third of the state's wind energy and values other renewable energy opportunities such as solar and geothermal energy (Kern County 2009).

The Borel Project is currently non-operational but has a total installed capacity of 12 MW. During prior operations, the Borel Project generated an estimated average of 57,000 MW hours of energy annually (FERC 2005).

### 3.11.1.2 Communities, Population, and Housing

The communities that are located in the Borel Project Vicinity are described in Section 3.8.1.5 and include Kernville, Mountain Mesa, Woodford Heights, Lake Isabella, and Bodfish. Recreation areas in the Borel Project Vicinity are described in Section 3.8.1.4. In addition to the communities located in the Borel Project Vicinity, there are residences, businesses, recreation areas, schools, and churches located near the canal. Churches located in the immediate vicinity of the canal include

Kern River Valley Seventh-day Adventist Church, Mt. View Southern Baptist Church, Garden Community Fellowship, and First Missionary Baptist Church. Schools in the vicinity of the canal include Woodrow W. Wallace Elementary and Middle School and Kern Valley High School.

The incorporated cities of Kern County are experiencing rapid population growth, while the unincorporated areas near the Borel Project facilities are not experiencing the same growth. The population of Kern County increased 22 percent from 1990 to 2002, and the estimated population of Kern County increased 7 percent between 2010 and 2019 (Kern County 2009; USCB 2019). Population projections estimate more than 1 million people will reside in Kern County by the year 2030 (Provost & Pritchard Consulting Group 2020). The population of Kern County is largely Latino (54 percent) and White (34 percent) (Provost & Pritchard Consulting Group 2020). Table 3.11-1 provides population statistics for Kern County from the U.S. Census Bureau.

**Table 3.11-1. Kern County Socioeconomic Conditions**

| Category | Amount |
|---|---|
| Population, 2010 Census | 839,621 |
| Population, Estimate 2019 | 900,202 |
| Population per Square Mile | 103.3 |
| Civilian Labor Force, Age 16+, 2015–2019 | 58.0% |
| Housing Units, 2019 | 302,898 |
| Average Persons per Household, 2015–2019 | 3.17 |
| Median Household Income, 2015–2019 | $53,350 |
| Poverty Rate | 19.0% |

Source: USCB 2019

### 3.11.1.3 Industry, Economy, and Employment

The geographic location of the county, in proximity to several large population centers and transportation corridors, provides an ample workforce (Kern County 2009). In November 2021, Kern County's resident civilian labor force totaled approximately 388,800 people (State of California 2021). Unemployment in the county during November 2021 was 7.4 percent, as compared to 5.4 percent in the State of California and 3.9 percent for the United States.

The economy of Kern County is driven by a diverse range of assets, including agriculture, oil, and warehousing services (Provost & Pritchard Consulting Group 2020; SCE 2021a). Other growing industries include transportation and logistics. Agriculture is Kern County's most productive industry (Kern County 2009). However, similar to trends statewide, the county has faced pressure to convert farmland to housing, industrial, and commercial development. Following agriculture in terms of economic importance to Kern County are mineral and petroleum resources.

Employment by industries located within the county is dominated by agricultural sectors; trade, transportation, and utilities; educational and health services; leisure and hospitality; and mining and logging (Table 3.11-2).

**Table 3.11-2. Employment in Major Industries in Kern County**

| Industry | Labor Force (Number of People) |
|---|---|
| **Total, All Industries** | 339,900 |
| **Total Farm** | 72,100 |
| **Total Nonfarm** | 267,800 |
| *Mining, Logging, and Construction* | 23,300 |

**Table 3.11-2. Employment in Major Industries in Kern County**

| Industry | Labor Force (Number of People) |
|---|---|
| *Manufacturing* | 12,400 |
| *Trade, Transportation, and Utilities* | 57,200 |
| *Information* | 1,600 |
| *Financial Activities* | 7,300 |
| *Professional and Business Services* | 27,700 |
| *Educational and Health Services* | 39,200 |
| *Leisure and Hospitality* | 26,900 |
| *Other Services* | 7,700 |
| *Government* | 64,500 |

Source: State of California 2021

In the immediate Borel Project area, the basic industry is recreation, although mining and silviculture activity is also present. The economics of recreation was assessed during the previous relicensing of the Borel Project between 2001 and 2003. In 2001, spending attributable to recreation activity along the Kern River between Lake Isabella and Democrat Beach was estimated to total $3.9 million in Kern County, including $3.4 million in spending by nonresidents of the county. Compared to 2001 employment in Kern County, the jobs generated by total spending related to recreation activity in the Borel Project area represented approximately 0.17 percent of the jobs in recreation-serving businesses and approximately 0.03 percent of total jobs in Kern County. In 2001, spending attributable to recreation activity in the Borel Project area generated an estimated $3.2 million in personal income in Kern County, including $2.9 million generated by the spending of nonresidents. This income represents approximately 0.02 percent of total personal income received by Kern County residents in 2001 (SCE 2003a).

## 3.11.2 Environmental Effects

### 3.11.2.1 Power Generation

The Borel Project is currently non-operational, and the Borel Project's total installed capacity of 12 MW is only 0.00085 percent of California's total hydroelectric capacity. Kern County and the State of California have ambitious renewable energy goals, and California is ahead of its 60 percent renewable generation goal by 2030, according to progress tracking of the state's renewable generation goals (California Energy Commission 2020). Annual renewable power generation has been steadily increasing in the state since 2013. As a result, the Borel Project surrender will not have adverse effects on power generation needs in Kern County or the State of California.

### 3.11.2.2 Communities, Population, and Housing

SCE's construction schedule projects that up to three crews will simultaneously work on Borel Project decommissioning, in different areas. Each crew will consist of 5 to 10 workers, depending on the work (i.e., flume dismantling will require a larger crew). In total, 10 to 20 workers are expected to be required at any one time during decommissioning. These workers may be local and reside in Kern County or adjacent counties, in which case they will commute to the Borel Project area for work daily. Workers may also temporarily relocate to the Borel Project area during decommissioning activities, which are expected to take approximately 3 years. Temporary workers may reside in the several motels, recreational vehicle parks, or campgrounds in the Borel Project Vicinity or available nearby rental properties.

The number of additional workers needed for the Borel Project decommissioning will not cause a significant increase in population and strain the housing market or other public services, such as education, healthcare, and emergency services. There appears to be sufficient temporary housing in the Lake Isabella area for the limited number of potential temporary workers. Additional accommodations are also available in the city of Bakersfield, approximately 40 miles from the Borel Project area, should it be necessary.

Several communities, schools, churches, businesses, and residencies are located adjacent to the Borel Canal, where decommissioning activities are proposed. The Borel Canal will generally be graded to conform to natural topography, and drainage features will be designed to prevent potential flooding to local properties and parcels. During decommissioning, these communities and adjacent parcels will experience short-term, temporary, localized impacts such as increased construction vehicle traffic, noise, and dust. Long-term impacts to local communities, population, and housing values are not expected.

SCE will utilize mitigation measures such as a SWPPP and methods to reduce traffic, noise, and dust and to prioritize public safety. Measures may include erosion and dust control and reseeding and restoring disturbed areas. Additionally, construction schedules will be designed to reduce impacts to sensitive areas such as churches and schools to the extent practicable, such as performing work on the Borel Canal segments adjacent to the schools during summer, when school is not in session. These measures are described in Section 3.11.3. Consultation with local landowners, communities, and other stakeholders has been ongoing and is described in Volume IV (Record of Consultation) of this Application.

#### 3.11.2.3 Industry, Economy, and Employment

SCE's construction schedule projects that up to three crews will work on Project decommissioning at a time, in different areas. Each crew will consist of five to 10 workers depending on the work (e.g., flume dismantling will require a larger crew). In total 10-20 workers are expected to be required at any one time during decommissioning. These workers may be local and reside in Kern County or adjacent counties, in which case they will commute daily to the Borel Project area for work or may temporarily relocate to the Borel Project area during construction. The local community will experience a temporary benefit from the creation of jobs for construction and related workers. Additionally, the workers that temporarily relocate to the area will likely spend money at local businesses during their time in the area, which will benefit local communities. To provide positive benefit to the local community, construction supplies will be purchased from local businesses to the extent practicable, although it is expected that supplies will also need to be purchased outside of Kern County.

Long term, there may be a small loss of economic benefit to the local communities, as SCE will no longer have personnel in or around the area to operate or maintain the Borel Project.

Other important industries in the Borel Project Vicinity include agriculture and recreation. Impacts related to the agricultural industry are not expected. Recreation areas in the immediate vicinity of construction, including those discussed in Section 3.8.2.1, may experience temporary, short-term, localized impacts such as increased construction vehicle traffic, noise, and dust. However, long-term impacts to recreation areas are not expected.

### 3.11.3 Measures

Proposed measures are summarized in Table 2.2-2. The measures associated with socioeconomic resources include:

- SCE will consult with the applicable federal, state, and local agencies to obtain necessary permits and will comply with these permits during all decommissioning activities (Measure 1).
- Work areas will be kept clear of garbage, including micro trash (small pieces of trash or smaller, broken-down pieces of trash). Trash and food will be stored in closed containers and removed daily to reduce attractiveness to opportunistic predators such as coyotes, domestic and feral dogs and cats, opossums, skunks, and raccoons. Littering of trash and food waste will be prohibited. Upon completion of a Borel Project activity, the work site will be inspected to ensure it is free of garbage and micro trash. If garbage or micro trash is detected at the site, it will be removed (Measure 3).
- Impacts to the community will be minimized, to the extent possible, through the use of seasonally-appropriate construction windows (Measure 4).
- All construction equipment and vehicles will drive no faster than 15 miles per hour on access roads and anywhere within the FERC Project boundary for reasons of public safety, avoidance of wildlife collisions, and to prevent excess dust. Vehicles will stay on designated roads to the extent reasonably possible. Construction truck trips will be minimized to the extent practicable, particularly in the community and on the grade between Bakersfield and Lake Isabella (Measure 5).
- SCE or the contractor will develop a suite of plans that the contractor will be required to follow throughout the decommissioning process. These plans are expected to include, but are not limited to, a traffic control plan, a staging and haul route plan, a materials handling plan, a fire safety plan, a dewatering plan, and a SWPPP (Measure 9).

## 3.12 Environmental Justice

Executive Order 14008, Tackling the Climate Crisis at Home and Abroad, and Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, as amended, require federal agencies such as FERC to consider if impacts on human health or the environment would be disproportionately high and adverse for environmental justice communities in the surrounding community resulting from the federal agency's programs, policies, or activities, such as issuing an order surrendering a license. Section 3.12.1 provides racial, ethnic and poverty statistics for each census block group within the Borel Project's FERC Project boundary and a one-mile wide buffer around the boundary.[19] Section 3.12.2 identifies potentially-affected

[19] For this analysis, SCE uses a 1-mile-wide buffer around the existing FERC Project boundary based on FERC's direction in FERC's May 13, 2022, Study Plan Determination to the licensee for the Ripogenus and Penobscot Mills hydroelectric projects (P-2572 and P-2458) to conduct an Environmental Justice Study using a 1-mile-wide buffer around the FERC project boundaries, on FERC's direction in FERC's April 20, 2022, Additional Information Request to the licensee for the Racine Hydroelectric Project (P-2570) to conduct an Environmental Justice Study using a 1-mile-wide buffer around the FERC Project boundary, and on FERC's direction in FERC's May 17, 2022,

environmental justice populations and communities. Section 3.12.3 identifies non-English speaking groups and sensitive receptor locations (e.g., schools, day care centers and hospitals) potentially affected by SCE's proposed Plan and surrender of the license. SCE's proposed measures related to environmental justice, if any are warranted, are described in Section 3.12.4. Section 3.12.5 assesses potential impacts to environmental justice populations and communities under SCE's proposed Plan and surrender of the license. Section 3.12.6 describes environmental justice measures that were recommended by agencies that were not adopted by SCE and why.

## 3.12.1 Relevant Racial, Ethnic and Poverty Statistics

Table 3.12-1 provides racial, ethnic and poverty statistics for each census block group within the Borel Project's FERC Project boundary and a one-mile wide buffer around the boundary by: 1) total population; 2) total population of each racial and ethnic group (i.e., White Alone Not Hispanic, African American, American /Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, some other race, two or more races, Hispanic or Latino (count for each group); 3) minority population including individuals of Hispanic, Latino and Hmong origin as a percentage of total population[20]; and 4) total population below poverty level as a percentage.[21] Comparative information for California and Kern County, the county in which the Borel Project is located, is also provided. The information is from the U.S. Census Bureau's most recently available American Community Survey 5-year Estimates using table #B03002 for race, and ethnicity data and table #B17017 for low-income households.



Additional Information Request to the licensee for the Constantine Hydroelectric Project (P-10661) to conduct an Environmental Justice Study using a 1-mile-wide buffer around the FERC Project boundary.

20 Calculated by subtracting the percentage of "White Alone Not Hispanic" from 100 percent for any given area.

21 Calculated by dividing the total households below the poverty level by the total number of households and multiplying by 100.

**Table 3.12-1. Racial, ethnic and poverty statistics for California, Kern County, and each Census Block Group within the Borel Project's FERC Project boundary and within a one-mile-wide buffer of the boundary.**

| | Race and Ethnicity Data | | | | | | | | | | Low-Income Data |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total Population | White Alone Not Hispanic | African American | Native American/Alaska Native | Asian | Native Hawaiian & Other Pacific Islander | Some Other Race | Two or More Races | Hispanic or Latino | Total Minority % | Below Poverty Level % (% of households) |
| California | 39,283,497 | 14,605,312 | 2,169,155 | 140,831 | 5,610,931 | 140,788 | 100,119 | 1,188,673 | 15,327,688 | 63% | 12.52% |
| Kern County | 887,641 | 303,225 | 45,761 | 4,303 | 40,730 | 1,115 | 873 | 18,260 | 473,374 | 66% | 18.89% |
| Census Tract 52.01 Block Group 3 | 742 | 726 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 2% | 33.80% |
| Census Tract 52.01 Block Group 4 | 1,623 | 1,315 | 0 | 0 | 0 | 0 | 0 | 0 | 308 | 19% | 21.21% |
| Census Tract 52.01 Block Group 6 | 189 | 118 | 0 | 0 | 19 | 0 | 0 | 0 | 52 | 38% | 16% |
| Census Tract 52.01 Block Group 7 | 577 | 450 | 2 | 0 | 0 | 0 | 0 | 0 | 125 | 22% | 14.50% |
| Census Tract 52.03 Block Group 4 | 1,019 | 941 | 0 | 23 | 0 | 0 | 0 | 35 | 20 | 8% | 31.40% |
| Census Tract 52.04 Block Group 1 | 829 | 650 | 17 | 29 | 5 | 0 | 0 | 4 | 124 | 22% | 25.20% |
| Census Tract 52.04 Block Group 2 | 1,034 | 928 | 0 | 44 | 0 | 0 | 0 | 0 | 62 | 10% | 68.68% |
| Census Tract 52.04 Block Group 3 | 1,411 | 926 | 0 | 0 | 55 | 0 | 0 | 83 | 347 | 34% | 13.40% |
| Census Tract 52.04 Block Group 4 | 1,380 | 1,042 | 0 | 51 | 0 | 0 | 0 | 52 | 235 | 24% | 28.57% |
| Census Tract 52.04 Block Group 5 | 1,309 | 1,268 | 0 | 0 | 0 | 0 | 0 | 0 | 41 | 3% | 25.78% |
| ONE MILE BUFFER DATA BELOW | | | | | | | | | | | |
| Census Tract 52.01 Block Group 3 | 255 | 249 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 1% | 11.61% |
| Census Tract 52.01 Block Group 4 | 398 | 322 | 0 | 0 | 0 | 0 | 0 | 0 | 75 | 5% | 5.20% |
| Census Tract 52.01 Block Group 6 | 7 | 5 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1% | 0.61% |
| Census Tract 52.01 Block Group 7 | 33 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1% | 0.84% |
| Census Tract 52.03 Block Group 4 | 32 | 29 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0% | 0.98% |
| Census Tract 52.04 Block Group 1 | 24 | 19 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 1% | 0.72% |
| Census Tract 52.04 Block Group 2 | 923 | 828 | 0 | 39 | 0 | 0 | 0 | 0 | 55 | 9% | 61.29% |
| Census Tract 52.04 Block Group 3 | 1411 | 926 | 0 | 0 | 55 | 0 | 0 | 83 | 347 | 34% | 13.40% |
| Census Tract 52.04 Block Group 4 | 272 | 205 | 0 | 10 | 0 | 0 | 0 | 10 | 46 | 5% | 5.63% |
| Census Tract 52.04 Block Group 5 | 823 | 797 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 2% | 16.21% |

Source: America Community Survey, 2019, ACSDT5Y2019: Race and ethnicity data from Table #B03002 and poverty data from Table #B17017

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## 3.12.2 Potentially-Affected Environmental Justice Populations and Communities

SCE first identified potentially-affected environmental justice populations by block group using the data in Figure 3.12-1 by applying the following methods included in EPA's *Promising Practices for EJ Methodologies in NEPA Reviews* (2016). Specifically, potentially-affected environmental justice communities were identified based on the presence of minority populations within the Borel Project's FERC Project boundary and a one-mile wide buffer around the boundary and use the "50 percent" and the "meaningfully greater" analysis methods. The "50 percent" analysis method determined whether the total percent minority population of any block group in the affected area exceeds 50 percent. The "meaningfully greater" analysis determined whether any affected block group affected is 10 percent greater than the minority population percent in the county using the following process:

- Calculate the percent minority in the reference population (county).
- To the reference population's percent minority, add 10 percent (i.e., multiply the percent minority in the reference population by 1.1).
- This new percentage is the threshold that a block group's percent minority would need to exceed to qualify as an environmental justice community under the meaningfully greater analysis method.

SCE found 10 census tracts block groups to be within one-mile of the Borel Project: these are listed in Table 3.12 1 and visually represented in Figure 3.12-1.

No environmental justice communities within the Borel FERC Project boundary or the one-mile buffer around the boundary were identified using the 50 percent analysis method or the meaningfully greater analysis method.

Next, SCE identified environmental justice communities within the Borel Project's FERC Project boundary and a one-mile-wide buffer around the boundary based on the presence of low-income populations, using the "low-income threshold criteria" method. Environmental justice communities uses the "low-income threshold criteria" to determine if the poverty level in the identified block group is equal to or greater than that of the reference population (i.e., county).

One census tract was identified as an environmental justice community within the one-mile buffer of the Borel Project boundary using the low-income threshold method: Census Tract 52.04 Block Group 2 in Kern County, California at 61 percent (42 percent greater than Kern County), see Figure 3.12-1.

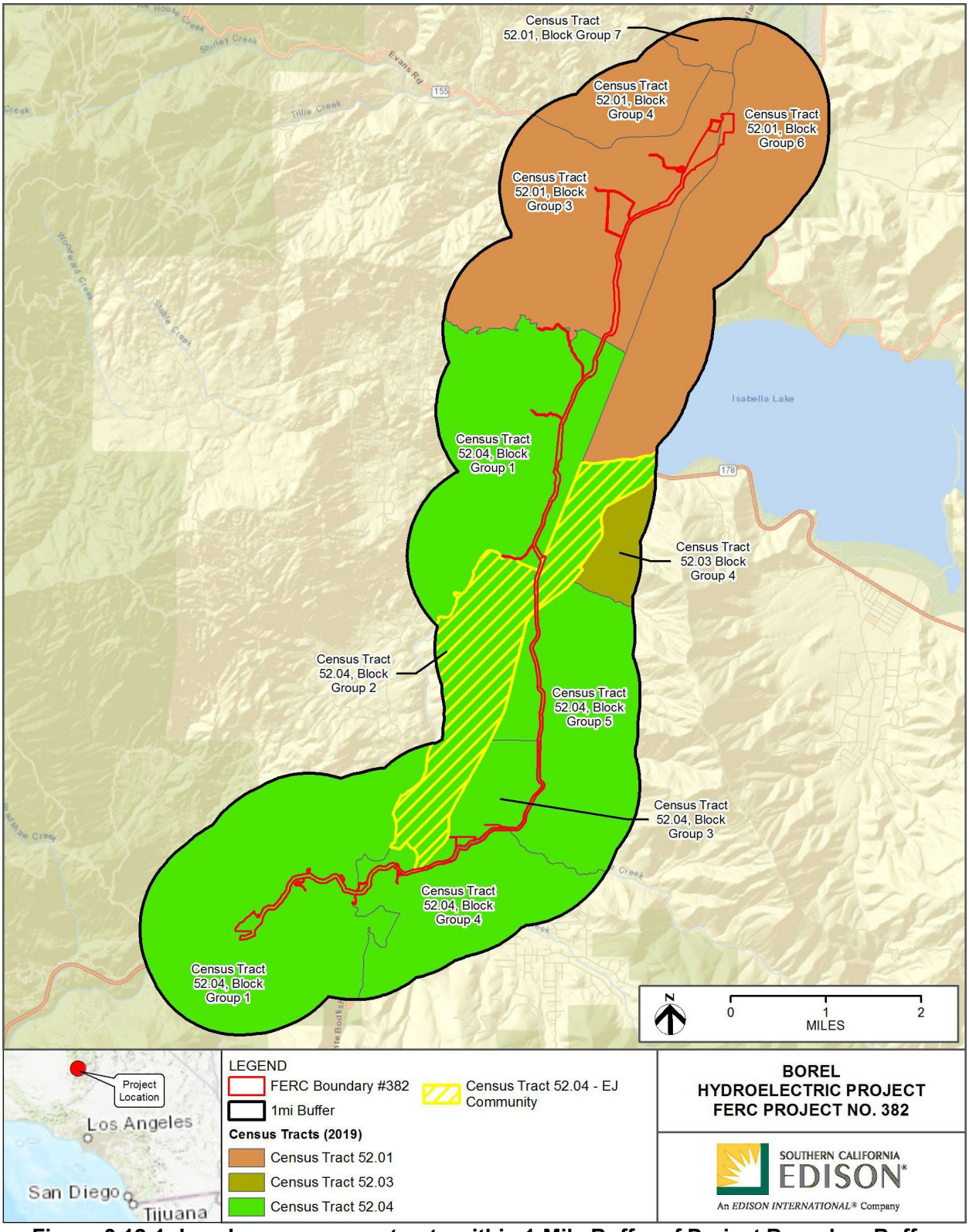


**Figure 3.12-1: Low Income census tracts within 1-Mile Buffer of Project Boundary Buffer**

### 3.12.3 Potentially-Affected Non-English Speaking Groups and Sensitive Receptors

SCE reviewed existing EPA EJ information to identify any non-English speaking groups within the one-mile buffer around the Borel Project's boundary

The data, as shown in Attachment G – American Community Survey Language Report, indicates that only 6 percent of the population does not speak English at home.

In addition, SCE reviewed existing information to identify sensitive receptor locations within the Borel Hydroelectric Project's FERC Project boundary and a one-mile-wide buffer around the boundary. The United States Environmental Protection Agency defines sensitive receptors as "areas where occupants are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides, and other pollutants and include (but are not limited to): hospitals, schools, daycare facilities, elderly housing, and convalescent facilities."[22] SCE has identified 16 sensitive receptors within the one-mile buffer of the Borel Project. The visual results of the sensitive receptors found within the one-mile-wide buffer can be found in Figure 3-12.2. SCE does not anticipate any long-term project-related effects with the implementation of proposed measures as identified in Section 3.12.4. For example, work areas will be reduced to the smallest possible footprint to keep community disturbance at a minimum. Air pollution will be mitigated using modern, emission-controlled, on-road heavy duty trucks and construction vehicles. Additionally, SCE intends to prepare a traffic control plan, a staging and haul route plan, a materials handling plan, a fire safety plan, a dewatering plan, and a SWPPP to reduce impacts to the community. More details about these mitigation measures and others can be found in Section 3.12.4.



[22] United States Environmental Protection Agency (USEPA). 2022. "What are Sensitive Receptors?" page. Online: https://www3.epa.gov/region1/eco/uep/sensitivereceptors.html#:~:text=Sensitive%20receptors%20include%2C%20but%20are,%2C%20pesticides%2C%20and%20other%20pollutants. October 12, 2022.

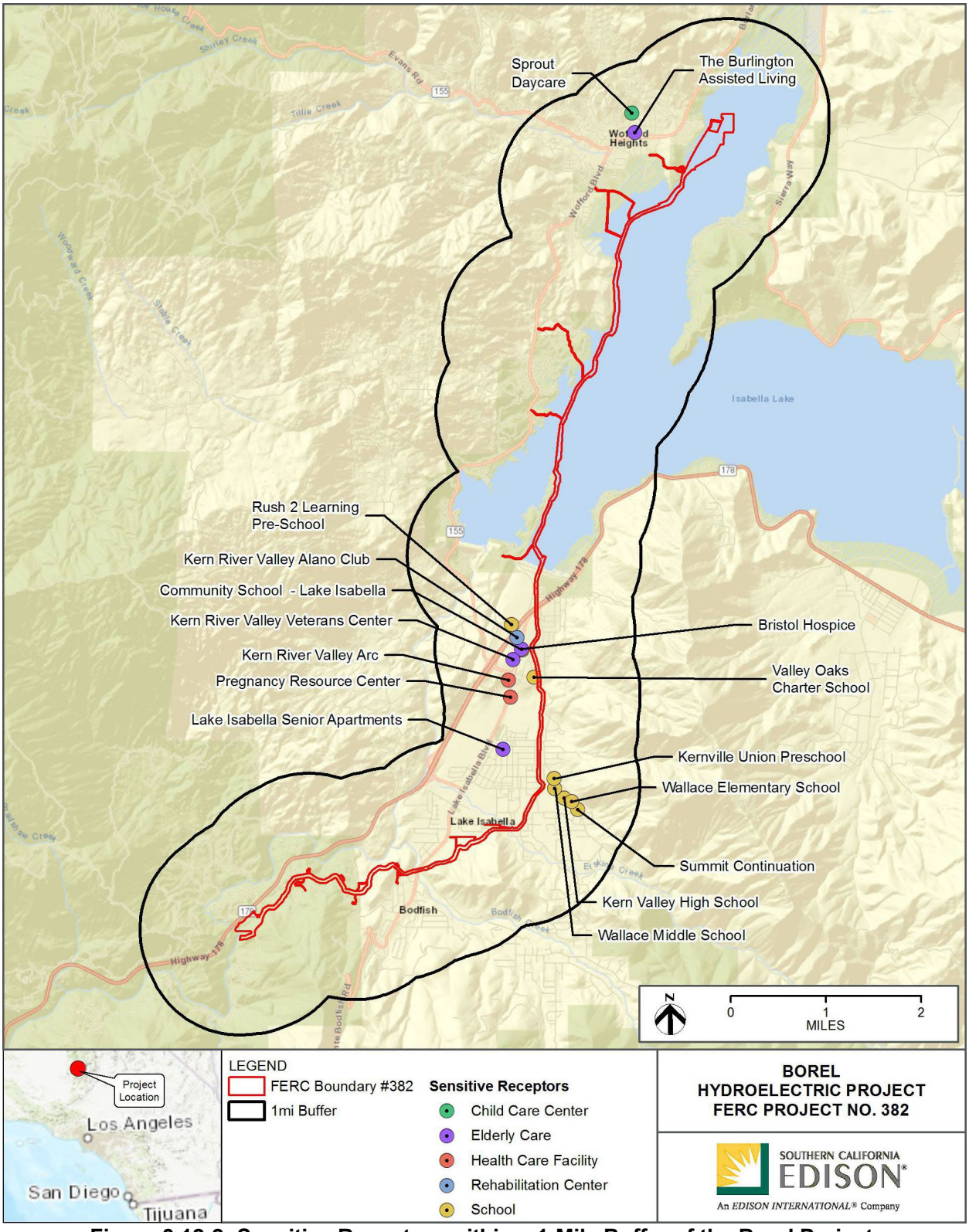


**Figure 3.12-2: Sensitive Receptors within a 1-Mile Buffer of the Borel Project.**

**Table 3.12-2. Sensitive receptors located within a 1-mile buffer of the Borel Project.**

| Sensitive Receptor | Sensitive Receptor Type | Location | Distance from FERC Project boundary | Project-related Effects |
|---|---|---|---|---|
| Valley Oaks Charter School | School | Lake Isabella, CA | 165 feet | Short-term to None |
| Community School – Lake Isabella | School | Lake Isabella, CA | 450 feet | Short-term to None |
| Kern Valley High School | School | Lake Isabella, CA | 1,260 feet | Short-term to None |
| Wallace Middle School | School | Lake Isabella, CA | 595 feet | Short-term to None |
| Wallace Elementary School | School | Lake Isabella, CA | 1,710 feet | Short-term to None |
| Summit Continuation | School | Lake Isabella, CA | 2,230 feet | Short-term to None |
| Kernville Union Preschool | School | Lake Isabella, CA | 620 feet | Short-term to None |
| Sprout Daycare | Child Care Center | Wofford Heights, CA | 2,510 feet | Short-term to None |
| Rush 2 Learning Pre-School | School | Lake Isabella, CA | 1,335 feet | Short-term to None |
| Bristol Hospice | Elderly Care | Lake Isabella, CA | 481 feet | Short-term to None |
| Lake Isabella Senior Apartments | Elderly Care | Lake Isabella, CA | 1,911 feet | Short-term to None |
| The Burlington Assisted Living | Elderly Care | Wofford Heights, CA | 1,470 feet | Short-term to None |
| Kern River Valley Veterans Center | Elderly Care | Lake Isabella, CA | 1,060 feet | Short-term to None |
| Kern River Valley Alano Club | Rehabilitation Center | Lake Isabella, CA | 855 feet | Short-term to None |
| Pregnancy Resource Center | Health Care Facility | Lake Isabella, CA | 1,570 feet | Short-term to None |
| Kern River Valley Arc | Health Care Facility | Lake Isabella, CA | 1,585 feet | Short-term to None |



As discussed in Section 3.12.2, SCE has conducted outreach for the Borel Project since December 16, 2020, with its letter of intent requesting to add the SCE Borel Project to Sequoia NF 2021 Program of Work and with its December 16, 2020, Proposed Plan and Schedule to FERC for the Application. SCE is continuing to consult with participating stakeholders on the Application. The Application documents will be made available to the public at libraries in the vicinity of the Borel Project, as well as on the public websites for the Borel Project and the FERC eLibrary.

## 3.12.4 SCE's Proposed Measures Related to Environmental Justice

A complete list of proposed measures are summarized in Table 2.2-2. Of those measures, the measures identified as associated with environmental justice and there include:

- Work area footprints will be confined as much as reasonably practicable. All parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities will be confined, to the greatest extent possible, to previously disturbed areas. Additionally, the site footprint/area will be clearly defined and marked to avoid working in areas outside of the approved area. Fences and flagging will be installed by the contractor in a manner that does

not impact habitats and other sensitive areas to be avoided and that is clearly visible to personnel on foot and operating heavy equipment. (Measure 2);

- Impacts to the community will be minimized, to the extent possible, through the use of seasonally-appropriate construction windows (Measure 4);
- All construction equipment and vehicles will drive no faster than 15 miles per hour on access roads and anywhere within the FERC Project boundary for reasons of public safety, avoidance of wildlife collisions, and to prevent excess dust. Vehicles will stay on designated roads to the extent reasonably possible. Construction truck trips will be minimized to the extent practicable, particularly in the community and on the grade between Bakersfield and Lake Isabella (Measure 5);
- SCE or the contractor will develop a suite of plans that the contractor will be required to follow throughout the decommissioning process. These plans are expected to include, but are not limited to, a traffic control plan, a staging and haul route plan, a materials handling plan, a construction safety plan, a specific fire safety plan, a dewatering plan, and a SWPPP (Measure 9);
- On-road heavy duty truck fleet will comply with California Title 13 CCR § 2025, which requires that older vehicles be replaced by modern, emission-controlled trucks (Measure 12);
- Natural landscape drainage patterns will be maintained to the extent practicable to reduce impacts (Measure 30);
- SCE or the contractor will develop a SWPPP in accordance with the State Water Resources Control Board General Construction Permit and local regulations. The SWPPP will include BMPs to reduce or eliminate construction impacts to stormwater runoff (Measure 32);

### 3.12.5 Potential Impacts to Environmental Justice Populations and Communities

Impacts associated with the Borel Project would be highest in the immediate vicinity of the Borel Project. The nearest sensitive receptor to the Borel Project boundary identified in Table 3.12-2 was the Valley Oaks Charter School which is on a parcel immediately adjacent to the Borel Project boundary. No project-related effects are anticipated to impact this or other entities listed in Table 3.12-2. No representatives from the sensitive receptor locations have filed comments in the proceeding.

### 3.12.6 Agency Proposed Measures Related to Environmental Justice That Were Not Adopted by SCE

[Reviewers, this section, with SCE consultation, will be completed after the above sections are complete.]

# 3.13 Cumulative Effects Analysis

Cumulative effects are defined in Section 3.2. Based on information in this APDEA and consultation conducted to date, the Borel Project license surrender and decommissioning will result in negligible short-term impacts to local resources because decommissioning activities are limited in geographic and temporal scope, and SCE has committed to a robust suite of measures. As a result, no resources have the potential to be cumulatively affected by the Borel Project license surrender and decommissioning of Borel Project facilities.

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# 4.0 Conclusions and Recommendations

SCE proposes to surrender the FERC license for and decommission the Borel Project in accordance with the Plan (Volume II). SCE proposes to continue consultation with the appropriate federal, state, and local agencies as the Borel Project design progresses. SCE and the contractor will implement and abide by the measures as described in this APDEA and in the Plan (Volume II).

## 4.1 Applicant-proposed Measures

SCE proposes to include a comprehensive suite of measures as part of the proposed action to ensure appropriate resource protections during Borel Project decommissioning. Table 2.2-2 in Section 2.2.2 summarizes the measures that are proposed for the protection of the human and natural environment.

## 4.2 Agency- and Stakeholder-proposed Measures

With distribution of this Application, SCE seeks agency and stakeholder input on appropriate resource measures to be considered by SCE and FERC as the Borel Project is decommissioned.

## 4.3 Unavoidable Adverse Impacts

No unavoidable adverse impacts are associated with the proposed action.

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