
Pine Flat Transmission Line Project

FERC Project No. 2876



Pre-Application Document
Department of Water Resources
February 2024

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List of Attachments

- Attachment A Consultation
- Attachment B Glossary
- Attachment C Exhibit G Project Maps
- Attachment D Exhibit F Project Description
- Attachment E IPaC Resource List
- Attachment F Botanical Compendium

1.0 INTRODUCTION

This section consists of seven subsections. Section 1.1 presents the California Department of Water Resources' (DWR or Licensee) intent to apply to the Federal Energy Regulatory Commission (FERC or Commission) for a new license for the Pine Flat Transmission Line Project, FERC Project Number (No.) 2876 (Project), and DWR's designated agent for the relicensing.¹ Section 1.2 provides a description of DWR. Section 1.3 provides a brief description of the Project. Section 1.4 describes the purpose of this Pre-Application Document (PAD). Section 1.5 presents the process DWR implemented to acquire the existing, relevant, and available information provided in this PAD. Section 1.6 presents DWR's proposed relicensing process plan and schedule, and Section 1.7 provides the communication guidelines that DWR will follow during the relicensing.

1.1 DEPARTMENT OF WATER RESOURCES' INTENT TO APPLY FOR A NEW LICENSE FOR THE PINE FLAT TRANSMISSION LINE FERC PROJECT AND ITS DESIGNATED AGENT

Pursuant to Section (§) 5.5 of Title 18 of the Code of Federal Regulations (CFR), on or about February 1, 2024, DWR filed with FERC a Notice of Intent (NOI) to Apply for a New License for the Pine Flat Transmission Line Project - on or before July 30, 2027. DWR is the existing licensee and current owner of the Project. The Commission issued the original license to DWR on March 24, 1980, stating that the new license would be effective from the first day of the month of license issuance through August 31, 2029.

The exact name, business address, and telephone number of the person authorized to act as agent for DWR for the Pine Flat Transmission Line Project relicensing is:

Jeremiah McNeil, Manager
Hydropower License Planning and Compliance Office
California Department of Water Resources
2033 Howe Avenue, Suite 220
Sacramento, California 95825
(916) 699-8414

Mailing Address
P.O. Box 942836
Sacramento, California 94236

¹ In this PAD, "relicensing" means the activities an applicant performs to prepare an application for new FERC license, and the application itself is referred to as the "Application for New License."

1.2 DEPARTMENT OF WATER RESOURCES

DWR is a State agency that manages California's water resources, systems, and infrastructure, working with other agencies and the public. DWR's main responsibilities include preventing and responding to floods, droughts, and catastrophic events; public information; developing scientific solutions to water problems; restoring aquatic habitat; planning for future water needs; generating hydropower and providing water-related recreational opportunities. DWR's mission is to sustainably manage the water resources of California, to benefit the State's people and protect, restore, and enhance the natural and human environments.

1.3 BRIEF DESCRIPTION OF THE PROJECT

The Project is located near the Community of Piedra, Fresno County, California, 30 miles east of the City of Fresno. The Project starts on the north bank of the Kings River 200 feet downstream of the United States Army Corps of Engineer's (USACE) Pine Flat Dam at the Jeff L. Taylor Powerhouse, which is part of Kings River Conservation District's (KRCD) Jeff L. Taylor- Pine Flat Hydroelectric Project, FERC No. 2741. The existing Project consists of a single-circuit 230 kilovolt (kV) transmission line constructed on three self-supporting, square-based steel lattice towers. The existing 11.52-acre FERC Project boundary includes 7.94 acres of federal lands administered by the USACE, 1.11 acres of State of California lands submerged by the Kings River, and 2.46 acres of private lands. Figure 1.3-1 illustrates the regional location of the Project. Figure 1.3-2 shows existing Project facilities, features and nearby surrounding non-Project facilities and features. Refer to Section 2 of this PAD for a more detailed description of Project facilities, features, and operations.

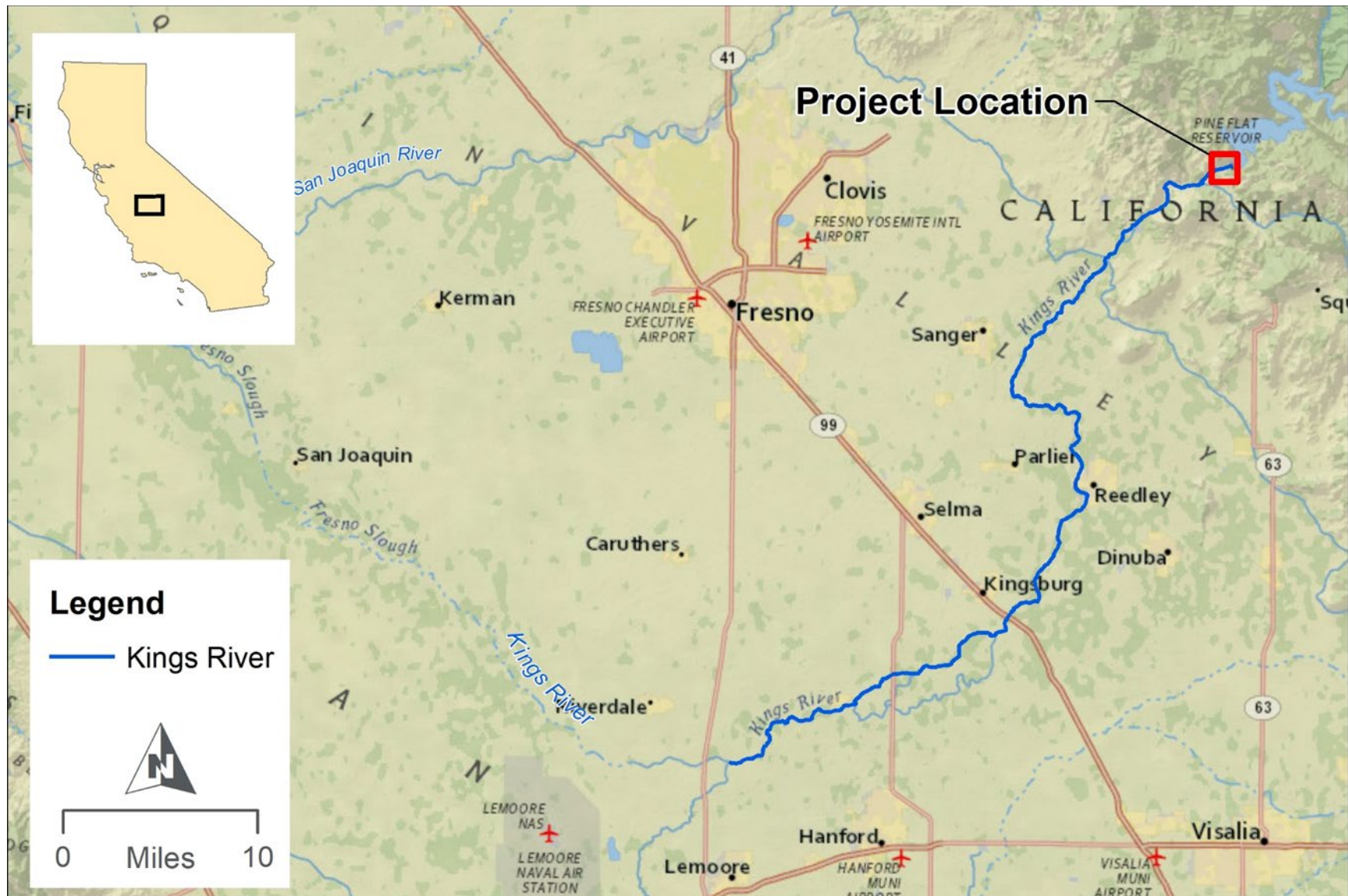


Figure 1.3-1. Location of the Pine Flat Transmission Line Project.

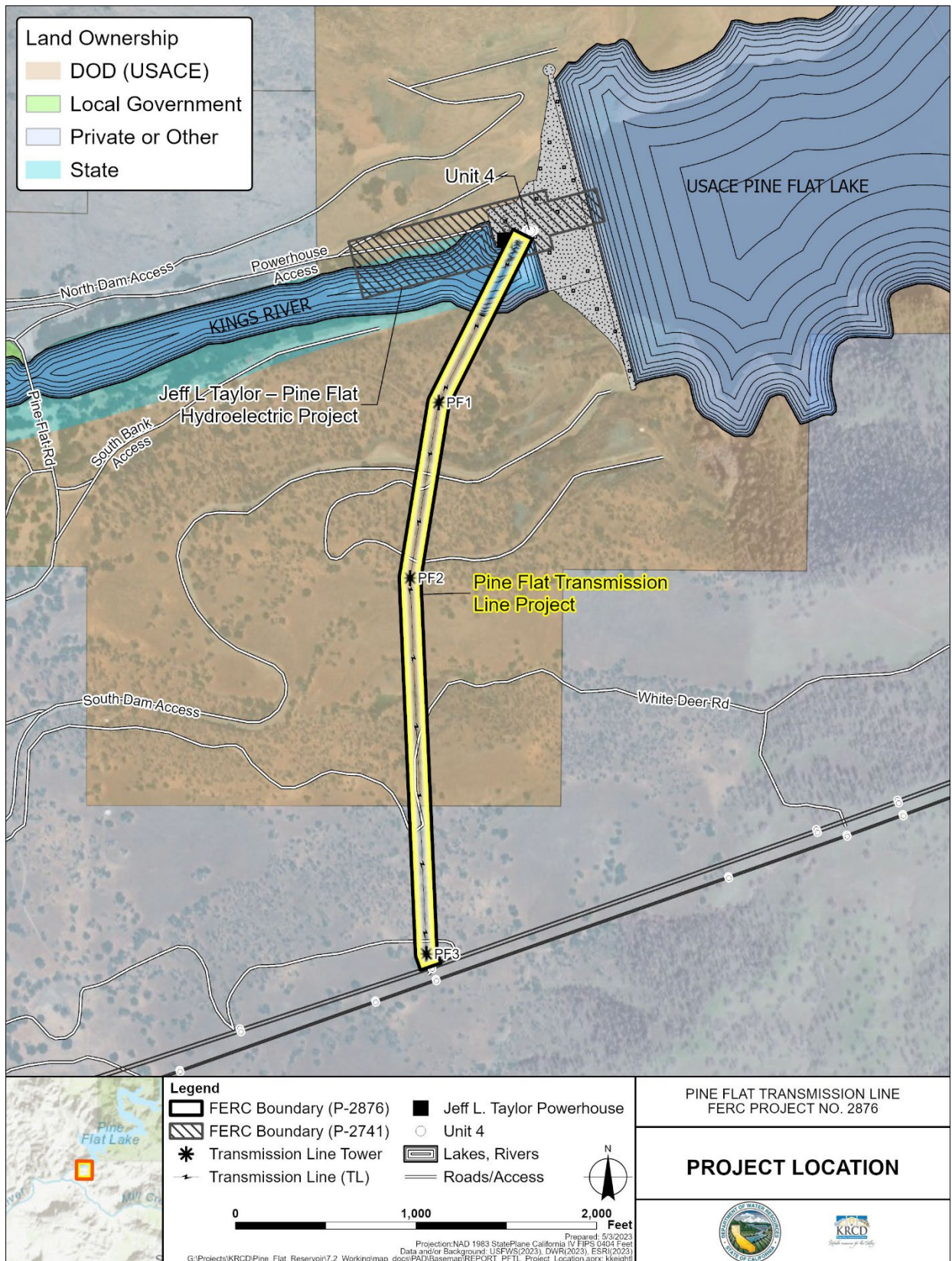


Figure 1.3-2. Pine Flat Transmission Line Project facilities and nearby surrounding non-Project features.

1.4 PURPOSE OF THE PRE-APPLICATION DOCUMENT

This PAD provides to FERC and to federal and State of California agencies, Native American tribes, local governments, non-governmental organizations (NGOs), businesses, members of the public, and others interested in the Project relicensing² summaries of existing, relevant, and reasonably available information. The existing, relevant, and reasonably available information presented is in DWR's possession at the time the PAD is filed, and is related to the Project and resources that may be potentially affected by the Project. In addition, the PAD presents DWR's proposal for gathering additional information that may be needed to inform the requirements of the new license.

1.5 ACQUISITION OF INFORMATION

DWR conducted searches of its files and other existing sources of information to compile existing, relevant, and reasonable available information for this PAD. This included contacting via email the following agencies, Native Americans and NGOs on April 14, 2023:

Federal Agencies

- Federal Emergency Management Agency, Region 9
- USACE
- United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS)
- United States Department of the Interior, Bureau of Indian Affairs, Pacific Region
- United States Department of the Interior, National Park Service (NPS)
- United States Department of the Interior, Fish and Wildlife Service (USFWS)
- United States Environmental Protection Agency (USEPA)
- United States Geological Survey (USGS)

State of California Agencies

- California Coastal Commission
- California Department of Fish and Wildlife (CDFW)
- California Department of Forestry and Fire Protection, Fresno-Kings Unit
- California Department of Parks and Recreation, Office of Historic Preservation (OHP)
- California Department of Water Resources (DWR)

² In this PAD, these parties are collectively referred to as "Stakeholder."

- California Native American Heritage Commission (NAHC)
- California State Lands Commission
- California State Parks, Division of Boating and Waterways (DBOW)
- California State Water Resources Control Board (SWRCB)
- Central Valley Regional Water Quality Control Board (RWQCB)

Local Agencies

- Alta Irrigation District
- County of Fresno, Board of Supervisors
- Central Kings Groundwater Sustainability Agency
- Clark's Fork Reclamation District #2069
- Consolidated Irrigation District
- Corcoran Irrigation Company
- El Rico Groundwater Sustainability Agency
- Empire West Side Irrigation District
- Fresno County Board of Supervisors
- Fresno County Public Works and Planning
- Fresno Irrigation District
- James Groundwater Sustainability Agency
- James Irrigation District
- Kings River East Groundwater Sustainability Agency
- Kings River Water District
- Laguna Irrigation District
- McMullin Area Groundwater Sustainability Agency
- Mid-Kings River Groundwater Sustainability Agency
- North Fork Kings Groundwater Sustainability Agency
- North Kings Groundwater Sustainability Agency
- Riverdale Irrigation District
- South Fork Kings Groundwater Sustainability Agency
- South Kings Groundwater Sustainability Agency
- Southwest Kings Groundwater Sustainability Agency
- Stratford Irrigation District

- Tri-County Water Authority Groundwater Sustainability Agency
- Tulare Lake Basin Water Storage District
- Tulare Lake Reclamation District #761

Native American Tribes and Tribal Representatives

Federally Recognized Tribes

- Big Sandy Rancheria of Western Mono Indians
- Chicken Ranch Rancheria of Me-Wuk Indians
- Cold Springs Rancheria
- Kings River Choinumni Farm Tribe
- Nashville Enterprise Miwok-Maidu-Nishinam Tribe
- North Fork Rancheria of Mono Indians
- Picayune Rancheria of Chukchansi Indians
- Santa Rosa Rancheria Tachi Yokut Tribe
- Table Mountain Rancheria
- Tejon Indian Tribe
- Tule River Indian Reservation

Other Tribes

- Dumna Wo-Wah Tribal Government
- Dunlap Band of Mono Indians
- Kitanemuk & Yowlumne Tejon Indians
- North Fork Mono Tribe
- Traditional Choinumni Tribe
- Wuksache Indian Tribe/Eshom Valley Band

Non-Governmental Organizations and Businesses

- American Rivers
- American Whitewater
- Burrel Ditch Company
- California Hydropower Reform Coalition
- California Sportfishing Protection Alliance
- California Trout
- Crescent Canal Company

- El Rio Reyes Conservation Trust
- Fresno Fly Fishers
- Friends of the River
- Hanson Environmental
- John Heinlen Mutual Water Company
- Kaweah Fly Fishers
- Kings River Conservancy
- Kings River Water Association
- Last Chance Water Ditch Company
- Lemoore Canal & Irrigation Company
- Liberty Canal Company
- Liberty Mill Race Company
- Natural Heritage Institute
- Northwest Hydroelectric Association
- Pacific Gas and Electric Company (PG&E)
- People's Ditch Company
- Reed Ditch Company
- Sierra Land Use Committee
- Southeast Lake Water Company
- Stinson Canal & Irrigation Company
- Trout Unlimited
- Tulare Lake Canal Company
- Upper San Jose Water Company
- Private landowners (names withheld)

DWR requested from each of the parties:

1. Any existing, relevant, and reasonably available information in their possession, or a link to where that information may be accessed, that describes the potentially affected environment, assuming that DWR already has in its possession all relevant information developed by DWR for the Project.
2. A list of any issues they believe DWR should address in its PAD and license application, including potential Project effects.

3. A description of any information, including studies, they believe will be needed to assess potential Project effects and inform licenses' requirements.

Documentation of this outreach and responses are included in Attachment A to this PAD. As a summary, DWR received no responses to their information request. DWR held a web-based virtual meeting with interested stakeholders on May 12, 2023, to provide a Project and relicensing overview and answer any questions. Besides DWR and its consultant, representatives from the following agencies and NGOs participated in the meeting: KRCD, CDFW, Dunlap Band of Mono Indians, Hanson Environmental, SWRCB, and USACE. Action items from the meeting included distributing the meeting presentation to participants and developing a glossary of commonly used FERC terms, which is included with this PAD as Attachment B and distributed to stakeholders.

1.6 RELICENSING PROCESS PLAN AND SCHEDULE

1.6.1 Regulatory Relicensing Deadlines

On or about February 1, 2024, DWR filed a request for FERC to authorize the use of the Traditional Licensing Process (TLP), as described in 18 CFR, Part 4 and Part 16, rather than the Integrated Licensing Process (ILP), as described in 18 CFR Part 5, to relicense the Project.³ However, regardless of whether DWR uses the TLP or ILP, some dates are fixed by the current license expiration date. These fixed dates are:

- February 1, 2024 – The earliest date DWR may file an NOI to file an application for a new license and a PAD.
- August 1, 2024 – The latest date DWR may file an NOI and PAD.
- August 31, 2027 – The latest date that DWR may file a Final Application for New License (FLA).
- August 31, 2029 – The date the original FERC license for the Project expires.

In addition, regardless of whether DWR uses the TLP or ILP, FERC will consult with federally-recognized Native American tribes within 30 days of the date DWR files its NOI and PAD, and FERC will issue its Notice of Commencement of Proceeding within 60 days of the date DWR files its NOI and PAD.

Since, at the time DWR files this PAD, it is uncertain whether FERC will approve DWR's request to utilize the TLP, Table 1.6-1 shows a schedule for relicensing the Project through filing of the FLA using either the TLP or the ILP. DWR developed the table using the timeframes set forth in 18 CFR Part 4 and Part 16 as applicable, for the TLP and in 18 CFR Part 5, for the ILP, and based the table on an anticipated NOI and PAD filing date of February 1, 2024. Table 1.6-1 shows for both the ILP and TLP: (1) the pertinent regulations for each activity; (2) the party or parties responsible for initiating

³ DWR anticipates that FERC will reply to DWR's request to use the TLP within 60 days of the date that DWR filed its request.

the activity; (3) a description of the activity including, where appropriate, a previous activity linked to this activity; and the calendar duration of the activity. When an activity is contingent on completion of a previous activity or an extension may be granted for a designated period, Table 1.6-1 assumes the previous activity is completed the latest possible date shown for that previous activity, unless otherwise indicated.

After DWR files its NOI and PAD, it is anticipated that FERC will issue its own schedule, which will become the formal relicensing schedule, , and that FERC's schedule will include the post-application filing period (i.e., from filing of the FLA through issuance of a new license).

Table 1.6-1. Process plan and schedule for DWR’s Pine Flat Transmission Project relicensing using either FERC’s Integrated Licensing Process or Traditional Licensing Process.

Integrated Licensing Process (ILP)					Traditional Licensing Process (TLP)				
Subsection(s)	Lead	Activity ¹	Timeframe (Start and Finish) ³		Subsection(s)	Lead	Activity ¹	Timeframe (Start and Finish) ³	
					18 C.F.R. § 5.3.				
					(b)	DWR	File request to use TLP	February 1, 2024 (Thursday)	
18 C.F.R. § 5.5. NOTIFICATION OF INTENT					18 C.F.R. § 5.5. NOTIFICATION OF INTENT				
(a)-(g)	DWR	File Notice of Intent (NOI) to file an application for a new license and request for non-federal representative status under § 7 of the Endangered Species Act (ESA) and § 106 of the National Historic Preservation Act (NHPA) <i>(no earlier than 5.5 years and no later than 5 years prior to expiration of the current license)</i>	February 1, 2024 (Thursday)		(a)-(g)	DWR	File Notice of Intent (NOI) to file an application for a new license and request for non-federal representative status under § 7 of the Endangered Species Act (ESA) and § 106 of the National Historic Preservation Act (NHPA) <i>(no earlier than 5.5 years and no later than 5 years prior to expiration of the current license)</i>	February 1, 2024 (Thursday)	
18 C.F.R. § 5.6. PRE-APPLICATION DOCUMENT					18 C.F.R. § 5.6. PRE-APPLICATION DOCUMENT				
(a)-(e)	DWR	File Pre-Application Document (PAD) <i>(no earlier than 5.5 years and no later than 5 years prior to expiration of the current license)</i>	February 1, 2024 (Thursday)		(a)-(e)	DWR	File Pre-Application Document (PAD) <i>(no earlier than 5.5 years and no later than 5 years prior to expiration of the current license)</i>	February 1, 2024 (Thursday)	
18 C.F.R. § 5.7. TRIBAL CONSULTATION					18 C.F.R. § 5.7. TRIBAL CONSULTATION				
--	FERC	Hold meeting with potentially affected Native American tribes <i>(no later than (NLT) 30 days of date NOI and PAD filed)</i>	February 2, 2024 (Friday)	March 4, 2024 ² (Monday)	--	FERC	Hold meeting with potentially affected Native American tribes <i>(NLT 30 days of date NOI and PAD filed)</i>	February 2, 2024 (Friday)	March 4, 2024 ² (Monday)
18 C.F.R. § 5.8. NOTICE OF COMMENCEMENT OF PROCEEDING, DECISION ON USE OF TLP, AND INITIATION OF ESA AND NHPA INFORMAL CONSULTATION					18 C.F.R. § 5.8. NOTICE OF COMMENCEMENT OF PROCEEDING, DECISION ON USE OF TLP, AND INITIATION OF ESA AND NHPA INFORMAL CONSULTATION				
(a)	FERC	Issue Notice of Commencement of Proceeding (NCP) and decision regarding DWR’s request to use TLP <i>(NLT 60 days of date NOI and PAD filed)</i>	February 2, 2024 (Friday)	April 1, 2024 (Monday)	(a)	FERC	Issue Notice of Commencement of Proceeding (NCP) and decision regarding DWR’s request to use TLP <i>(NLT 60 days of date NOI and PAD filed)</i>	February 2, 2024 (Friday)	April 1, 2024 (Monday)
(b)	FERC	Request initiation of informal consultation under § 7 of the ESA and/or § 106 of the NHPA, if appropriate <i>(NLT 60 days of date NOI and PAD filed)</i>	February 2, 2024 (Friday)	April 1, 2024 (Monday)	(b)	FERC	Request initiation of informal consultation under § 7 of the ESA and/or § 106 of the NHPA, if appropriate <i>(NLT 60 days of date NOI and PAD filed)</i>	February 2, 2024 (Friday)	April 1, 2024 (Monday)
18 C.F.R. § 5.8. ISSUE SCOPING DOCUMENT 1									
(c)	FERC	Issue Scoping Document 1 (SD1) <i>(NLT 60 days of date NOI and PAD filed)</i>	February 2, 2024 (Friday)	April 1, 2024 (Monday)					
18 C.F.R. § 5.8. HOLD NEPA SCOPING MEETING AND SITE VISIT					18 C.F.R. § 16.8. FIRST STAGE CONSULTATION – HOLD JOINT MEETING AND SITE VISIT				
					(b)(3)(i)(B)	DWR	Consult with the resource agencies, Native American tribes and members of the public on the scheduling of a joint meeting <i>(NLT 15 days in advance of the joint meeting)</i>	April 2, 2024 (Tuesday)	May 16, 2024 (Thursday)
					(b)(3)(i)(B) [and 18 CFR § 16.8(h)(i)]	DWR	Post notice of joint meeting in local newspapers, including purpose, location, time and agenda <i>(NLT 14 days in advance of the joint meeting)</i>	April 2, 2024 (Tuesday)	May 17, 2024 (Friday)
(e)	FERC	Post notice of NEPA scoping meeting in Federal Register and local newspapers <i>(NLT 30 days of date NCP issued)</i>	April 2, 2024 (Tuesday)	May 1, 2024 (Wednesday)	(b)(3)(i)(B)	DWR	Provide to resource agencies, Native American tribes and FERC a written notice of the time and place of the joint meeting and an agenda of the issues to be discussed at the joint meeting <i>(NLT 15 days in advance of the joint meeting)</i>	April 2, 2024 (Tuesday)	May 16, 2024 (Thursday)

Table 1.6-1. (Continued)

Integrated Licensing Process (ILP)					Traditional Licensing Process (TLP)				
Subsection(s)	Lead	Activity ¹	Timeframe (Start and Finish) ³		Subsection(s)	Lead	Activity ¹	Timeframe (Start and Finish) ³	
18 C.F.R. § 5.8. HOLD NEPA SCOPING MEETING AND SITE VISIT (Continued)					18 C.F.R. § 16.8. FIRST STAGE CONSULTATION – HOLD JOINT MEETING AND SITE VISIT (Continued)				
(d)	Relicensing Participants	Resource agencies, Native American tribes and members of the public may attend the NEPA scoping meeting to identify issues for NEPA scoping, preliminary identify study needs, discuss process plan and schedule, and cooperating agency status (<i>NLT 30 days of date NCP is issued</i>)	April 2, 2024 (Tuesday)	May 1, 2024 (Wednesday)	(b)(4)	Relicensing Participants	Resource agencies, Native American tribes and members of the public may attend the joint meeting to express their views regarding resource issues that should be addressed in the application. Public attendance at the site visit is at the discretion of DWR (<i>NET 30 days but NLT 60 days of date NCP is issued</i>)	May 1, 2024 (Wednesday)	May 31, 2024 (Friday)
--	FERC	Post either an audio recording or written transcripts of the joint meeting on e-Library	--		(b)(4)	DWR	Make either an audio recording or written transcripts of the joint meeting, and promptly provide copies of these recordings, upon request (<i>Promptly provide to FERC, agencies and Indian tribes, upon request</i>)	Promptly provide following the joint meeting	
18 C.F.R. § 5.9. COMMENTS AND INFORMATION OR STUDY REQUESTS					18 C.F.R. § 16.8. FIRST STAGE CONSULTATION - STUDY REQUESTS AND DISPUTE RESOLUTION				
(a)	DWR & Relicensing Participants	File comments on PAD and SD1, and request studies (<i>NLT 60 days of date NCP issued</i>)	April 2, 2024 (Tuesday)	May 31, 2024 (Friday)	(b)(5)	Relicensing Participants	Provide to DWR written comments identifying Relicensing Participant's determination of necessary studies to be performed or the information to be provided by DWR (<i>NLT 60 days after joint meeting unless deadline is extended to 120 days by FERC</i>)	June 1, 2024 (Saturday)	July 30, 2024 (Tuesday)
--	FERC	Issue Scoping Document 2 (SD2) (<i>NLT 45 days of the end of PAD and SD1 comment period</i>)	June 1, 2024 (Saturday)	July 15, 2024 (Monday)					
18 C.F.R. § 5.11. APPLICANT'S PROPOSED STUDY PLAN AND STUDY PLAN MEETINGS									
(a)	DWR	File Proposed Study Plan (<i>NLT 45 days of the end of PAD and SD1 comment period</i>)	June 1, 2024 (Saturday)	July 15, 2024 (Monday)					
(e)	DWR	Hold Proposed Study Plan meeting (<i>NLT 30 days after date Proposed Study Plan filed</i>)	July 16, 2024 (Tuesday)	August 14, 2024 (Wednesday)					
18 C.F.R. § 5.12. COMMENTS ON PROPOSED STUDY PLAN									
--	Relicensing Participants	File comments on Proposed Study Plan (<i>NLT 90 days after date Proposed Study Plan is filed</i>)	July 16, 2024 (Tuesday)	October 14, 2024 ² (Monday)					
18 C.F.R. § 5.13. REVISED STUDY PLAN AND STUDY PLAN DETERMINATION									
(a)	DWR	File Revised Study Plan (<i>NLT 30 days of date Proposed Study Plan comment period ends</i>)	October 15, 2024 (Tuesday)	November 13, 2024 (Wednesday)					
(b)	Relicensing Participants	File comments on Revised Study Plan (<i>NLT 15 days of the date Revised Study Plan is filed</i>)	November 14, 2024 (Thursday)	November 29, 2024 (Friday)					
(c)	FERC	Issue Study Plan Determination (<i>NLT 30 days of date Revised Study Plan is filed</i>)	November 14, 2024 (Thursday)	December 16, 2024 ² (Monday)					
(d)	FERC	Revised Study Plan deemed approved (<i>20th day after FERC Determination if no study plan disputes filed</i>)	January 6, 2025 ² (Monday)						
18 C.F.R. § 5.14. FORMAL STUDY DISPUTE RESOLUTION PROCESS									
(a)	Mandatory Conditioning Agencies and Tribes	File Notice of Dispute (NOD) (<i>NLT 20 days of date FERC Determination issued</i>)	December 16, 2024 (Monday)	January 6, 2025 ² (Monday)					

Table 1.6-1. (Continued)

Integrated Licensing Process (ILP)					Traditional Licensing Process (TLP)				
Subsection(s)	Lead	Activity ¹	Timeframe (Start and Finish) ³		Subsection(s)	Lead	Activity ¹	Timeframe (Start and Finish) ³	
18 C.F.R. § 5.14. FORMAL STUDY DISPUTE RESOLUTION PROCESS (Continued)					18 C.F.R. § 16.8. FIRST STAGE CONSULTATION - STUDY REQUESTS AND DISPUTE RESOLUTION (Continued)				
(d)	FERC	Convene Dispute Resolution Panel (<i>NLT 20 days of date NOD filed</i>)	January 7, 2025 (Tuesday)	January 27, 2025 ² (Monday)					
(i)	DWR & Relicensing Participants	File comments on NOD (<i>NLT 25 days of date NOD filed</i>)	January 7, 2025 (Tuesday)	January 31, 2025 (Friday)					
(k)	Dispute Resolution Panel (DRP)	Deliver to FERC finding on NOD (<i>NLT 50 days of date NOD filed</i>)	January 7, 2025 (Tuesday)	February 25, 2025 (Tuesday)					
(l)	FERC	Director of Office of Energy Projects issues written determination regarding NOD (<i>NLT 70 days of date NOD filed</i>)	January 7, 2025 (Tuesday)	March 17, 2025 (Monday)					
					(b)(6)(i)	DWR & Relicensing Participants	During first stage consultation, if DWR and Relicensing Participant disagree regarding any matter or regarding the need to conduct a study or gather information, DWR or the Relicensing Participant may refer the dispute in writing to FERC for resolution, providing a copy to other affected parties (<i>any time during first stage consultation</i>).	July 30, 2024 (Tuesday)	Until First Stage Consultation ends
					(b)(6)(ii)	Disagreeing Party	If a dispute is filed with FERC, the disagreeing party may file a response (<i>NLT 15 days from the date the dispute is filed with FERC</i>)	NLT 15 days from the date the dispute is filed with FERC	
					(b)(6)(iv)	FERC	FERC resolves dispute	--	--
18 C.F.R. § 5.15. CONDUCT STUDIES					18 C.F.R. § 16.8. SECOND STAGE CONSULTATION – CONDUCT STUDIES				
(a)	DWR	Conduct studies	January 7, 2025 (Tuesday)	January 7, 2027 (Thursday)	(c)(1)	DWR	Conduct studies	July 30, 2024 ⁵ (Tuesday)	August 31, 2027 ⁵ (Tuesday)
(b)	DWR	File periodic progress reports	FERC determine frequency						
(c)(1)	DWR	File Initial Study Report (<i>NLT 1 year after FERC’s approval of Revised Study Plan</i>)	January 7, 2025 (Tuesday)	January 6, 2026 (Tuesday)					
(c)(2)	DWR	Hold Initial Study Report meeting (<i>NLT 15 days of date Initial Study Report filed</i>)	January 7, 2026 (Wednesday)	January 21, 2026 (Wednesday)					
(c)(3)	DWR	File Initial Study Report meeting summary including proposed plan modifications and new studies (<i>NLT 15 days after Initial Study Report meeting</i>)	January 22, 2026 (Thursday)	February 5, 2026 (Thursday)					
(c)(7)	FERC	Approval of meeting summary and study plan modifications if no disagreements filed (<i>30th day after meeting summary filed</i>)	March 9, 2026 ² (Monday)						
(c)(4)	Relicensing Participants	File disagreements with meeting summary including DWR’s proposed study plan modifications and new studies (<i>NLT 30 days after Initial Study Report meeting summary filed</i>)	February 6, 2026 (Friday)	March 9, 2026 ² (Monday)					
(c)(5)	DWR & Relicensing Participants	File responses to disagreements (<i>NLT 30 days after disagreement period ends</i>)	March 10, 2026 (Tuesday)	April 8, 2026 (Wednesday)					
(c)(6)	FERC	Resolve disagreement and amend study plan (<i>NLT 30 days after responses to disagreements period ends</i>)	April 9, 2026 (Thursday)	May 8, 2026 (Friday)					
(f)	DWR	File Updated Study Report, including election of DWR to file a DLA rather than a PLP, if DWR chose to do so (<i>NLT 2 years after FERC’s approval of Revised Study Plan</i>)	January 7, 2025 (Tuesday)	January 6, 2027 (Wednesday)					
(c)(2)	DWR	Hold Updated Study Report meeting (<i>NLT 15 days of date Updated Study Report filed</i>)	January 7, 2027 (Thursday)	January 21, 2027 (Thursday)					

Table 1.6-1. (Continued)

Integrated Licensing Process (ILP)					Traditional Licensing Process (TLP)									
Subsection(s)	Lead	Activity ¹	Timeframe (Start and Finish) ³		Subsection(s)	Lead	Activity ¹	Timeframe (Start and Finish) ³						
18 C.F.R. § 5.15. CONDUCT STUDIES (cont.)					18 C.F.R. § 16.8. SECOND STAGE CONSULTATION – CONDUCT STUDIES (cont.)									
(c)(3)	DWR	File Updated Study Plan meeting summary including DWR’s proposed study plan modifications and new studies <i>(NLT 15 days after Updated Study Report meeting)</i>	January 22, 2027 (Friday)	February 5, 2027 (Friday)										
(c)(7)	FERC	Approve meeting summary and study plan modifications if no disagreements filed <i>(30 days after meeting summary filed)</i>	March 8, 2027 ² (Monday)											
(c)(4)	Relicensing Participants	File disagreements with meeting summary and proposed study modifications and new studies <i>(NLT 30 days after Updated Study Report meeting summary filed)</i>	February 6, 2027 (Saturday)	March 8, 2027 ² (Monday)										
(c)(5)	DWR & Relicensing Participants	File response to disagreements <i>(NLT 30 days after disagreement period ends)</i>	March 9, 2027 (Tuesday)	April 7, 2027 (Wednesday)										
(c)(6)	FERC	Resolve disagreement and amend study plan <i>(NLT 30 days after response to disagreements period ends)</i>	April 8, 2027 (Thursday)	May 7, 2027 (Friday)										
										(c)(2)	Relicensing Participants	During Second Stage Consultation, a Relicensing Participant may request DWR conduct a study or gather information not previously identified. DWR must promptly initiate all reasonable and necessary studies or gather the information, unless it refers the request to FERC for resolution <i>(during second stage consultation)</i> .	When Second Stage Consultation begins	Until Second Stage Consultation ends
										(c)(2)	DWR	DWR may refer the request to FERC for dispute resolution, copying affected parties.	--	--
										(b)(6)(ii)	DWR	If DWR files the dispute with FERC, other affected parties may file a response <i>(NLT 15 days from the date the dispute is filed with FERC)</i>	NLT 15 days from the date DWR files the dispute with FERC	
					(b)(6)(iv)	FERC	FERC resolves dispute	--						
18 C.F.R. § 5.16. PRELIMINARY LICENSING PROPOSAL OR DRAFT LICENSE APPLICATION					18 C.F.R. § 16.8. SECOND STAGE CONSULTATION – DRAFT LICENSE APPLICATION									
(a)–(d)	DWR	File Preliminary Licensing Proposal (PLP) or Draft License Application (DLA) <i>(No less than 150 days prior to deadline for filing license application)</i>	April 5, 2027 ² (Monday)		c(4)	DWR	Provide to agencies and Native American tribes a copy of the DLA, including full documentation of consultation. <i>(No less than 150 days prior to deadline for filing license application)</i>	April 5, 2027 ² (Monday)						
(e)	Relicensing Participants	File comments on PLP/DLA <i>(NLT 90 days of date PLP or DLA filed)</i>	April 6, 2027 (Tuesday)	July 6, 2027 ² (Tuesday)	c(5)	Resource Agencies & Native American Tribes	Provide written comments on DLA to DWR <i>(NLT 90 days of date PLP or DLA filed)</i>	April 6, 2027 (Tuesday)	July 6, 2027 (Tuesday)					
					c(6)(i)	DWR, Resource Agencies & Native American Tribes	If comments indicate that a resource agency or Native American tribe has a substantive disagreement with DWR’s conclusions regarding resource impacts or proposed PM&E measures, DWR holds at least one joint meeting with the disagreeing resource agency or Native American tribe and other agencies with similar or related areas of interest, expertise, or responsibility to discuss and to attempt to reach agreement. DWR and the disagreeing resource agency or Native American tribe may conclude the joint meeting with a document embodying any agreement and any issues that are unresolved. <i>(NLT 60 days from the date of the written comments of the disagreeing agency or Indian tribe)</i>	July 7, 2027 (Wednesday)	September 6, 2027 ² (Monday)					
					c(6)(ii)	DWR	Consult with disagreeing party and others about scheduling of joint meeting, and provide FERC, disagreeing party and others with written notice of the time and place of the joint meeting and a written agenda of the issues to be discussed at the joint meeting <i>(NLT 15 days in advance of the joint meeting)</i>	NLT 15 days in advance of the joint meeting						
					c(7)	DWR & Disagreeing Party	DWR and the disagreeing resource agency or Native American tribe may conclude the joint meeting with a document embodying any agreement and any issues that are unresolved.	--	--					

Table 1.6-1. (Continued)

Integrated Licensing Process (ILP)				Traditional Licensing Process (TLP)			
Subsection(s)	Lead	Activity ¹	Timeframe (Start and Finish) ³	Subsection(s)	Lead	Activity ¹	Timeframe (Start and Finish) ³
				c(8)	DWR	DWR describes all disagreements with a resource agency or Native American tribe on technical or PM&E measures in its application, including an explanation of the basis for DWR's disagreement with the resource agency or Native American tribe.	--
18 C.F.R. § 5.17. FILING OF APPLICATION				18 C.F.R. § 16.8. THIRD STAGE CONSULTATION – FINAL LICENSE APPLICATION			
	DWR	File a Final License Application (FLA) (<i>NLT 2 years prior to expiration of the current license</i>)	August 31, 2027 (Tuesday)	(d)(1)	DWR	File a Final License Application (FLA) and provide a copy of the FLA to agencies, Native American tribes, governmental offices and consulted members of the public (<i>NLT 2 years prior to expiration of the current license</i>)	August 31, 2027 (Tuesday)
				(f)	DWR	Include in Exhibit E documentation of all consultation regarding comments, recommendation and proposed terms and conditions and studies. If the comments, recommendation and proposed terms and conditions and studies were not accepted by DWR, describe why. (<i>unspecified</i>)	Include in FLA

¹ The activity description is a good faith effort to summarize the pertinent regulation. The reader is encouraged to read the specific regulation.
² 18 C.F.R. § 385.2007(a)(2) provides that if a filing date falls on a Saturday, Sunday or federal legal public holiday, the deadline for filing becomes the next business day. The schedule includes this consideration.
³ When an activity is contingent on completion of a previous activity, the schedule assumes the previous activity is completed the latest date possible for that previous activity, unless otherwise indicated.
⁴ The ILP schedule assumes that studies, if needed, begin when FERC's Study Plan Determination is deemed final, and may continue for 2 years or more, as determined by FERC.
⁵ The TLP schedule assumes that studies, if needed, begin after the deadline for providing to DWR written comments identifying necessary studies or information, and may continue until DWR files the FLA.

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1.6.2 Proposed Location and Dates of the TLP Joint Meeting and Site Visit or the ILP NEPA Scoping Meeting and Site Visit

1.6.2.1 TLP Joint Meeting and Site Visit

If FERC authorizes DWR to use the TLP and based on the TLP process schedule in Table 1.6-1, DWR's proposed date and location of the TLP site visit are as follows:

- Proposed Site Visit – from 9 AM to 12 PM on May 1, 2024, at the Project.

DWR proposes holding the TLP joint meeting on the same day as the site visit. Specifically, DWR proposes:

- Proposed Joint Meeting – from 1 PM to 4 PM on May 1, 2024, at KRCD's office located at 4886 E Jensen Avenue, Fresno, California 93725.

The above site visit and joint meeting will only occur if FERC authorizes DWR's use of the TLP.

1.6.2.2 ILP NEPA Scoping Meeting and Site Visit

If FERC does not approve DWR's request to use the TLP, Section 5.6(d)(1) of 18 C.F.R. requires an applicant using the ILP to include in its PAD a proposal to FERC for dates and locations for FERC's ILP scoping meeting and site visit. Based on the ILP process schedule in Table 1.6-1, DWR proposes FERC hold the ILP site visit as follows:

- Proposed Site Visit – from 9 AM to 12 PM on May 1, 2024, at the Project.

DWR proposes FERC hold the ILP joint meeting on the day of the site visit. Specifically, DWR proposes:

- Proposed Joint Meeting – from 1 PM to 4 PM on May 1, 2024, at KRCD's office located at 4886 E Jensen Avenue, Fresno, California 93725.

However, FERC will set the schedule and location for a FERC ILP site visit and joint meeting if the ILP is used.

1.6.3 Discretionary Activities

Table 1.6-1 provides a general schedule of regulatory deadlines, many of which must be adhered to by stakeholders, including DWR and FERC. However, within the confines of those regulations, DWR may choose to undertake discretionary activities to facilitate the relicensing, such as holding additional meetings and/or workshops. Of note, DWR may choose to issue the DLA earlier than the dates shown in Table 1.6-1.

1.7 DISCRETIONARY ACTIVITIES

1.7.1 Objectives

The communication guidelines describe how DWR plans to communicate and interact with stakeholders during the relicensing, regardless of whether the ILP or TLP is used.

It should be noted that:

- These guidelines do not supersede or in any way modify FERC's regulations, or any other federal regulation related to relicensing, including those related to Section 106 of the NHPA, Section 7 of the ESA, or Section 401 of the CWA.
- These guidelines do not apply to FERC or any documents, meetings, correspondence, or other actions for which FERC is responsible for during the relicensing process.
- These guidelines do not apply to stakeholder. Each stakeholder may choose how it wishes to communicate during the relicensing.
- These are guidelines, not hard rules.
- DWR may revise these communication guidelines as necessary at any time during the relicensing process.

1.7.2 Participation

1.7.2.1 *Participants*

Participation in the relicensing is open to any federal agency; State of California agency; local agency; NGO; Native American tribe, including tribes that are formally recognized by the federal government, tribes that are not formally recognized by the federal government, and individual tribal representatives; business; and unaffiliated members of the public. DWR assumes that each stakeholder is authorized to speak on behalf of the agency, organization, or affiliation that he or she represents in the relicensing.

1.7.2.2 *Late Participants in the Relicensing*

DWR anticipates each stakeholder that begins participating in the relicensing after the initiation of the relicensing processes (i.e., filing of the NOI and PAD) will take actions, including consulting with DWR and other stakeholders regarding available information, as necessary to become informed and "up-to-speed". DWR intends that late or delayed participation will not be allowed to disrupt the relicensing.

1.7.3 Stakeholders Contact List

DWR will maintain a list of parties that are likely to be interested in the relicensing or that have specifically expressed to DWR an interest in the relicensing.

DWR will request that each of these potentially interested parties provide appropriate information (i.e., name, title, affiliation, mailing address, telephone numbers, and email address) for its designated contact for the relicensing. DWR assumes that designated contacts will keep the appropriate members of their agency, tribe, or NGO advised of relicensing activities. Also, DWR anticipates that each agency, tribe, and NGO will notify DWR if contact information for its designated contact changes.

Relicensing can be a long process. To keep the stakeholder contact list current, DWR will periodically issue an email to all those on the contact list asking for each contact to confirm whether they wish to remain on the contact list. DWR will assume that those who do not respond in a timely fashion are no longer interested in the relicensing and delete those individuals from the contact list.

Because DWR understands that many people would be uncomfortable if their contact information was made readily available, DWR will not provide the contact list to parties or otherwise make it available.

1.7.4 Relicensing Website

DWR has established and will maintain a publicly accessible internet website as a means of making information regarding the relicensing readily available to stakeholders. Examples of information that will be provided on the website include the NOI and PAD, as well as other documents as they are developed. Many of the folders on the website will be empty until the documents for each folder are developed. DWR's Relicensing Website can be accessed at <https://www.krcd.org/relicensing>.

1.7.5 Meetings

As noted above, these communication guidelines apply only to DWR-sponsored meetings. DWR anticipates that meetings sponsored by another party (e.g., FERC or a stakeholder) will be organized, announced, hosted, and followed-up on by that other party. The guidelines DWR intends to follow for DWR-sponsored meetings are provided below.

1.7.5.1 *In-Person Meeting Locations and Start Time*

DWR intends that any in-person meeting locations and start times will be selected by DWR in consultation with interested stakeholders to ensure the greatest participation by those who wish to attend the meeting and the least amount of inconvenient travel for meeting participants overall. DWR assumes that each stakeholder will be aware of any meeting start time and location posted on the Relicensing Website Event Calendar.

1.7.5.2 *Virtual Meetings*

To accommodate constrained schedules, minimize travel time, encourage participation, and make meetings as accessible as possible to meeting participants, DWR will arrange meetings such that they are virtual and/or so they offer a virtual option, even for

meetings otherwise planned to be in-person, to the extent possible. DWR will give virtual meeting information to interested stakeholders as appropriate when scheduling a virtual meeting, no later than three days prior to the date of a meeting. As discussed under Section 1.7.5.7 below, stakeholder participation in virtual meetings may be limited to those on a need-to-know basis if these meetings involve discussions of sensitive and confidential information such as cultural and biological resources information.

1.7.5.3 Event Calendar

An event calendar that includes scheduled DWR-sponsored meetings, as well as key relicensing milestone dates, will be maintained on the Relicensing Website. Stakeholders and others may view the event calendar to see when a meeting is planned. The calendar will provide details, such as location and an agenda for the meeting, and any information that may be required to participate in video or teleconferences.

1.7.5.4 Meeting Agenda

DWR will develop an agenda for an upcoming DWR meeting based on regulatory requirements and input from the stakeholders at previous meetings or as otherwise reasonable. Standard items on each meeting agenda will include:

- Introductions
- Purpose of Meeting
- Review of Agenda
- Review Overall Relicensing Schedule
- Administrative Items, if any
- Status Reports If Appropriate or Requested, if any
- Specific Meeting Agenda Items
- Review of Decisions and Action Items

Those who plan to attend a DWR-sponsored in-person, virtual, or teleconference meeting should understand that those at the meeting may reorganize the agenda or proceed through an agenda at a faster or slower pace than anticipated when the agenda was developed.

1.7.5.5 Meeting Moderation/Facilitation

DWR is committed to an open and transparent process with a free exchange of information and interests among DWR and all stakeholders during meetings. DWR anticipates leading DWR-sponsored meetings. DWR will make a good-faith effort to ensure that all meeting participants are provided opportunities to participate and speak during the meeting.

If DWR and stakeholders jointly agree that a facilitator is pivotal to the success of any particular DWR-sponsored meeting or group of meetings, DWR will provide a neutral third-party facilitator for that relicensing meeting or group of meetings.

1.7.5.6 Meeting Action Items and Decisions

DWR does not intend to prepare a summary of meetings unless: (1) DWR and stakeholders jointly agree that a summary would be important in tracking a particular issue and agree on specific wording that will be included in the summary; or (2) FERC regulations require a summary of the meeting be prepared and filed with FERC. If DWR prepares a summary, DWR will post the summary on the Relicensing Website event calendar for that meeting, unless the summary is otherwise filed with FERC and available on FERC's eLibrary.

1.7.5.7 Privileged Meetings and Material

Some meetings and information prepared for or shared during a meeting may be privileged or confidential. For example, information on Native American resources and locations of sensitive environmental and cultural resources are considered confidential. Privileged material and material considered by DWR to be Critical Energy/Electric Infrastructure Information (CEII) will have restrictions on their distribution. DWR will share privileged information with only those stakeholders who have a need-to-know basis. Further, DWR anticipates that any stakeholder providing privileged information to DWR will identify and so mark each page of the information as privileged or confidential in advance of providing it to DWR. The processes for obtaining privileged and CEII material that has been filed with FERC can be found at 18 C.F.R. §§ 388.12 and 388.113.

1.7.5.8 Attendance at Meetings

DWR encourages each stakeholder to make a good faith effort to be represented at every DWR-sponsored relicensing meeting that is of interest to the stakeholder.

1.7.5.9 Preparation for Meetings

DWR encourages stakeholders to make good faith efforts to arrive at meetings on time, read background information provided before each meeting, and be prepared to effectively discuss topics on the meeting agenda. DWR encourages stakeholders to discuss material on the agenda with other stakeholders whom they think might be interested in the material.

1.7.5.10 Caucus

DWR encourages stakeholders to call for a caucus, if needed, at any time during a DWR-sponsored meeting.

1.7.5.11 Stakeholders Unable to Attend a Meeting

If a stakeholder finds that they are unable to attend or is unable to have a representative attend a DWR-sponsored meeting, the stakeholder may provide to DWR any input the stakeholder wishes to be considered at the meeting. If this occurs, DWR will make a good faith effort to convey the information accurately, disclosing who provided the information and when they provided it.

1.7.6 Documents

FERC's regulations identify documents that are required during relicensing. The ILP and TLP regulations stipulate that either FERC, the applicant, or in some instances another party, is responsible for producing these necessary documents. DWR anticipates that there will also be other informal documents generated during the course of the relicensing.

1.7.6.1 FERC's Documents

For documents issued by FERC, DWR anticipates that FERC will distribute the documents in accordance with FERC's protocols. DWR anticipates that all documents issued or received by FERC will be posted and publicly available in their e-Library on FERC's website at www.ferc.gov. To view these, a stakeholder should click on "Documents and Filing," "eLibrary," then "General Search." FERC's website provides further instructions for obtaining documents. Each stakeholder can register to receive a notice each time FERC posts a document to its website regarding the relicensing of the Project. To register, a stakeholder should go to FERC's website, click on "Documents and Filing," and then "eSubscription." FERC's website provides further instructions.

1.7.6.2 Non-DWR or Non-FERC Generated Documents

DWR expects that any stakeholder who creates, files with FERC, or distributes a document including correspondence will be responsible for the distribution of the document. A stakeholder should not assume that, by using the "Reply All" function in a DWR-generated e-mail, all stakeholder on the Contact List received their e-mail.

DWR reminds stakeholders that FERC encourages parties when filing material with FERC to submit an electronic filing pursuant to Section 385.2003(a) or file a complete hardcopy original and required number of copies of the filing to the Office of the Secretary, Federal Energy Regulatory Commission, 888 First Street, N.E., Washington, DC 20426. The filing should reference the Pine Flat Transmission Project and FERC Project No. 2876.

1.7.6.3 DWR's Documents

DWR anticipates using FERC's e-Filing whenever possible for publicly available documents DWR files with FERC and distributing such documents by e-mail, compact disc (CD or DVD), or paper copy to stakeholders, as appropriate. The distribution will also go to FERC's Service List after FERC establishes a formal Service List. DWR

plans to use email for distribution of informal documents it initiates. DWR will have the date, the name of the document, and the page number on each page of each document DWR produces. Other miscellaneous information, such as “draft,” will be shown in the footer of each page of the document, if appropriate. DWR will follow the processes at 18 CFR §§ 388.112 and 388.113 when filing privileged, confidential, and CEII material with FERC.

1.7.6.4 Collaboratively Developed Documents

DWR anticipates that at times DWR and stakeholders may desire to develop a document collaboratively. In those cases, and unless otherwise agreed to by DWR and stakeholders interested in the document, DWR plans to use a single-text approach.

Specifically, once an initial draft of the document is developed, DWR plans to post the document on its Relicensing Website in Microsoft Word or some other appropriate format (i.e., not *.pdf or a password-protected document) that can be downloaded from the Relicensing Website and used by stakeholders. This is referred to as a “Posted File.”

As a Posted File is revised, DWR anticipates that DWR or the stakeholder who revises the Posted File will include in the file name the date of the version of the file and the author/reviser. For instance, a file may be named “Proposal 1 SWRCB050524.doc” to indicate the Posted File is a version of a proposal, the revisions were made by the SWRCB, and the date of the file is May 5, 2024.

DWR anticipates that the author or reviewer will ensure that the appropriate headers and footers are on the file and that the date of the file in the footer matches the date in the file name – this is not DWR’s responsibility. DWR plans to post the revised file on the Relicensing Website if DWR made the revision, or post the file once provided to DWR if a stakeholder made the revision.

Periodically, DWR may remove files from the Relicensing Website that have been revised or are otherwise out-of-date.

DWR intends that all changes to a Posted File will be made in Microsoft Word Track Changes or other appropriate manner so that changes and/or comments can easily be understood, shared, and integrated into a revised text.

DWR plans that Track Changes on a Posted File may be accepted if DWR and Stakeholder developing the document agree.

1.7.6.5 Availability of Information in PAD

In accordance with 18 CFR §§5.6(c)(2) and 5.2, DWR plans to provide sources of information on the existing environment and known or potential resource impacts included in the PAD to anyone who requests the information with the exception of privileged, confidential, and CEII material. DWR will make a good faith effort to provide the document within 20 days of receipt of request. The document may be provided

electronically (e.g., by email or on CD/DVD) unless the party requesting asks for the information in hardcopy. Except for FERC and resource agencies, DWR may charge a reasonable cost for copying and postage for the material.

1.7.7 Personal Conduct

1.7.7.1 *Respect for Participants*

DWR will respect at all times the personal integrity, values, and legitimacy of the interests of each stakeholder, and expects that each stakeholder will do the same.

1.7.7.2 *Commitments*

DWR will not make commitments lightly and expects that stakeholders will do the same.

1.7.7.3 *Communicating Interests*

At DWR-sponsored meetings, DWR will make a good faith effort to ensure that adequate time is provided for the interests of all stakeholders to be discussed and acted upon. However, DWR does not intend to routinely defer decisions or allow the relicensing process to be disrupted by delays.

DWR will communicate its interests in topics under consideration and expects stakeholders will do the same. DWR firmly believes that it is incumbent upon DWR and each stakeholder to state their interests, and that timely voicing of these interests is essential to enable meaningful dialogue and full consideration of different points of view. DWR will share resource information where appropriate and will identify its understanding of relevant agency laws, regulations, and policies with regards to assessment of potential impacts and development of potential resource management measures and encourages stakeholders to do the same.

1.7.8 Communications

DWR understands that all stakeholders, including DWR, are free to communicate informally with each other; however, all parties are encouraged to share relevant communications with DWR and among all stakeholders, as appropriate.

Other than verbal communications at meetings, DWR will use email as the primary means of DWR's formal communication among stakeholders.

DWR will treat telephone calls with stakeholders informally, with no specific documentation except in instances where the information discussed during the telephone call is material to the relicensing proceeding and should be documented.

2.0 EXISTING AND PROPOSED PROJECT

This section provides a description of the Project. Section 2.1 describes the existing Project, including facilities and features; safety; operations; maps, drawings and plans; environmental measures; Project maps and design drawings; compliance history; and DWR's current net investment in the Project. Section 2.2 describes any changes DWR proposes at this time to the existing Project.

2.1 EXISTING PROJECT

2.1.1 Project Location

The Project is located near the community of Piedra, Fresno County, California, 30 miles east of the City of Fresno, and starts on the north bank of the Kings River 200 feet downstream of USACE's Pine Flat Dam at KRCD's Jeff L. Taylor Powerhouse, which is a part of the Jeff L. Taylor- Pine Flat Hydroelectric Project, FERC No. 2741.

2.1.2 Facilities, Features, Project Boundary and Safety

The 0.8-mile-long single-circuit 230 kV transmission line Project extends from Project 2741's switchyard to PG&E's 230-kV Balch #2-McCall transmission line. The Project's primary facilities include three self-supporting, square-based steel lattice towers. The steel poles are vertical construction design. The three towers vary in height from 79 to 112 feet and have a life expectancy of at least 80 years from their erection. The three-phase conductors of the single-circuit line consist of a 605,000-circular mil steel-reinforced aluminum cable. The transmission line crosses the Kings River from Project 2741's switchyard to the south bank and continues south in a draw to the crest of a nearby ridge, and then proceeds southeast until it connects with PG&E's transmission line. There are no Project access roads, but existing non-Project roads may be used to access tower PF3 and partway to towers PF 1 and 2. Figure 2.1-1 and Figure 2.1-2 below show representative photos of the Project structures. The transmission line was constructed to access power generated by Project 2741's Jeff L. Taylor Powerhouse that is used to offset electricity demands of operating the State Water Project. DWR purchases, delivers, and transmits all electric energy produced from the Pine Flat Powerplant on the terms and conditions set forth in the Pine Flat Power Sale Contract between KRCD and DWR on November 6, 1979, (Contract No. B53458) and in subsequent Amendments and Addendums. The Project is the primary transmission line for Project 2741 in that its sole purpose is to transmit power from Project 2741 to the interconnected electric grid.

The 11.52-acre FERC Project Boundary includes 7.94 acres of federal lands administered by the USACE, 1.11 acres of State of California lands submerged by the Kings River, and 2.46 acres of private lands.

DWR is unaware of any safety issue related to the Project. The Project has been operating for more than 44 years under the existing license and during this time FERC staff has conducted occasional inspections focusing on the continued safety of the

structure, efficiency and safety of operations, compliance with the terms of the license, and proper maintenance.



Figure 2.1-1. Pine Flat Transmission Line Pole PF1.



Figure 2.1-2. Pine Flat Transmission Line Pole PF3.

Operations

The transmission line transmits approximately 420 million kWh of hydroelectric energy annually from the Project 2741's switchyard to PG&E's existing 230-kV Balch #2-McCall transmission line, a part of PG&E's interconnected system. The California Independent System Operator (CAISO) controls the operation of the transmission line.

2.1.2.1 Maintenance Activities

The operation of the Project is ultimately controlled by the CAISO. CAISO specifies the maintenance practices to prioritize, inspect, and maintain overhead electrical transmission lines placed under the control of the CAISO. Transmission lines are considered high priority under the CAISO guidelines. Additional maintenance requirements are specified under California Public Resources Code (CPRC) §4293 and requirements of the California Public Utilities Commission, General Order 95, Rule 35, to maintain specific clearances between conductors and vegetation. CPRC §4292 requires clearing of vegetation around specific structures, or types of electrical apparatus, to reduce fire danger (e.g. switch structures). Maintenance activities are described below.

Routine Inspection

Maintenance staff or contractors conduct inspections of each transmission structure every year. Inspectors inspect some of the Project from the roadway and the rest on foot. These inspections are designed to assess the physical condition of the transmission line hardware (conductors, insulators, cross-arms, and guy anchors) and to determine if repairs or replacements are necessary to maintain the system reliability. Vegetation management staff or contractors conduct an annual ground inspection of the entire transmission line corridor to identify vegetation that does not comply with CPRC §4293. These inspections are generally conducted from a vehicle on a public road or on foot. There is no disturbance associated with routine inspections.

Minor Repairs of Transmission Equipment

Repairs to insulators and cross-arms or other minor repairs are made by personnel physically climbing the pole to make the repair or from vehicles parked adjacent to the poles when access is available. In areas where there is no vehicle access, the crews will walk into the work area with the necessary materials, or the materials may be flown in by helicopter. These repairs are generally made infrequently (once every 25 years) and may only be required following a severe storm. Any potential disturbance during such repairs is localized and of short duration.

Tree Trimming and Hazard Tree Removal

Vegetation management on the Project follows the requirements of the Pine Flat Transmission Vegetation Management Program (DWR, 2018), whose contents are designed to meet all federal and State regulations. An annual inspection of the right-of-way is performed by foot in summer or fall, generally between July and September.

Management activities to meet regulatory requirements for vegetation are determined at that time to be implemented the following year in the same July through September period. Vegetation within 25 feet of the Project is subject to management and 30 feet is the desired vegetation clearance distance to be obtained. Routine vegetation management activities include application of herbicides (e.g., Garlon 3a®, Milestone®, and Garlon4®; tree Growth Regulators such as Cambistat®, etc.), mechanical vegetation control, and/or tree trimming and/or removal. High risk trees or vegetation may be dealt with more immediately, depending on the situation. All vegetation management is documented and reported in the implementation year.

Under an agreement with DWR, KRCD manages, maintains, and operates the Pine Flat Tap 230kV transmission lines and Towers and 230kV disconnect switch located on PF Tower 3. KRCD cooperates with DWR for annual inspections and tasks. KRCD also coordinates with the USACE and Pacific Gas and Electric (PG&E) as needed to assist with vegetation management.

Maintenance of Steel Structures

Steel structures generally have a life span of 80 years. Steel structures may be physically inspected once every five years to assess the physical condition of the transmission line hardware (conductors, insulators, and cross-arms) to determine if repairs are necessary to maintain the system reliability. Vegetation clearances required under CPRC §§4292 and 4293 also apply.

Conductor Repair and Replacement

Replacing damaged sections of the conductor may be done from a vehicle when access is available or it may be done by hand when access is limited. Repairs on conductors are required infrequently and may only be required following a severe storm. Any potential disturbance would be localized and of a short duration.

2.1.3 FERC License Requirements

On March 24, 1980, FERC issued an “Order Issuing Transmission Line License” for the Project. The licensed project extends approximately 0.8-mile from the Jeff L. Taylor Powerhouse - a hydroelectric generating unit owned and operated by KRCD that is a component of FERC Project No. 2741 - to the junction with PG&E’s interconnected transmission grid at PG&E’s 230-kV Balch #2-McCall transmission line.

The Transmission Line License expires on August 31, 2029. There are currently 20 Articles in the existing License. Of these, DWR considers Articles 18, 19, and 20 “expired” or “out-of-date” because the article pertains to an activity that has been completed or is no longer pertinent. All articles are detailed below.

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, that if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project works shall be constructed in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Upon the completion of the project, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised exhibits insofar as necessary to show any divergence from or variations in the project area and project boundary as finally located or in the project works as actually constructed when compared with the area and boundary shown and the works described in the license or in the exhibits approved by the Commission, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variation in or divergence from the approved exhibits. Such revised exhibits shall, if and when approved by the Commission, be made a part of the license under the provisions of Article 2 hereof.

Article 4. The construction, operation, and maintenance of the project and any work incidental to additions or alterations shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of the project and for any subsequent alterations to the project. Construction of the project works or any features or alteration thereof shall not be initiated until the program of inspection for the project works or any

such feature thereof has been approved by said representative. The Licensee shall also furnish to said representative such further information as he may require concerning the construction, operation, and maintenance of the project, and of any alteration thereof, and shall notify him of the date upon which work will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the U.S., necessary or appropriate for the construction, maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by any other lawful authority for avoiding or eliminating inductive interference.

Article 7. Timber on lands of the United State cut, used, or destroyed in the construction and maintenance of the project works, or in the clearing of said lands, shall be paid for, and the resulting slash and debris disposed of, in accordance with the requirements of the agency of the United States having jurisdiction over said lands. Payment for

merchantable timber shall be at current stumpage rates, and payment for young growth timber below merchantable size shall be at current damage appraisal values. However, the agency of the United States having jurisdiction may sell or dispose of the merchantable timber to others than the Licensee: Provided, that timber so sold or disposed of shall be cut and removed from the area prior to, or without undue interference with, clearing operations of the Licensee and in coordination with the Licensee's project construction schedules. Such sale or disposal to others shall not relieve the Licensee of responsibility for the clearing and disposal of all slash and debris from project lands.

Article 8. The Licensee shall do everything reasonably within its power, and shall require its employees, contractors, and employees of contractors to do everything reasonably within their power, both independently and upon the request of officers of the agency concerned, to prevent, to make advance preparations for suppression of, and to suppress fires on the lands to be occupied or used under the license. The Licensee shall be liable for and shall pay the costs incurred by the United States in suppressing fires caused from the construction, operation, or maintenance of the project works or of the works appurtenant or accessory thereto under the license.

Article 9. The Licensee shall be liable for injury to, or destruction of, any buildings, bridges, roads, trails, lands, or other property of the United States, occasioned by the construction, maintenance, or operation of the project works or of the works appurtenant or accessory thereto under the license. Arrangements to meet such liability, either by compensation for such injury or destruction, or by reconstruction or repair of damaged property, or otherwise, shall be made with the appropriate department or agency of the United States.

Article 10. The Licensee shall allow any agency of the United States, without charge, to construct or permit to be constructed on, through, and across those project lands which are lands of the United States such conduits, chutes, ditches, railroads, roads, trails, telephone and power lines, and other routes or means of transportation and communication as are not inconsistent with the enjoyment of said lands by the Licensee for the purposes of the license. This license shall not be construed as conferring upon the Licensee any right of use, occupancy, or enjoyment of the lands of the United States other than for the construction, operation, and maintenance of the project as stated in the license.

Article 11. The Licensee shall make provision, or shall bear the reasonable cost, as determined by the agency of the United States affected, of making provision for avoiding inductive interference between any project transmission line or other project facility constructed, operated, or maintained under the license, and any radio installation, telephone line, or other communication facility installed or constructed before or after construction of such project transmission line or other project facility and owned, operated, or used by such agency of the United States in administering the lands under its jurisdiction.

Article 12. The Licensee shall make use of the Commission's guidelines and other recognized guidelines for treatment of transmission line rights-of-way, and shall clear such portions of transmission line rights-of-way across lands of the United States as are designated by the officer of the United States in charge of the lands; shall keep the areas so designated clear of new growth, all refuse, and inflammable material to the satisfaction of such officer; shall trim all branches of trees in contact with or liable to contact the transmission lines; shall cut and remove all dead or leaning trees which might fall in contact with the transmission lines; and shall take such other precautions against fire as may be required by such officer. No fires for the burning of waste material shall be set except with the prior written consent of the officer of the United States in charge of the lands as to time and place.

Article 13. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 14. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 15. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

Article 16. The Licensee shall pay the United States the following annual charge, effective the first day of the month in which this license is issued:

- (a) For the purpose of reimbursing the United States for the costs of administration of Part I of the Act, an annual charge of \$200.00, or such amount as may be determined by the Federal Energy Regulatory Commission in accordance with the provisions of its Regulations, in effect from time to time; and

- (b) For the purpose of recompensing the United States for the use, occupancy, and enjoyment of its lands for transmission line rights-of-way, an amount as may be determined from time to time pursuant to the Commission's Regulations.

Article 17. The Licensee shall, within one year after the date of issuance of this license, prepare and file in accordance with the Commission's Rules and Regulations, as modified January 1, 1980, an 'as-built' Exhibit K, to show and describe the actual land occupied by the project. Exhibit K, when approved, will supersede the Exhibit K approved as part of this license.

Article 18. The Licensee shall, by flagging, fencing, or other appropriate means, protect the identified archeological site in the construction yard, designated as CA-Fre-665, from construction-related activities. If any previously unrecorded archeological sites are discovered during the course of construction or development of any project works or other facilities at the project, construction activity in the vicinity shall be halted, a qualified archeologist shall be consulted to determine the significance of the sites, and the Licensee shall consult with California State Historic Preservation Officer (SHPO) to develop a mitigation plan for the protection of significant archeological resources. The Licensee shall make available funds in a reasonable amount for any archeological work as required. If the Licensee and the SHPO cannot agree on the amount of money to be expended on archeological work related to the project, the Commission reserves the right to require the Licensee to conduct, at its own expense, any such work found necessary.

Article 19. The Licensee shall take all measures necessary to assure that the construction procedures described in Exhibit V of its application for this license are followed, except that minor deviations warranted by particular field conditions to avoid unanticipated engineering difficulties or to minimize environmental effects may be authorized by the Commission's Regional Engineer.

Article 20. Prior to construction, Licensee shall conduct a field survey to determine the presence of nesting raptors. If nesting is found, and blasting is required for tower foundations, the blasting will be postponed until after nesting season. The transmission lines will be designed to be raptor electrocution-proof.

2.1.4 Maps, Design Drawings and Plans

2.1.4.1 Project Maps

Refer to Attachment C, Draft Exhibit G, Project Maps of this PAD for a map of the Project Boundary, including land ownership.

2.1.4.2 Project Design Drawings

Refer to Attachment D, Draft Exhibit F, Design Drawings, of this PAD for a list of detailed drawings of Project facilities. These drawings provide plan, elevation, profiles and sections, and depict the as-built principal Project works, and due to their content,

are treated by the Commission as Critical Energy Infrastructure Information (CEII) under 18 CFR Section 388.113 and are not released to the public.

2.1.4.3 *Plans and Agreements*

The existing FERC license does not include other license Plans.

DWR entered into a contract with KRCD, which FERC approved on December 13, 1979, to purchase power from the Jeff L. Taylor- Pine Flat Hydroelectric Project for a period of 50 years after the last of the Project 2741's generating units became commercially operable, in which FERC anticipated would be two years beyond the license term (or August 31, 2031).

2.1.5 Compliance History

DWR complies with terms and conditions of the existing license.

DWR has had no reoccurring situations of noncompliance with the existing license's terms and conditions. In 1993, DWR was late paying the Project's annual charges, with FERC sending four notices prior to payment, the last dated November 11, 1993. In the event of a deviation from a term or condition in the existing license, DWR would notify FERC, initiate an investigation, and provide a written report, including proposed corrective actions, if appropriate, to FERC regarding the deviation. FERC would conduct its own analysis and determine if the deviation is considered a formal noncompliance event.

2.1.6 Current Net Investment

DWR estimates the existing Project's net book value (assets minus liabilities) is approximately \$0 in 2023 U.S. dollars.

2.2 DWR PROPOSED CHANGES TO PROJECT FACILITIES AND OPERATIONS

At this time, DWR proposes no changes to existing Project's facilities and features, Project Boundary, or operations. DWR reserves its right to propose changes as the relicensing proceeds.

3.0 INTRODUCTION TO THE RIVER BASIN

This section is divided into two subsections. Section 3.0.1 provides a general description of the river basin in which the Project occurs. Section 3.0.2 provides existing, relevant, and reasonably available information regarding the resources.

3.0.1 General Description of the River Basin

The Kings River originates along the crest of the Sierra Nevada in and around Kings Canyon National Park, flows in a westward direction for approximately 133 miles where it enters the San Joaquin River during periods of high flows near the Mendota Pool in the City of Mendota, California at an elevation of 154 feet. The Kings River has been designated as fully appropriated year-round (RWQCB, 2018), meaning there is insufficient water for any new water right applications. Figure 3.0-1 shows the Kings River.

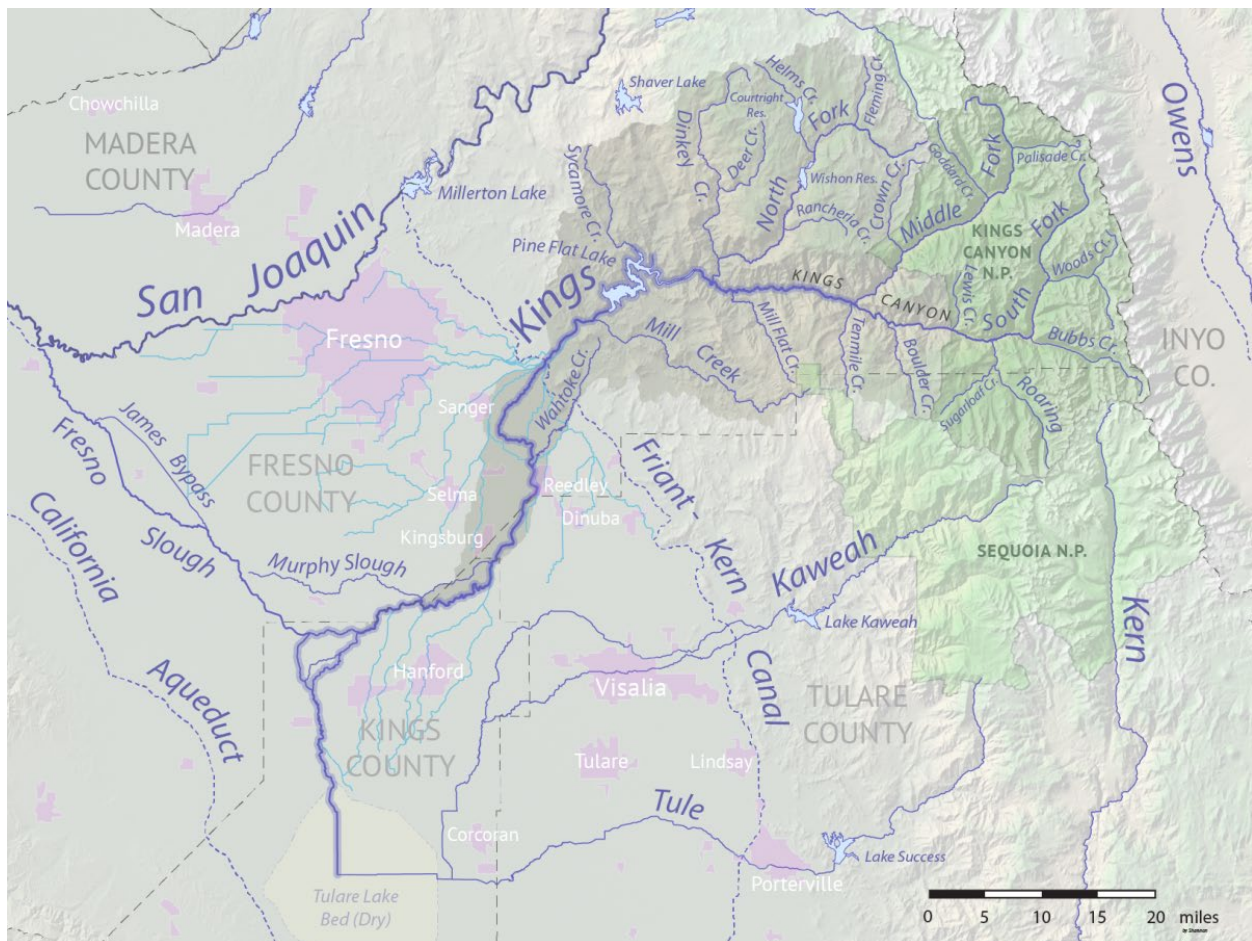


Figure 3.0-1. Kings River Upstream and Downstream of Pine Flat Lake.

Three main forks form the Kings River. The South and Middle Forks are unimpaired and both are designated as Wild and Scenic under the Wild and Scenic Rivers Act (16 U.S.C. § 1271-1287). The 44-mile South Fork originates on the Sierra Crest at the far eastern edge of Kings Canyon National Park. The South Fork flows south, and then west through the Cedar Grove section of Kings Canyon. The 37-mile-long Middle Fork, originates at Helen Lake in the high Sierra. None of the designated Wild and Scenic segments are located within the Project boundary nor below Pine Flat Lake. The South and Middle Forks converge in the Monarch Wilderness at an elevation of 2,257 feet just outside the Kings River National Park to form the Kings River that flows westward for about 30 miles to where it converges with the North Fork Kings River at an elevation of 973 feet near Balch Camp.

The 40-mile-long North Fork Kings River originates at an elevation of approximately 12,000 feet at the White Divide within the John Muir Wilderness. Three FERC licensed hydroelectric projects, all owned and operated by PG&E occur on the North Fork Kings River: 1) the 193.2 MW Hass-Kings River Hydroelectric Project (P-1988); 2) the 1,080 MW Helms Pumped Storage Project (P-2735); and 3) the 139 MW Balch Hydroelectric Project (P-175). P-1988 consists primarily of the 123,184 acre-foot Courtright Lake on Helms Creek, the 128,606 acre-foot Lake Wishon on the North Fork Kings River, a tunnel and penstock from Lake Wishon to Haas Powerhouse, a tailrace tunnel from Haas Powerhouse to P-175's 1,260 acre-foot Black Rock Reservoir on the North Fork Kings River, a tunnel and penstock from P-175's 319 acre-foot Balch Afterbay on the North Fork Kings River to the Kings River Powerhouse at USACE's Pine Flat Lake on the mainstem Kings River and a tailrace from the Kings River Powerhouse to Pine Flat Lake. P-2735 is an open-loop pumped storage hydroelectric project with its lower intake-outlet structure in P-1988's Lake Wishon and its upper intake-outlet structure in P-1988's Courtright Lake. All P-2735 facilities and structures used to exchange water between the two reservoirs are underground, including Helms Powerhouse. P-175 is comprised of Black Rock Reservoir, Balch Afterbay, and Balch Powerhouse. The three FERC licenses for P-175, P-1988, and P2735 expire on April 30, 2026.

From the confluence with the North Fork Kings River, the Kings River flows approximately 20 miles downstream to Pine Flat Lake. Pine Flat Dam was constructed by the USACE in 1954 to provide local and regional flood protection. The dam is a 455-foot-high concrete gravity dam that impounds Pine Flat Lake that, at its normal operations elevation of 955 feet, has a maximum storage capacity of 1,000,000 acre-feet. The drainage area at the dam is approximately 1,545 square miles. Pine Flat Lake provides recreation areas and water for irrigation and groundwater replenishment. The lake is about 20 miles long and has a shoreline length and surface area of about 67 miles and 5,760 acres, respectively, at its normal maximum water surface elevation of 955 ft (i.e., spillway crest elevation). The drainage area upstream of Pine Flat Dam is 1,545 square miles. Average annual flow immediately downstream of Pine Flat Dam

from 1954 through 2022 was 2,243 cfs.¹ The dam and its associated facilities do not include USACE hydropower facilities and are not under FERC jurisdiction.

The Pine Flat Transmission Line Project begins at the base of Pine Flat Dam, crosses the Kings River and continues southward, as is described in Section 2.0.

The Kings River emerges from the foothills of the Sierra Nevada near the Community of Piedra, about 10 miles downstream of Pine Flat Dam. From there, the river diverges into multiple branches that flow across the gently sloping alluvial plain of the San Joaquin Valley. Some water flows south to the old Tulare Lakebed and the rest flows north to the San Joaquin River. This makes estimates of the total drainage area upstream of Kingsburg at the State Highway 99 Bridge difficult because the river downstream of Kingsburg becomes difficult to define due to the diffuse nature of the drainage system across the valley and north to the San Joaquin River.

Downstream of Pine Flat Dam, the Kings River is characterized by a system of canals, ditches, and several diversion structures, as well as a temporary division into North and South Forks some 6 miles north of the City of Lemoore. Sixteen major weirs, numerous diversions, and numerous pumps occur along the Kings River before it reaches the San Joaquin River (from the lower North Fork via Fresno Slough) or the Tulare Lake basin (after the rejoining of the lower North and South Forks west of the city of Lemoore in Kings County). Downstream from the Project, these include: Cobles Weir, Gould Weir, Fresno Weir, Peoples Weir, Dutch John Weir, Cole Slough Weir, Reynolds Weir, Last Chance Weir, Lemoore Weir, Army Weir, Island Weir, Empire Weir 1, Empire Weir 2, Crescent Weir, Stinson Weir, and James Weir. None of these are under FERC jurisdiction.

Figure 3.0-2 is a gradient profile of the Kings River downstream of Pine Flat Dam to the Friant-Kern Canal.

¹ The United States Geological Survey (USGS) maintained USGS Gage 11221500, Kings River Below Pine Flat Dam, CA, from January 1, 1954, through October 4, 1990. In October 1990, the USACE assumed the maintenance, operation, and reporting responsibility for the gage, which USACE refers to as "PNFQ". Gage data are publicly available at <https://www.spk-wc.usace.army.mil/reports/monthly.html> and at <https://cdec.water.ca.gov/index.html> under Station ID "PNF."

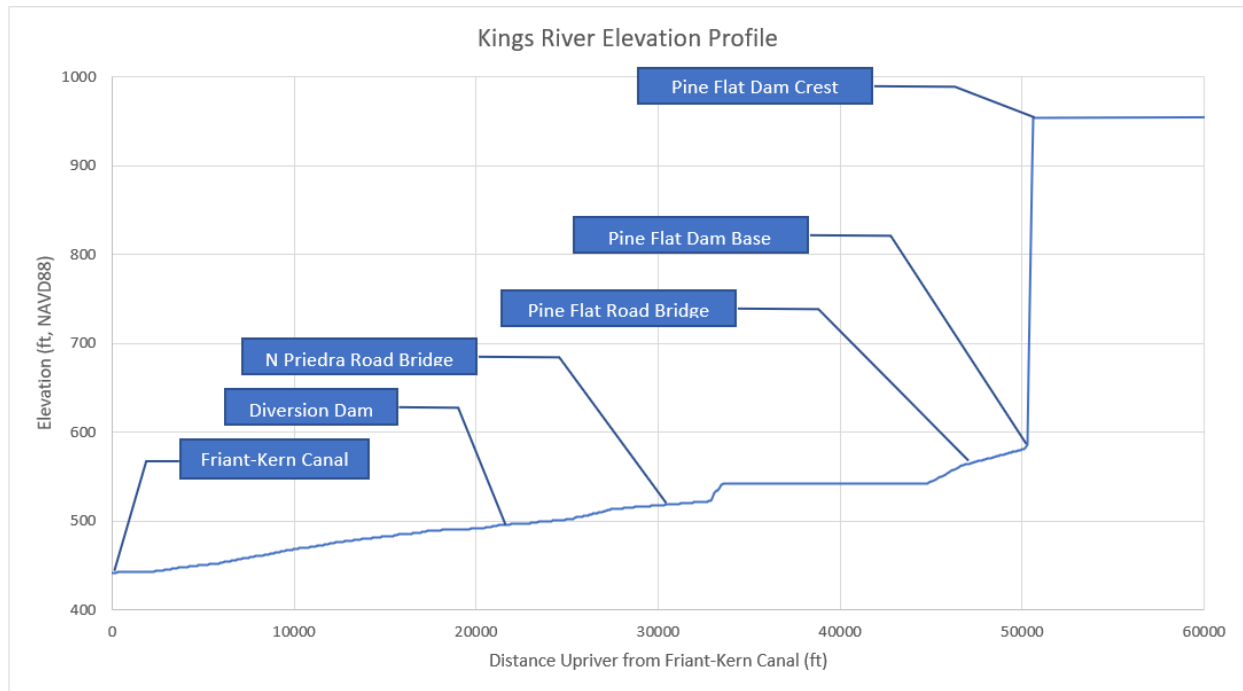


Figure 3.0-2. Streambed Gradient of the Kings River from Pine Flat Dam to the Friant-Kern Canal.

3.0.2 Climate

Overall, the climate near the Project is typical of a mixed-elevation Mediterranean climate. The National Weather Service monitoring station at Pine Flat Dam (Number 046896) provides a climate history representative of the Project area. The area occupies the eastern Central Valley and rolling, western Sierra foothills, and experiences high summer temperatures while winters tend toward moderate temperatures. July air temperatures at Pine Flat Dam average a high of 99.9° and a low of 64.9°F. Average January high and low temperatures are 58.9° and 33.9°F, respectively. Annual average precipitation totals 19.8 inches and falls exclusively as rain, with 89 percent falling from November through April. May through September precipitation averages only 1.2 inches generally resulting from rare summer thunderstorms (Western Regional Climate Center, 2023).

3.0.3 Potentially-Affected Stream Reaches

The Project is an existing transmission line only and has no effect on stream reaches.

3.0.4 Major Land Use

In California, counties are the primary agencies for establishing land use policies for private land within their jurisdiction. The Project is within Fresno County, California. Major land uses in and surrounding the Project area include agriculture and cattle grazing on private and federal lands surrounding Pine Flat Lake.

3.0.5 Major Water Uses

The Central Valley Regional Water Quality Control Board (RWQCB), in its Water Quality Control Plan for the Tulare Lake Basin (Basin Plan) (RWQCB, 2018) identifies streams and watersheds with unique Hydro Unit (HU) numbers.² The Project is a non-consumptive use of Kings River basin water: all water that passes through the Project is returned to the Kings River. Beneficial uses of surface water designated by the Basin Plan (RWQCB, 2018) in the Kings River from Pine Flat Dam to Friant-Kern (Hydrologic Units 552, 551). The Project and the area downstream fall in two Basin Plan units, HU 551 and HU 552 that includes the Kings River from Pine Flat Dam to Friant-Kern. Designated beneficial uses of surface water in this unit are shown in Table 3.0-1.

Table 3.0-1. Beneficial Uses of Surface Water in the Kings River at the Project.

Beneficial Use	Beneficial Use Description
Municipal and Domestic Supply (MUN)	Uses of water for community, military, or individual water supply systems, including, but not limited to, drinking water supply.
Agricultural Supply (AGR)	Uses of water for farming, horticulture, or ranching, including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
Hydropower Generation (POW)	Uses of water for hydropower generation.
Water Contact Recreation (REC-1)	Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.
Non-Contact Water Recreation (REC-2)	Uses of water for recreational activities involving proximity to water, but where there is generally no body contact with water, nor any likelihood of ingestion of water. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
Warm Freshwater Habitat (WARM)	Uses of water that support warm water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates. WARM includes support for reproduction and early development of warm water fish.
Cold Freshwater Habitat (COLD)	Uses of water that support cold water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Wildlife Habitat (WILD)	Uses of water that support terrestrial or wetland ecosystems, including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
Spawning, Reproduction, and/or Early Development (SPWN)	Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish. SPWN shall be limited to cold water fisheries.
Ground Water Recharge (GWR)	Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
Freshwater Replenishment (FRSH)	Uses of water for natural or artificial maintenance of surface water quantity or quality.

SOURCE: (Board, 2018)

² Basin Plan Hydro Unit (HU) codes do not correspond to Hydrologic Unit Code (HUC) numbers as defined by the Water Resources Council; the RWQCBs use the HU codes primarily for state-level water quality planning and regulatory purposes.

3.1 EXISTING ENVIRONMENT

Section 3.0 is divided into 13 sections by major resource area, starting with this description:

- Geology and Soils (Section 3.2)
- Water Resources (Section 3.3)
- Aquatic Resources (Section 3.4)
- Terrestrial Resources (Section 3.5)
- Endangered Species Act-Listed Species (Section 3.6)
- Recreation Resources (Section 3.7)
- Land Use (Section 3.8)
- Aesthetic Resources (Section 3.9)
- Socioeconomic Resources (Section 3.10)
- Environmental Justice (Section 3.11)
- Cultural Resources (Section 3.12)
- Tribal Interests (Section 3.13)

Where appropriate, existing information is noted as either a source document (i.e., contains original data collected by the author) or anecdotal information. The amount of detail included in the description of each existing resource and known Project effect is commensurate with the importance of the resource and effect in the relicensing.

3.2 GEOLOGY AND SOILS

3.2.1 Geologic Setting

3.2.1.1 *Topography and Geomorphology*

The Project is located within the southern portion of the Central Valley of California, also known as the San Joaquin Valley, on the Kings River at the base of the foothills of the Sierra Nevada. The physiographical region that the Pine Flat transmission line falls within is the Cascade-Sierra Mountains province. This region, from California through Alaska, has some of the most recent tectonic formation activity in North America (National Park Service, 2018). A steep canyon of the Kings River lies just below the dam, with an elevation of approximately 560 feet at the river around the North Riverside Access Park and around 972 feet at the top of Pine Flat Dam (United States Geologic Survey, 2023). The transmission line has a peak elevation of 1,125 feet south of the dam.

3.2.1.2 *Bedrock Lithology and Stratigraphy*

Within and adjacent to the FERC Project boundary, there are four main rock types: (1) pre-Cenozoic metavolcanic rocks; (2) Mesozoic intrusive rocks; (3) Mesozoic to pre-Cambrian metamorphic and intrusive rocks; and (4) Quaternary alluvium. The metavolcanic rocks are made up of latite, dacite, tuff, and greenstone; commonly schistose. The Mesozoic intrusive rocks are made up of granite, quartz monzonite, granodiorite, quartz diorite, ultramafic serpentine rocks, peridotite, gabbro, and diabase. The Mesozoic to pre-Cambrian metamorphic and intrusive rocks are mostly gneiss and other metamorphic rocks injected by granitic rocks. Downstream of the Pine Flat dam, Quaternary stream alluvium and sedimentary rocks made up of unconsolidated and semi-consolidated lake, playa, and terrace deposits are present (California Department of Conservation, 2015).

3.2.1.3 *Tectonic History*

There are no known faults in the FERC Project boundary or within a five-mile radius (United States Geologic Survey, 2021).

3.2.1.4 *Mineral Resources*

Fresno County has historically been a leading producer of mineral resources and primarily mines aggregate resources and chromium (Fresno County 2021). San Joaquin River Resource Area Land parcels that border the FERC Project boundary are mapped as Mineral Resource Zone 1 (MRZ-1), indicating no significant mineral deposits are present. MRZ-2 is mapped within three miles downstream of the FERC Project boundary, indicating there are known significant mineral deposits in the area (Fresno County, 2021). Multiple active mines or extraction sites are currently within 5 miles of the FERC Project boundary; however, none that would be impacted by Project operations.

3.2.2 Soils

3.2.2.1 *Soil Types*

The dominant soil types present within the FERC Project boundary are Trimmer loam 45-70 percent slopes, Trimmer loam 30-45 percent slopes, Blasingame loam 30 to 45 percent slopes, and Tretten fine sandy loam 30-45 percent slopes.

The FERC Project boundary is mainly made up of rocky outcrops, loam, and sandy loam soils (Natural Resources Conservation Service, 2019). Soil types within the FERC Project boundary are shown in Table 3.2-1.

Table 3.2-1. Soil types within the FERC Project Boundary.

Soil Unit Name	Acres within FERC Project boundary	Drainage Class
Trimmer loam, 45 to 70 percent slopes	4.52 (39%) ¹	Well Drained
Trimmer loam, 30 to 45 percent slopes	3.24 (28%) ¹	Excessively Drained
Blasingame loam, 30 to 45 percent slopes	1.5 (13%)	Well Drained
Tretten fine sandy loam, 30 to 45 percent slopes	1.0 (9%)	Well Drained

SOURCE: (Natural Resources Conservation Service, 2019)

¹ Water and dam infrastructure is present in the FERC Project boundary (1.17 acres water and 0.1-acre dam, 11%).

The trimmer and blasingame soil series both occur in the foothills along the east side of the San Joaquin Valley and in the western part of the southern California foothills. Trimmer loam is made of weathered basic and metabasic igneous rock, with an elevation between 500 and 3,500 feet (USDA National Cooperative Soil Survey, 2003). The blasingame soil series formed in material weathered from gabbro, diorite, and other basic igneous rocks (Natural Resources Conservation Service, 2023). Their elevation range is between 400 and 4,500 feet. Trimmer loam makes up 67% of the FERC Project boundary while blasingame loam makes up 13%.

Due to the lack of clay soils in the FERC Project boundary, expansive soils are unlikely to be encountered. Unconsolidated sandy soils in the FERC Project boundary have the potential for liquefaction in saturated conditions triggered by seismic ground shaking; however, due to the low potential for seismicity in the area, liquefaction would be unlikely.

Figure 3.2-1 shows the soils within the FERC Project boundary and surrounding area.

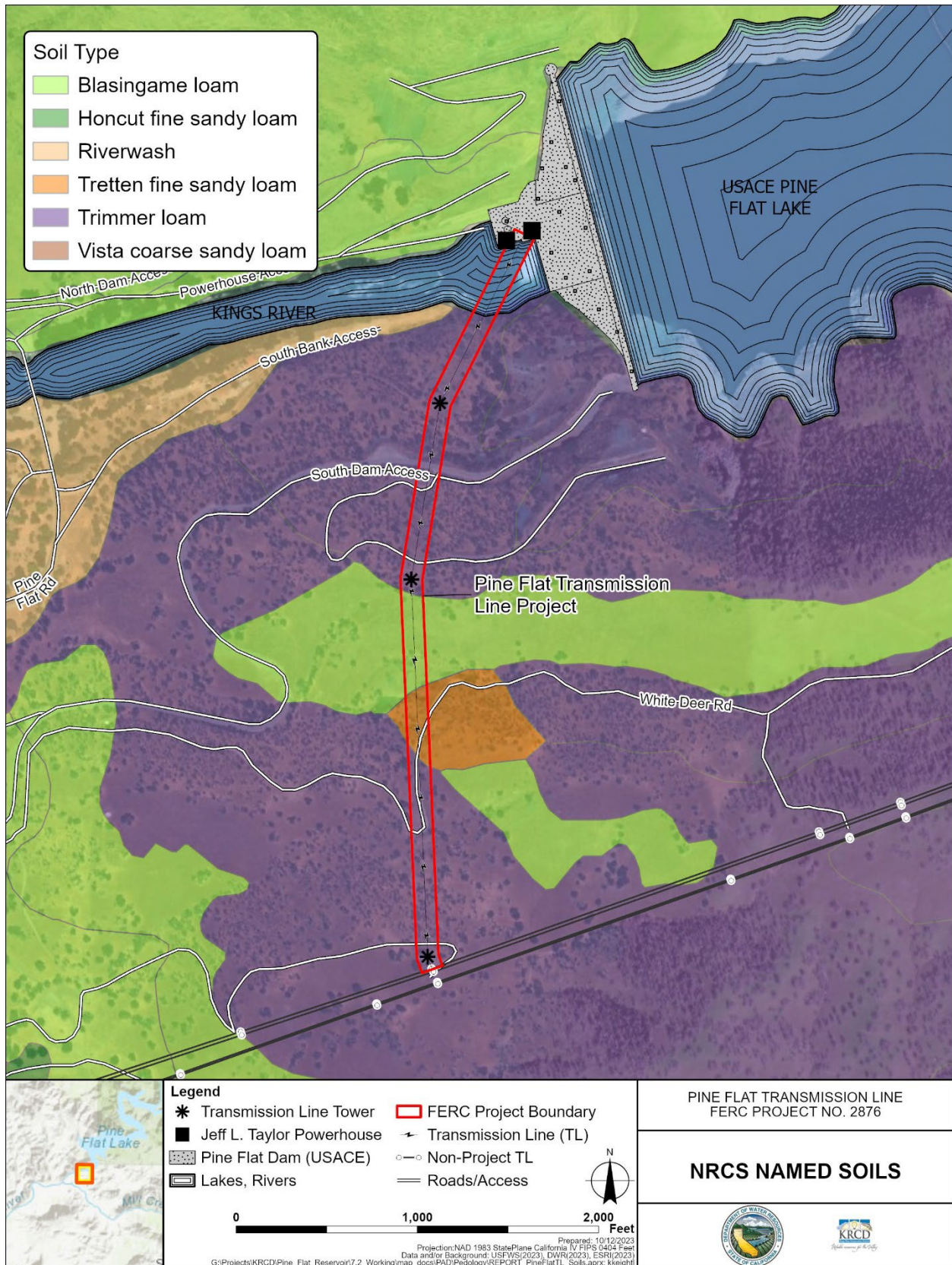


Figure 3.2-1. Soil types within the FERC Project boundary.

3.2.2.2 *Erodibility and Landslide Potential*

The reservoir basin, downstream river, and mountains bordering the transmission line are all potential sites that could be impacted by erosion and landslides. However, as the transmission line lies outside the high-water line of any waterbody or stream, and the right of way is covered with vegetation, including some areas of denser shrubs and trees, there is minimal erodibility and landslide potential. The FERC Project boundary is in an area not evaluated or mapped for landslide potential (California Department of Conservation, 2022).

3.3 WATER RESOURCES

All facilities, maintenance, and operations of the Project are outside of watercourses and the FEMA Special Flood Hazard Areas (FEMA, 2023). Therefore, the Project will not have any adverse effects on any water resources within or near the FERC Project boundary. However, since the Project crosses over the Kings River and a small, unnamed, perennial drainage, information on those watercourses (Section 3.3.1) and potential effects on water quality (Section 3.3.2) are provided below.

3.3.1 Watercourses

3.3.1.1 *Kings River*

The headwaters of the Kings River originate as the North, Middle, and South Forks in the Sierra Nevada and are impounded above Pine Flat Dam, forming Pine Flat Lake. Pine Flat Lake's maximum capacity is 1,000,000-acre-feet and provides flood control and irrigation benefits to the San Joaquin Valley. Below Pine Flat Dam, the Kings River divides into Kings River North, which flows into the San Joaquin River during flood operations, and Kings River South, which flows into the Tulare Lake basin.

The Project extends from the Jeff L. Taylor Powerhouse (part of KRCD's Jeff L. Taylor-Pine Flat Hydroelectric Project, FERC Project No. 2741) and crosses above the Kings River to the south bank where it interconnects with PG&E's Balch #2-McCall line. The transmission lines are approximately 50 feet above the water (Figure 3.3-1). Project transmission tower PF1 is nearest to the Kings River, several hundred feet upslope of the water (Figure 3.3-1).

3.3.1.2 *Unnamed Drainage*

An unnamed, likely perennial, two- to three-foot-deep drainage with moderate flow that includes pools and riffles runs between towers PF2 and PF3. The transmission line is over 50 feet above the drainage, and the nearest tower is 550 feet away. Figure 3.3-2 shows the location of the transmission line in relation to the creek.

3.3.2 Water Quality and Quantity

The Project crosses over Kings River directly below Pine Flat Dam and crosses over the unnamed drainage below PF2 however, no Project activities or facilities occur in or near either watercourse. All transmission line towers are also outside the Federal Emergency Management Agency (FEMA) Special Flood Hazard Areas (FEMA, 2023). Therefore, the Project does not have any impact on water resources, including quality and quantity. All vehicular access to the Project occurs on designated roads, and there is no vegetation management at or near any watercourses.



Figure 3.3-1. View of the Pine Flat Transmission Line's first supporting tower on the south bank of the Kings River and the lines above the water.

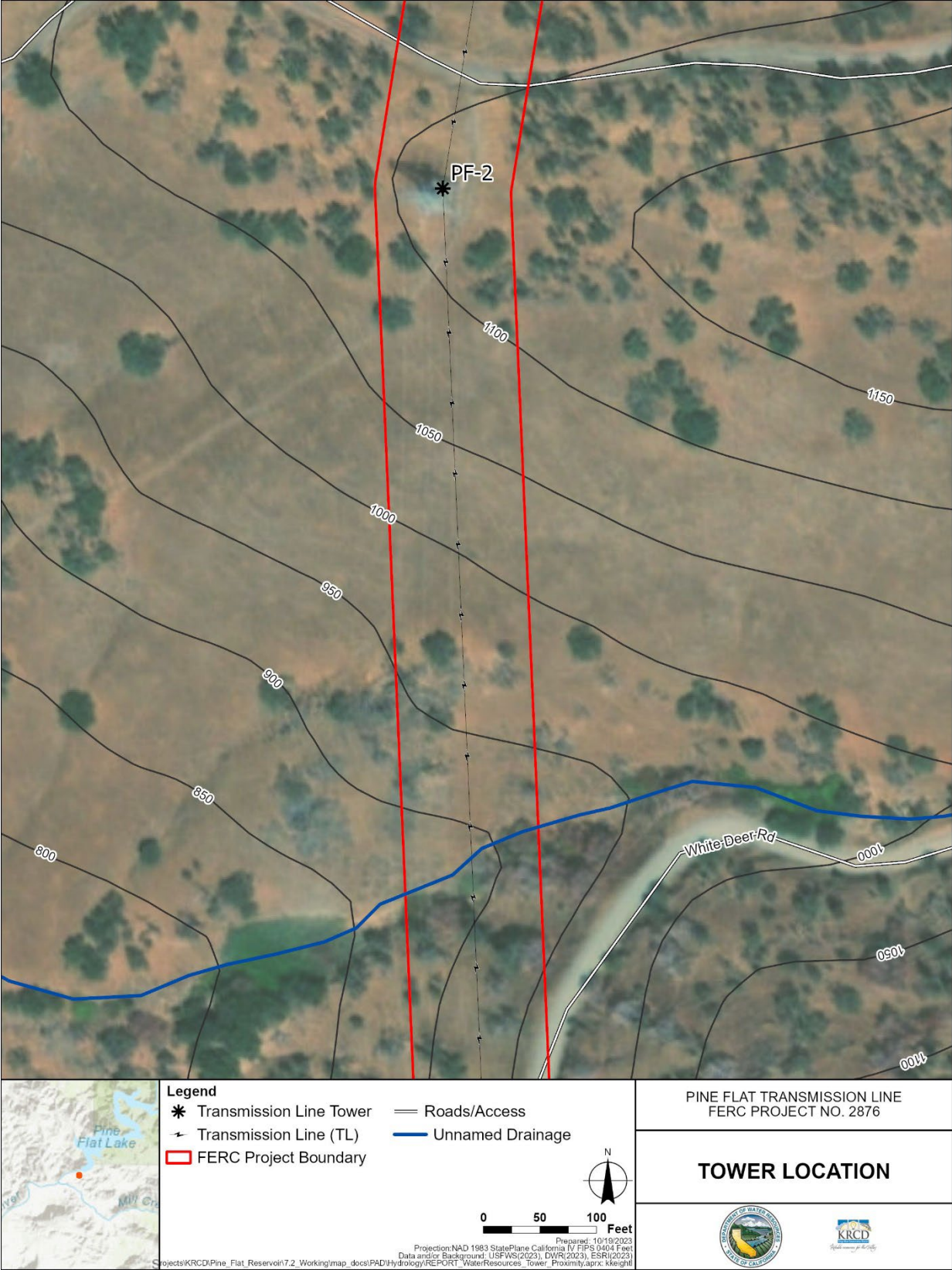


Figure 3.3-2. View of the transmission line over the unnamed drainage.

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3.4 AQUATIC RESOURCES

As discussed in Section 3.3 *Water Resources*, all facilities, maintenance, and operations of the Project are outside of watercourses and the FEMA Special Flood Hazard Areas (FEMA, 2023). Therefore, the Project will not have any adverse effects on any fish or aquatic resources within or near the Project boundary; however, since the Project crosses over the Kings River, a brief description of the special-status aquatic species (Section 3.4.1),¹ fish community (Section 3.4.2), and aquatic invasive species (AIS)² (Section 3.4.3) found in the Kings River are provided below.

3.4.1 Special-Status Aquatic Species

On October 11, 2023, DWR queried the following databases to generate a list of special-status aquatic species with the potential to occur within the 12.4-mile section of the Kings River from Pine Flat Dam to the State Highway 180 bridge (shown on Figure 3.4-1):

- USFWS Information for Planning and Consultation (IPaC) website (USFWS, 2024) (as updated January 22, 2024) (Attachment E)
- CDFW California Natural Diversity Database (CNDDB) (CDFW, 2023)
- USACE 2001 Final Environmental Impact Statement/Environmental Impact Report for Pine Flat Dam Fish and Wildlife Habitat Restoration (USACE, 2001)

As a result of this query and these reviews, DWR determined one special-status aquatic species is known to occur in the reach and three other special-status aquatic species have the potential to occur in the reach. Table 3.4-1 provides for each of the special-status aquatic species: (1) status; (2) habitat requirements; (3) potential to occur in the Kings River reach; and (4) rationale for why the species does or does not have potential to occur.

¹ For the purpose of this PAD, a special-status aquatic species is a species that has a reasonable possibility of being affected by Project O&M and meets one or more of the following criteria: 1) listed under CESA as a candidate for listing as endangered (SCE) or threatened (SCT), a candidate for delisting (SCD), or listed as threatened (ST) or endangered (SE); 2) Fully Protected (FP) under California law; and/or 3) designated by CDFW as a Species of Special Concern (SSC). If an aquatic species that meets one of the above criteria and is also listed as threatened or endangered under the federal ESA or proposed for or a candidate for listing under the federal ESA, it is not considered “special status” in this document but treated as an “ESA-listed species” in Section 3.2.5 of this document.

² For the purpose of this PAD, “aquatic invasive species” are defined as aquatic “*species that are non-native to the ecosystem under consideration, and whose introduction causes, or is likely to cause, economic or environmental harm, or harm to human health.*” Terrestrial non-native invasive plant species are discussed in Section 3.2.4.

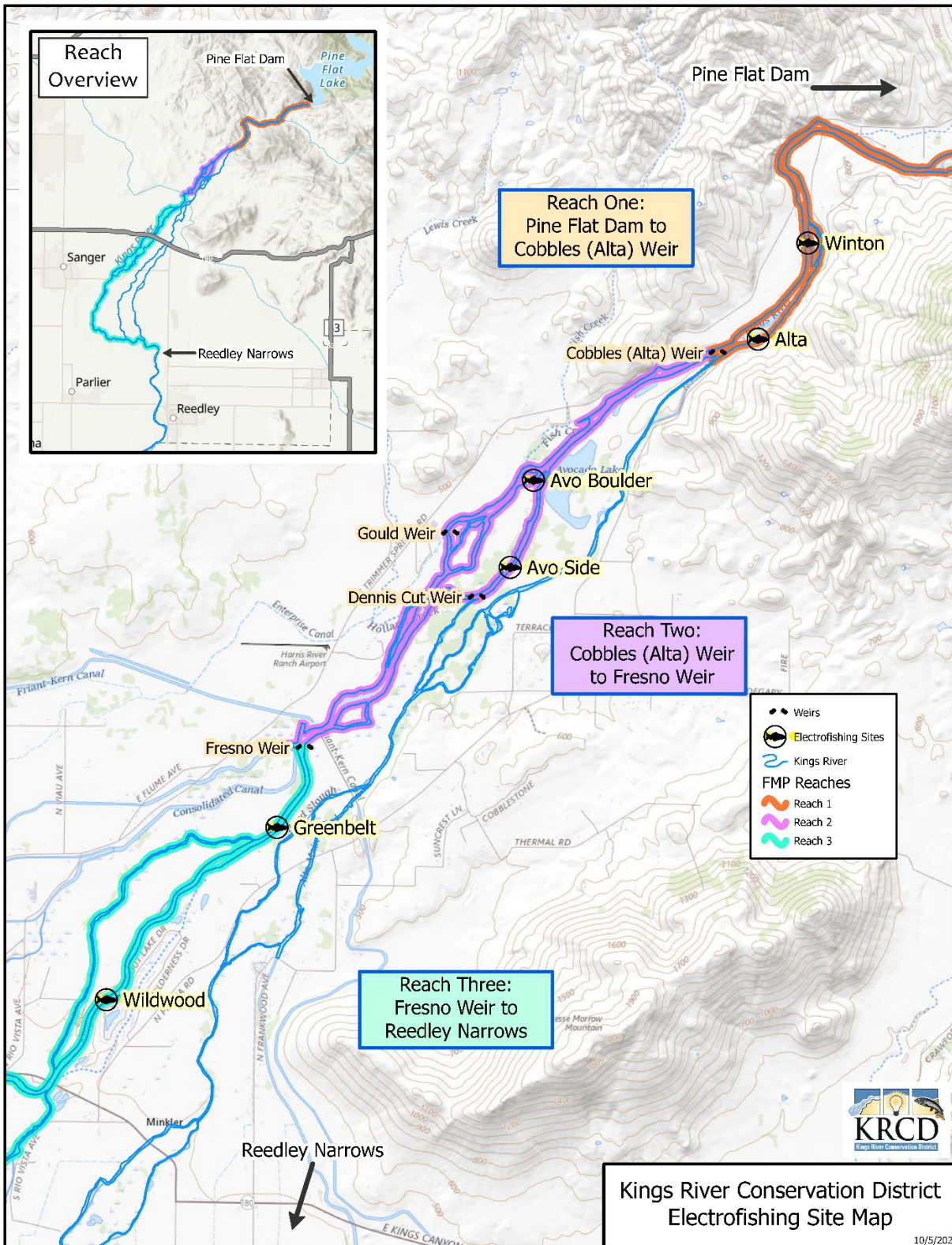


Figure 3.4-1. Location of Winton, Cobbles (Alta), Avo Boulder, Avo Side, Greenbelt, and Wildwood fish monitoring sites.

Table 3.4-1. Special-status aquatic species with the potential to occur within the 12.4-mile-long section of the Kings River from Pine Flat Dam to the State Highway 180 Bridge.

FISH			
hardhead <i>Mylopharodon conocephalus</i>	Species of Special Concern (SSC)	Hardhead is typically found within larger mid- and low-elevation streams where summer mean daily water temperatures exceed 20°C (Moyle & Daniels, 1982) (Moyle & Nichols, 1973).	Observed in the lower end of the reach near Wildwood.
Kern Brook lamprey <i>Lampetra hubbsi</i>	SSC	The principal habitats of Kern brook lamprey are silty backwaters of large rivers in foothill regions. Kern Brook lamprey has a relatively small range, which includes the reach, though the nearest known occurrence of the species is approximately 70 miles northwest (CDFW, 2023).	Observed in the Kings River near Thorburn Channel
rifle sculpin <i>Cottus gulosus</i>	SSC	Rifle sculpins are found in headwater streams with cold water and rocky or gravelly substrate. The rifle sculpin's range also includes the reach, though the nearest known occurrence is approximately 76 miles northwest of the reach (CDFW, 2023).	Observed in the Kings River in 2011

3.4.2 Fishes and Aquatic Resources

3.4.2.1 ***Fishery Management and Stocking***

Since 2007, CDFW has stocked rainbow trout (*Oncorhynchus mykiss*) and brook trout (*Salvelinus fontinalis*) in the Kings River downstream of Pine Flat Dam. In addition, CDFW, in cooperation with KRWA, KRCD, and appropriate fishing organizations, implements a focused supplemental rainbow trout stocking program. The program is designed to provide an attractive trout fishery and emphasizes stocking in the main channel and channels that flow into or out of the main channel, and stocking "put-and-grow" sub-catchable fish and eggs that can mature into a sustaining population of adult fish whenever appropriate. The supplemental stocking program is in addition to CDFW's existing stocking program.

3.4.2.2 ***Fish Community***

KRCD monitors the fish community at six sites in the Kings River from Pine Flat Dam to Wildwood via electrofishing (2007-2021) and snorkeling surveys (2019). Fifteen fish species were identified during monitoring that included 4 fish species identified to genera. With the exception of rainbow trout, seven of the fifteen fish species were native species and 7 fish species were introduced species/genera. Both native and hatchery reared rainbow trout were identified during monitoring. A summary is provided in Table 3.4-2.

Table 3.4-2. Fish Species identified during monitoring surveys from Pine Flat Dam Downstream to Wildwood in the Kings River from 2007 to 2021.

Common Name	Scientific Name	Native/Introduced
Black bass	<i>Micropterus</i> spp.	Introduced
Bluegill	<i>Lepomis macrochirus</i>	Introduced
Brook trout	<i>Salvelinus fontinalis</i>	Introduced
Catfish/Bullhead	<i>Ameiurus</i> spp.	Introduced
California roach	<i>Hesperoleucus symmetricus</i>	Native
Green sunfish	<i>Lepomis cyanellus</i>	Introduced
Hardhead	<i>Mylopharodon conocephalus</i>	Native, species of special concern
Lamprey spp.	<i>Lampetra</i> spp.	Native
Mosquitofish	<i>Gambusia affinis</i>	Introduced
Rainbow trout	<i>Oncorhynchus mykiss</i>	Native and introduced hatchery reared
Sacramento pikeminnow	<i>Ptychocheilus oregonensis</i>	Native
Sacramento sucker	<i>Catostomus occidentalis</i>	Native
Sculpin spp.	<i>Cottus</i> spp.	Native
Three-spined stickleback	<i>Gasterosteus aculeatus</i>	Native
White catfish	<i>Ameiurus catus</i>	Introduced

3.4.3 Aquatic Invasive Species

DWR reviewed the USGS list of aquatic invasive species (AIS), including reported geographical locations (USGS, 2023), and found no reported occurrences of AIS in Pine Flat Lake or within the FERC Project boundary. Three AIS, one amphibian and two plants, are reported to occur in the Kings River within 5 miles downstream of where the Project crosses over the river. This is in addition to the eight species/genera of introduced fish located during monitoring and detailed in Section 3.4.2. Table 3.4-3 includes information on the three AIS species, including listing, habitat requirements, and potential to occur in the FERC Project boundary.

Table 3.4-3. Aquatic Invasive Species with the Potential to Occur in the Project Vicinity.

Common Name Scientific Name	Status or Listing: (1) CCR, (2) Cal-IPC, (3) CDFA	Habitat Requirements	Potential for Occurrence within the FERC Project Boundary
American bullfrog <i>Lithobates catesbianus</i>	--	Inhabit a wide range of habitats, including rivers, reservoirs/lakes, ponds and other waterbodies	Potential in the unnamed drainage and the Kings River beneath the transmission line
hyssop loosestrife <i>Lythrum hyssopifolia</i>	(2) Moderate	Seasonal wetlands, ditches, and cultivated fields, especially rice fields	Potential in the unnamed drainage
West Indian spongeplant <i>Limnobiium laevigatum</i>	(1) CCR 4500, (2) High (3) A-rated	Streams, ponds, and lagoons	Potential in the unnamed, perennial drainage and the Kings River beneath the transmission line

SOURCE: (CDFA, 2021) (CDFW, 2023) (USGS, 2023)

3.5 TERRESTRIAL RESOURCES

This section discusses terrestrial resources that could be affected by the Project. This section is divided into five subsections. Section 3.5.1 discusses botanical resources, including vegetation types, plant species that have a potential or are known to occur within the FERC Project boundary, special-status plants,¹ and non-native invasive plants (NNIP).² Section 3.5.2 identifies special-status wildlife^{3, 4} that could be affected by the Project. Section 3.5.3 discusses general wildlife resources, including wildlife habitat. Section 3.5.4 discusses commercially-valuable wildlife species.⁵ Finally, Section 3.5.5 discusses wetland, littoral, and riparian habitats in the FERC Project boundary.

3.5.1 Botanical Resources

This section describes the botanical resources that have been documented as present or having the potential to be present within the FERC Project boundary. Botanical resources discussed include vegetation communities/habitat types, NNIP, and special-status plant species.

3.5.1.1 ***Vegetation Communities***

Qualified biologists conducted a botanical survey of the FERC Project boundary on April 12, 2023, following Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities (CDFW, 2018). A

¹ For the purpose of this document, a special-status botanical species is a species that has a reasonable possibility of occurring on the Project and meets one or more of the following criteria: (1) listed on CDFW's list of California Rare (SR) species under the Native Species Plant Protection Act; (2) listed as threatened or endangered under CESA; or (3) listed on the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants as a California Rare Plant Rank (CRPR). Botanical species listed as threatened or endangered, or a candidate or proposed for listing, under the federal ESA are discussed in Section 3.6 of this PAD.

² For the purpose of this document, an NNIP is a plant species that has a reasonable possibility of occurring on the Project and meets one or more of the following criteria: (1) listed as a noxious weed by the California Department of Food and Agriculture (CDFA) with a rating of A or B; or (2) listed by the California Invasive Plant Council (Cal-IPC) as Cal-IPC status of High, Moderate, Limited, or Watch List. CDFA A-list species are mandated for eradication or control; B-list species are widespread plants that agricultural commissioners may designate for local control efforts. Cal-IPC defines High as species that have severe ecological impacts on the surrounding habitat; Moderate as species that have substantial and apparent, but generally not severe, ecological impacts on the surrounding habitat; and Limited as species that are invasive, but their ecological impacts are minor on a Statewide level. These species may be locally persistent and problematic. Cal-IPC Watch List species are species predicted to become invasive if no further actions are taken. Distribution may range from limited to widespread in specific regions (Cal-IPC, 2006).

³ For the purpose of this document, a special-status wildlife species is a species that has a reasonable possibility of occurring on the Project and meets one or more of the following criteria: (1) protected under the Bald and Golden Eagle Protection Act; (2) designated by CDFW as a Species of Special Concern (SSC); (3) listed as threatened or endangered, or a candidate for listing under CESA; or (4) listed as Fully Protected under California law pursuant to Fish and Game Code Sections 3511, 4700, 5050 and 5515. Wildlife species listed as threatened or endangered, or a candidate or proposed for listing, under the ESA are discussed in Section 3.6 of this PAD.

⁴ Aquatic reptiles, mollusks, and snails are discussed in Section 3.4.

⁵ For the purpose of this document, a commercially-valuable wildlife species is a species that has a reasonable possibility of occurring in the FERC Project boundary and is listed as a 'Harvest species' by CDFW, that is, "*game birds* (CDFW, Fish and Game Code 3500); *Game Mammals* (CDFW, Fish and Game Code 3950) and *Fur-bearing Mammals and Non-game animals as designated in the California Code of Regulations* (CDFW, Fish and Game Code 4005) and (CDFW, Fish and Game Code 4150-4154 Article 1).

follow-up survey was conducted on June 1, 2023. Seventy plant species were identified during the surveys, which are included in Attachment F.

DWR also mapped vegetation alliances within and adjacent to the FERC Project boundary following the current version of the Manual of California Vegetation (Manual) (CNPS, A Manual of California Vegetation Online, 2023). A vegetation alliance is a category of plant community classification that describes patterns of plants at the landscape scale. Each alliance is defined by the percentage of dominant plants on the landscape (CNPS, A Manual of California Vegetation Online, 2023). Six vegetation alliances were identified, each of which are described below. All alliances were assessed for CDFW rankings (S1,⁶ S2,⁷ S3,⁸ or S4⁹) per the NatureServe Heritage Program Status Ranking system (Faber-Langendoen, 2012). The alliances were then assessed for criteria meeting the definition of a sensitive natural community based on rarity and threats (CDFW, California Sensitive Natural Communities, 2023). Figure 3.5-1 shows the mapped vegetation alliances within the FERC Project boundary.

Blue Oak Savannah Alliance

This alliance is dominated by a sparse but evenly distributed blue oak (*Quercus douglasii*) canopy. Portions of this alliance that are situated in valleys, foothills, rocky outcrops, and ravines are co-dominated with California buckeye (*Aesculus californica*). The shrub layer is sparse and consisting mainly of silver bush lupine (*Lupinus albifrons* var. *albifrons*) in more exposed areas. The herb layer is comprised of species found in the wild oat (*Avena fatua*) and annual brome (*Bromus* sp.) grassland habitat. This habitat mostly occurs between poles PF2 and PF3 in the FERC Project boundary and occupies 2.85 acres (24.7 percent). This alliance exists as a transitional vegetation community between valley oak (*Quercus lobata*) forest and annual grasslands. Blue Oak Savannah and Brome Grassland Association Alliance is not designated by CDFW as a sensitive natural community and has a State Rarity Rank of S4 (CDFW, California Sensitive Natural Communities, 2023).

Interior Live Oak Forest Alliance

This alliance is mostly dominated by interior live oak (*Quercus wislizeni*) but often co-dominates with buckeye and elderberry (*Sambucus mexicana*). The understory of this habitat is comprised of the species found in the wild oat and annual brome grassland habitat. This alliance is considerably wetter than the surrounding forest due to the influence of mist derived from falling water from the dam in this area of the FERC

⁶ 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.”

⁷ 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.”

⁸ 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.”

⁹ CDFW defines a S4 special-status vegetation community as “At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.”

Project boundary. This habitat occurs upslope of the interior live oak riparian forest and adjacent to the dam. It occupies 0.14-acre (1.25 percent) of the FERC Project boundary. Interior Live Oak Forest Alliance has a State Rank of S4 and is not designated by CDFW as a sensitive natural community when it has no association (CDFW, California Sensitive Natural Communities, 2023).

Interior Live Oak Riparian Forest - Buckeye Alliance

This alliance is mostly dominated by interior live oak but often co-dominates with buckeye, elderberry, and edible fig (*Ficus carica*). The understory of this habitat is comprised of species found in wild oat and annual brome grassland along with western poison oak (*Toxicodendron diversilobum*), bulbous blue grass (*Poa bulbosa* ssp. *vivipara*), fiesta flower (*Pholistoma auritum* var. *auritum*), and red-dotted monkey flower (*Erythranthe guttata*). This habitat occurs on an unnamed channel in a steep ravine between PF2 and PF3; and along the Kings River—where a few Hind’s willow (*Salix exigua* var. *hindsiana*) and Goodding’s black willow (*Salix gooddingii*) trees intermix with this alliance at the toe of the dam. This habitat occupies 0.36-acre (3.15 percent) of the FERC Project boundary. This habitat is not described in the Manual. It does not have a unique State Rank and so it would follow the State Rank of the Alliance, S4, and is not designated by CDFW as a sensitive natural community (CDFW, California Sensitive Natural Communities, 2023).

Valley Oak Forest Alliance

This alliance is dominated by valley oak in the tree layer with blue oak represented in the canopy in fewer numbers, and the absence of a developed shrub layer. The oak canopy is open, and the herb layer is comprised of species found in wild oat and annual brome grassland habitat (CNPS, A Manual of California Vegetation Online, 2023). This habitat mostly occurs between poles PF2 and PF3 in the north-facing and ridge portions of the FERC Project boundary and occupies 5.5 acres (47.70 percent). Valley Oak Forest Alliance, and all its Associations, are designated by CDFW as a sensitive natural community with a State Rarity Rank of S3 (CNPS, A Manual of California Vegetation Online, 2023).

Wild Oat and Annual Brome Grassland Alliance

This alliance is comprised of a mixture of species in the herb layer with no one species being dominant in any particular area. Overall soft chess brome (*Bromus hordeaceus*), rip-gut brome (*Bromus diandrus*), and rose clover (*Trifolium hirtum*) are most prevalent with additional cover of American deervetch (*Acmispon americanus* var. *americanus*), smooth cat’s-ear (*Hypochaeris glabra*), silver hair grass (*Aira caryophyllea*), wild oat, hairy vetch (*Vicia villosa*), Carolina geranium (*Geranium carolinianum*), and Heerman’s tarplant (*Holocarpha heermannii*). This habitat occurs throughout the FERC Project boundary and occupies 0.77-acre (6.7 percent). Wild Oat and Annual Brome Grassland Alliance is not state ranked.

Developed Alliance

This alliance is comprised of all built structures including the Pine Flat Dam and does not have vegetation cover. There are 0.2-acre (1.7 percent) in the FERC Project boundary. Developed Alliance is not State ranked.

Open Water Alliance

This alliance is composed of water with no vascular vegetation cover and minimal observations of algae growth. This is defined as the Kings River which occurs in the eastern FERC Project boundary and occupies 1.12 acres (9.7 percent). Open Water Alliance is not state ranked.

Dirt Roads

These areas are composed of mostly non-native grasses and herbs growing on marginally used—and often eroded— dirt roads. There are 0.58-acre (5.1 percent) in the FERC Project boundary.

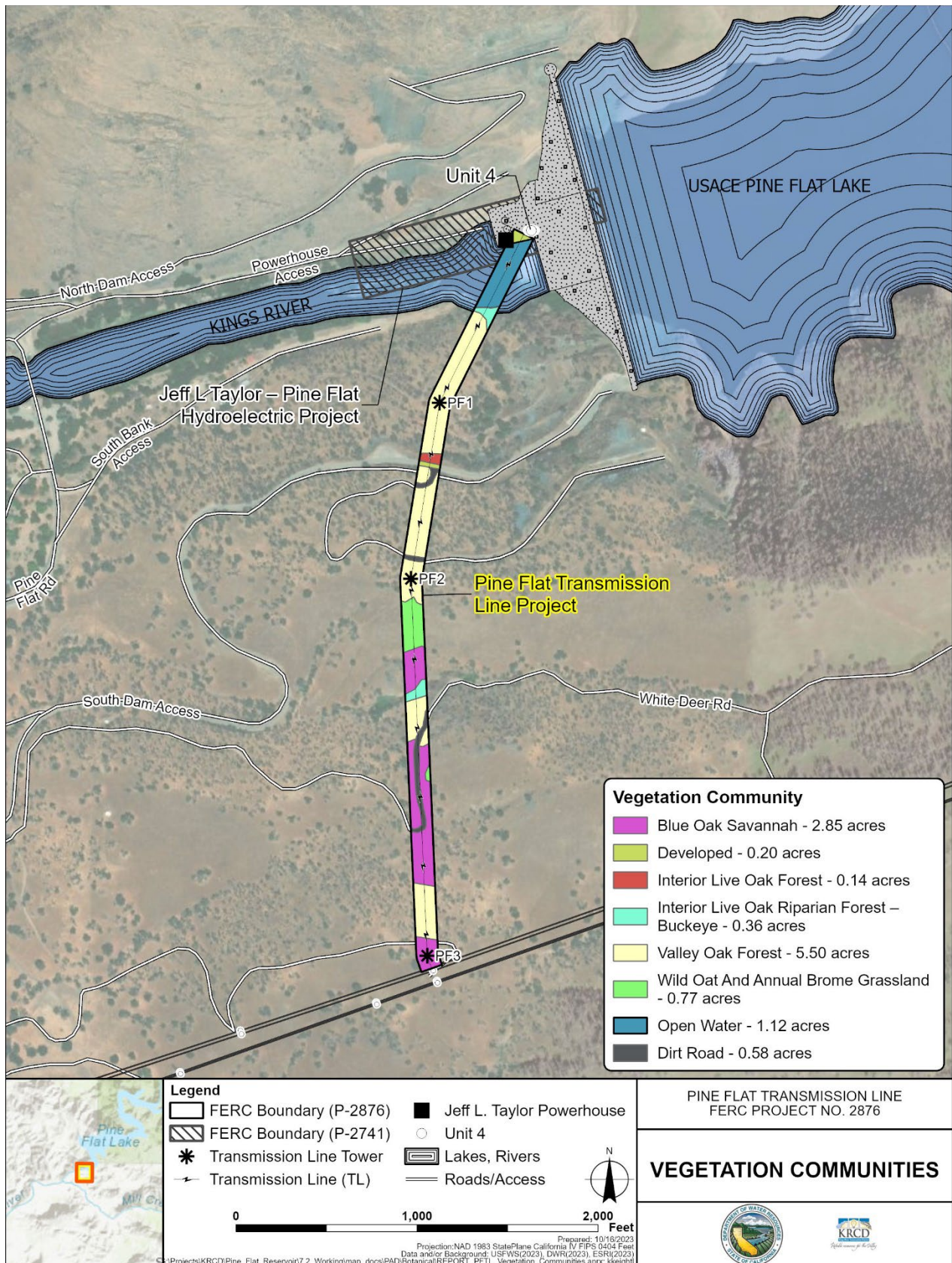


Figure 3.5-1. Vegetation Communities within the FERC Project Boundary.

3.5.1.2 *Special-status Plants*

On March 20, 2023, DWR queried the following databases to generate a list of special-status plants with the potential to occur within the FERC Project boundary.

- CDFW's California Natural Diversity Database (CNDDDB) (CDFW, California Natural Diversity Database BIOS 5 Viewer and Rare Find., 2023)
- CNPS' Inventory of Rare and Endangered Plants of California (CNPS, Inventory of Rare and Endangered Plants (online edition, v9-01), 2023)

Based on the database reviews, DWR initially identified 28 special-status plants with the potential to occur within the FERC Project boundary; however, upon further evaluation of the habitat needs for each of the 28 special-status plants, DWR determined that 16 special-status plants have the potential to occur within the FERC Project boundary.

Table 3.5-1 provides for each of the 28 special-status plant species: (1) listing status; (2) flowering period; (3) elevation range; (4) habitat requirements; (5) potential to occur; and (6) rationale for why the species does or does not have potential to occur within the FERC Project boundary.

As shown in Table 3.5-1, 16 special-status plants have suitable habitat in the FERC Project boundary. DWR conducted surveys on April 12 and June 1, 2023, which followed CDFW's protocol (CDFW, 2018) for focused plant surveys. The surveys found no special-status plants within or adjacent to the FERC Project boundary.

Table 3.5-1. Special-status Plant Species with Potential to Occur Within the FERC Project boundary.

Common Name Scientific Name	Status ¹	Habitat Characteristics	Potential to Occur	Rationale
Thread-leaved beakseed <i>Bulbostylis capillaris</i>	CRPR 4.2	Meadows, seeps, and montane coniferous forests. Elevation: 1,295–6,810 feet. Blooming period: June–August	No	Suitable meadows, seeps, and montane coniferous forest is absent from the Project boundary.
Grassland suncup <i>Camissonia lacustris</i>	CRPR 1B.2	Granitic, gravelly, and serpentine soils in chaparral, cismontane woodland, lower montane coniferous forest and valley/foothill grassland. Elevation: 590–4,005 feet. Blooming period: March–June	Yes	Suitable habitat for this species is present.
Tree-anemone <i>Carpenteria californica</i>	ST, CRPR 1B.2	Usually granitic soils in chaparral and cismontane woodland. Elevation: 1,115–4,395 feet. Blooming period: April–July	Yes	Suitable habitat for this species is present.
Fresno ceanothus <i>Ceanothus fresnensis</i>	CRPR 4.3	Openings of cismontane woodland and lower montane coniferous forest. Elevation: 2,950–6,900 feet. Blooming period: May–July	No	The Project boundary is approximately 2,000 feet below the species elevation range.
Slender clarkia <i>Clarkia exilis</i>	CRPR 4.3	Cismontane woodland. Elevation: 393–3,280 feet. Blooming period: April–May	Yes	Suitable habitat for this species is present.
Streambank spring beauty <i>Claytonia parviflora</i> ssp. <i>grandiflora</i>	CRPR 4.2	Rocky soils in Cismontane woodland. Elevation: 820–3,937 feet. Blooming period: February–May	Yes	Suitable habitat for this species is present.
Small-flowered morning-glory <i>Convolvulus simulans</i>	CRPR 4.2	Friable clay soils or serpentine seeps in chaparral openings, coastal scrub, and grassland. Elevation: 98–2,297 feet. Blooming period: March–July	Yes	Suitable habitat for this species is present.
Ewan's larkspur <i>Delphinium hansenii</i> ssp. <i>ewanianum</i>	CRPR 4.2	Rocky soils in Cismontane woodland and grassland. Elevation: 196–1,968 feet. Blooming period: March–May	Yes	Suitable habitat for this species is present.
Kings River buckwheat <i>Eriogonum nudum</i> var. <i>regirivum</i>	CRPR 1B.2	Carbonate, rocky substrates in cismontane woodland. Elevation: 492–984 feet. Blooming period: August–November	Yes	Suitable habitat for this species is present.
Spiny-sealed button-celery <i>Eryngium spinosepalum</i>	CRPR 1B.2	Vernal pools and grassland. Elevation: 262–2,034 feet. Blooming period: April–June	No	Suitable habitat for this species is not present within the Project boundary. Vernal pool habitat is absent from the Project boundary.
Kings River monkeyflower <i>Erythranthe acutidens</i>	CRPR 3	Cismontane woodland and lower montane coniferous forest. Elevation: 1,000–4,005 feet. Blooming period: April–July	Yes	Suitable habitat for this species is present.
Slender-stalked monkeyflower <i>Erythranthe gracilipes</i>	CRPR 1B.2	Decomposed granitic soils that are often disturbed or in burned areas of chaparral, cismontane woodland, and lower montane coniferous forest. Elevation: 1,640–4,265 feet. Blooming period: April–June	No	Project boundary is over 600 feet below the species known elevation range. The nearest occurrences are more than 15 miles away.
Sierra Nevada monkeyflower <i>Erythranthe sierrae</i>	CRPR 4.2	Granitic sandy to gravelly soils in vernal wet depressions, swales, or streambanks in openings of cismontane woodland, lower montane coniferous forest, meadows, and seeps. Elevation: 606–7,496 feet. Blooming period: March–July	Yes	Suitable habitat for this species is present.

Table 3.5-1. (Continued)

Common Name Scientific Name	Status ¹	Habitat Characteristics	Potential to Occur	Rationale
Stinkbells <i>Fritillaria agrestis</i>	CRPR 4.2	Clay, sometimes serpentine soils in chaparral, cismontane, pinyon and juniper woodland, and grassland. Elevation: 32–5,101 feet. Blooming period: March–June	Yes	Suitable habitat for this species is present.
American manna grass <i>Glyceria grandis</i>	CRPR 2B.3	Bogs, fens, meadows, seeps, and the stream banks and lake margins of swamps and marshes. Elevation: 45–6,495 feet. Blooming period: June–August	No	Suitable habitat for this species is not present within the Project boundary and the nearest occurrence is 15 miles away.
Winter's sunflower <i>Helianthus winteri</i>	CRPR 1B.2	Granitic or rocky soils along roadsides or on relatively steep south facing slopes in openings of cismontane woodland and grassland. Elevation: 410–1,510 feet. Blooming period: year-round	Yes	Suitable habitat for this species is present.
Hogwallow starfish <i>Hesperevax caulescens</i>	CRPR 4.2	Mesic grassland in clay soils and shallow vernal pools. Elevation: 0–1,656 feet. Blooming period: March–June	No	Suitable habitat for this species is not present within the Project boundary. Mesic grassland and vernal pool habitat is absent from the Project boundary.
California satintail <i>Imperata brevifolia</i>	CRPR 2B.1	Mesic soils in chaparral, coastal scrub, Mojavean desert scrub, riparian scrub, meadows, and seeps (often alkali). Elevation: 0–3,985 feet. Blooming period: September–May	No	Suitable habitat for this species is not present within the Project boundary. Mesic and/or alkali soil is absent from the Project boundary.
Forked hare-leaf <i>Lagophylla dichotoma</i>	CRPR 1B.1	Sometimes in clay soils in cismontane woodland and grassland. Elevation: 145–1,100 feet. Blooming period: April–May	Yes	Suitable habitat for this species is present.
Madera leptosiphon <i>Leptosiphon serrulatus</i>	CRPR 1B.2	Cismontane woodland and lower montane coniferous forest. Elevation: 984–4,265 feet. Blooming period: April–May	Yes	Suitable habitat for this species is present.
Orange lupine <i>Lupinus citrinus</i> var. <i>citrinus</i>	CRPR 1B.2	Granitic soils in chaparral, cismontane woodland, and lower montane coniferous forest. Elevation: 1,245–5,575 feet. Blooming period: April–July	Yes	Suitable habitat for this species is present.
Elongate copper moss <i>Mielichhoferia elongata</i>	CRPR 4.3	Metamorphic rock and carbonate soils, often along roadsides, that are usually vernal mesic and acidic in chaparral, meadows, seeps, coastal scrub, cismontane woodland, and broad-leaved upland and lower montane and subalpine coniferous forests. Elevation: 0–6,430 feet.	Yes	Suitable habitat for this species is present.
Shevock's copper moss <i>Mielichhoferia shevockii</i>	CRPR 1B.2	Mesic and metamorphic rocky soils in cismontane woodland. Elevation: 2,460–4,595 feet.	No	Suitable habitat for this species is not present within the Project boundary. The Project is over 1,000 feet below the species known elevation range.
adobe navarretia <i>Navarretia nigelliformis</i> ssp. <i>nigelliformis</i>	CRPR 4.2	Clay, sometimes serpentine soils in vernal mesic grassland and vernal pools. Elevation: 328–3,280 feet. Blooming period: April–June	No	Suitable habitat for this species is not present within the Project boundary. Mesic grassland and vernal pool habitat is absent from the Project boundary.
Arizona pholistoma <i>Pholistoma auritum</i> var. <i>arizonicum</i>	CRPR 2B.3	Mojavean desert scrub. Elevation: 902–2,739 feet. Blooming period: March	No	Suitable habitat for this species is not present within the project boundary. Desert scrub habitat is absent from the Project boundary.
Aromatic canyon gooseberry <i>Ribes menziesii</i> var. <i>ixoderme</i>	CRPR 1B.2	Chaparral and cismontane woodland. Elevation: 2,001–3,805 feet. Blooming period: April	No	Suitable habitat for this species is not present within the Project boundary. The Project is over 1,000 feet below the species known elevation range.

Table 3.5-1. (Continued)

Common Name <i>Scientific Name</i>	Status ¹	Habitat Characteristics	Potential to Occur	Rationale
Sanford's arrowhead <i>Sagittaria sanfordii</i>	CRPR 1B.2	Fresh water marshes and swamps that are typically shallow. Elevation: 0–2,132 feet. Blooming period: May–October	No	Suitable habitat for this species is not present within the Project boundary. Swamp and marsh habitat is absent from the Project boundary.
Farnsworth's jewelflower <i>Streptanthus farnsworthianus</i>	CRPR 4.3	Cismontane woodland. Elevation: 1,312–4,593 feet. Blooming period: May–June	Yes	Suitable habitat for this species is present.
Total:	28 Special-Status Plant Species			12 = No Suitable Habitat Present 16 = Suitable Habitat Present

SOURCE: (California Department of Fish and Wildlife, 2023) (CNPS, Inventory of Rare and Endangered Plants (online edition, v9-01), 2023) (Jepson Flora Project, 2022)

¹ Status:

ST = CESA listed as threatened

CRPR 1B = California Rare Plant Rank, endangered in California and elsewhere

CRPR 2 = California Rare Plant Rank, rare/threatened/endangered in California only

CRPR 3 = California Rare Plant Rank, plants requiring further information

CRPR 4 = California Rare Plant Rank, plants of limited distribution, a watch list

(.1 after CNPS rating indicates a species that is seriously endangered in California, .2 after CNPS rating indicates a species that is endangered in California, .3 after CNPS rating indicates a species that is not very endangered in California)

3.5.1.3 Non-native Invasive Plants

During DWR's April 12 and June 1, 2023 vegetation surveys, 13 NNIP species with a Cal-IPC rating were identified within the FERC Project boundary. Nine NNIP species are rated "Moderate" including: rip gut brome, wild oat, Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*), Maltese starthistle (*Centaurea melitensis*), bull thistle (*Cirsium vulgare*), bristly dogtail grass (*Cynosurus echinatus*), edible fig, tall sock-destroyer (*Torilis arvensis*) and rose clover. The remaining four NNIP species are rated "Limited": soft chess brome, blessed milk thistle (*Silybum marianum*), smooth-cat's ear, and variable burclover (*Medicago polymorpha*). Italian thistle, Maltese star-thistle, and bull thistle are also listed under the CDFA noxious weed list and identified as noxious weeds in CDFA regulations at Title 3, California Code of Regulations § 4500 (CDFA, 2021).

3.5.2 Special-Status Wildlife Species

On March 20, 2023, DWR queried CDFW's CNDDDB database to generate a list of special-status wildlife with the potential to occur within the FERC Project boundary. Based on this database review, DWR identified 15 special-status wildlife species with the potential to occur within the FERC Project boundary. For the purpose of Section 3.5.2, special-status refers to any wildlife species protected under the Bald and Golden Eagle Protection Act, listed as threatened and endangered under the California Endangered Species Act, a Candidate for listing under the California Endangered Species Act, is a California Fully Protected Species under California law pursuant to Fish and Game Sections 3511, 4700, 5050 and 5515, or is listed by CDFW as a Species of Special Concern.

Table 3.5-2 provides for each of the 15 special-status wildlife species: (1) listing status; (2) habitat requirements; (3) potential to occur in the Project vicinity; and (4) rationale for why the species does or does not have potential to occur in the FERC Project boundary.

As shown in Table 3.5-2, 13 of the 15 special-status wildlife species have the potential to occur within the FERC Project boundary because suitable habitat is present. DWR conducted reconnaissance-level habitat assessment surveys on April 12 and June 1, 2023, in which biologists surveyed FERC Project boundary and viewed surrounding habitat up to a 500-foot buffer from the transmission line. DWR encountered suitable habitat for special-status wildlife species, as described below in Table 3.5-2. During reconnaissance surveys, a golden eagle (*Aquila chrysaetos*), bald eagle (*Haliaeetus leucocephalus*), and American peregrine falcon (*Falco peregrinus*) were observed either in the FERC Project boundary or 500-foot buffer during one or both surveys (April 12 and June 1, 2023). The species in Table 3.5-2 will not be discussed further if they have no suitable habitat and no potential to occur within the Project boundary.

Table 3.5-2. Special-status Wildlife Species with the Potential to Occur Within the FERC Project Boundary.

Common Name <i>Scientific Name</i>	Status ¹	Habitat Requirements	Potential to Occur	Rationale
INVERTEBRATES				
Crotch bumble bee <i>Bombus crotchii</i>	SCE	Occurs primarily in California, ranging across southern California, from the coast and coastal ranges, through the Central Valley, and to the adjacent foothills. Known to inhabit open grassland and shrublands. Requires floral resources and undisturbed nesting and overwintering sites. Food plants include open flowers with short corollas particularly in families Fabaceae, Apocynaceae, Asteraceae, Lamiaceae, Hydrophyllaceae, Asclepiadaceae and Boraginaceae. Mated queens overwinter in soft debris, leaf litter, or disturbed soils and emerge in early spring to feed and search for a new colony site; typically in former burrows. May rely on sufficient availability of rodent and other animal burrows to provide underground nesting sites (CDFW, 2019)	Yes	Suitable habitat for this species is present. DWR found suitable burrow habitat and food sources (<i>Asclepias</i> , <i>Lupinus</i> , <i>Medicago</i> , and <i>Phacelia</i>) to support Crotch's bumblebee throughout the Project area. This species was not observed during the April 12 or June 1, 2023 reconnaissance survey conducted for the Project.
AMPHIBIANS				
Western spadefoot <i>Spea hammondi</i>	SSC	Generally found in grasslands, oak woodlands, coastal sage scrub, and chaparral in washes, floodplains, alluvial fans, playas, and alkali flats. Natural and artificial water bodies are used for breeding. Specifically, vernal pools used by this species have an average ponding duration of 81 days, and successful recruitment occurs in ponds that last on average 21 days longer than larval development time. (Thomson, Wright, & Shaffer, 2016).	No	There are no suitable water bodies for breeding, and all known occurrences in the area are over 7 miles away.
REPTILES				
Western pond turtle <i>Emys marmorata</i>	SSC	Ranges throughout California except for Inyo and Mono Counties. Generally, occurs in various water bodies including permanent and ephemeral systems either natural or artificial. Upland habitat that is at least moderately undisturbed is required for nesting and overwintering, in soils that are loose enough for excavation (Thomson, Wright, & Shaffer, 2016).	Yes	Suitable aquatic habitat is present in the Kings River.

Table 3.5-2. (Continued)

Common Name Scientific Name	Status ¹	Habitat Requirements	Potential to Occur	Rationale
BIRDS				
Golden eagle <i>Aquila chrysaetos</i>	BGEPA & FP	Uncommon resident in hills and mountains throughout California, and an uncommon migrant and winter resident in the Central Valley and Mojave Desert. Prefers rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, cliffs, and rock outcrops (California Wildlife Habitat Relationships Program Staff, 1990).	Yes	Suitable habitat for this species is present. One golden eagle was observed foraging within the FERC Project boundary during the April 12, 2023 reconnaissance survey.
Burrowing owl <i>Athene cunicularia</i>	SSC	Resident in much of the State in open, dry grasslands and various desert habitats. Requires open areas with mammal burrows; especially those of California ground squirrel (<i>Otospermophilus beecheyi</i>). Inhabits rolling hills, grasslands, fallow fields, sparsely vegetated desert scrub, vacant lots and other open human disturbed lands such as airports and golf courses. Absent from the northwest coast and at elevations above 5,500 feet (Polite, 1999).	Yes	Suitable habitat is present in the Project boundary. Ground squirrel burrows were discovered along rocky outcrops in open grasslands along the Project in April 12, 2023.
Swainson's hawk <i>Buteo swainsoni</i>	ST	Nests in oak savanna and cottonwood riparian areas adjacent to foraging habitat of grasslands, agricultural fields, and pastures where they often follow farm equipment to gather killed and maimed rodents. Increasingly also nests in sparse stands of gum trees (<i>Eucalyptus</i> spp.) and Australian pines (<i>Casuarina equisetifolia</i>) and often forage along roadsides and grassy highway medians. Breeding resident in the Central Valley, Klamath Basin, Northeastern Plateau, and in juniper-sagebrush flats of Lassen County. Limited breeding reported from Lanfair Valley, Owens Valley, Fish Lake Valley, and Antelope Valley. Winters primarily in Argentina, with most birds absent from California between October through February, though a few may overwinter in the Sacramento-San Joaquin River Delta. Prolific migrant through southern California in spring and fall, with large mixed-age groups of birds frequently observed kitting high overhead on thermals or foraging together on freshly cut agricultural fields (California Wildlife Habitat Relationships Program Staff, 2006).	Yes	Suitable habitat for this species is present. Suitable foraging habitat but no nesting habitat was observed for Swainson's hawk in the Project boundary in 2023.
White-tailed kite <i>Elanus leucurus</i>	FP	Fairly common resident of the Central Valley, coast, and Coast Range Mountains. Nests in oak savanna, oak and willow riparian, and other open areas with scattered trees near foraging habitat. Forages in open grasslands, meadows, farmlands, and emergent wetlands. Often seen hover foraging over roadsides or grassy highway medians (California Wildlife Habitat Relationships Program Staff, 2005).	Yes	Suitable habitat for this species is present. Both suitable foraging and nesting habitat was observed in the Project boundary in 2023.

Table 3.5-2. (Continued)

Common Name Scientific Name	Status ¹	Habitat Requirements	Potential to Occur	Rationale
BIRDS				
American peregrine falcon <i>Falco peregrinus</i>	FP	Breeds near wetlands, lakes, rivers, or other waters on cliffs, banks, dunes or mounds, mostly in woodland, forest, and coastal habitats. Nest is a scrape on a depression or ledge in an open site. May use man-made structures (such as bridges, skyscrapers, or electrical towers), large snags, or trees for nesting (California Wildlife Habitat Relationships Program Staff, 1990).	Yes	Suitable habitat for this species is present. This species was observed at in the Project boundary in 2023.
Bald eagle <i>Haliaeetus leucocephalus</i>	SE, BGEPA & FP	Permanent resident in the highest Coast Range mountains, across the Cascade Range, and down the Sierra Nevada to the eastern Transverse Ranges of San Bernardino and Riverside Counties. Uncommon migrant and winter visitor to lowland rivers, lakes, and reservoirs. Nests in large, old-growth, or dominant live trees with open branchwork, especially ponderosa pine (<i>Pinus ponderosa</i>). Requires large bodies of water or rivers with abundant fish, and adjacent snags (California Wildlife Habitat Relationships Program Staff, 1999).	Yes	Suitable habitat is present in the FERC Project boundary. An individual was observed in the Project boundary during the April 12, 2023 reconnaissance survey. There is a reported occurrence of bald eagle nest less than 1 mile away from the FERC Project boundary along the Kings River (iNaturalist, 2023).
Great gray owl <i>Strix nebulosa</i>	SE	Breeds in red fir (<i>Abies magnifica</i>), lodgepole pine (<i>Pinus contorta</i> ssp. <i>murrayana</i>), and mixed coniferous habitats, always near wet meadows. Nests in large, broken-topped snags usually 25 to 72 feet above the ground. A rarely seen resident at 4,500 to 7,500 feet in elevation within the Sierra Nevada Range, from the vicinity of Quincy south to the Yosemite region (California Wildlife Habitat Relationships Program Staff, 1990).	No	Suitable coniferous forest habitat is not present in the FERC Project boundary.
MAMMALS				
Pallid bat <i>Antrozous pallidus</i>	SSC	Ranges across all of California. Generally found in a wide variety of habitats but with preference for arid and semi-arid, and rocky, mountainous areas (Miller, 2002), (Western Bat Working Group, 2005). Day and night roosts include rocky crevices, caves, mines, trees (snags, exfoliating bark, hollows of larger trees) and anthropogenic structures (bridges, vacant buildings, bat boxes, attics). Common tree species used are coast redwoods; oaks (valley, live, blue); pine (Ponderosa, lodgepole). Pallid bats are not documented to have very low roost fidelity and will often switch roosts seasonally or even daily. Overwintering roosts will typically be found in protected structures out of direct sunlight with stable temperatures (Western Bat Working Group, 2005). When hibernating, pallid bats can be found roosting in buildings, caves, or rock crevices (Miller, 2002), (Western Bat Working Group, 2005).	Yes	Suitable roosting habitat present on trees. The blue oak woodlands provide peeling bark and dead tree cavities for roosting. Rocky outcrops provide suitable roosting habitat as well. Ephemeral channels bisecting the Project area could provide further resources in addition to the Kings River.

Table 3.5-2. (Continued)

Common Name Scientific Name	Status ¹	Habitat Requirements	Potential to Occur	Rationale
MAMMALS				
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	SSC	Ranges throughout California except for high elevation portions of the Sierra Nevada Mountains. Generally, prefers mesic habitats but is known to occur in all non-alpine habitats of California. Roosting occurs in caves, tunnels, mines, buildings, or other structures and this species may use different roosting sites for day and night (California Wildlife Habitat Relationships Program Staff, 2000).	Yes	Suitable habitat for this species is present. The blue oak woodlands provide peeling bark and dead tree cavities for roosting. Rocky outcrops provide suitable roosting habitat as well. Ephemeral channels bisecting the project area could provide further resources in addition to the Kings River.
Spotted bat <i>Euderma maculatum</i>	SSC	Ranges across the eastern half of California from the low foothills and over the Cascade and Sierra Nevada crests to Nevada, as well as Southern California except for the lowlands of Orange and Los Angeles Counties. Generally, occurs in desert, mixed coniferous forests, and grassland habitats. Prefers to roost in rock crevices on cliffs but will sometimes use caves and buildings (California Wildlife Habitat Relationships Program Staff, 2000).	Yes	Suitable habitat for this species is present. The blue oak woodlands provide peeling bark and dead tree cavities for roosting. Rocky outcrops provide suitable roosting habitat as well. Ephemeral channels bisecting the Project area could provide further resources in addition to the Kings River.
Western mastiff bat <i>Eumops perotis californicus</i>	SSC	Ranges throughout Southern California, the central coast, and the Sierra Nevada Mountains. Generally, occurs in open, arid, or semi-arid habitats. Roosts in rock crevices and buildings (Ahlborn, 1990)	Yes	Suitable habitat for this species is present. The blue oak woodlands provide peeling bark and dead tree cavities for roosting. Rocky outcrops provide suitable roosting habitat as well. Ephemeral channels bisecting the Project area could provide further resources in addition to the Kings River.

Table 3.5-2. (Continued)

Common Name Scientific Name	Status ¹	Habitat Requirements	Potential to Occur	Rationale
MAMMALS				
American badger <i>Taxidea taxus</i>	SSC	Ranges across nearly all of California except northernmost Humboldt and Del Norte Counties. Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils (Ahlborn, 1990).	Yes	Suitable habitat present in the Project boundary. High quality habitat was observed for the American badger in the Project boundary during the April 12, 2023 reconnaissance survey.
Total:	15 Special-Status Wildlife Species			13 = Suitable Habitat Present 2 = No Suitable Habitat Present

SOURCE: (CDFW, Special Animals List, 2023)

¹ Special status:

BGEPA = protected under the Bald and Golden Protection Act
 SCE = State Candidate endangered for listing under the CESA
 SE = CESA listed as endangered
 ST = CESA listed as threatened
 FP = fully protected under California Fish and Game Code § 3511
 SSC = considered a Species of Special Concern by CDFW

The following discussion describes the three special-status species observed during reconnaissance surveys conducted by DWR for the FERC Project boundary, as well as incorporating results of surveys conducted by the Kings River Conservation District for the Jeff L. Taylor-Pine Flat Hydroelectric Project, FERC Project No. 2741.

3.5.2.1 *American Peregrine Falcon*¹⁰



The American peregrine falcon is a State of California Fully Protected Species (CDFW, Special Animals List, 2023).

The American peregrine falcon may be found throughout the United States, using cliffs and man-made structures, such as buildings and bridges, for nesting. They do not build nests like most birds, but lay eggs in a scraping of cliff sides or other shallow indentations. Breeding usually begins in late February and can last until June. A second clutch may be laid if eggs are destroyed or removed early in the breeding season. Primary prey includes birds that range in size from medium-sized passerines up to

small waterfowl as well as small reptiles and mammals (Wildlife, American Peregrine Falcons in California, 2023).

This species was observed in the FERC Project boundary along the Project on June 1, 2023.

3.5.2.2 *Bald Eagle*¹¹



The bald eagle is currently protected under the Bald and Golden Eagle Protection Act and is a State of California Endangered Species as well as a California Fully Protected Species (CDFW, 2023).

The bald eagle breeds or winters throughout California, except for the desert areas and the Statewide populations are increasing (CDFW, 2000). Most breeding in the state occurs in the northern Sierra Nevada, Cascades, and north coast range. California's breeding population is resident year-round in most areas, where the climate is relatively mild (Jurek, 1988). Between mid-October and December,

¹⁰ [wikimedia.org](#)

¹¹ [wikimedia.org](#)

migratory birds from areas north and northeast of California arrive in the State. Wintering populations remain through March or early April. Data from Statewide breeding surveys conducted since 1973 indicate that the number of breeding pairs in the State continue to increase on an annual basis (CDFW, 2000). Breeding generally occurs from February to July, but can be initiated as early as January via courtship, pair bonding, and territory establishment. The breeding season normally ends around August 31, as the fledglings are no longer attached to their nest area.

Bald eagle typically nests in large, old growth or dominant live trees with open branching and within two miles of a lake, reservoir, or river containing fish. Most nesting territories in California are located at elevations ranging from 1,000 to 6,000 feet, but nesting can occur from near sea level to over 7,000 feet (Jurek 1988). Bald eagles often construct up to five nests within a territory and alternate between them from year to year. Wintering habitat is associated with open bodies of water, primarily large lakes and reservoirs. Two characteristics that play a significant role in habitat selection during the winter are diurnal feeding perches and communal night roost areas. Most communal roosts are usually located near an abundant food source and have greater protection from the weather than diurnal habitat (CDFW, 2000).

This species was observed immediately west of the FERC Project boundary during the April 12, 2023, reconnaissance survey.

3.5.2.3 Golden Eagle¹²



The golden eagle is a State of California Fully Protected Species and is currently protected under the Bald and Golden Eagle Protection Act (16 U.S.C 668-668d) (CDFW, 2023)

Most golden eagles in California are yearlong residents with some migration into California in the winter. The golden eagle generally breeds from late January through August (CDFW, 2023).

Golden eagles use a range of terrestrial habitats including forests, chaparral, grasslands, and oak woodlands, and feed on mammals, birds, and terrestrial reptiles, as well as carrion. Open water is not considered foraging habitat for the species (CDFW, 2013). Golden eagles nest on cliffs of all heights and in large trees in open areas. Alternative nest sites are maintained, and old nests are reused. They build large platform nests, often 10 feet across and three feet high, of sticks, twigs, and greenery. Rugged, open habitats with canyons and escarpments are used most frequently for nesting (J.E. Pagel, 2010).

¹² [wikimedia.org](https://www.wikimedia.org/)

This species was observed in the FERC Project boundary along the Project during the April 12, 2023, reconnaissance survey (Figure 3.5-2).



Figure 3.5-2. Golden eagle seen between poles PF2 and PF3 about 500 feet from the transmission line.

3.5.2.4 Transmission Line Avian Safety

Avian interactions with powerlines, including collisions, electrocutions, and nesting, have occurred since the first powerlines were developed. The design and location of transmission lines plays a lead role in the number and severity of these interactions. In 1989, the Avian Power Line Interaction Committee (APLIC) was founded to address first whooping crane and later all avian collisions with powerlines. They have issued guidance documents for the design and build of the lines to reduce negative avian interactions. The most recent is the 2012 Reducing Avian Collisions with Power Lines (APLIC, 2012).

The 230 kV Pine Flat Transmission Line has three self-supporting, square-based steel lattice towers. The steel lattice towers are horizontal construction design. The three towers vary in height from 79 to 112 feet and have a life expectancy of at least 80 years from their erection. The three-phase conductors of the single-circuit line consist of a 0.994-inch diameter steel-reinforced aluminum cable. The transmission line has been designed and constructed with conductors spaced at a distance greater than 8 feet, exceeding both the typical 5-foot standard of separation between energized and grounded parts (APLIC 1996) and the wingspan of all avian species identified during the FERC Project boundary wildlife survey.

The three lattice towers meet APLIC guidelines. The horizontal configuration and phase separation of the transmission conductors minimize the risk of avian electrocution by reducing the height of the collision zone and providing adequate spacing between conductors to eliminate the potential for birds to bridge conductive parts. In addition, the larger size of the transmission conductor leads to a lower risk of avian collision relative to smaller distribution conductor or shield wire (APLIC, 2006); (APLIC, 2012).

The lattice towers satisfy general APLIC guidance for transmission structure design. DWR has no reported instances of avian collisions or electrocutions on the Pine Flat Transmission Line.

3.5.3 Wildlife Resources

A variety of wildlife use the habitat in the FERC Project boundary. Reptiles recorded in the area include the western fence lizard (*Sceloporus occidentalis*), sagebrush lizard (*Sceloporus graciosus*), Gilbert's skink (*Plestiodon gilberti*), rubber boa (*Charina bottae*), California kingsnake (*Lampropeltis californiae*), Sierra gartersnake (*Thamnophis couchii*), and western rattlesnake (*Crotalus oreganus*). California newt (*Taricha torosa*), gregarious slender salamander (*Batrachoseps gregarious*), American bullfrog (*Lithobates catesbeianus*), western toad (*Anaxyrus boreas*), and Sierran treefrog (*Pseudacris sierra*) are all common amphibian species that have been observed in the area (California Watchable Wildlife, 2023); (eBird, 2023); (iNaturalist, 2023); (USACE, 2001).

Over 60 bird species have been recorded in or around the FERC Project boundary, including a variety of waterfowl such as common merganser (*Mergus merganser*),

American coot (*Fulica americana*), killdeer (*Charadrius vociferus*), California gull (*Larus californicus*), eared grebe (*Podiceps nigricollis*), great blue heron (*Ardea herodias*), western grebe (*Aechmophorus occidentalis*), and ruddy duck (*Oxyura jamaicensis*). Other bird species in the FERC Project area include bald eagle, red-tailed hawk (*Buteo jamaicensis*), tree swallow (*Tachycineta bicolor*), white-crowned sparrow (*Zonotrichia leucophrys*), California quail (*Callipepla californica*), Bullock's oriole (*Icterus bullockii*), acorn woodpecker (*Melanerpes formicivorus*), Anna's hummingbird (*Calypte anna*) and mourning dove (*Zenaida macroura*) (California Watchable Wildlife, 2023); (eBird, 2023); (iNaturalist, 2023); (USACE, 2001).

The most common large mammal in the vicinity of the Project is mule deer (*Odocoileus hemionus*), members of the North Kings herd. Smaller mammals include coyote (*Canis latrans*), California ground squirrel (*Otospermophilus beecheyi*), striped skunk (*Mephitis mephitis*), bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), and gray fox (*Urocyon cinereoargenteus*) (California Watchable Wildlife, 2023); (eBird, 2023); (iNaturalist, 2023); (USACE, 2001).

Wildlife surveys conducted on April 12 and June 1, 2023, recorded 26 species of wildlife: California ground squirrel (*Otospermophilus beecheyi*), mule deer (*Odocoileus hemionus*), European starling (*Sturnus vulgaris*), Western bluebird (*Sialia mexicana*), house finch (*Haemorhous mexicanus*), oak titmouse (*Baeolophus inornatus*), Canada goose (*Branta canadensis*), acorn woodpecker (*Melanerpes formicivorus*), scrub jay (*Aphelocoma californica*), golden eagle, house wren (*Troglodytes aedon*), common raven (*Corvus corax*), Anna's hummingbird (*Calypte anna*), red tailed hawk, mourning dove (*Zenaida macroura*), lesser goldfinch (*Spinus psaltria*), chipping sparrow (*Spizella passerine*), American crow (*Corvus brachyrhynchos*), bald eagle, great blue heron (*Ardea herodias*), phainopepla (*Phainopepla nitens*), western kingbird (*Tyrannus verticalis*), coyote (*Canis latrans*), American bushtit (*Psaltiriparus minimus*), American peregrine falcon, and Northern rough-winged shallow (*Stelgidopteryx serripennis*).

3.5.4 Commercially-Valuable Wildlife Species

Game bird and mammal species are those regulated by California Fish and Game Code §§ 3500 and 3950, which provide recreational hunting opportunities. Geographic location, elevation, and available habitat¹³ were used to evaluate the potential for game animals to occur within the FERC Project boundary. Table 3.5-3 lists game species, their habitat requirements, and their potential seasonal distribution within the FERC Project boundary. Of the 64 game species identified (35 birds, 3 reptiles, 3 amphibians, and 23 mammals), American badger is the only special-status species that is also listed as a commercially-valuable species (CDFW, 2023).

No hunting occurs within the FERC Project boundary.

¹³ DWR crosswalked the vegetation alliances and other land covers within the FERC Project boundary against California Wildlife Habitat Relationship (CWHR) habitat classifications following the Manual of California Vegetation (CNPS, A Manual of California Vegetation Online, 2023).

Table 3.5-3 Commercially valuable wildlife species potentially occurring within the FERC Project boundary.

Common Name/ Scientific Name	Temporal and Spatial Distribution and General Habitat Requirement ^{1, 2}
REPTILES AND AMPHIBIANS	
Western toad (<i>Anaxyrus boreas</i>)	Yearlong – AGS, OAK, RIV, VFR
Arboreal salamander (<i>Aneides lugubris</i>)	Yearlong – OAK, VFR
Glossy snake (<i>Arizona elegans</i>)	Yearlong – AGS, OAK
North American racer (<i>Coluber constrictor</i>)	Yearlong – AGS, OAK, VFR
Western rattlesnake (<i>Crotalus oreganus</i>)	Yearlong – AGS, DEV, OAK, VFR
American bullfrog (<i>Lithobates catesbeianus</i>)	Yearlong – AGS, OAK, RIV, VFR
BIRDS	
Wood duck (<i>Aix sponsa</i>)	Yearlong – DEV, OAK, RIV, VFR
Chukar (<i>Alectoris chukar</i>)	Yearlong – AGS, VFR
Northern pintail (<i>Anas acuta</i>)	Yearlong – AGS, DEV, RIV
American wigeon (<i>Anas americana</i>)	Yearlong – AGS, DEV, RIV
Northern shoveler (<i>Anas clypeata</i>)	Yearlong – AGS
Green-winged teal (<i>Anas crecca</i>)	Winter – AGS, DEV, RIV
Cinnamon teal (<i>Anas cyanoptera</i>)	Yearlong – AGS, RIV, VFR
Eurasian wigeon (<i>Anas penelope</i>)	Winter – AGS, DEV, RIV
Mallard (<i>Anas platyrhynchos</i>)	Yearlong – AGS, DEV, RIV, VFR
Gadwall (<i>Anas strepera</i>)	Yearlong – AGS, RIV
Greater white-fronted goose (<i>Anser albifrons</i>)	Winter – AGS, RIV
Lesser scaup (<i>Aythya affinis</i>)	Winter – RIV
Canvasback (<i>Aythya valisineria</i>)	Winter – RIV
Canada goose (<i>Branta canadensis</i>)	Winter – AGS, DEV, RIV
Bufflehead (<i>Bucephala albeola</i>)	Yearlong – VFR
Common goldeneye (<i>Bucephala clangula</i>)	Winter – RIV, VFR
California quail (<i>Callipepla californica</i>)	Yearlong – AGS, DEV, OAK, VFR
Snow goose (<i>Chen caerulescens</i>)	Winter – AGS, RIV
Ross's goose (<i>Chen rossii</i>)	Winter – AGS, RIV
Rock pigeon (<i>Columba livia</i>)	Yearlong – AGS, DEV
American crow (<i>Corvus brachyrhynchos</i>)	Yearlong – AGS, DEV, OAK, RIV, VFR
American coot (<i>Fulica americana</i>)	Yearlong – AGS, DEV, RIV
Wilson's snipe (<i>Gallinago delicata</i>)	Winter – RIV, VFR
Common gallinule (<i>Gallinula galeata</i>)	Yearlong – RIV, DEV
Hooded merganser (<i>Lophodytes cucullatus</i>)	Winter – DEV, RIV, VFR
Wild turkey (<i>Meleagris gallopavo</i>)	Yearlong – AGS, OAK, VFR
Common merganser (<i>Mergus merganser</i>)	Winter – DEV, RIV, VFR
Mountain quail (<i>Oreotyx pictus</i>)	Yearlong – AGS, OAK, VFR
Ruddy duck (<i>Oxyura jamaicensis</i>)	Yearlong – VFR
House sparrow (<i>Passer domesticus</i>)	Yearlong – OAK, VFR
Band-tailed pigeon (<i>Patagioenas fasciata</i>)	Yearlong – DEV, OAK, VFR
Ring-necked pheasant (<i>Phasianus colchicus</i>)	Yearlong – AGS, DEV, VFR
Spotted dove (<i>Streptopella chinensis</i>)	Yearlong – DEV
European starling (<i>Sturnus vulgaris</i>)	Yearlong – AGS, DEV, OAK, VFR
Mourning dove (<i>Zenaida macroura</i>)	Yearlong – AGS, DEV, OAK, VFR
MAMMALS	
Coyote (<i>Canis latrans</i>)	Yearlong – AGS, DEV, OAK, VFR
American beaver (<i>Castor canadensis</i>)	Yearlong – AGS, OAK, RIV, VFR
Elk (<i>Cervus elaphus</i>)	Yearlong – AGS, OAK, VFR
Virginia opossum (<i>Didelphus virginiana</i>)	Yearlong – AGS, DEV, OAK, VFR
Black-tailed jackrabbit (<i>Lepus californicus</i>)	Yearlong – AGS, DEV, OAK, VFR
Bobcat (<i>Lynx rufus</i>)	Yearlong – AGS, OAK, VFR
Striped skunk (<i>Mephitis mephitis</i>)	Yearlong – AGS, DEV, OAK, VFR
House mouse (<i>Mus musculus</i>)	Yearlong – AGS, DEV, OAK, VFR
Long-tailed weasel (<i>Mustela frenata</i>)	Yearlong – AGS, DEV, OAK, VFR
American mink (<i>Mustela vison</i>)	Yearlong – RIV, VFR
Mule deer (<i>Odocoileus hemionus</i>)	Yearlong – AGS, DEV, OAK, VFR
Common muskrat (<i>Ondatra zibethicus</i>)	Yearlong – RIV, VFR
Raccoon (<i>Procyon lotor</i>)	Yearlong – AGS, DEV, OAK, RIV, VFR
Norway rat (<i>Rattus norvegicus</i>)	Yearlong – DEV, OAK, VFR
Black rat (<i>Rattus rattus</i>)	Yearlong – DEV, OAK, VFR
Western gray squirrel (<i>Sciurus griseus</i>)	Yearlong – OAK, VFR
Eastern fox squirrel (<i>Sciurus niger</i>)	Yearlong – DEV, OAK

Table 3.5-3. (Continued)

Common Name/ Scientific Name	Temporal and Spatial Distribution and General Habitat Requirement ^{1, 2}
MAMMALS	
Wild pig (<i>Sus scrofa</i>)	Yearlong – AGS, OAK, VFR
Audubon's cottontail (<i>Sylvilagus audubonii</i>)	Yearlong – AGS, DEV, OAK, VFR
Brush rabbit (<i>Sylvilagus bachmani</i>)	Yearlong – AGS, DEV, OAK, VFR
American badger (<i>Taxidea taxus</i>)	Yearlong – AGS, OAK, VFR
Gray fox (<i>Urocyon cinereoargenteus</i>)	Yearlong – AGS, DEV, OAK, VFR
Black bear (<i>Ursus americanus</i>)	Yearlong – AGS, RIV, VFR

SOURCE: (CDFW, 2023)

¹ Habitat Types

AGS = Annual grassland
BAR = Barren
DEV = developed
OAK = Interior live oak riparian
RIV = Riverine (Kings River)
VFR = Valley foothill riparian

² Temporal and Spatial Distribution - CWHR habitat types. DWR crosswalked the vegetation communities and three other land covers within the FERC Project boundary into six CWHR habitat classifications, following the Manual (CNPS, A Manual of California Vegetation Online, 2023).

3.5.5 Wetlands, Riparian, and Littoral Habitats

The majority of the FERC Project boundary is composed of slopes ranging from moderately steep to gently rolling hillsides. Numerous ephemeral drainages bisect the transmission line corridor where the hillsides intercept. All the drainages within the FERC Project boundary are located between transmission line towers PF2 and PF3. The largest of these drainages is an unnamed, likely perennial, channel that includes pools and riffles about two to three feet deep with moderate flow, as shown in Figure 3.5-3. This drainage may hold water year-round due to perennial riparian vegetation identified during both surveys; and described in Section 3.5.1.1 (Interior Live Oak Riparian Forest). All other drainages observed within the FERC Project boundary had standing water several inches deep or were dry with signs of recent water flow at the time of the April 12, 2023, survey, but no water flow during the subsequent June 1, 2023, survey.

The northernmost portion of the transmission line corridor overlies the Kings River near the toe of the dam. The FERC Project boundary occurs to the west of Pine Flat Lake, which provides littoral habitat, but there is no littoral habitat within the FERC Project boundary. The FERC Project boundary does not contain any known wetlands.



Figure 3.5-3. View of the unnamed, likely perennial, drainage located between transmission line towers PF2 and PF3 of the Pine Flat Transmission Line.

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3.6 ENDANGERED SPECIES ACT-LISTED SPECIES

This section discusses species listed under the federal Endangered Species Act (ESA) as threatened (FT), endangered (FE), proposed or candidates for listing and their critical habitats that could be affected by the Project. This section is divided into two subsections. Section 3.6.1 identifies ESA-listed species and their critical habitats that could potentially be affected by the Project. This section also includes discussion on species that as of the date of this PAD filing, are candidate species for ESA listing. Section 3.6.2 provides a general life history for each ESA-listed species and available information regarding the distribution, abundance, and condition of the species and their designated critical habitat relative to the Project area and in the Upper Kings River watershed.

3.6.1 Federal Endangered Species Act Listed and Proposed or Candidate Species

On October 11, 2023 and updated January 22, 2024, DWR generated a list of ESA-listed and ESA candidate species for the area within the FERC Project boundary, plus a 1-mile buffer, using the USFWS Information for Planning and Consultation (IPaC) System (Attachment E) (USFWS, 2024). The list includes a total of 15 species, of which 6 are threatened (3 plants, 2 invertebrates, and 1 amphibian), 6 are endangered (1 plant, 1 invertebrate, 1 amphibian, 1 bird, and 2 mammals), 2 are proposed (1 reptile and 1 bird), and 1 is a candidate (1 invertebrate). The 15 ESA-listed, proposed and candidate species are:

- Threatened
 - California tiger salamander – Central California Distinct Population Segment (*Ambystoma californiense* pop. 1)
- Endangered
 - Keck's checkerbloom (*Sidalcea keckii*) and its critical habitat
 - Foothill yellow-legged frog – South Sierra DPS (*Rana boylei* pop. 5)
 - California condor (*Gymnogyps californianus*) and its critical habitat
 - Fisher – Southern Sierra Nevada Evolutionarily Significant Unit (ESU) (*Pekania pennanti* pop. 2)
 - San Joaquin kit fox (*Vulpes macrotis mutica*)
- Proposed
 - Northwestern pond turtle (*Actinemys marmorata*)
 - Western Spadefoot (*Spea hammondi*)

Candidates¹

- Monarch butterfly - California overwintering population (*Danaus plexippus* pop. 1)

The Project was visited on April 12 and May 31, 2023, for a focused plant survey, and habitat assessment, both described in Section 3.05. No ESA-listed species were observed during either visit.

Based on the data from the 2023 surveys and assessment, DWR eliminated from further consideration the succulent owl's-clover, San Joaquin Orcutt grass, vernal pool fairy shrimp, and vernal pool tadpole shrimp because habitat for these species, vernal pools, does not occur in or within 500 feet of the FERC Project boundary.

California tiger salamander (CTS) was eliminated from further consideration because there are no suitable breeding ponds within 3 miles of the FERC Project boundary per the field visits and an aerial assessment of the 3-mile buffer around the Project boundary. CTS require upland habitat that encompasses an approximately 1.5-mile buffer around suitable breeding habitat. However, due to the absence of suitable breeding ponds within the CTS' approximately 1.5-mile dispersal buffer, the FERC Project boundary does not provide suitable upland habitat. Additionally, there are no known occurrences of the species within 7 miles of the Project area (CDFW, 2023).

The Project falls outside of both the valley elderberry longhorn beetle's known range (USFWS, 2020) and outlined recovery management units (USFWS, 2019). Furthermore, surveys of the FERC Project boundary did not locate the host plant for valley elderberry longhorn beetle (elderberry shrub [*Sambucus* spp.]). Valley elderberry longhorn beetle was therefore eliminated from further consideration.

The specific habitat for San Joaquin adobe sunburst, adobe clay soil, is also not found in the FERC Project boundary. Therefore, San Joaquin adobe sunburst was eliminated from further consideration.

The Southern Sierra Nevada DPS of Fisher was also eliminated from further consideration as the FERC Project boundary does not contain a mature dense forested area this species typically requires, does not provide such habitat in close proximity to the Project, and is below the known elevation range of the species (has been detected between 3,200 and 10,300 feet).

Foothill yellow-legged frog have no documented extant occurrences within the Project vicinity, and no documented species records within a mile of the Project. Over ten occurrences within 15 miles of the Project have been extirpated (CDFW, 2023). Therefore, this species was eliminated from further consideration.

¹ A candidate species is species being considered for listing but not yet the subject of a proposed rule.

Finally, the Sierra Nevada DPS of California spotted owl was eliminated from consideration as the FERC Project boundary does not contain a dense forested area with multi-layered canopies that this species typically requires, nor is there any such habitat in close proximity to the Project.

On October 11, 2023, DWR also queried the following databases to generate a list of other ESA-listed species with the potential to occur within the FERC Project boundary:

- CDFW's California Natural Diversity Database (CNDDDB) (California Department of Fish and Wildlife, 2023)
- CNPS Inventory of Rare and Endangered Plants of California (California Native Plant Society, 2023)

No additional ESA-listed species were determined to have the potential to occur within the FERC Project boundary.

As a result, DWR concluded that five species (i.e., Keck's Checkerbloom, Monarch Butterfly, Northwestern Pond Turtle, California Condor, and San Joaquin Kit Fox) have the potential to occur within the FERC Project boundary. Information regarding ESA listing, suitable habitat, known occurrences, proximal reports of the species relative to the Project vicinity, and relevant status reports and recovery plans is shown in Table 3.6-1.

Table 3.6-1. ESA listed species and their designated critical habitat with the potential to occur in the FERC Project boundary and in the vicinity.

Species		Suitable Habitat Type	Known Occurrence in Project Vicinity	Status ¹	Status Reports and Recovery Plans Relevant to Project Vicinity
Common Name	Scientific Name				
PLANTS					
Keck's Checkerbloom	<i>Sidalcea keckii</i>	Serpentine or clay soils in cismontane woodland and grassland habitats at elevations ranging from 245 to 2,135 feet (CNPS, 2023).	Nearby CNDDDB records within Piedra quad, 2 miles SW of FERC Project boundary (CDFW, 2023)	FE	5-Year Reviews (USFWS, 2008); (USFWS, 2012); (USFWS, 2020) Critical Habitat – Near Project (68 FR 12863, 2003)
INVERTEBRATES					
Monarch butterfly	<i>Danaus plexippus</i>	In the larva stage monarch butterflies require milkweed host plants, primarily of the genus <i>Asclepias</i> . Adult monarch butterflies require a diverse set of nectaring resources, which would include milkweed for ovipositioning in addition to larval feeding. Monarchs will often also use a variety of roosting trees along their fall migration routes. The overwintering habitats in California include tree groves of blue gum eucalyptus (<i>Eucalyptus globulus</i>), Monterey pine (<i>Pinus radiata</i>), and Monterey cypress (<i>Hesperocyparis macrocarpa</i>) all of which act as roost trees.	No known occurrences within the FERC Project boundary or Project vicinity.	FCT	Status Reports (USFWS, 2020)
AMPHIBIANS					
Western spadefoot	<i>Spea hammondi</i>	Endemic to California and northern Baja California ranging from Redding throughout the central valley and associated foothills, through the South Coast Ranges into southern California west of the Peninsular mountains. Breeding sites include vernal pools, temporary rain pools, cattle tanks, and occasionally pools of intermittent streams typically in turbid water with little to no cover that remain wet for at least 30 days to allow for transformation of larvae (Nafis 2023). Prefers open areas with sandy or gravelly soils, in a variety of habitats including grasslands, oak woodlands, coastal sage scrub, chaparral, sandy washes, floodplains, alluvial fans, playas, and alkali flats. Pools with invasive species, such as crayfish (<i>Pacifasticus</i> spp.), or bullfrogs (<i>Lithobates catesbeianus</i>) often, but not always, exclude this species (Thomas et al. 2016).	Nearby CNDDDB records within Piedra, Tucker Mountain, Orange Cove North and Humphrey's Station quads (CDFW, 2023)	FPT	Status Reports (USFWS, 2020)
REPTILES					
Northwestern pond turtle	<i>Actinemys marmorata</i>	Variety of natural habitats including small mountain creeks, large rivers and oxbow lakes, and modified habitats, such as wastewater treatment oxidation ponds, irrigation ditches, urban parks, and artificially created lakes from sea level to nearly 6,700 feet (CDFW, 2023)	The species has been sighted in tributary streams and Kings River (Reclamation & CDFW, 2003).	FPT	Recovery Plan (USFWS, 2020) Status Reports (USFWS, 2023)

Table 3.6-1. (Continued)

Species		Suitable Habitat Type	Known Occurrence in Project Vicinity	Status ¹	Status Reports and Recovery Plans Relevant to Project Vicinity
Common Name	Scientific Name				
BIRDS					
California condor	<i>Gymnogyps californianus</i>	Formerly ranged across much of North America, but over the course of the 20 th Century, disappeared over nearly its entire range. Dwindled to such small numbers that by the 1980's, all remaining birds were removed from the wild to a captive rearing program. In the 1990's, condors were released, and now the species has reestablished in the foothills of the southern Sierra Nevada Range, across the Tehachapi Range and through the Transverse Ranges from Los Angeles County to Santa Barbara County, and up the Coast Range Mountains to Big Sur and Pinnacles National Park. Nests in cavities located on steep rock formations or in the burned-out hollows of old-growth coast redwoods (<i>Sequoia sempervirens</i>) or giant sequoias (<i>Sequoiadendron giganteum</i>). Less commonly uses cliff ledges or large old nests of other bird species. Forages in open terrain of foothill grassland and oak savanna habitats, and at coastal sites in central California (USFWS, 2013).	No known occurrences within the FERC Project boundary or Project vicinity.	FE	Recovery Plan (USFWS, 1996); (USFWS, 2019) 5-Year Reviews (USFWS, 2013) Critical Habitat – Near Project (42 FR 47840, 1977)
MAMMALS					
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	The subspecies historically ranged in alkali scrub/shrub and arid grasslands throughout the level terrain of the San Joaquin Valley floor from southern Kern County north to Tracy in San Joaquin County, and up into more gradual slopes of the surrounding foothills and adjoining valleys of the interior Coast Range. Occurs in desert-like habitats characterized by sparse or absent shrub cover, sparse ground cover, and short vegetative structure. Prefers areas with open, level, sandy ground (USFWS, 2010).	Nearby CNDDDB record within Piedra quad, about 4.5 miles SW of the FERC Project boundary (CDFW, 2023)	FE	Status Reports (USFWS, 2020) Recovery Plan (USFWS, 1998) 5-Year Reviews (USFWS, 2010)

¹Special Status:

FE = ESA listed as endangered

FT = ESA listed as threatened

FCT = candidate for ESA listing as threatened

FPT = ESA proposed as threatened

3.6.2 Life Histories of ESA-Listed and Candidate or Proposed Species

A brief description of listing status and life history of each ESA-listed, candidate or proposed species potentially affected by the Project is provided below.

3.6.2.1 ***Keck's Checkerbloom***²



On February 16, 2000, the USFWS listed the Keck's checkerbloom as an endangered species (65 FR 7757). The checkerbloom is endangered due to urban development, grazing, and agricultural land development. Due to their small population sizes, they are also susceptible to random weather events (CNPS, 2023).

On March 18, 2003, critical habitat was designated for Keck's checkerbloom (68 Federal Register [FR] 12863). Lands that have been designated as critical habitat are under both private and federal jurisdiction totaling about 1,082 acres across 3 units: Piedra, Mine Hill, and White River. The closest unit to the FERC Project boundary is the Piedra unit, approximately 2.5 miles west-southwest along Elwood Road and the Kings River, just west of Tivy Mountain. This area has been established for the conservation of Keck's checkerbloom, and populations have been documented in 2000 and 2001 growing on both Fancher and Cibo soils (68 FR 12863). This unit is essential, as it is the most northerly location known for Keck's checkerbloom and is the only documented location with above-ground plants containing maroon-centered flowers (68 FR 12863).

Appearance

The checkerbloom is a California endemic annual herb; the species is slender and hairy and grows anywhere from 6 to 13 inches tall (CNPS, 2023). During the flowering period (April-June), deep pink flowers with petals reaching 10-20 millimeters (mm) wide appear (Hill, 2012). Keck's checkerbloom resemble four other *Sidalcea* species: *S. calycosa*, *S. diploscyha*, *S. hartwegii*, and *S. hirsuta*. Only two of these species, *S. calycosa* and *S. diploscyha*, have ranges that overlap Keck's checkerbloom (CNPS, 2023). Keck's checkerbloom can be separated from these two species by: number and size of flowers, arrangement of stamens, size and shape of the stem leaves, density of hairs on the stems, and the presence of a purple spot on the flower about 1-2 mm wide (Hill, 2012).

Habitat

Habitat requirements are not well understood due to the low number of known extant occurrences. These populations occur in clay or serpentine soils in sparsely vegetated grasslands and on the margins of cismontane woodlands (65 FR 7757; CNPS 2023).

² Wikimedia Commons

No Keck's checkerbloom was observed during 2023 surveys of the Project area, nor are there any other reports of the species within the FERC Project boundary. The nearest known occurrence is approximately 2 miles southwest of the Project. Additionally, there are several occurrences in the Piedra quadrangle, last reported in 2019 (CDFW, 2023).

3.6.2.2 Monarch Butterfly³



The monarch butterfly is currently a candidate for ESA listing as of May 3, 2022 [87 FR 26152]. The proposed listing is to help in combating declining populations across their range, due largely to habitat loss and climate change.

Life Cycle



Adult female monarchs will lay eggs on milkweed (*Asclepias* spp.) plants, the host plant for this species. The milkweed leaves will serve as the exclusive food source for caterpillars as they grow prior to pupating (Brower, Taylor, Williams, Slayback, & Zubieta, 2012). The pupa stage will last for about two weeks, while the caterpillar undergoes metamorphosis transforming into a butterfly

(Brower, Taylor, Williams, Slayback, & Zubieta, 2012).

Migration and Overwintering

In the fall, monarch butterflies in western North America will migrate south to California, where they will overwinter in clusters within coastal regions. In the spring, the overwintering populations in California will migrate north, with female adults laying eggs on milkweed plants along the way (Brower, Taylor, Williams, Slayback, & Zubieta, 2012).

Habitat

Habitat supporting monarch life histories includes milkweed plants for reproduction and early life cycles, as well as a variety of other flowering plant species that produce nectar in the butterfly phase of their life cycle (Flockhard, Pichancourt, Norris, & G., 2017).

One occurrence of California milkweed was recorded within the FERC Project boundary during botanical surveys in 2023. This occurrence was found immediately south of tower PF2 on a south facing slope in grassland habitat. Six milkweed plants were found at this location with limited immediate nectaring sources nearby.

³ Wikimedia Commons

3.6.2.3 *Western Spadefoot*⁴



The northern DPS western spadefoot is currently proposed to be listed as threatened with rules issued under section 4(d) of the ESA as of December 5, 2023 [88 FR 84252]. The proposed listing notes that the southern DPS will also be listed. The designation of critical habitat for this species has not been determined due to insufficient data. This proposed listing is due to

habitat loss, nonnative predators, chemical contaminants, noise disruptions, wildfire, and climate change [88 FR 84261].

Appearance and Behavior

The western spadefoot ranges in size from 3.8 to 6.3 centimeters from snout to vent length. They vary in color from dusky green to gray on their backs with four irregular light-colored stripes. The iris of the eye is usually pale gold. The abdomen is white in color without any markings. The western spadefoot has a wedge-shaped spade on each hind foot used for digging burrows.

Western spadefoots are primarily terrestrial inhabiting underground burrows. They spend most of their life cycle in a torpor state in underground burrows upland of their aquatic breeding habitat. Spadefoots emerge to forage and breed in seasonally wet pools after winter and spring rains. Surface activity is mostly nocturnal. Breeding and oviposition occur from October to May in ephemeral pools and non-flowing drainage areas natural or manmade. Females deposit many egg clusters with an average of 24 eggs per cluster and 300 to 500 eggs per season. Eggs hatch in 1 to 6 days and tadpole development can be completed between 3 to 11 weeks provided the pool hasn't dried out. Individuals may take at least 2 years to mature.

Habitat and Range

The historical range of the western spadefoot is from Shasta County, California south to Baja California, Mexico. They have been observed from sea level up to 4,550 feet in the Sierra Nevada foothills. In California, the western spadefoot inhabits the Central Valley, the Coast Ranges and coastal lowlands. Genetic analysis determined that the species is divided into the northern and southern DPS by the Transverse Ranges in southern California.

Western spadefoot habitat is primarily open treeless grassland, scrub, or mixed woodland and grassland where aquatic breeding habitat is nearby. They are primarily terrestrial and require upland habitat to forage and construct burrows for dry season dormancy. Aquatic breeding habitat in vernal pools, sand and gravel washes, and

⁴ Wikimedia Commons

ephemeral streams is favored but egg and larvae have also been observed in artificial ponds, livestock ponds, irrigation ditches and tire ruts.

3.6.2.4 *Northwestern Pond Turtle*⁵



The northwestern pond turtle is currently proposed to be listed as threatened with proposed rules issued under section 4(d) of the ESA as of October 3, 2023 [88 FR 68370] issued by USFWS. The proposed listing notes that the western pond turtle was previously believed to be a single species; however, it is now recognized as two distinct species, the northwestern pond turtle, discussed here, and the southwestern pond turtle [88 FR 68370]. This proposed listing is due largely to drought, predation by bullfrogs, and anthropogenic factors such as habitat loss and fragmentation, altered hydrology, and climate change (USFWS, 2023).

Due to the recently recognized split in species, any instance where western pond turtle is referenced can be understood to be in reference to both distinct species.

Appearance and Behavior

The western pond turtle is a small to medium-sized turtle that ranges in coloration from dark brown, olive brown, to blackish. It usually has a pattern of striping or spotting that radiates from the center of the scutes (Nafis, 2023). Turtles that are south of the Transverse Ranges tend to be lighter in color, from yellowish brown to light brown (Nafis, 2023), understood now to be likely in reference to morphological distinctions of the southwestern pond turtle.

Western pond turtles are typically active from February through November, but may be active during warm periods in winter in warmer climates (Nafis, 2023); those individuals that are not active may hibernate underwater for several months over the winter, clustering in shallow areas of ponds or moving themselves into woodlands to bury themselves in loose soil or in existing California ground squirrel burrows. In the heat of summer, especially during droughts, pond turtles will estivate by burying themselves in the bottoms of ponds to cool off (Nafis, 2023).

Mating occurs between April and May, where females will dig nests along stream or pond margins where full sunlight is available to lay a clutch of eggs. Hatchlings may emerge in the late summer or the fall of the same year, but some turtles have been documented to overwinter in the nest and emerge the following spring (Nafis, 2023).

⁵ Wikimedia Commons

Habitat and Range

Largely, the western pond turtle is common in suitable aquatic habitat throughout California west of the Sierra-Cascade crest and absent from all desert regions but the Mojave, where it is found along the Mojave River and its tributaries (CDFW, 2000). In California, the northwestern pond turtle's range expands to include areas from the Oregon-California border down to northern Monterey County, the lower elevation and foothills of the southern Cascades and Sierra Nevada Mountains, and areas within the Sacramento and San Joaquin Valleys [88 FR 68370]. Elevation ranges extend from very near sea level up to 4,692 feet (1,430 m), and they are associated with permanent or nearly permanent water bodies in various habitat types (CDFW, 2000).

Western pond turtles require basking sites within their immediate habitats – these areas could be partially submerged logs, rocks, mats of floating vegetation, or open mud banks (CDFW, 2000). Terrestrial habitat is important in their life history in search for food, finding shelter, and laying eggs in the spring (Nafis, 2023).

No northwestern pond turtles have been observed in or near the FERC Project boundary. The nearest documented occurrence of western pond turtle is approximately 6 miles northeast of the FERC Project boundary along Sycamore Creek that is a tributary to the Kings River in Fresno County. Three western pond turtles were captured and retained in 1988. This report was last updated in February 1996. An additional occurrence in the Sacate Ridge USGS Quadrangle is approximately 7 miles northeast of the FERC Project boundary along Big Creek (CDFW, 2023).

3.6.2.5 California Condor⁶



On March 11, 1967, the USFWS listed the California condor (condor) as an endangered species under the Endangered Species Preservation Act of 1966 (supplanted by the current Endangered Species Act of 1973) due to historic hunting practices, poisoning from lead ammunition, and habitat loss [32 FR 4001]. One of the major threats to the condor continues to be poisoning from lead ammunition as they ingest fragments in carrion (Church, et al., 2006).

On September 24, 1976, critical habitat was designated for the California condor and was adjusted on September 22, 1977 [41 FR 41914, 42 FR 47840]. Lands designated as critical habitat are described as: Sespe-Piru Condor Area, Matilija Condor Area, Sisquoc-San Rafael Condor Area, Hi Mountain-Beartrap Condor Areas, Mount Pinos Condor Area, Blue Ridge Condor Area, Tejon Ranch, Kern County rangelands, and Tulare County rangelands. Of these areas, the closest to the FERC Project boundary include the Blue Ridge Condor Area and Tulare County rangelands; these areas include the land, water, and airspace in Tulare County [42 FR 47840]. These areas are approximately 45 miles south of the Project vicinity.

⁶ Wikimedia Commons

Appearance and Behavior

California condors have wingspans of about 9.5 feet, have black feathers except for white underwings and bald heads and necks, where their skin coloration can vary from pink and red to light blue (USFWS, 1996). Condors spend a great deal of time perched or sunning, often in groups (Snyder, Ramey, & Sibley, 1986). They have been known to nest on cliffsides, deep within cave systems, and inside burned-out cavities of coastal redwoods and giant sequoias (Snyder, Ramey, & Sibley, 1986).

Condors are obligate scavengers and feed exclusively on carrion, or cadavers, of cattle, deer, and large marine mammals (Church, et al., 2006).

Habitat and Range

Currently, the wild population of condor is found in the western U.S. in California, Arizona, and Utah (Snyder & Snyder, 1989), as well as Baja California, Mexico (USFWS, 2023). Remaining condor populations are in two main populations: one in the coastal mountains of central and southern California, and another in the Grand Canyon region of Arizona and Utah (Finkelstein, et al., 2012). Historically, the condor could be found from British Columbia down to Baja California, but there was a sharp decline in the 1800s (CDFW, 2017). In the 1980s, individuals were captured to begin a captive breeding program; the first California condors were released back into the wild in 1992, in Ventura County (CDFW, 2017). As of 2022, there were 347 known California condors in the wild (USFWS, 2023).

No verified occurrences of California condors are within the FERC Project boundary; however, the area is considered within the species' range (USFWS, 2021). There is an unconfirmed sighting less than 15 miles southeast of the Project on June 15, 2017, along Highway 180 (The Cornell Lab of Ornithology, 2022). California condor was also observed in 2009 approximately 90 miles west of the Project, near Rock Spring Peaks (CDFW, 2023).

3.6.2.6 San Joaquin Kit Fox⁷



On March 11, 1967, the USFWS listed the San Joaquin kit fox (fox) as an endangered species under the Endangered Species Preservation Act of 1966 (supplanted by the current Endangered Species Act of 1973) [32 FR 4001]. The fox is endangered due to multiple problems throughout its range, including disease and competition with other canid species (Harrison, Cypher, Bremner-Harrison, & Job, 2011); however, the most prominent threat to the fox is -

habitat degradation, loss, and fragmentation (Cypher, Phillips, & Kelly, 2013). Critical habitat has not been designated for the San Joaquin kit fox.

⁷ Wikimedia Commons

Appearance and Behavior

The San Joaquin Kit Fox, a subspecies of the kit fox (*Vulpes macrotis*), is a small fox species that is characteristically slender with large, pointed ears (USFWS, 1998). Their coloration can range from a light buff to grayish along the back to the tail while they can show gray, rust, or yellow along their sides with white bellies; there are two distinct coats depending on the season, a tan summer and silver-gray winter coat (USFWS, 1998).

The fox is a predominantly nocturnal mammal, and feeds on other small nocturnal mammals such as kangaroo rats, pocket mice, and other rodents (USFWS, 1998). However, they will also feed on other organisms including birds, lagomorphs, and insects (USFWS, 1998).

Reproduction can begin when the fox reaches one year of age and breeding typically occurs from December through February with litters of 3 to 5 pups born between February and late March (USFWS, 1998).

Habitat and Denning

The fox is endemic to the San Joaquin Valley and adjacent arid areas of central California, with the majority of remaining natural lands occurring at the valley edges and the base of Diablo and Sierra Nevada ranges (Cypher, Phillips, & Kelly, 2013). The most important attributes of fox habitat include sparse vegetation coverage that is dominated by allscale saltbush (*Atriplex polycarpa*) and red brome (*Bromus rubens*) that is generally flat or gently rolling (Cypher, Phillips, & Kelly, 2013).

Den use by the fox is for temperature regulation, shelter from environmental conditions and predation, and reproduction. They will dig new dens in the terrain, or repurpose dens from other animals, such as badgers and coyotes (USFWS, 1998).

No San Joaquin kit fox have been observed in or near the FERC Project boundary. The nearest documented occurrence of San Joaquin kit fox is approximately 5 miles away, southeast of the Kings River, between Sanger and Pine Flat Lake in the Piedra quadrangle. Kit fox pups were observed there in the early 1990s. This occurrence was last reported in August 2007 (CDFW, 2023).

3.7 RECREATION

This section describes existing conditions pertaining to recreation facilities, opportunities, and use within the FERC Project boundary and vicinity. The Project is near the community of Piedra, Fresno County, California, 30 miles east of the City of Fresno. The Project is on the south bank of the Kings River approximately 200 feet downstream of the USACE Pine Flat Dam. Regionally, the NPS and the USFS provide recreational opportunities.

Since there are no Project recreation facilities, Section 3.7.1 describes existing non-Project recreation facilities in the area. Section 3.7.2 describes current recreational use of Project lands and waters, while Section 3.7.3 discusses shoreline buffer zones. Recreation-related goals and identified needs are described in Section 3.7.4, while shoreline management plan/policy is in Section 3.7.5. Section 3.7.6 includes information about designated scenic and protected river segments. National trails system and wilderness area lands are included in Section 3.7.7, while regional recreation areas are included in Section 3.7.8.

3.7.1 Existing Non-Project Recreation Facilities

There are no Project recreational facilities under the existing license, and none are being proposed for inclusion. There are several non-Project public recreation sites in the vicinity of the Project including at Pine Flat Lake, North Riverside Access Park, Kings River Conservancy Raptor Walk, Choinumni Park, Winton Park, and Avocado Lake Park. The parks are owned and operated by local and State agencies, and the Pine Flat Lake recreation facilities are operated by USACE.

3.7.1.1 *Pine Flat Lake*

Pine Flat Lake is formed by Pine Flat Dam. Pine Flat Lake is 20 miles long, has 67 miles of shoreline, and approximately 9 square miles of surface area. Recreation opportunities at various sites around Pine Flat Lake include picnicking, camping, boating, fishing, and hunting (USACE, 2023).

These sites include Island Park Campground which features 49 campsites and group camping areas, and 45 overflow campsites. Trimmer Campground features 10 campsites. Both campgrounds have flush restrooms and showers. Deer Creek and Trimmer recreation areas feature commercial marinas; boat launching ramps are available at Deer Creek, Island Park, Lakeview, and Trimmer recreation areas. There are also six overnight mooring areas around the lake (USFS, 2023) (USACE, 2023). The Pine Flat Lake recreational development also includes the Kings River Wildlife Area, a day-use site with hiking and wildlife viewing recreation opportunities located immediately downstream of Pine Flat Dam along the Kings River.

3.7.1.2 *North Riverside Access Park*

North Riverside Access Park is on the northern bank of the Kings River just downstream of Pine Flat Dam. The day-use park features a 1.5-mile multipurpose trail directly

accessing the Kings River, of which one-half mile is designed to accessible standards, a parking lot for 11 vehicles, an ADA-compliant restroom, two interpretive kiosks, and visitor feedback stations (North Riverside Access Park, 2019).

3.7.1.3 *Kings River Conservancy Raptor Walk*

The Kings River Conservancy Raptor Walk follows the south shore of the Kings River just below the dam. The trail features interpretive signs describing the large birds of prey likely to be encountered. Recreation opportunities include wildlife viewing, hiking, and river access (Kings River Conservancy, Kings River Conservancy Raptor Walk, 2019).

3.7.1.4 *Choinumni Park*

Choinumni Park is a 170-acre park on the northern bank of the Kings River approximately 2 miles downstream of Pine Flat Dam. Recreation opportunities include camping, fishing, and hiking. It features picnic tables, two group picnic areas, barbeque grills, a playground, 75 campsites, including one group camping area, trailer dump station, and restrooms (Fresno County, 2023).

3.7.1.5 *Winton Park*

Winton Park is a 26-acre day-use park on the northern bank of the Kings River approximately 3.5 miles downstream of Pine Flat Dam. Recreation opportunities include fishing and Kings River access. It features picnic tables, barbeque grills, and two restrooms (Fresno County, 2023).

3.7.1.6 *Avocado Lake Park*

Avocado Lake Park is a 210-acre day-use park, with an 83-acre fishing lake, on the southern bank of the Kings River approximately 6.5 miles downstream of Pine Flat Dam. Recreation opportunities include swimming, fishing, and picnicking. It features picnic tables, a group picnic area, barbeque grills, boat launching ramp, and a playground (Fresno County, 2023).

3.7.2 Current Recreational Use of Lands

Recreational use does not occur within the FERC Project boundary.

3.7.3 Shoreline Buffer Zones

The Project does not include a reservoir or impoundment with shoreline areas. As such, there are no shoreline buffer zones within the FERC Project boundary.

3.7.4 Recreation-Related Goals and Needs Identified in Agency Management Plans

Management plans that cover recreation resources that overlap with the FERC Project boundary include the California Department of Parks and Recreation's (CDPR) California Outdoor Recreation Plan (SCORP) and the Fresno County General Plan.

3.7.4.1 Statewide Comprehensive Outdoor Recreation Plan

California's 2021-2025 SCORP (CDPR, 2020) identifies and prioritizes outdoor recreation opportunities and constraints most critical in California. The SCORP establishes the following actions to address California's park and recreation needs: (1) increase park access, (2) community-based planning, and (3) health partnerships through grants.

As an element of the SCORP, the 2012 Survey on Public Opinions and Attitudes on Outdoor Recreation (SPOA) in California identifies the top 15 recreational activities in California with the highest latent demand, as follows in order of rank (CDPR, 2014).

1. Picnicking in picnic areas (with tables, fire pits, or grills)
2. Walking for fitness or pleasure on paved surfaces
3. Camping in developed sites with facilities such as toilets and tables (not including backpacking)
4. Beach activities (swimming, sunbathing, surf play, wading, playing on beach)
5. Swimming in a pool
6. Day hiking on un-paved trails
7. Attending outdoor cultural events
8. Visiting outdoor nature museums, zoos, gardens, or arboretums
9. Shopping at a farmer's market
10. Visiting historic or cultural sites
11. Wildlife viewing, bird watching, viewing natural scenery
12. Driving on paved surfaces for pleasure, sightseeing, driving through natural scenery
13. Swimming in freshwater lakes, rivers and/or streams
14. Jogging and running for exercise (on trails, streets, sidewalks, paths)
15. Bicycling on paved surfaces

These are activities that Californians would participate in, from a Statewide perspective, if more facilities and opportunities were provided. The Project does not include recreation facilities and recreational use does not occur within the Project boundary. However, of the top 15 recreation activities, picnicking, wildlife viewing, swimming, freshwater fishing, and day hiking are available adjacent to the Project boundary at non-Project recreation facilities.

Other relevant findings from the 2012 SPOA survey include (CDPR, 2014):

- More than two-thirds (68 percent) of Californians report spending the same or more time in outdoor recreation activities compared to 5 years ago.
- Most Californians participated in walking for fitness or pleasure (74 percent). Other activities with high percentages of participants include picnicking in picnic areas; driving for pleasure; sightseeing; driving through natural scenery; beach activities; and visiting outdoor nature museums, zoos, gardens, or arboretums.
- The park facilities and services that Californians rank most important are play areas for young children; wilderness type areas where no vehicles or development are allowed; environmental and outdoor education programs; multi-use turf areas for field sports; picnic sites for large groups; trails for multiple, non-motorized activities; and hard-surface trails.
- The majority of Californians visit highly developed parks and recreation areas; developed nature-oriented parks and recreation areas; historical or cultural buildings, sites, or areas; and natural and undeveloped areas during the past 12 months.

3.7.4.2 *Fresno County General Plan*

The goals and policies of the Fresno County General Plan includes specific parks and recreation goals. These include promoting the continued and expanded use of national forests, national parks, and other recreational areas to meet the recreational needs of County residents, maintaining a standard of 5 to 8 acres of County-owned improved parkland per 1,000 residents in the unincorporated areas, and encourage the development of parks near public facilities, public and private campgrounds and recreational vehicle parks where environmentally appropriate, and private recreation facilities to reduce demands on public agencies (Fresno County, 2021).

3.7.5 Shoreline Management Plan/Policy

The Project does not include a reservoir or impoundment with shoreline areas. As such, a shoreline management plan is not relevant or needed.

3.7.6 Designated Scenic and Protected River Segments

The nearest designated river segment is the Kings River Wild and Scenic River located 19 river miles upstream of the Project. On November 3, 1987, Congress designated 81 miles of the Kings River system as wild and scenic. The Kings River system flows

through Kings Canyon National Park and the Sequoia and Sierra National Forests. The designated river segments include the (1) Middle Fork of the Kings River from its headwaters at Lake Helen between Muir Pass and Black Giant Mountain to its confluence with the main stem; (2) South Fork of the Kings River from its headwaters at Lake 11599 to its confluence with the main stem; and (3) main stem of the Kings River from the confluence of the Middle Fork and the South Fork to the point at elevation 1,595 feet (NWSRS, 2023). The Kings River has 65.5 miles classified as wild and 15.5 miles classified as recreational for a total of 81 miles.

3.7.7 National Trails System and Wilderness Area Lands

The National Trails System Act of 1968 called “for establishing trails in both urban and rural settings for people of all ages, interests, skills, and physical abilities. The act promotes the enjoyment and appreciation of trails while encouraging greater public access. It establishes four classes of trails: national scenic trails, national historic trails, national recreation trails, and side and connecting trails” (National Trails System Act, 1968). The Pacific Crest National Scenic Trail (PCT) is one of the original National Scenic Trails established by Congress in the 1968 National Trails System Act. It begins at the Mexico-California border and is a total distance of 2,650 miles through California, Oregon, and Washington, ending at the U.S.-Canada border (USFS, Pacific Crest Trail, 2023). In addition to being split into regions (Southern, Central, Northern California, Oregon, and Washington), the trail is divided into “Sections,” with Section CA H being located in the Project vicinity (Magellan, 2018).

There are no federally designated trails located within the FERC Project boundary; however, the PCT is the nearest national trail, approximately 40 miles east of the Project. The Project facilities are not visible from the PCT. Section CA H of the PCH starts at the Crabtree Meadows Trailhead and continues north for 175.5 miles and includes 39,061 feet of cumulative elevation gain to Highway 120 at Tuolumne Meadows (Wild and Scenic Rivers Act, 2022).

The Wilderness Act of 1964 established the National Wilderness Preservation System, which provides federal-level protection for preservation of wilderness areas in their natural condition. There are no federally designated wilderness areas located within the FERC Project boundary; however, the federally designated John Muir Wilderness and Monarch Wilderness are located within the vicinity of the Project to the east.

3.7.8 Regional Recreation Areas

Regionally, the Project is located in the Central California Valley, just west of the Sierra Nevada foothills. Recreation facilities and opportunities are identified within the Project vicinity include camping, day-use, swimming, and fishing. Regional areas are described below by locality. There are also innumerable State and locally managed parks, campgrounds, and access areas.

Sierra National Forest, established in 1893, covers 1,300,000 acres on the western slope of central Sierra Nevada and is bounded on the northwest by Yosemite National

Park and the south by Kings Canyon National Park. Ansel Adams, John Muir, Dinkey Lakes, Kaiser, and Monarch Wilderness areas and the Merced and the Tuolumne Wild and Scenic Rivers are within the forest (USFS, Sierra National Forest, 2023).

Sierra Heritage Scenic Byway is approximately 70 miles north of the Project. It includes recreation opportunities, such as horseback riding, skiing/snowboarding, camping, boating, fishing, and mountain biking as well as impressive views. Highway 168 goes to the border of the Sierra National Forest (USFS, Sierra National Forest, 2023).

Sequoia National Forest, established in 1908, covers 1,193,315 acres in the southern Sierra Nevada and is bounded on the north by Sequoia National Park and on the south by Highway 58. Domeland, Golden Trout, Jennie, Kiavah, Monarch, and South Sierra Wilderness areas. The Giant Sequoia National Monument, and the Kings and the Kern Wild and Scenic Rivers are within the forest. (USFS, Sequoia National Forest, 2023).

Kings Canyon Scenic Byway (Highway 180) is approximately 50 miles south of the Project. It is internationally significant for its unique scenic and geologic displays. Highway 180 is a showcase of nature's wonderland. The largest species of trees on earth, the giant sequoia (*Sequoiadendron giganteum*), and one of the deepest canyons in America, the Kings Canyon, are two outstanding tributes to the natural beauty found here. There are dramatic changes in vegetation, wildlife, and geology throughout the 4,000 feet through the eastern foothills of the Sierra Nevada (USFS, Sequoia National Forest, 2023).

Millerton Lake State Recreation Area is around Millerton Lake, formed in 1944 by Friant Dam on the San Joaquin River. It provides 47 miles of shoreline and recreation opportunities such as camping, swimming, boating, boat camping, hiking, bicycling, and interpretive programs (California State Parks, 2014).

3.8 LAND USE

This section discusses land use resources potentially affected by the Project. This section is divided into two subsections; land use in Fresno County is discussed in Section 3.8.1 and lands within the FERC Project boundary are described in Section 3.8.2.

3.8.1 Fresno County

The FERC Project boundary is located entirely within Fresno County and encompasses 11.52 acres, with 7.94 acres of federal lands administered by the USACE, 1.11 acres of State of California lands submerged by the Kings River, and 2.46 acres of private lands. The area within the boundary is zoned as agricultural (AE160) and resource conservation (RC40), and no special designated lands occur within or adjacent to the boundary. The Project will not result in a change to those land use designations. In addition, all lands within the FERC Project boundary are closed to public access through a series of private gates. No designated federal or State of California Wildernesses, Wild and Scenic Rivers, wetlands, or environmentally sensitive areas occur within or adjacent to the FERC Project boundary. The only affected federal lands are managed by the USACE and are closed to the public.

Fresno County is 3.84 million acres in size, including 1.88 million acres of farmland (Fresno County 2021). Fresno County has been transitioning from a resource-based rural county to a more diverse and urban economic base. Agriculture continues to be the main land use in the county, in which field crops make up the dominant form. Unincorporated lands make up over 65% of the acreage in Fresno County, and over 60% of unincorporated lands are dedicated agricultural lands (Fresno County 2021).

The 15 cities in Fresno County are increasing in population density, even as population is decreasing in the unincorporated communities. The largest three cities in Fresno County are Fresno (542,107 people), Clovis (120,124 people), and Reedley (25,227 people) (US Census Bureau, 2022).

3.8.2 Lands within the FERC Project Boundary

The 7.94 acres of U.S. lands within the FERC Project boundary are managed by the USACE as part of Pine Flat Lake, which was constructed by the USACE in 1947 under the Flood Control Act of 1944 as part of the Pine Flat Lake and Kings River Project (USACE, 1976). The primary purpose of the lake is for flood control along the Kings River and in the Tulare Lake Basin (USACE, 1976). The USACE manages Pine Flat Lake in accordance with its federal land and dam protocols and is guided by the USACE Operational Management Plan for the operation of the recreation development. Pine Flat Lake and Dam, and their associated facilities, are not features of the Project and are not under FERC jurisdiction.

Table 3.8-1 identifies the USGS' sections within the existing FERC Project Boundary that encompasses U.S. lands.

Table 3.8-1. Lands of the United States enclosed within the existing FERC Project Boundary and managing federal agency.

Administered by	Township	Range	Section	Acres
USACE	13S	24E	2	7.94
Total				7.94

SOURCE: (USGS, 2023)

3.9 AESTHETIC RESOURCES

This section describes the existing visual characteristics of the Project transmission line and surrounding environment. This section is divided into two subsections. Regulatory context is discussed in Section 3.9.1 and visual character is discussed in 3.9.2.

3.9.1 Regulatory Context

The Project is located on federal lands administered by USACE, State of California lands (submerged by the Kings River), and private lands. Applicable aesthetic resource guidance is provided solely by the Fresno County General Plan. The 2000 Fresno County General Plan goals and policies applicable to the protection of scenic resources on county and private lands include (Fresno County 2000):

- Goal OS-K. To conserve, protect, and maintain the scenic quality of Fresno County and discourage development that degrades areas of scenic quality.
 - Policy OS-K.1. The County shall encourage the preservation of outstanding scenic views, panoramas, and vistas wherever possible. Methods to achieve this may include encouraging private property owners to enter into open space easements for designated scenic areas.
 - Policy OS-K.2. The County shall identify and map significant scenic resources within the County and shall develop a program to manage these resources.
 - Policy OS-K.3. The County should preserve areas of natural scenic beauty and provide for public access to scenic vistas by purchasing sites for park use.
 - Policy OS-K.4. The County should require development adjacent to scenic areas, vistas, and roadways to incorporate natural features of the site and be developed to minimize impacts to the scenic qualities of the site.

No Project facilities that may be viewed by the public are designated by Fresno County as significant scenic resources.

3.9.2 Existing Aesthetic Resources

The Project is situated near the community of Piedra, approximately 30 miles east of the City of Fresno in Fresno County, California (Figure 3.9-1). It is within the Sierra Nevada foothills and the Kings River Watershed, and near the Kings River. The Project is predominantly on the south bank of the Kings River at approximately RM 111, two hundred feet downstream of the USACE Pine Flat Dam (a non-Project facility).

The major access road to the Project from the west is North Piedra Road to East Trimmer Springs Road and then to Pine Flat Road.

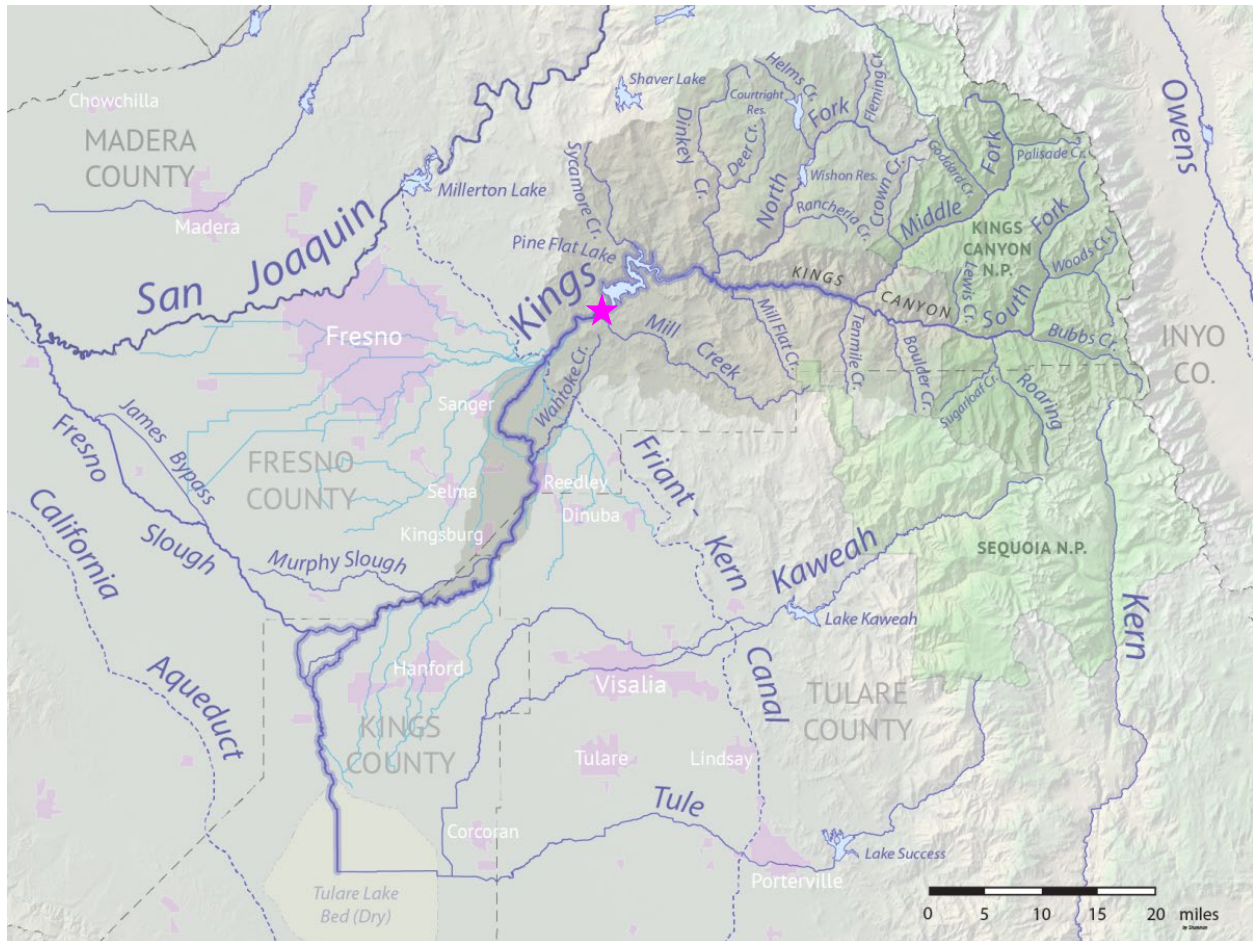


Figure 3.9-1. Pine Flat Transmission Line Project within the region.

3.9.2.1 Existing Aesthetic Character

Kings River

The Kings River originates in the high mountains of the Sierra Nevada range and traverses through deep canyons and scenic valleys before reaching Pine Flat Lake. Six miles of the Kings River above Pine Flat Lake are designated as a Wild and Scenic River. The clear, unpolluted water is seen in rapids and large pools. In the upper reaches, the river flows through deep canyons with steep granite walls and cascading waterfalls. As it moves downstream, the river transitions into a wider valley, meandering through the flat and fertile Central Valley. The diversity of vegetation and many boulders enhance the beauty of the river corridor.

Pine Flat Lake

Pine Flat Lake is nestled within a narrow canyon carved by the Kings River, creating steep slopes and cliffs in some areas. Surrounding the canyon, the land gradually transitions into undulating hills and broad valleys. In spring and early summer, snowmelt

from the higher elevations of the Sierra Nevada mountains contributes as a major water source for the Kings River and subsequently Pine Flat Lake.

3.9.2.2 Vegetation

Nearby valleys are fertile agricultural land, with orchards, vineyards, and croplands. The surrounding foothills and mountains of the Sierra Nevada are covered in chaparral, oak woodlands, and coniferous forests, providing a diverse range of colors and textures throughout the year. In the spring, wildflower blooms cover the hillsides in vibrant hues of yellow, purple, and orange. In the fall, the trees display a spectacular array of red, orange, and gold foliage, making the area a popular destination for sightseeing.

3.9.2.3 Topography

The non-Project Pine Flat Dam is a 429-foot-high concrete gravity dam. It stores 1,000,000 acre-feet of water at maximum capacity, which is the origin of Pine Flat Lake (a non-Project facility). The lake is 20 miles long, provides 67 miles of shoreline, and 9 square miles of surface area. The shoreline of the lake is rocky, with large boulders and cliffs jutting out of the water, creating dramatic and picturesque landscapes. Project facility elevations range from approximately 670 to 970 feet. The topography is characterized by its rugged hills and steep cliffs. The surrounding hills provide breathtaking views of the valley below, with numerous hiking trails and lookout points available for visitors to explore. Recreation resources are detailed in Section 3.7 of this PAD.

3.9.2.4 Existing Project Facilities

The Project location starts on the north bank of the Kings River 200 feet downstream of USACE's Pine Flat Dam at KRCD's Jeff L. Taylor Powerhouse, which is a part of the Jeff L. Taylor- Pine Flat Hydroelectric Project, FERC No. 2741. The transmission line crosses over the Kings River from the powerhouse to the south bank and continues south in a draw to the crest of a nearby ridge, and then proceeds southeast until it connects with PG&E's 230-kV Balch #2-McCall transmission line. The entire line is approximately 0.8-mile in length (Figure 3.9-2).

The Project is a single-circuit 230 kV transmission line constructed on three self-supporting, square-based steel lattice towers. The steel towers are vertical construction design. The three towers vary in height from 79 to 112 feet. The three-phase conductors of the single-circuit line consist of a 605,000-circular mil steel-reinforced aluminum cable. The transmission line was constructed to access power generated at the KRCD Jeff L. Taylor Powerhouse that is used to offset electricity demands of operating the State Water Project. Figure 3.9-3 is a representative photo of the Project structures and the appearance of the FERC Project boundary and immediate surroundings.

The 11.52-acre FERC Project boundary includes 7.94 acres of federal lands administered by the USACE, 1.11 acres of State of California lands submerged by the Kings River, and 2.46 acres of private lands.

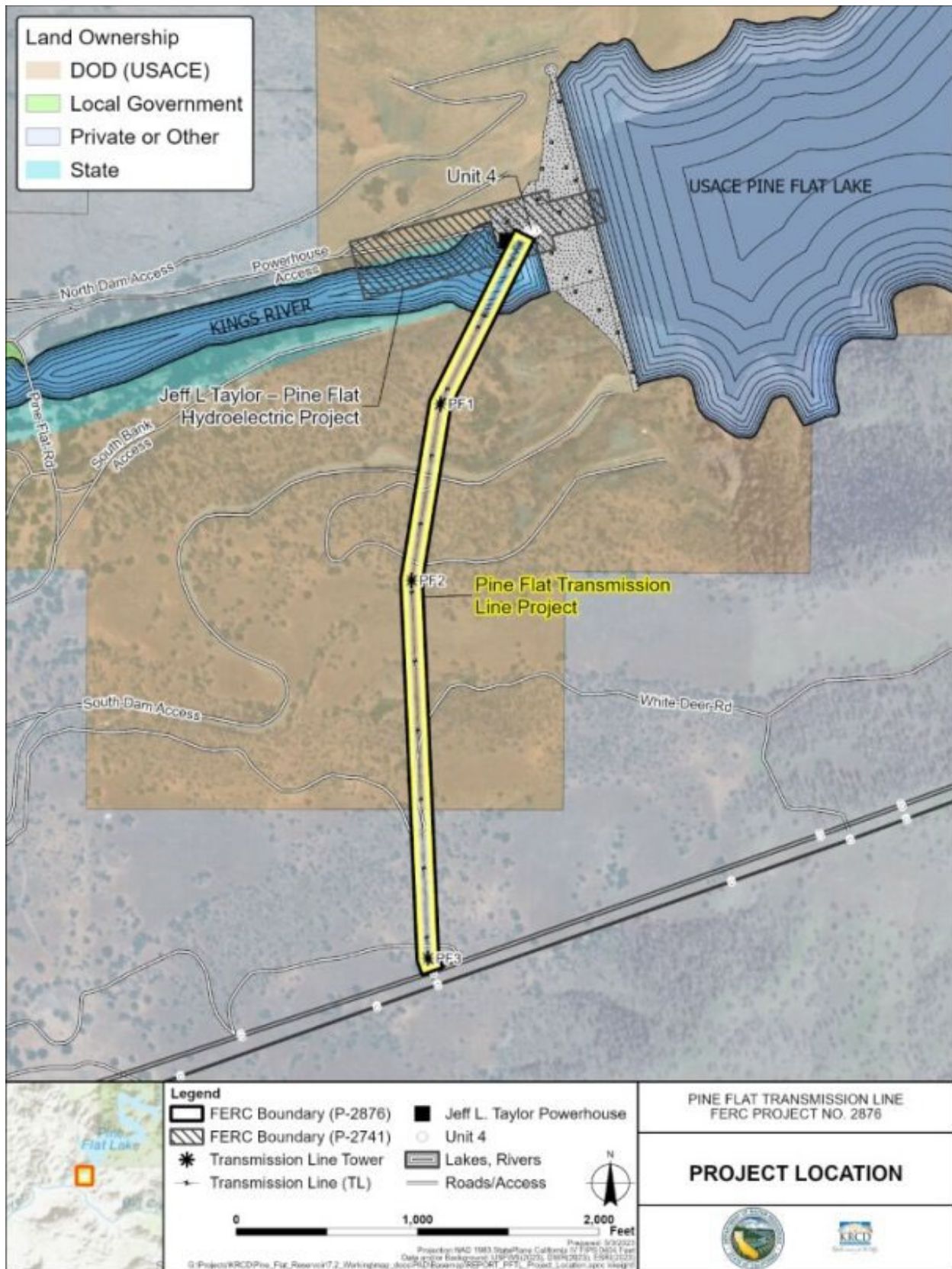


Figure 3.9-2. Pine Flat Transmission Line Project facilities.



Figure 3.9-3. Pine Flat Transmission Line and immediate surroundings.

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3.10 SOCIOECONOMIC RESOURCES

This section is divided into two parts. Section 3.10.1 describes existing socioeconomic conditions in Fresno County, California, the county in which the Project is located. Section 3.10.2 describes socioeconomic considerations for the Project.

3.10.1 Fresno County Socioeconomic Conditions

The population of Fresno County, in which the Project is located, was estimated at 1,011,273 people in January 2022 (California Department of Finance, 2022). Between 2010 and 2022, Fresno County's population increased by 8.7% from 930,450 to 1,011,273, which is more than the State's approximate growth of 5.2% over the same decade (U.S. Census Bureau, 2022). Fresno County's population has increased every year for the last three years (California Department of Finance, 2022).

With a population of 1,011,273 residents, 343,513 housing units, Fresno County has an estimated 2.94 persons per household and a vacancy rate of 5.6% (California Department of Finance, 2022). The 2020 population density of Fresno County is an estimated 169.3 persons per square mile (U.S. Census Bureau, 2022). From 1990 to 2000, 2000 to 2010, and 2010 to 2020, the population of Fresno County increased by 19.28%, 16.86%, and 8.4%, respectively. During those same periods, the number of housing units increased at a rate of 14.69%, 16.80%, and 7.26%, respectively. For comparison, the population of the State of California increased by 13.32%, 10.48%, and 6.13% and the number of housing units increased by 8.97%, 12.18%, and 5.28%, respectively (Table 3.10-1).

Table 3.10-1. Population and Housing Units in Fresno County and the State of California.

Area		2022	2021	2020	2010	2000	1990
Fresno County	Population	1,011,273	1,009,231	1,008,654	930,450	796,187	667,490
	Housing Units	343,513	341,686	338,441	315,531	270,157	235,563
State of California	Population	39,185,605	39,303,157	39,538,223	37,253,956	33,721,583	29,758,213
	Housing Units	14,583,998	14,512,281	14,392,140	13,670,304	12,186,125	11,182,513

SOURCE: (California Department of Finance, 2007); (California Department of Finance, 2012); (California Department of Finance, 2022)

Table 3.10-2 shows that the majority (598,673 or 59.2%) of the Fresno County population falls between the ages of 18 and 65 years old. The State of California has a higher percent of the population between the ages of 18 and 65 years old (62.4%) (U.S. Census Bureau, 2022).

Table 3.10-2. Population Age in Fresno County and the State of California.

Population: Age	Fresno County	California
Population under 5 years old	71,800	2,224,672
Persons under 5 years old, percent ¹	7.1%	5.7%
Persons under 18 years old	285,178	8,742,572
Persons under 18 years old, percent ¹	28.2%	22.4%
Persons 65 years old and over	127,420	5,932,459
Persons 65 years old and over, percent ¹	12.6%	15.2%

SOURCE: (U.S. Census Bureau, 2022)

¹ Estimates provided with data from the U.S. Census Bureau are not comparable to other geographic levels due to methodology and differences that exist between different data sources.

Fresno County has 15 incorporated areas including: Clovis, Coalinga, Firebaugh, Fowler, Fresno, Huron, Kerman, Kingsburg, Mendota, Orange Cove, Parlier, Reedley, Sanger, San Joaquin, and Selma. In 2021, the estimated population in the City of Fresno, the largest city in Fresno County, was 542,720. In 2022, it grew to 543,660, increasing by 0.17% (California Department of Finance, 2022). The second largest city in Fresno County is the City of Clovis, which had an estimated population of 123,665 in 2022, a 1.64% population growth from the year before (California Department of Finance, 2022). Major population centers near Fresno County are the City of Sacramento, 169 miles north of Fresno, and the City of Bakersfield, 109 miles to the south of Fresno.

Table 3.10-3 summarizes household units (i.e., number of units, net change for a given period, and percent change for a given period), homeownership rate, median home value, income, and poverty level for Fresno County. Median value of owner-occupied housing and median household income in Fresno County are significantly lower than that of the State of California. Also, the percent of people in poverty within Fresno County (19.4%) is almost double that of the State of California (12.3%).

Table 3.10-3. Households, Homeownership, Home Value, and Income in Fresno County and the State of California.

Household Information	Fresno County	California
Housing units, 2021	341,686	14,512,281
Homeownership rate, 2017-2021, percent	54.1%	55.5%
Median value of owner-occupied housing units, 2017- 2021	\$288,100	\$573,200
Households, 2021	992,406	38,513,178
Persons per household, 2021	3.09	2.85
Median household income, 2017-2021	\$61,276	\$84,097
Per capita income in the past 12 months, 2017-2021	\$27,295	\$41,276
Persons in poverty, 2021 ¹	19.4%	12.3%

SOURCE: (U.S. Census Bureau, 2022); (California Department of Finance, 2022)

¹ Estimates provided with data from the U.S. Census Bureau are not comparable to other geographic levels due to methodology and differences that exist between different data sources.

Fresno County is similar to the State of California in respect to ethnic diversity. Table 3.10-4 provides a summary of population estimates by race for Fresno County and the State of California for the year 2022.

Table 3.10-4. Population Estimates by Gender and Race in Fresno County and the State of California in 2022.

Population: Gender/Race	Fresno County	California
POPULATION		
White persons ¹	765,534	27,860,965
White alone, not Hispanic or Latino	275,066	13,793,333
Black or African American persons ¹	59,665	2,547,064
American Indian and Alaska Native persons ¹	32,361	666,155
Asian persons ¹	117,308	6,230,511
Native Hawaiian and Other Pacific Islander persons ¹	3,034	195,928
Persons reporting two or more races	33,372	1,645,795
Persons of Hispanic or Latino origin	553,166	15,752,613
PERCENT OF POPULATION		
Female persons, percent	49.8%	50.0%
White persons, percent ¹	75.7%	71.1%
White alone, not Hispanic or Latino	27.2%	35.2%
Black or African American persons, percent ¹	5.9%	6.5%
American Indian and Alaska Native persons, percent ¹	3.2%	1.7%
Asian persons, percent ¹	11.6%	15.9%
Native Hawaiian and Other Pacific Islander, percent ¹	0.3%	0.5%
Persons reporting two or more races, percent	3.3%	4.2%

SOURCE: (U.S. Census Bureau, 2022); (California Department of Finance, 2022)

¹ Includes persons reporting only one race.

The Census Bureau estimates that 77.9% of Fresno County's population is educated through high school with 22.6% of the population having obtained a Bachelor's degree or higher. An estimated 84.2% of California's population is estimated to have a high school education or higher. In California the percentage of the population who has obtained a Bachelor's degree or higher is 35.3%. When compared to the State of California, Fresno County has a lower percentage of both high school graduates and individuals with a Bachelor's degree or higher (U.S. Census Bureau, 2022).

According to the California Employment Development Department (EDD), in 2022 the annual average unemployment rate was 6.3% for Fresno County (EDD, 2023). Comparatively, the average unemployment rates for 2010 and 2015 were, respectively, 17.1% and 10.3 % (EDD, 2023). These rates are higher compared to those for the State of California, which had an unemployment rate of approximately 4.1% in 2022 and approximately 12.2% and 6.2% in 2010 and 2015 (EDD, 2023).

Based on data from December 2022, health care and social assistance (18.37%), local government (12.86%), and retail trade (9.82%) are the three largest industry types in Fresno County. Leisure and hospitality accounts for 8.77% of employment in Fresno County. Transportation, warehousing, and utilities, which includes PG&E, makes up 5.05% of the employees in the county (Table 3.10-5). These percentages are similar to the State of California, except for leisure and hospitality, which account for 14.27% of total employment in the State (State of California Employment Development Department, 2023).

Table 3.10-5. Industry Statistics for Fresno County and State of California for December 2022.

Industry Type	Fresno County		State of California	
	Employees	Percent Total	Employees	Percent Total
Farming	36,300	8.69%	416,200	2.29%
Mining and Logging	300	0.07%	19,300	0.11%
Construction	20,500	4.91%	925,600	5.09%
Durable Goods	9,000	2.16%	847,000	4.66%
Nondurable Goods	17,100	4.1%	470,600	2.59%
Wholesale Trade	16,000	3.83%	661,600	3.64%
Retail Trade	41,000	9.82%	1,618,600	8.9%
Transportation, Warehousing & Utilities	21,100	5.05%	848,200	4.67%
Information	3,300	0.79%	604,500	3.33%
Finance & Insurance	8,100	1.94%	542,900	2.99%
Real Estate & Rental & Leasing	5,000	1.2%	297,400	1.64%
Professional, Scientific, and Technical Services	11,400	2.73%	1,444,000	7.94%
Management of Companies & Enterprises	3,000	0.72%	246,700	1.36%
Administrative & Support & Waste Services	19,200	4.6%	1,183,900	6.51%
Educational Services	4,500	1.08%	401,700	2.21%
Health Care & Social Assistance	76,700	18.37%	2,594,000	4.9%
Leisure & Hospitality	36,600	8.77%	1,952,500	14.27%
Other Services	12,600	3.02%	556,500	3.06%
Federal Government	9,600	2.3%	245,300	1.35%
State Government	12,500	2.99%	549,600	3.02%
Local Government	53,700	12.86%	1,752,000	9.64%
Total	417,500	100%	18,178,100	100%

SOURCE: (State of California Employment Development Department, 2023)

3.10.2 DWR Socioeconomic Conditions

Approximately 12-15 DWR employees work directly on the Project on a regular basis. The majority of these staff are based out of Sacramento.

DWR was created through legislation signed into law by Governor Goodwin Knight in 1956 (Chapter 52, Statutes of 1956, First Extraordinary Session) with the goal of overseeing the construction of the nation's largest State-made water conveyance system, the State Water Project (SWP). DWR maintains an extensive network of infrastructure supporting California's water supply. Currently, DWR's primary functions are to continue to expand and maintain this network with a growing emphasis on long term conservation and sustainability of water resources and management systems (California Department of Water Resources, 2023).

DWR is a department under the California Natural Resources Agency, and is headquartered in Sacramento, California. DWR has about 3,500 employees serving California across 8 main offices, and more than 800 programs. DWR's work includes power generation, facility construction and maintenance, habitat restoration, financial assistance, planning for future water needs, and preventing and responding to floods and droughts (California Department of Water Resources, 2023).

DWR pays approximately \$880.34 each year to FERC in fees, including \$200.00 in administrative, and \$680.34 in government land.

In addition, DWR pays sales tax on all equipment and supplies; revenue from sales tax is generally used to support the local and State of California economy.

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3.11 ENVIRONMENTAL JUSTICE

This section presents information on environmental justice communities, including race and ethnicity, poverty status, and English-speaking proficiency of the individuals within the Project vicinity. Given the relatively limited information that exists on environmental justice in the Project vicinity, this section relies on available U.S. Census Bureau data for the respective state, county, census tracts, and block groups.

The term ‘environmental justice’ means “fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no population bears a disproportionate share of negative environmental consequences resulting from industrial, municipal, and commercial operations or from the execution of federal, state, and local laws; regulations; and policies. Meaningful involvement requires effective access to decision makers for all, and the ability in all communities to make informed decisions and take positive actions to produce environmental justice for themselves” (Department of Energy, n.d.).

Pursuant to 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, FERC completes an analysis of potential impacts from Project operations on the local community in the vicinity of the Project to understand the impacts to human health and the environment as they relate to environmental justice communities. An environmental justice community is a community that stands to be disproportionately impacted by construction of a new facility or the continued operation of an existing facility, including socioeconomic and/or sociocultural impacts.

Additionally, FERC plays an integral role in regulating large parts of the United States energy industry, having far-reaching impacts to the nation, especially regarding the move toward cleaner energy. Although FERC is not required to comply with Executive Order 13985, *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*, FERC has voluntarily elected to participate in the process, in an effort to ensure everyone can benefit from the clean energy transition (FERC, 2022). Pursuant to Executive Order 13985, FERC has developed an Equity Action Plan and recognizes that many of the licensed hydropower projects (and associated transmission lines) were constructed prior to implementation of the National Environmental Policy Act (NEPA), or the issuance of executive orders related to equity or environmental justice (FERC, 2022). The information compiled in this section is meant to support FERC’s consideration of environmental justice communities as they relate to the relicensing process.

The Project is located near the Community of Piedra, Fresno County, California. Within a one-mile buffer of the Project boundary, each State, county, census tract, and block group were analyzed for racial and ethnic statistics (USCB, 2021a)(United States Census Bureau, 2021a), poverty statistics (USCB, 2021b), and English-speaking

proficiency statistics (USCB, 2021c) using the U.S. Census Bureau 2021 American Community Survey 5-year Estimate.

3.11.1 Environmental Justice Communities

The presence of environmental justice communities within the geographic scope of the Project was evaluated through the methods included in the Environmental Protection Agency (EPA) *Promising Practices for Environmental Justice Methodologies in NEPA Reviews* (United States Environmental Protection Agency, 2016).

The methods begin with a selection of the appropriate geographic unit of analysis within the affected environment (e.g., census block, block group, census tract). For example, within the one-mile buffer of the Project, there are two census tracts and two block groups partially within the Project's area of analysis that could potentially be impacted by the relicensing and continued operation of the Project. Block groups were selected for minority and low-income analysis. Census tracts were selected for non-English speakers' analyses as the U.S. Census Bureau does not provide this data at the block group level.

It is important to note, census data is self-reported and can only be disaggregated to certain prescribed levels (e.g., census blocks, census tracts). This suggests that pockets of minority or low-income communities, including those that may be experiencing disproportionately high and adverse effects, may be missed in a traditional census tract-based analysis. This is why census data also has the possibility of distortion of population breakdowns. However, census data is the most comprehensive and standardized database of the population composition and its distribution, as well as the recommended statistical source of data for environmental justice analysis (United States Environmental Protection Agency, 2016).

The assessment identified no minority populations using the fifty percent analysis and the meaningfully greater analysis.

3.11.2 Minority and Low-income Populations

After selecting the appropriate unit of analysis, several analyses are performed to identify minority populations or low-income populations. The term 'minority' means "individual(s) who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic" (Council on Environmental Quality, 1997). A population is identified as minority in a potentially affected area by either a fifty percent analysis or meaningfully greater analysis. The fifty percent analysis highlights populations with a cumulative minority population that exceeds fifty percent in the affected area (United States Environmental Protection Agency, 2016). The meaningfully greater analysis highlights populations with a cumulative minority population percentage that is meaningfully greater than the minority population percentage in the general population (United States Environmental Protection Agency, 2016). The low-income threshold criteria analysis is used to identify low-income populations. The low-income threshold analysis highlights populations

within the affected area with an income below poverty level percentage, which is equal to or greater than the respective county (United States Environmental Protection Agency, 2016).

The assessment identified two block groups as low-income populations using the low-income threshold analysis.

3.11.3 Non-English-Speaking Communities

The percentage of non-English speaking communities identified in the area of analysis is minimal (0.8 and 2.2 percent). Non-English-speaking communities are identified regardless of whether the census tract has been identified as an environmental justice community.

As noted above, the percentage of non-English speaking communities in the area of analysis is minimal.

The results of these analyses are detailed in Table 3.11-1 and Table 3.11-2. The block groups that were identified as environmental justice communities and their location in relation to the Project boundary are shown on Figure 3.11-1.

3.11.4 Sensitive Receptors

Sensitive receptor locations are areas where the occupants are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides, and other pollutants. Due to the remote nature of the site and limited Project boundary, no sensitive receptor locations (e.g., daycare facilities, schools, elderly housing, hospitals, etc.) are located within the geographic scope of analysis.

3.11.5 Outreach

The Project is a transmission line that has been operating for more than 44 years under the existing license. At this time, DWR proposes no changes to the existing Project facilities or features, Project boundary, or operations. As part of the relicensing, DWR will conduct outreach and collaboration with various entities including local, State, and federal agencies, Native American Tribes and tribal representatives, and non-governmental organizations and businesses. Documentation of outreach for the PAD and responses are included in Attachment A. DWR held a web-based meeting with interested stakeholders on May 12, 2023, to provide a Project and relicensing overview and answer questions. Besides DWR and its consultant staff from HDR, Inc., representatives from the following stakeholders attended the meeting: CDFW, Dunlap Band of Mono Indians, KRCD, Hanson Environmental, SWRCB and USACE. Action items resulting from the meeting included the distribution of the presentation PowerPoint to meeting participants and preparing a commonly used FERC acronyms list to accompany the PAD (Attachment B). As part of this relicensing, there will be additional opportunities for public involvement, such as a joint meeting and a site visit scheduled for Spring of 2024.

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Table 3.11-1. Race and ethnicity and low-income data for block groups within one mile of the FERC Project boundary.

RACE AND ETHNICITY DATA											LOW-INCOME DATA
Geography	Total Population (count)	White Alone Not Hispanic (count)	African American (count)	Native American/ Alaska Native (count)	Asian (count)	Native Hawaiian & Other Pacific Islander (count)	Some Other Race (count)	Two or More Races (count)	Hispanic or Latino (count)	Total Minority (%)	Below Poverty Level (%)
California	39,455,353	14,109,297	2,128,184	124,341	5,802,086	134,692	149,096	1,413,870	15,593,787	64.2%	11.8%
Fresno County	1,003,150	279,940	42,525	4,340	104,266	1,561	2,945	26,229	541,344	72.1%	18.4%
Census Tract 64.07 Block Group 2	909	565	0	44	0	0	8	77	215	37.8%	19.6%*
Census Tract 64.11 Block Group 2	1,512	982	0	0	92	0	0	16	422	35.1%	23.1%*

*Shaded grey cells with an asterisk denote a qualifying value for an environmental justice community.
SOURCE: (USCB, 2021a) and (USCB, 2021b)

Table 3.11-2. Non-English speaking data for census tracts within one mile of the FERC Project boundary

PRIMARY LANGUAGE – SPEAK ENGLISH LESS THAN “VERY WELL”						
Geography	Total Population (count)	Total non-English Speaking (percent)	Spanish (percent)	Indo-European (percent)	Asian/ Pacific Island (percent)	Other (percent)
California	37,105,018	17.2%	10.9%	1.3%	4.6%	0.4%
Fresno County	928,069	17.8%	13.7%	1.2%	2.5%	0.4%
Census Tract 64.07	2,240	0.8%	0.8%	0%	0%	0%
Census Tract 64.11	3,169	2.2%	1.0%	0%	1.2%	0%

SOURCE: (USCB, 2021c)

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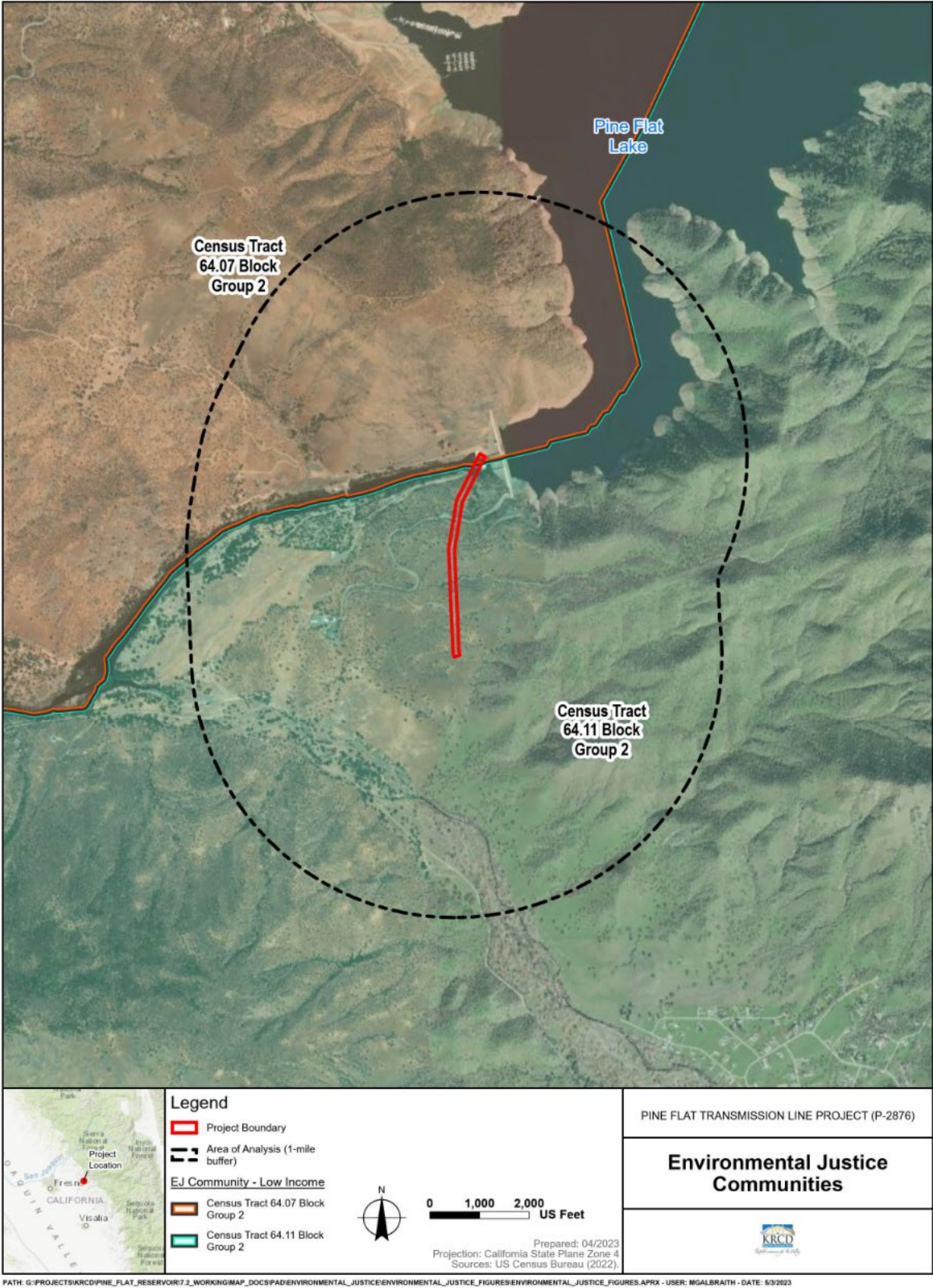


Figure 3.11-1. Environmental Justice Communities Map.

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3.12 CULTURAL RESOURCES

Section 3.12 provides information regarding previously documented cultural resources within the FERC Project boundary and a 0.5-mile search radius surrounding the FERC Project boundary. Examining known resources within the buffer provides information regarding cultural and tribal resources in the general vicinity of the FERC Project boundary. For the purpose of this document, a cultural resource is any precontact or historic district, site, building, structure, or object, regardless of its National Register of Historic Places (NRHP) eligibility. Tribal Resources are discussed in Section 3.13 of this PAD.

3.12.1 Affected Environment

To obtain background information pertinent to understanding the archaeology, history, and ethnohistory of the FERC Project boundary, in 2019 the DWR procured a record search through the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System (CHRIS), located at California State University, Bakersfield. Data from a subsequent search request at SSJVIC for an unrelated but overlapping project was reviewed in 2021. The records searches included examining resource location maps and records for archaeological sites, historic built environment resources, and tribal resources; historic property files, the NRHP, and California Register of Historical Resources (CRHR), the Historic Property Data File for Fresno County, the Built Environment Resource Directory, and California Historic Landmarks. The background research also included a review of historical General Land Office plats (GLOs) and USGS topographic quadrangles to identify the potential to encounter historic sites and features potentially still present within the FERC Project boundary.

Archival research of the FERC Project boundary and 0.5-mile search radius of the FERC Project boundary revealed that previous researchers from the Sequoia National Forest (SQF) conducted one cultural resource survey in 2000 (SQF 2000), which, based on the GIS data, slightly overlaps with the existing FERC Project boundary at the southern end (Table 3.12-1).

Table 3.12-1. Previous Cultural Resource Studies within the FERC Project boundary and 0.5-mile Radius.

Year	Author(s)	Report Name and Description	SSJVIC Report No.
2000	N/A	<i>Survey on Sequoia National Forest, Volumes 1 and 2</i>	23812

Archival research with the CHRIS showed that no archaeological sites or built environment resources have been previously recorded within the existing FERC Project boundary. However, at the request of Kings River Conservation District, HDR recorded and evaluated the Pine Flat Power Plant and Pine Flat Power Plant Intake Structure for CRHR and NRHP eligibility. Both structures are licensed under FERC Project No. 2741.

3.12.2 Historic Context

The following sections describe the archaeological and historical context of the environment relative to the FERC Project boundary and its vicinity.

3.12.2.1 *Archaeological Context*

The San Joaquin Valley and adjacent Sierra foothills and Coast Range have a long and complex cultural history with distinct regional patterns that extend back more than 11,000 years (McGuire 1995). The first generally agreed-upon evidence for the presence of prehistoric peoples in the region is represented by the distinctive basally thinned and fluted projectile points found on the margins of extinct lakes in the San Joaquin Valley. These projectiles, often compared to Clovis points, have been found at three localities in the San Joaquin Valley including along the Pleistocene shorelines of former Tulare Lake. Based on evidence from these sites and other well-dated contexts elsewhere, these Paleo-Indian hunters who used these spear points existed during a narrow time range of 11,550 Before Present (BP) to 8,550 BP (Rosenthal et al. 2007).

As a result of climate change at the end of the Pleistocene, a period of extensive deposition occurred throughout the lowlands of central California, burying many older landforms and providing a distinct break between Pleistocene and subsequent occupations during the Holocene. Another period of deposition, also a product of climate change had similar results around 7,550 BP, burying some of the oldest archaeological deposits discovered in California (Rosenthal and Meyer 2004).

The Lower Archaic (8,550-5,550 BP) is characterized by an apparent contrast in economies, although it is possible that they may be seasonal expressions of the same economy. Archaeological deposits which date to this period on the valley floor frequently include only large-stemmed spear points, suggesting an emphasis on large game such as artiodactyls (Wallace 1991). Recent discoveries in the adjacent Sierra Nevada have yielded distinct milling assemblages which clearly indicate a reliance on plant foods. Investigations at Copperopolis (Lajeunesse and Pryor 1996) argue that nut crops were the primary target of seasonal plant exploitation. Assemblages at these foothill sites include dense accumulations of handstones, millingslabs, and various cobble-core tools, representing “frequently visited camps in a seasonally structured settlement system” (Rosenthal et al. 2007). As previously stated, these may represent different elements of the seasonal round. What is known is that during the Lower Archaic, regional interaction spheres had been well established. Marine shell from the central California coast has been found in early Holocene contexts in the great basin east of the Sierra Nevada, and eastern Sierra obsidian comprises a large percentage of flaked stone debitage and tools recovered from sites on both sides of the Sierra.

On the valley floor, early Middle Archaic sites are relatively rare. This changes significantly toward the end of the Middle Archaic. Late Middle Archaic settlement in central California focused on river courses on the valley floor. “Extended residential settlement at these sites is indicated by refined and specialized tool assemblages and features, a wide range of non-utilitarian artifacts, abundant trade objects, and plant and

animal remains indicative of year-round occupation” (Rosenthal et al. 2007). Again, natural (non-anthropogenic) fluctuating climate cycles apparently influenced this shift, with warmer, drier conditions prevailing throughout California. The shorelines of many lakes, including Tulare Lake, contracted substantially, while at the same time rising sea levels, a residual effect from the retreating ice sheets, favored the expansion of the San Joaquin/Sacramento Delta region (Rogers and Storesund 2011), with newly formed wetlands extending eastward from the San Francisco Bay.

In contrast, early Middle Archaic sites are relatively common in the Sierran foothills, and the mainly utilitarian assemblages recovered show relatively little change from the preceding period with a continued emphasis on acorns and pine nuts. Few bone or shell artifacts, beads, or ornaments have been recovered from these localities. Projectile points from this period reflect a high degree of regional morphological variability, with an emphasis on local toolstone material supplemented with a small amount of obsidian from eastern sources. In contrast with the more elaborate mortuary assemblages and extended burial mode documented at Valley sites, burials sites documented at some foothill sites such as CA-FRE-61 on Wahtoke Creek are reminiscent of “reburial” features reported from Milling Stone Horizon sites in southern California. These reburials are characterized by reinterment of incomplete skeletons often capped with inverted millingstones (McGuire 1995).

A return to colder and wetter conditions marked the Upper Archaic in Central California (2,500-1,000 BP). Previously desiccated lakes returned to spill levels and increased freshwater flowed in the San Joaquin and Sacramento watershed. Cultural patterns as reflected in the archeological record, particularly specialized subsistence practices, emerged during this period. The archeological record becomes more complex, as specialized adaptations to locally available resources were developed, and valley populations expanded into the lower Sierran foothills. New and specialized technologies expanded distinct shell bead types occur across the region. The range of subsistence resources utilized exchange systems that expanded significantly from the previous period. In the Central Valley, archaeological evidence of social stratification and craft specialization is indicated by well-made artifacts such as charmstones and beads, often found as funerary items.

The period between approximately 1,000 BP and Euro-American contact is referred to as the Emergent Period. The Emergent Period is marked by the introduction of bow and arrow technology which replaced the dart and atlatl at about 1,100 to 800 BP. In the San Joaquin region, villages and small residential sites developed along the many stream courses in the lower foothills and along the river channels and sloughs of the valley floor. A local form of pottery was developed in the southern Sierran foothills along the Kaweah River. While many sites with rich archaeological assemblages have been documented in the northern Central Valley, relatively few sites have been documented from this period in the southern Sierran foothills and adjacent valley floor, despite the fact that the ethnographic record suggests dense populations for this region.

Further ethnographic contextual information is provided in Section 3.13 of this PAD.

3.12.2.2 Historic Context

Regional History

Transportation

Native Americans have traveled the mountain passes of the Sierra Nevada Mountains (Sierras) on foot for thousands of years. At one time, nearly every gulch and ridgeline was traveled by different groups to engage in trade, hunting, and exploration. During the early-nineteenth century, European explorers navigated Native American trails while also creating their own routes through the region. After the California Gold Rush started in 1848, settlers began utilizing some of the same native trails and trade routes using horses and mule trains. One of the region's earliest trails, the El Camino Viejo, traversed the entire length of the San Joaquin Valley (Hoover et al. 2002:88-89).

Another early road, the Stockton-Los Angeles Road, followed the base of the Sierras through the present-day towns of Reedley, Sanger, and Friant, with numerous roads and trails branching off to the east (Hoover et al. 2002:90). During the late-nineteenth and early-twentieth centuries, additional mountain roads were developed to access mining, lumber milling, ranching, and hydroelectric production areas. One example, Dinkie's (Dinkey's) Trail, followed the North Fork Kings River to what became known as Coolidge Meadow (now submerged under Wishon Reservoir [BLM 2020; Greenwood and Foster 1982:126]). The two Kings River crossings along the road were managed by privately-owned ferry operations. One crossing was established in 1851 by John Pool at Pool's Ferry, and the other was established in 1855 by James Smith at present-day Reedley. Smith's Ferry was more popular as it provided the only access across the King's River at high water. From 1858 to 1861, the Butterfield Stage traveled the Stockton-Los Angeles Road and used either Smith's Ferry during high water or diverted northwest to Firebaugh's Ferry. The road and ferry crossings were the primary means of travel through the region until the railroad arrived in the early 1870s. Smith's Ferry, the last remaining ferry, ceased operation in 1874 (Hoover et al. 2002:90).

The transcontinental railroad connecting California with the rest of the U.S. was completed in 1869 (Hayes 2007). In 1872, the Southern Pacific Railroad (having recently merged with the Central Pacific Railroad) began laying tracks through California's Central Valley, which led to the development of towns such as Fresno, Modesto, and Merced by the railroad's completion in 1874 (Coate 2005). Nearly 20 years later, the San Francisco and San Joaquin Valley (SF&SV) Railroad was constructed. The line connected Stockton to Bakersfield, where it linked to the second transcontinental line (Blaszak 1995; Hayes 2007). Spur tracks connected both railroads to lumber and milling operations in the Sierras to the east. The SF&SV Railroad, a competitor of the Southern Pacific Railroad, ran parallel to that line throughout the Central Valley. The SF&SV's construction aimed to break the Southern Pacific Railroad's monopoly over the Central Valley's agriculture industry. With the SF&SV's completion, central California's economic base was untethered from the "tyranny" of the Southern Pacific Railroad, and the SF&SV became known informally as "The People's Railroad" or the "Valley Road" (Hooper 2014). In 1899, the Atkinson Topeka & Santa Fe

Railroad (AT&SF) acquired the SF&SJV. The AT&SF operated the line until 1996 when it was merged with the Burlington Northern Railroad, incorporated, and renamed the Burlington Northern Santa Fe Railway (Trains 2006).

Ranching

Ranching in California dates to the Spanish Period (circa [ca.] 1776-1822) and expanded during the Mexican Period (1822-1848) with the creation of large private ranchos granted to California's elites. Animal husbandry, a relatively undeveloped industry at the time, consisted primarily of branding and marking stock. Every rancho was required to hold a yearly roundup for accountability. During this period, the hide and tallow trade drove the cattle industry, especially after the 1820s when owners of American sailing vessels purchased large amounts of these commodities on a regular basis. An estimated five million hides were exported from California during the early nineteenth century, making the industry one of the economy's chief components (Burcham 1981; Guinn and Beck 1915).

During the Gold Rush, increased demand for beef combined with the proceeds from hides and tallow led California's ranching industry to become more lucrative. New stock imported to California from the east also improved cattle breeds. The demand for beef was so high that California's stock alone was insufficient to supply the miners. Approximately 150,000 head of cattle had to be transported from Mexico and the midwest during the early 1850s to meet demand. Within 10 years, nearly the entire Spanish native stock had been replaced with crossbred cattle from all over the world (Burcham 1981; Guinn and Beck 1915). In this environment, small stock raising operations, such as Miller and Lux's San Luis Ranch in the San Joaquin Valley, developed into cattle empires (Hoover et al. 2002:89).

By the early 1860s, California herds had grown to over three million head but the demand for beef had begun to decline. Intense floods from 1862 to 1863 followed by several years of drought led to the loss of nearly one million head of cattle. The cattle crisis ended ranching speculation and generated a system of range management to prevent overgrazing. The situation was complicated by significant growth in the agricultural industry which continued to encroach on rangelands (Burcham 1981; Guinn and Beck 1915). In the wake of the cattle crisis, sheep ranching was introduced to California when the eastern U.S. cotton trade was interrupted by the Civil War. By the 1870s, sheep ranching began to overtake the cattle industry as the more profitable stock trade, with Bakersfield as the center of production (Greenwood and Foster 1982:123-124).

By the late nineteenth century, Fresno County had become California's leading producer of wool, and stockmen were increasingly drawn to the meadows of the Sierra foothills for grazing land. The Sierras provided water and dense grasslands with ample food for flocks, especially in the summer when the San Joaquin Valley was dry. The North Fork Kings River area was first settled by ranchers William Helm and Frank Dusy. Helm settled at Dry Creek in 1865 and Dusy, after spending several years in Fresno, settled at Dinkey Flat in 1872. Between 1870 and 1874, they partnered in the stock

business, and the meadows where Helm and Dusy pastured their sheep were named after them. Dusy also entered partnerships with Henry Carpenter and William Coolidge who then organized stock business in the meadows along the North Fork (Greenwood and Foster 1982:123-125).

After the Tollhouse Road to the Pine Ridge lumber mills was constructed in 1867, the North Fork became more accessible to stockmen who entered the meadows from Pine Ridge using the Dinkey Trail. Early stockmen in the area included Thomas Nelson at Laurel and Bear Creek Meadows, William Markwood at Cutt's Meadow, John Hall at Hall's Meadow, John and Elisha Patterson at Patterson Mountain, Albert Statham at McKinley Grove and Rancheria Creek, the Collins brothers at Big Crown Meadow (Collins Meadow), David Sample at lower Crown Valley, and Henry Ross at Dinkey Creek. These early stockmen built cabins and corrals in the meadows and along the creeks where they raised their sheep. They constructed numerous fences after 1874 when the "No Fence Act" required stockmen to keep their sheep away from a farmer's crops (Greenwood and Foster 1982:125-128).

As the number of stockmen in the Sierras increased so did the landscape's degradation. Large flocks were capable of denuding meadows and slopes of all vegetation within a matter of weeks, and to promote new growth, stockmen would set fire to the forests at the end of the season. During the late-nineteenth century, the disappearance of grazing lands, a decline in wool prices, and an increase in the price of beef led many stockmen to trade their sheep for cattle. By 1895, Frank Dusy was operating a cattle ranch at Dinkey Flat. However, not all stockmen switched to cattle and there were disputes over the use of grazing lands. After the turn of the twentieth century, the Forest Reserves (now called National Forests) sought to regulate stock raising to prevent destruction and disputes within the Sierras. Eventually, sheep were prohibited from grazing in the Sierra National Forest (Greenwood and Foster 1982:129-131).

Mining

No major mining camps were present along the Kings River during the Gold Rush Era (1848-ca. 1859) and no early claims were recorded (Britannica 2022). However, many prospectors passed through the region on their way to the Mother Lode Mine and may have engaged in some placer mining. Established mining along the Kings River did not occur until the late 1870s when the price of silver increased. One of the first claims was discovered by Tom Bacon in 1879 north of Dinkey Flat. Bacon and his associates decided to build a town near the claim at "Miningtown" Meadow, but the plan never materialized. Gold mining began at Dinkey and Laurel Creeks during the 1880s, and a small discovery led to the development of a road connecting the site with the Pine Ridge mill area. Claims associated with the discovery included Richard Burton's and Joe Kesterman's Laurel Creek Placer, H. Richter's Cabin Meadow Placer, and a hydraulic mining operation at Russell's Camp known as Howell's Mine. By 1910, the mines had been depleted and little mining activity took place over the next few decades. During the 1930s, a rise in the price of gold and the onset of the Great Depression revived mining activity at Laurel Creek with a small claim operated by J. Kesson (Greenwood and Foster 1982:131-132).

Gold mining did not occur again in the area at any notable scale; however, two tungsten deposits were discovered in the 1940s. Following the onset of World War II, tungsten became a valuable resource for use in the construction of aircraft and machinery. The two mines associated with the tungsten deposits were both called Garnet Dike; one was in Fox Canyon and the other was at Mud Lakes. The Fox Canyon mine was discovered in 1943, possibly by Clarence Quigley, and was developed by the Garnet Dike Mining Company under Orrin Farrand (Greenwood and Foster 1982:131). Development of the mine was the impetus for the construction of a road along the Kings River to the east of Rogers Crossing. The Mud Lake mine was discovered during World War II by Joe Sadler, who sold it to H. A. Savage. Savage leased the claim to the Garnet Dike Mining Company, which began extracting ore in 1953. In 1954, the operation was acquired by the Cal-Tex Tungsten Company, which processed between 175 and 200 tons of ore per day until the mine closed in 1956 (Greenwood and Foster 1982:161).

Other mining claims documented in the area include: the “Gold Wonder” lode claims discovered by John Cogdell in 1984 along the Kings River just west of the North Fork; the “Mein Lieben” lode claims staked by Ray Long in the early 1980s to the north of Balch Camp; the “6K” lode claims discovered by Robert Konvalin during the 1960s and 1970s to the southeast of Black Rock Reservoir; and the “Jimmie Jeanne” lode claim discovered in 1956 by Walter Frank to the west of Sawmill Flat. All of these mines have either been formally closed by the U.S. Department of the Interior, Bureau of Land Management or were abandoned (The Diggings 2020).

Timber Harvesting

Timber harvesting in the Sierras began shortly after California achieved statehood in 1850, and the first mills opened in 1852 within the northern part of Fresno County at Pine Ridge (Shaver Lake). Early logging targeted the Giant Sequoia trees found throughout the region before the trees had achieved protected status. Early loggers encountered major obstacles, namely transporting the harvested lumber to developing valley towns to place on the market. Transport methods included logging roads and log flumes; however, the need for constant repair and maintenance rendered these methods costly and inefficient. As a result, loggers also used toll roads such as Tollhouse Road, which had been constructed in 1867 to connect the mills at Pine Ridge with Fresno (Greenwood and Foster 1982: 140; Hoover et al. 2002:96-97).

Similar to the livestock and agricultural industries, the lumber industry was bolstered by railroad development in the 1870s. As a result, lumber milling promoted the establishment of regional towns throughout the late-nineteenth and early-twentieth centuries such as Madera, which was founded by the California Lumber Company in 1876 (Coate 2005). Near the FERC Project boundary, lumber milling began around the turn of the twentieth century when the Sanger Lumber Company constructed a flume to the south of the Kings River for timber harvesting. In 1925, the San Joaquin Light and Power Company (SJLPC) harvested 80 acres of land along the North Fork Kings River to prepare for Balch Camp construction. The wood was processed at the Patterson Mountain Lumber Mill, which only operated for a single season. Generally, logging within the region was not as frequent as in areas to the northwest of Dinkey Creek

where operations had cleared large sections of the Sierras by the early twentieth century (Greenwood and Foster 1982:140-141).

The lumber industry's decline threatened the livelihood of many towns in the San Joaquin Valley and Sierra foothills and, after the Great Depression, many lumber companies failed (Coate 2005). However, some large-scale regional operations resumed in the early 1940s when Byles and Jamison harvested Bear Meadow, and the Pine Logging Company harvested near Dinkey Flat. Later, during the 1950s, smaller operations occurred at Tule Meadow, Fence Meadow, Black Rock Reservoir, and Lake Wishon. Most of these harvesting operations were associated with the construction of dams for hydroelectric projects (Greenwood and Foster 1982:140-141).

The Sierra and Sequoia National Forests

The Kings River watershed covers three million acres that includes portions of the John Muir Wilderness, Kings Canyon National Park, Sequoia National Forest, and Sierra National Forest. Reservoirs within the watershed include Pine Flat, Black Rock, Balch Afterbay, Courtright, and Wishon (Finney 2002). During the late-nineteenth century, concern mounted over the protection of watersheds in California as fires burned out of control, lands were overhunted, and livestock overgrazing went unchecked. The Homestead Act of 1862 and the Timber and Stones Acts of 1870 led to the private ownership and exploitation of millions of acres which had to be managed to prevent destruction of the natural landscape and resources (Newland 2008). Naturalist and wilderness preservationist John Muir referred to sheep as hooved locusts that turned meadows to dust and fouled local streams. Abbott Kinney, a rancher, botanist, and developer, spearheaded a movement for forest management, and in 1886 he was appointed as the first chairman of California's Board of Forestry. Through the efforts of Muir, Kinney, and others, Congress was pressed to act. Then, in 1891, the Forest Reserve Act was passed which gave the President authority to set aside lands as forest reserves (Robinson 1991).

In 1893, President Benjamin Harrison created 15 new forest reserves and, in 1897, President Grover Cleveland created 13 more under the Forest Reserve Act authority (Robinson 1989 and 1991). The Sierra Forest Reserve, one of the first and largest, was established by President Harrison on February 14, 1893, with more than six million acres in the Sierras (USDA 2020a). Despite creation of the reserves, Congress had not contemplated their administration or appropriated management funding. From 1892 to 1897, the forest reserves were only a reality on paper with no administration, officers, or rangers to enforce the law. During these years, timber cutting and livestock grazing continued unchecked. In 1896, public outcry resulted in a Forest Reserve Commission consisting of Charles Sargent, John Muir, and Gifford Pinchot visiting the Forest Reserves. The Commission declared that the protection of reserves was of the utmost importance due to their symbiotic relationship with water supply (Robinson 1989 and 1991).

In 1905, President Theodore Roosevelt transferred responsibility of the Forest Reserves from the U.S. Department of the Interior to the U.S. Department of Agriculture and

appointed Pinchot as the head of the newly created Forest Service. Pinchot devised a civil service exam for prospective rangers and created a set standard of qualifications for supervisors and rangers to create a professional staff of qualified foresters. The term “reserve” was eliminated because Pinchot believed it implied the forests were off limits, and in 1907 the forest reserves became national forests (Robinson 1989 and 1991; USDA 2020a).

In 1908, the Sequoia National Forest was created from the Sierra National Forest to the south of the Kings River and what was once the Tulare Forest Reserve. Establishment of the Reserve resulted primarily from the lobbying efforts of Tipton Lindsey, Frank. J. Walker, John Tuohy, and George Stewart; four prominent San Joaquin Valley residents who recognized the necessity of protecting the Sierra watersheds. In 1909, President Roosevelt designated new forest lands that increased total acreage to over 3 million (Tweed 2012). The new Sequoia National Forest protected 38 groves of giant sequoias (*Sequoiadendron giganteum*), more than any other national forest or reserve. Only two other national forests contain giant sequoia groves; the Sierra National Forest has two groves and the Tahoe National Forest has one grove. Much of the Sequoia National Forest was annexed in 1910 as part of the Kern National Forest but was reabsorbed five years later (Stewart et al. 1994:151; USDA 2020b).

During the early-twentieth century, the newly created Forest Service hired rangers to administer the new districts and programs within the national forests. A hierarchical structure of rangers, assistant rangers, and foresters was established to maintain newly created districts within the forests. Rangers were assigned specialized duties such as scaling and marking timber sold to lumber companies and working with cattlemen to control grazing within the forests. The rangers also worked to control wildfires, and several lookouts were established at high points. In 1916, President Woodrow Wilson created the National Park Service under the leadership of Stephen Mather who sought to increase awareness of National Forests and Parks (USDA 2020a).

Beginning in 1929, the Great Depression brought devastation to the U.S. economy. As a result, the California Division of Forestry, in partnership with the U.S. Forest Service, initiated the California Relief Program and created work camps for economic relief and the betterment of the National Forests. Between 1931 and 1932, numerous camps filled with unemployed men sprang up in California forests. The men worked six days a week building roads, trails, and firebreaks in exchange for meals and lodging. These camps became the largest construction and fire control program in Forest Service history (Robinson 1989 and 1991).

In 1933, President Franklin Roosevelt launched his New Deal Program which included the Emergency Conservation Act. The act created the Civilian Conservation Corps (CCC), a large-scale version of the California Relief Program. Within a few months, the CCC enrolled approximately 275,000 men in 1,300 camps across the nation, with over one million enrolled by 1940. New enrollees between the ages of 17 and 29 committed to a six-month term. They worked eight hours a day, five days a week on Forest Service projects in exchange for room, board, and a monthly salary of 35 dollars. The Works Progress Administration, the National Industrial Relief Administration, and the State

Emergency Relief Administration also worked in the Sierra and Sequoia National Forests during the 1930s. These groups improved infrastructure by developing trails, building roads, clearing areas for camp sites, removing old structures, and building new structures (Newland 2008; Robinson 1989; USDA 2020a and 2020b).

Within the Sierra National Forest, the CCC constructed 16 bridges, 240 miles of roads, 20 miles of trails, 90 miles of firebreaks, 62 buildings and lookout towers, and 145 miles of telephone lines, as well as improving 70 different campgrounds (USDA 2020a). The CCC conducted similar operations within the Sequoia National Forest and constructed or rebuilt most of the fire lookout towers and ranger guard stations (USDA 2020b). The U.S. entered World War II in December 1941, which effectively ended the Great Depression along with most of the federal relief programs. The CCC was disbanded in 1942 as former workers joined the military. The Forest Service also lost 40 percent of its rangers who signed up for military service. After the war ended in 1945, the ranger service was renewed with returning veterans. Within a short time, fire suppression methods were upgraded with new technologies such as the use of aircraft (Robinson 1989 and 1991).

During the mid- to late-twentieth century, early hydroelectric operations along the San Joaquin and Kings River watersheds were expanded by construction of multiple reservoirs including Courtright Lake and Lake Wishon. In 1964, the Wilderness Act led to the establishment of the Ansel Adams and Jon Muir Wilderness Areas within the Sierra National Forest (USDA 2020a). At the turn of the twenty-first century, the Sequoia National Monument was created by Presidential Proclamation, encompassing all the giant sequoia groves and approximately one third of the Sequoia National Forest lands (USDA 2020b).

Recreation

Beginning in the 1880s, San Joaquin Valley residents sought refuge in the Sierras and established recreational camp sites to escape the extreme summer heat. Creation of the Sierra Forest Reserve and Sequoia National Forest increased the popularity of recreational activities such as camping, hiking, fishing, and hunting. The explorations and actions of naturalists like John Muir and groups like the Sierra Club led to increased interest in the Sierras. By 1911, traffic into the Sierra foothills was beginning to interfere with the activities of stockmen. The following year, special use areas were set aside for tourists, horses, and pack animals. Pine Ridge, the recreational headquarters for campers, was surrounded by satellite locations like the pasture at Dinkey Creek. Within a few years, the number of tourists at the Dinkey Creek camp increased and a trail was built to Mount Nelson for hiking. In 1916, Jay Robinson established a resort and packing business at the Dinkey Creek camp and, five years later, Fresno County provided funds to enlarge the camp. The development of resorts like Robinson's was made possible by the Organic Administration Act of 1897, which allocated use permits in exchange for an annual fee. During the 1930s, the CCC improved the camp at Dinkey and built better access roads (Greenwood and Foster 1982:142-143; USDA 2020a).

During the mid-twentieth century, hydroelectric projects throughout the Sierras led to the creation of numerous manmade lakes by the construction of dams along waterways. PG&E created reservoirs along the Kings River and its tributaries, including Courtright Lake and Lake Wishon, that were completed in 1958 for the Haas-Kings River Project (FERC Project No. 1988) which later became high Sierra recreation areas. Black Rock Reservoir was impounded in the 1920s for the Balch Hydroelectric Project (FERC Project No. 175). PG&E operates and maintains the lake campgrounds. The lakes also provide public boat launching facilities and are stocked with several varieties of trout. The lakes and reservoir have hiking and equestrian trails with access to Dinkey Lakes, John Muir Wilderness, and Kings Canyon National Park. Downstream, the Pine Flat Lake, constructed in 1954 by the USACE, provides similar recreational opportunities. Apart from the lakes and reservoirs, the river reaches are also used for rafting and kayaking (Greenwood and Foster 1982:147; USDA 2020c).

The City and County of Fresno

Six years after California achieved statehood in 1850, Fresno was carved out of portions of Mariposa, Merced, and Tulare counties (Hoover et al. 2002:88-91). The Spanish word “Fresno” translates as “ash tree,” after the shade trees planted by Spanish explorers (SJLPC 1925a:1). The county’s original seat was in Millerton, founded as the mining town of Rootville in 1851. During the 1860s, Millerton suffered several catastrophic floods and fires, leaving it a ghost town by the 1870s. Before being finalized in 1903, Fresno County’s boundaries were redrawn eight times to create other counties, such as Madera County to the north (Hoover et al. 2002:88-91).

During the mid-nineteenth century, Fresno was a sparsely populated county consisting primarily of barren sand plains with rugged mountains to the east. The population spiked during the 1870s after the railroad was constructed through the valley. The railroad facilitated rapid growth, and numerous towns were built by the Central Pacific Railroad Company (CPRC, predecessor to the Southern Pacific Railroad Company) along the route. The railroad was completed to what was then known as Fresno Station in 1872, and the settlement became the new county seat in 1874 (Hattersley-Drayton 2013; SJLPC 1925a:1). That year, the city had 55 buildings and a population of approximately 150. Fresno’s new status as a railroad town prompted the community of Millerton to move many of its buildings, including a hotel, to Fresno (SJLPC 1925a:1). Edward H. Mix had surveyed the original town site, which was organized on a grid. The townsite straddled the rail corridor and extended to the CPRC tracks’ east side along Front Street (present day H Street) (PRA 2008:11).

In 1875, one year after Fresno became the county seat, the Central California Colony was established to the south of Fresno with a system of irrigated canals dividing 20-40-acre parcels. The successful new agricultural colony became the model for nearly 50 similar colonies throughout the county during the next few decades (Hattersley-Drayton 2013). By October 1885, Fresno’s population had increased to 3,459 (SJLPC 1925a:1).

The City of Fresno was incorporated in 1885 and, by the turn of the twentieth century, had a population of more than 10,000. Initially, cattle ranching was the primary

economic activity in the San Joaquin Valley; however, this was overtaken by agriculture after Miller and Lux tapped the San Joaquin and Kings Rivers to irrigate approximately 610,000 acres of land. Crops included wheat, figs, and grapes. In 1875, grape crops were scorched by the summer heat, inadvertently creating what would become one of the nation's most lucrative raisin industries - the Sun-Made Raisin Cooperative. Between 1872 and 1903, the county's raisin yield grew from 50,000 pounds to 100 million pounds. Fresno County also produced alfalfa, dairy products, livestock, wine, oranges, lemons, olives, grain, wool, flax, silk, petroleum, oil, lumber, gold, silver, iron, and coal. Later, cotton would become Fresno County's primary crop after shortages during World War I encouraged the industry's growth (Fresno City and County Historical Society 1980:16; Hattersley-Drayton 2013; Hoover et al. 2002:94-95).

In summer 1887, George McCullough and Lyman Andrews began constructing a public water works project to centralize the town's water supply and establish a water distribution system. The Fresno Water Company later purchased the system and increased its capacity with new wells and tanks. By 1902, financial problems forced the company into receivership until it was purchased in 1904 by A. C. Balch, W. G. Kerckhoff, and A. G. Wishon, who reorganized as the Fresno City Water Company (SJLPC 1925b:3).

The area's early power transmission included a 68-mile, 19.6-kV transmission line from Fresno to Selma and Fowler to Hanford, which was the longest in the world at the time of completion in 1899 (Fresno City and County Historical Society 1980:22). That year, the Santa Fe Railroad Depot was completed on Tulare Street to serve the San Francisco and San Joaquin Valley Railroad, which ended the Southern Pacific Railroad's monopoly on Fresno rail activities. By 1900, the City of Fresno's population had increased from 10,818 to 12,470 (PRA 2008:12-13). The City's population nearly doubled between 1900 and 1910, and the first municipal planning commission – one of the oldest in the State – was established in 1916. Seven years later, in 1923, the City adopted a planning report which proposed a civic center, downtown revitalization, park and recreation plan, and street system to accommodate the growing automobile traffic (PRA 2008:13).

Following World War I, Fresno's population spiked to approximately 75,000 and its area reached over eight square miles by 1925. While the region remained primarily agricultural, the City of Fresno's downtown skyline was touted as "comparable to any inland city on the Pacific Coast, and tied to this picture of modern achievement is a large and expanding manufacturing and wholesale section" (SJLPC 1925a:2). At that time, the City of Fresno and environs functioned as a supply and trading center with 140 manufacturing plants and 100 wholesale houses, supported by the region's network of railroads and highways. The thriving industrial sector included plants for fruit processing, ice, cotton, and printing as well as production of broom, macaroni, and automotive parts. The manufacturing and wholesale sector was served by two transcontinental railroads and was a terminus for almost 40 stage lines transporting passengers and freight throughout California (SJLPC 1925a:2). During this period of dynamic industrial growth, PG&E's Balch Hydroelectric Project was under construction to meet the substantial increase in the area's power demand.

The migration of farmers from the Dust Bowl region to the San Joaquin Valley during the Great Depression increased competition for farm and agricultural industry work and led many new arrivals to seek employment in town, where resources were also limited. New Deal projects brought employment to Fresno in the form of building construction. As the U.S. prepared for and ultimately entered World War II, inland bases were established in and around Fresno, bringing nearly 60,000 military personnel to Fresno and nearby bases. In order to address labor shortages resulting from the draft, workers coming mostly from Mexico were contracted to work in the agricultural industry. In the meantime, Executive Order 9066 authorized the removal of US citizens and residents of Japanese ancestry in West Coast states. This included 1,000 persons forced from their homes in Fresno and Madera counties by the US Army and placed in assembly centers, such as the Fresno County Fairgrounds, before being transported to wartime internment camps (PRA 2008:20-23, 27).

By the end of World War II, Fresno's fruit production remained abundant; the county was the State's top producer of figs and raisins, and ranked third in production of peaches, table grapes, and wine grapes. In addition to 209,541 acres of fruit cultivation, the county boasted 86,000 acres of cotton, 60,000 acres of flax, and 1,000 acres of sugar beets. At that time, two companies dominated power development and transmission in the San Joaquin Valley: Southern California Edison (SCE) primarily served the State's southern region, and PG&E served the northern region (Walker 1946:191-92).

In addition to agriculture, ranching, mining, and timber harvesting were other important aspects of Fresno County's economy during the twentieth century. However, the development of agriculture increased while the latter industries declined or remained stagnant. By the late-twentieth century, Fresno County was ranked first in the nation for agricultural output with annual sales in excess of three billion dollars (City of Fresno n.d.).

Following the end of World War II, Fresno suffered a housing shortage and inadequate infrastructure to support a growing population. By the early 1950s, the Fresno-Clovis metropolitan area's growth exceeded that of the City of Fresno. Between 1945 and 1955, the City of Fresno's population increased by 13 percent while the outlying areas increased by 35 percent. In order to meet the area's growing demand for power, PG&E began construction to expand the existing Balch hydroelectric facility by raising the Balch Diversion dam and building a second penstock and second powerhouse. After the Balch expansion was completed, PG&E commissioned the design and construction of three model homes known as Electra Living Houses in Fresno to demonstrate the advantages of houses powered completely by electricity. The houses were completed ca. 1960 along East Gettysburg (PRA 2008:35).

By the mid-1980s, PG&E still powered the Kings River basin and most of the San Joaquin Valley basin including Fresno, except for SCE's Hanford service area in Kings County. The PG&E and SCE power systems were interconnected near Bakersfield, at PG&E's Kern Substation and SCE's Magunden Substation. Both companies directly or indirectly interconnected with California's other electric generating and transmission

systems, and with most systems in other western states, through power pool agreements and power exchange contracts (FERC 1984:24).

Hydroelectric Power in the West

The first hydroelectric plant in the West – High Grove Station – was established in 1887 in San Bernadino, California. Other significant early hydroelectric facilities were at Willamette Falls in Oregon City, Oregon, where the first Alternating Current plant was completed in 1889, and at Mill Creek, California, where the first three-phase hydroelectric plant was constructed in 1883. The three-phase generator enabled long-distance power transmission, expanding the role of electricity from industrial use to commercial production. Alternating currents also allowed power to travel greater distances, because power could be generated at one voltage, stepped up by a transformer to a higher voltage for transmission, and then stepped down for distribution to customers. Also in 1893, the Folsom Powerhouse, a three-phase hydroelectric facility was constructed in Folsom, California on the American River. Power was initially transmitted 22 miles over uninsulated copper wires to Sacramento for commercial use. Due to the growing demand for power in the area and an opportunity to harness additional power, a smaller powerhouse was built in 1897 just below the main Folsom Powerhouse at the mouth of the tailrace. By 1902-1903, PG&E acquired the Folsom Powerhouse and other powerplants in the foothills. In 1898, SCE's early predecessor, Edison Electric Company of Los Angeles, constructed, at the time, the world's largest transmission line and the Santa Ana River No. 1 hydroelectric plant on the Santa Ana River. Power generated from the powerplant was transmitted through the 83-mile, 33 kV double-circuit transmission line to Los Angeles, California (Hay 1991:xix-xxi).

Advancements in power generation led to evolving uses of electricity, including lamps, electrified machines, and indoor wiring. Relatively low-cost electricity had become available on a large scale, greatly impacting how people lived and worked. Another innovation associated with early hydroelectric developments was the use of concrete in dam construction, which became a ubiquitous building method in dams throughout the American west (Hay 1991:xix-xxi, 10; Edison Tech Center 2013). The development of hydroelectric power in the western Sierras began during the mid-1890s amid widespread conflict over water rights in the San Joaquin Valley. Water for irrigation was in high demand at the time and fledgling power companies were placing new demands on the water supply (Turrentine and Pisani 1983:208).

The Kings River was one of California's last major rivers to be developed for power generation (Geiger 1928:124). The river originates in the Sierras and extends through eastern and southern Fresno County, northwest Tulare County, and northern and central Kings County (KRCD and KRWAA 2009:45). Formed by mountain snowmelt, the river descends into the valley at a point approximately 25 miles east of Fresno. The snows melt early in summer, which causes runoff to peak in June. Before reservoir development in the area, the early summer runoff resulted in substantial loss of water before the river dropped to minimum flow by early August (Geiger 1928:122). J. B. Lippincott, a renowned California engineer, had led a United States Geological Survey party to the Kings River Canyon in 1901. At that time, the area had no roads, and the

party traveled by horseback to survey all three Kings River forks. The surveyors observed potential power development sites along the river's north fork; however, hydroelectric engineering had yet to develop the means for handling small water volumes under such a high head ("fall of water") (Palmer 1955:36-37).

San Joaquin Light and Power Corporation

The following section provides background and context regarding the origins of the SJLPC, who were instrumental in the development of hydropower in the Sierras, generally, and on the Kings River specifically. As the precursor to PG&E, the SJLPC systems kicked off a century of hydroelectric development on the Kings River culminating with the completion of the Helms Pumped Storage System and the Kings River Conservation District's powerplant, and associated DWR transmission line, in the 1980s. Each is discussed further below as potential historic properties must be understood within an industrial and regional framework.

The origins and evolutions of the SJLPC are inextricably tied to the ingenuity and work of Albert Graves Wishon. Wishon was born in Missouri in 1858 at Coppedges Mill near the town of Rolfe. He studied civil engineering at the State School of Mines in Rolla, Missouri, but left for lack of funds. During the 1880s, he worked as a railroad station agent and merchant before moving to Oregon, and then to Tulare, California, in 1889. Wishon worked at a lumber yard, and then as a bank's assistant cashier. In 1893, he established a real estate and insurance business. While living in Tulare, Wishon observed how irrigation substantially increased crop production and learned about the potential for hydropower production in the Sierras. His observations inspired him to develop a motorized pump system for irrigation, pioneering electric pump irrigation and expanding farm electrification in California. In 1894, Wishon partnered with brothers John H. Hammond and William H. Hammond to establish the Kaweah Power and Water Company. The company built a small hydroelectric plant at Lime Kiln Point on the Kaweah River in Tulare County, to distribute power in Tulare, Visalia, Exeter, Porterville, and Lindsay. In 1899, the Mt. Whitney Power Company (later acquired by SCE) was incorporated to assume control of the Kaweah River properties, enabling Wishon and William H. Hammond to cash out company stock they received as payment for their time and labor (Coleman 1952:181-84).

Around 1902, Wishon resigned from the Mt. Whitney Power Company and accepted a position managing the San Joaquin Power Company. The San Joaquin Power Company had been organized by famed engineer John Eastwood to construct a hydroelectric plant for powering the growing City of Fresno. At that time, Fresno's only power supplier was the Fresno Gas and Electric Company, which operated a small electric system. The San Joaquin Electric Company, a successor of the San Joaquin Power Company, was incorporated in 1895 with initial capital of \$800,000. John J. Seymour, who held the majority of stock, served as company president and Eastwood as vice-president and chief engineer. Seymour also owned the Fresno Water Company. The region's first powerplant – San Joaquin No. 1 – was constructed on the north fork San Joaquin River (Willow Creek) and placed into operation in May 1896. The powerhouse encountered catastrophic mechanical and environmental issues, as well as

low utility rates and interference from the Fresno Gas and Electric Company. By 1899, the San Joaquin Electric Company was in bankruptcy, and Seymour retained control by serving as receiver. Seymour operated the company for over two years while searching for a buyer (Coleman 1952:185-87).

In 1902, A. C. Balch and William G. Kerckhoff purchased the company, which they incorporated as the San Joaquin Power Corporation on August 11th. That year, Balch and Kerckhoff had also incorporated the Pacific Light and Power Company (later merged into SCE). Kerckhoff served as the San Joaquin Power Corporation's president and Balch as vice-president (Coleman 1952:188-89). The company's holdings included the Fresno City Railway, which controlled the streetcar system, and Fresno City Water Company (*Fresno Morning Republican* 1929). In order to remove local competition, the company purchased the Fresno Gas and Electric Light Company's electric system for \$25,000 (Coleman 1952:190).

Under Wishon's management, the San Joaquin Powerhouse No. 1 was placed into good working order and an addition was built to increase plant capacity (Coleman 1952:191). On May 13, 1905, the SJLPC filed articles of incorporation with the Los Angeles County Clerk. The capitalization was \$3 million, and the new company replaced the predecessor San Joaquin Power Corporation (*Bakersfield Morning Echo* 1905). In the next few years, the company constructed additional power facilities on the San Joaquin River and tributaries. During this period, Wishon continued to secure water rights on the San Joaquin, Tule, and Kings rivers for future power development (Coleman 1952:193).

In order to generate additional capital for projects, the SJLPC was organized on July 19, 1910, with a capitalization of \$25 million to pursue the work begun by the predecessor companies (Coleman 1952:195). The reincorporation also enabled the company to use a portion of its capitalization to acquire the Merced and Bakersfield Light and Power Companies (*Fresno Tribune* 1910). A. G. Wishon managed the newly acquired Bakersfield system, in addition to the Fresno system (*Fresno Morning Republican* 1910). The reincorporation and ongoing acquisition of additional utilities, including the Merced Gas and Electric Company in summer 1910, gave the SJLPC a virtual monopoly on the San Joaquin Valley's power system (*Fresno Morning Republican* 1910; *Bakersfield Morning Echo* 1910).

Also, in 1910, a new San Joaquin Powerhouse No. 1 (later renamed A. G. Wishon Powerhouse) was constructed adjacent to the original plant. Development continued during that decade, and by 1920, SJLPC was operating 11 powerhouses and an increasing number of transmission lines throughout the San Joaquin Valley. The mounting power needs of the San Joaquin Valley over the subsequent decade prompted the company to increase its capitalization to \$150 million on March 10, 1921 (Coleman 1952:195-99).

In 1924, the Western Power Corporation, holding company of the Great Western Power Company, purchased controlling shares of the SJLPC system. The deal paved the way to merge the two power systems but did not formally merge the companies or change

management or operational personnel (*Fresno Morning Republican* 1924). As part of the merger, A. G. Wishon became SJLPC president and his son A. Emory Wishon became vice president while remaining general manager (Coleman 1952:292-93). At that time, the SJLPC had a service area of approximately 6 million acres in 7 San Joaquin Valley counties, providing power with 11 hydroelectric plants, 3 steam plants, and 5,500 miles of transmission lines (*Fresno Morning Republican* 1924). In September 1925, the North American Investment Company obtained control of the Western Power Corporation and, therefore, the SJLPC. SJLPC retained its corporate identity, but its system operations were coordinated with Great Western Power Company, both now managed by A. Emory Wishon (Coleman 1952:294).

In April 1930, PG&E acquired all the public utility interests of the North American Investment Company, including the Great Western Power Company, SJLPC, and Midland Counties Public Service Corporation (an SJLPC affiliate). The \$650 million transaction was the largest ever recorded in California (*Gustine Standard* 1930). By acquiring the SJLPC and Great Western Power Company, PG&E attained the capacity to provide gas and electric services throughout Northern California. Also, in 1930, A. Emory Wishon became president of the SJLPC and his father A. G. Wishon retired as president to become vice-chairman of the board of directors. PG&E and the SJLPC did not fully merge until 1938 when PG&E's San Joaquin Power Division was established (Coleman 1952:297; *Visalia Times-Delta* 1936). By then, A. G. Wishon had passed away. His June 1936 obituary acknowledged the efforts he made to power the region, particularly his critical role in developing the San Joaquin Valley's rural electrification: "Farms, cities and towns, industries and oil fields are now served by the vast electrification built up by Mr. Wishon (*San Francisco Examiner* 1936). As reported by the *Fresno Morning Republican*, "For more than two decades [A. G.] Wishon worked building up this organization until the entire [San Joaquin] Valley was unified under the San Joaquin Corporation" (*Fresno Morning Republican* 1929).

Regional Hydropower Development During the Twentieth Century

Early Hydroelectric Development on the North Fork Kings River

The Balch Plant, built as the first unit of the larger Kings River Project, was completed in February 1927, and is now licensed under FERC Project No. 175. Upon completion, Balch boasted the "highest headwater in the United States," and its original powerhouse (Balch No. 1 Powerhouse) reportedly contained the largest capacity generator of its type (Geiger 1928:122). In addition, the installation of the original penstock (Balch No. 1 Penstock) was regarded as a feat of engineering due to the steepness of the canyon walls, the implementation of a specially constructed tramway, and the novel process of embedding a penstock section in the riverbed. California newspapers and national engineering journals regularly reported on Balch's construction progress. *Scientific American* featured the Balch powerhouse in a February 1928 article entitled, "America's Greatest Water-Wheel," while the local *Fresno Bee* touted Balch "as spectacular a piece of engineering as can be found anywhere" (Geiger 1928:122-24; Elliot 1926).

As described by SJLPC,

The Kings River project of the San Joaquin Light and Power Corporation . . . is spectacular because of the extremely high altitude of its storage and the unusually high heads under which its plants will operate. It will be remarkably efficient because of its possibilities of huge water storage, and its comparatively cheap construction, and particularly because it will deliver its power over a main transmission line only thirty-nine miles long (SJLPC 1925c:1).

Developing the Kings River for hydropower was anticipated to meet the San Joaquin Valley's expected population growth and associated power demand for the coming decades. In 1926, the *Fresno Bee* described the development as having "primary significance," because the completed project would eventually supply power for a population four times greater than that of the San Joaquin Valley at that time (Warren 1926). In addition to the growing population, new factories and expansion of existing industries was driving the area's increasing demand for electricity. SJLPC anticipated that by 1936, about a decade after the Balch unit's expected completion date, the valley would require the entire Kings River project output to meet demand. SJLPC engineers had planned to place the final Kings River plant in operation by 1936 (Warren 1926).

The Kings River project originally contemplated construction of 4 reservoirs, 9 powerhouses, 14 dams, and 40 miles of conduit, with an estimated cost of \$45 million (Jourdan 1926:13; *Fresno Bee* 1926). The six powerhouses planned for the North Fork Kings River would be Wishon (formerly San Joaquin Powerhouse No. 1), Balch, Haas, Kings River, Helms, and Junction. Of those planned for the North Fork Kings River, Junction was never constructed. The three powerhouses planned for the West Fork Kings River (Dinkey Creek) would be Peart, Meyer, and Farnham; however, none of those facilities were constructed (SJLPC 1927:11).

While SJLPC conducted preliminary work on the Balch Project, other San Joaquin Valley power projects were underway, as well as irrigation-related legislation and the ongoing Kings River project licensing process. By 1920, five powerhouses had been completed, as well as the Kerckhoff Reservoir and dam (Westman n.d.). Part of what facilitated the construction of these reservoirs and powerhouses was the need for inexpensive power to help promote irrigation in the San Joaquin Valley. However, it was determined that the development of hydroelectric power had to be regulated to prevent power companies from claiming all the water rights. Therefore, the California State legislature enacted several laws in 1911 to that end. One law declared all water public property and limited appropriations for hydroelectric power at the discretion of a committee with only publicly owned utilities being exempt. Another law required the filing of extensive applications for obtaining permits with review by a five-member board, as well as the annual filing of financial statements (Turrentine and Pisani 1983:237-238).

A few years later, the Pine Flat-Kings River Conservation District Act was passed, which led to a movement to develop Pine Flat Dam and form irrigation districts throughout the San Joaquin Valley (McFarland 2015). Wishon and his associates recognized that the area's hydropower development was bound to local irrigation-related issues. In order to

address the concerns of irrigation interests, upstream reservoir construction with the intent of providing water storage for irrigation and other uses on the upper Kings River would require a downstream reservoir to re-regulate water releases through the powerplants. Wishon proposed to the irrigation districts and canal companies that the SJLPC pay to construct Pine Flat Dam. In exchange, Wishon would construct an associated powerhouse for power generation without further charge. This plan required that Wishon negotiate with each district and canal company on the river, and the irrigation entities initially rejected the plan. Later negotiations resulted in an agreement that led to eventual construction of the Balch Project, the first unit of the Kings River Project (Palmer 1955:39-41).

During the 1920s, the San Joaquin Power Company purchased or merged with numerous entities throughout the region and reorganized as the SJLPC. A formal application for the Kings River project was submitted to the newly established Federal Power Commission (FPC) in December 1920; however, the FPC license limited initial construction to one-quarter of the Balch powerhouse's proposed capacity. Construction of the rest of the project was contingent on erection of the Pine Flat Dam to establish a re-regulatory reservoir. Another condition of the license was that the Kings River irrigation interests enter into an agreement for the operation of the Balch Powerhouse and that the powerhouse be operated under the direction of a State water master. Plant plans were altered to enhance stream-flow operations permitted by the FPC license (Palmer 1955:41-42).

In 1922, the company was granted a 50-year license for hydroelectric power development on the North and West Forks of the Kings River. On April 11, 1924, SJLPC applied for an amendment for the Project No. 175 license to include the licensed facilities under Project No. 102 within the Project No. 175 license. The amendment was authorized by the FPC on January 28, 1926, about a year before Balch was placed in commission (PG&E 1970: Exhibit Q). Development of the Kings River project was facilitated by settling decades old legal disputes by dividing the waters of the Kings River in an equitable manner for both power and irrigation purposes. Additionally, the operation of hydroelectric powerhouses was only allowed if they did not interfere with the normal flow of the river to the satisfaction of the Kings River watermaster who represented the irrigation districts (*Madera Daily Tribune* 1968). That was a critical condition as, by the time Balch was under construction, the San Joaquin Valley had hundreds of miles of canals that supplied Kings River water to irrigate over 400,000 acres (Geiger 1928:122). Thus, when the Balch plant was placed in service in 1927, it operated under direction of the Kings River watermaster (Palmer 1955:42).

Mid-Century Development Along the North Fork Kings River

By 1930, Mr. Kerckhoff had retired and was replaced by A. G. Wishon's son, A. E. Wishon, who served as director and executive Vice President of PG&E after the merger with the SJLPC (Westman n.d.). PG&E subsequently began working on a complex agreement with the irrigation districts and U.S. Department of the Interior, Bureau of Reclamation (USBR) to transfer water from the San Joaquin River to the Kings River.

This would allow water to be stored in planned reservoirs for the Kings River project rather than being continually released for irrigation (*Madera Daily Tribune* 1968).

On March 28, 1934, SJLPC applied to the FPC for abandonment of parts of the Kings River project, retaining only the Balch development, the Wishon development, and the Haas development. The FPC approved the request on July 19, 1935. The Wishon and Haas developments were then eliminated from the project on June 8, 1937, leaving only the Balch development as a licensed project. On December 31, 1938, SJLPC merged with PG&E and the existing license for the project was transferred to PG&E on November 22, 1939 (PG&E 1970: Exhibit Q).

Pine Flat Dam was key to hydropower development for the Kings River project. In 1944, Congress authorized USACE to build Pine Flat Dam, and two years later, construction began following appropriation of initial funds. During construction, the dam and reservoir were incorporated into the federal Central Valley Project. At the same time, the California Legislature passed the Kings River Conservation District Act, creating an agency to act on behalf of all regional irrigation districts. The dam was completed and dedicated in 1954, enabling the first water storage to occur (*Madera Daily Tribune* 1968; Provost 2013:7-8; McFarland 2015; KRCD 2020).

Meanwhile, in 1948, PG&E filed an application with the FPC to expand the facilities along the North Fork Kings River to create more capacity and proposed amending the FPC license to incorporate several changes. The new expansion program involved construction of the underground Haas Powerhouse, upstream of Black Rock Reservoir, and construction of the Kings River Powerhouse at the head of Pine Flat Lake, as well as water conveyance structures and other associated facilities. PG&E's design required storing water in the two new reservoirs impounded by the Courtright and Wishon dams (completed 1962). Courtright Dam was named for H. H. Kelly Courtright, a PG&E official from Fresno who died in 1955. Wishon Dam was named for A. G. Wishon (*Selma Enterprise* 1956). PG&E's application with the FPC was resubmitted on September 20, 1955, with a design that would increase power generation (FPC 1958:958; PG&E 1970: Exhibit Q). The revised application was approved on June 1, 1956, and construction began immediately (PG&E 1970: Exhibit Q). The general contractor was a joint venture of Morrison-Walsh-Perini (Ellingson 1956). Until the expansion, Balch had been the only power development on the Kings River for nearly 30 years.

The Courtright and Wishon dams were completed in 1958, after three years of construction, as primary components on the North Fork Kings River, licensed as the Haas-Kings River Project (FERC No. 1988) (*Madera Daily Tribune* 1968; PG&E 2021:3.9-24). After completion, Courtright Lake (8,170-foot elevation) served as a storage reservoir and released water to Lake Wishon (6,545-foot elevation) three miles downstream, without power generation. From Lake Wishon, the water was conveyed through a 6.2-mile tunnel to a 5,510-foot-long penstock. The penstock extended down the mountain before initiating a 500-foot vertical drop to the underground Haas Powerhouse (1959), the nation's first large-scale underground powerhouse. From Haas Powerhouse, the water flowed to Black Rock Reservoir. As part of the Haas-Kings River Project, the Balch Diversion Dam, which impounds Black Rock Reservoir, was raised

approximately 40 feet to expand capacity for the increased water flow. Water would continue through a tunnel until transitioning into the existing Balch No. 1 Penstock (1927) and the new Balch No. 2 Penstock. Balch No. 1 Penstock would continue to supply the Balch No. 1 Powerhouse (1927) and the Balch No. 2 Penstock would supply the Balch No. 2 Powerhouse. From the Balch powerhouses, the water would flow into the raised Balch Afterbay Dam (the afterbay dam bridge was removed), through tunnels and into a penstock to the Kings River Powerhouse at the upper end of Pine Flat Lake (*Selma Enterprise* 1956). In June 1959, the Haas-Kings River Project's new \$80 million facilities were dedicated at a ceremony attended by 500 guests that was held at the Balch powerhouse site (*Fresno Bee* 1959).

The Haas-Kings River Project, including construction of the Kings River Powerhouse, was completed in 1962 (*Madera Daily Tribune* 1968; McFarland 2015). On July 27, 1972, the original 50-year license for hydroelectric development along the Kings River expired. From 1972 to 1980, PG&E operated under annual licenses to continue ongoing development such as the Helms PSP (PG&E 1980:1-2). On April 18, 1980, the project was formally relicensed (FERC 1980; PG&E 1970: Exhibit R). The Haas-Kings River Project No. 1988, Helms Pumped Storage Project No. 2735, and the Balch Project No. 175 are separately licensed, but are operated in close coordination and are collectively considered a "complete unit of development" (FERC 1980; PG&E 1984). In 1984, the Kings River Conservation District constructed a powerplant at the base of Pine Flat Dam.

Late Twentieth Century Development Along the North Fork Kings River

Helms Pumped Storage Project

By the late 1960s, PG&E recognized a need for "quick load on reserve to backup existing and planned large generating units and to satisfy additional peaking capacity requirements expected in the late 1990s" (Paul 1989:9). PG&E co-developed a design for what would become the Helms Pumped Storage Project (Helms PSP) and the Diablo Canyon Power Plant (DCPP), a nuclear facility. DCPP was designed to operate at a steady rate around the clock, while Helms PSP would generate power during peak demand periods. During off-peak periods, Helms PSP generating units would reverse to pump water from Lake Wishon, the lower reservoir, to Courtright Lake, the upper reservoir. This pumping function required four units of electricity for every three units that Helms PSP generates; however, DCPP would provide inexpensive energy for the pumping function to make the system efficient. During Helms PSP's construction, to illustrate the point about system efficiency, a PG&E representative explained that six cents of nuclear fuel could generate the same amount of electricity as five cents of oil (Huber 1980).

PG&E selected the existing Courtright Lake and Lake Wishon as the upper and lower reservoirs for Helms PSP based on the reservoirs' "high elevation differential and relatively short horizontal separation" (Paul 1989:9). At that time, water from Lake Wishon was conveyed through a tunnel and penstock to PG&E's underground Haas powerplant, then farther downstream through PG&E's Balch and Kings River

powerhouses (*Lemoore Advance* 1973). Like the Haas Powerhouse, the Helms Powerhouse was constructed underground. However, the two powerhouses had notable distinctions. As PG&E's first pumped storage hydroelectric plant, Helms PSP was designed for a 1,125,000-kW capacity, compared to Haas, a conventional hydroelectric facility with 144,000 kW capacity. In addition, PG&E constructed the Helms Powerhouse at twice the underground depth of the Haas plant. Furthermore, the Haas plant transformers were aboveground, as opposed to the Helms plant where the transformers were located in an underground chamber on the main powerhouse floor (Kuhn 1976).

On September 24, 1973, PG&E filed an application for a major license under Section 4 (e) of the Federal Power Act to authorize the construction, operation, and maintenance of the project. Supplemental revisions to the application were filed twice in 1973, 11 times in 1974, and 8 times in 1975. As the project would utilize the existing Courtright Lake and Lake Wishon, components of the existing Hass-Kings River Project, as upper and lower storage reservoirs, PG&E sought to amend the existing license for the Hass-Kings Project to reflect the construction of the Helms PSP (PG&E 2021:3.9-24). FERC granted the license in May 1976 and the California Public Utilities Commission certificate was received in June 1976 (Zayakov et al. 1985:47).

The project was named after Helms Creek, a tributary of the North Fork Kings River and a major water source for Courtright Lake. The project would link Courtright Lake and Lake Wishon through a tunnel, with the underground powerhouse near the tunnel's lower end. During off-peak hours, water from Lake Wishon would be pumped to Courtright Lake using available power from PG&E's integrated electric system. During peak periods, water would be released by gravity flow from Courtright Lake to Lake Wishon to "generate quick response peaking power" (*Lemoore Advance* 1973; *Reedley Exponent* 1976). Helms PSP was regarded as the "sister project" of PG&E's DCNPP in San Luis Obispo County, which would provide less expensive nuclear energy to Helms PSP for off-peak pumping of water from Lake Wishon to Courtright Lake (Hardcastle 1980; Bigham 1980).

Pine Flat Power Plant

History

Kings River Conservation District (KRCD)

The Kings River historically flowed to Tulare Lake. During periods of high runoff, water traveled through the lower Kings River to the San Joaquin River, then to the Sacramento River Delta, and flowed into the San Francisco Bay. Until recently, Tulare Lake was largely drained to divert water for commercial and residential use. The first recorded irrigation diversions from the Kings River date to the 1850s. Between 1860 and 1880, substantial diversion structures and irrigation canals were constructed, and by the early 1900s, all of the Kings River's normal flows had been vested in private ownership by local water users (Barnes 1977:9).

The Kings River Water Association (KRWA), formed in 1927, was comprised of locally owned and operated public water districts and mutual water companies which generally administered the waters flowing into the Kings River (Barnes 1977:9).

In 1937, the USACE proposed construction of Pine Flat Dam and Lake as a flood control project even though USBR regarded the proposed dam and reservoir as an extension of the developing Central Valley Project. In December 1944, Congress approved the Flood Control Act, which specifically authorized the USACE to build Pine Flat Dam and for KRWA member units to pay for the irrigation storage benefit (KRCD and KRWA 2009:9-10). With regard to the Kings River, the Flood Control Act stated, in part, that:

The division of costs between flood control, and irrigation and other water uses shall be determined by the Secretary of War on the basis of continuing studies by the Bureau of Reclamation, the War Department, and the local organizations (Flood Control Act of 1944 – Sec. 10:810).

In 1946, the U.S. Department of the Interior, USBR was tasked with negotiating contracts related to dam construction and payment for irrigation storage benefits. The USACE, which began construction of Pine Flat Dam in 1949, decided to retain complete authority over flood control and to allow the Kings River watermaster to control conservation storage and releases (KRCD and KRWA 2009:9-10).

The KRCD was formed by California's Kings River Conservation District Act of 1951 (Act). Upon formation of the KRCD, KRWA's authority and functions were transferred to KRCD. The impetus for establishing the KRCD was to create a single public agency for managing the entire Kings River irrigational service area, including Pine Flat Lake water storage contract negotiations previously managed by USBR. KRCD's jurisdiction included the Kings River service area, except for cities outside of existing irrigation districts. Later changes to the Act excluded all incorporated cities (KRCD 2019; Provost 2014: 41). In 1954, the year in which Pine Flat Dam was completed, the KRCD and USBR entered into a one-year storage agreement. The agreement, which enabled the KRCD to repay the Pine Flat Dam's construction costs, required water consumers to pay \$1.50 per acre-foot of water released from storage, not including flood releases (Provost 2014:52). Between 1954 and 1963, KRCD played a critical role in Pine Flat Lake contract negotiations, representing water users in contracting with USBR for water storage agreements (KRCD and KRWA 2009:9-10).

The Act provided KRCD flexibility in meeting the region's dynamic water requirements. The also Act enabled KRCD to furnish water and power; acquire and dispose of property; construct water works facilities; appropriate and conserve water; maintain actions involving water rights; incur debt; enter into contracts; issue bonds; cooperate with the U.S. government; and control flood water (KRCD 2019).

Following the Act, the KRCD continued negotiations with USBR regarding whether USBR would exercise Reclamation Law over the Kings River and whether any exercise

of powers should continue after KRCD had paid in full for the Pine Flat Dam's construction. In October 1982, the Reclamation Reform Act exempted Pine Flat Dam (and all other USACE-constructed dams) from Reclamation Law (Provost 2014:44). By 1987, 18 small dams blocked the Kings River beginning at Pine Flat Dam and continuing to the San Joaquin River, with 61 canals and ditches intersecting with the river for irrigation purposes (Palmer 1987:20).

Today, KRCD activities are diverse, with responsibilities in flood control, hydroelectric power generation, improved water management and efficiency, environmental and regulatory oversight, and groundwater management. Additionally, the KRWA continues to function as a non-profit organization overseeing irrigation water distribution of its 28 member agencies as well as assisting its members to meet the Sustainable Ground Water Act goals.

Pine Flat Powerplant

The Pine Flat Powerplant, completed in 1984, was rededicated in 2004 as the Jeff L. Taylor Pine Flat Power Plant after long-time KRCD general manager Jeff L. Taylor. The plant was engineered by International Engineering Company, Inc. (IECO). IECO was established in the early 1950s by the Morrison Knudsen Company, Inc. (MK) as an engineering subsidiary (Funding Universe n.d.).

In 1973, KRCD contracted with IECO for a comprehensive study of water issues within the KRCD service area (IECO 1974; KRCD 1974:B-1). The 1973-1974 study concluded that modernizing the service area would result in more water available for irrigation, improved flood control activities, and the potential for power generation (IECO 1974:S-1). The study proposed five power developments, consisting of powerhouses at Pine Flat Dam, Piedra Afterbay Dam, Dinkey Creek, Rodgers Crossing, and Mill Creek. The five developments would collectively constitute the "Kings River Hydroelectric Project"; however, only the Pine Flat Power Plant was actually constructed (IECO 1974:S-2, S-3; IECO 1975:I-1).

IECO determined that hydroelectric power generation would benefit growing Statewide energy needs and potentially facilitate electric water pumping at groundwater wells throughout the KRCD service area, thereby justifying the cost of powerplant construction (IECO 1975:III-1).

In 1974, the KRCD applied to the FPC for a preliminary permit to construct a powerhouse at the Pine Flat Dam site (KRCD 1974:1). IECO engineered the plant using specifications influenced by the 1973-74 study. The Pine Flat Power Plant already had the necessary penstock connection points embedded within the existing dam, which facilitated construction (IECO 1974:V-2). The powerplant design called for the use of local alluvial deposits, which contained material suitable for concrete aggregate. The deposits were found along the Kings River and the lower valley of nearby Mill Creek. The design also required an extension of the three existing 13-foot-6-inch penstocks embedded within the dam, and a new penstock measuring 12 feet in diameter (IECO 1974:V-5, V-6).

Pine Flat Transmission Line

DWR agreed to purchase the power generated at Pine Flat Dam for the State Water Project (SWP). The SWP utilizes power generated at powerplants throughout the State to offset costs of conveying water for commercial and residential use. By 1978, the SWP required additional power sources for long-term reliability and growth. DWR obtains power through the CAISO market and power purchase agreements to meet the power demand. To support the SWP operations, nine powerplants were constructed and connections to multiple additional power facilities were incorporated. However, the power purchases required to meet the SWP pumping load demand exceeds the power generated and sold by all power generating facilities operated by DWR. In order to transmit the power generated at the Pine Flat Power Plant, DWR constructed the Pine Flat Transmission Line, a 0.8-mile transmission line (FERC Project No. 2876) from the powerplant to an existing PG&E transmission tower and power grid connection point for the Balch No. 2-to-McCall 230-kV transmission line (DWR 2019; KRCD 1978:x-xii, I-4, A-5). The Pine Flat Transmission Line facilities under the Project are owned and maintained by DWR.

In 1991, fishery groups filed a “public trust” complaint with the State that required a 300,000 acre-foot minimum pool and a 250 cfs minimum release from the Pine Flat Dam. Negotiations with fishery interests concluded in 1996 and in 1997, in coordination with the management of their three upstream reservoirs, PG&E agreed to allow a minimum pool of 100,000 acre-feet within Pine Flat Lake (Provost 2013). Structural modifications to the powerplant were necessary to manage water temperatures. Between 2001 and 2003, a turbine bypass was constructed for the penstocks to comply with the agreement (USACE 2001:2). The turbine bypass, completed in 2003, can divert water from the penstocks into the Kings River to maintain suitable water temperatures for fisheries (Provost 2014:140).

Description

The Pine Flat Transmission Line originates at the KRCD Pine Flat Power Plant switchyard. From the switchyard, the transmission line extends approximately 0.8 mile south to the 230-kV Balch #2-McCall line, owned by PG&E. Three steel-latticed self-supporting towers, varying from 79 to 112 feet in height, support the line. The right-of-way acreage covered by the license is 11.40 acres, consisting of 9.19 acres of United States-owned land and 2.21 acres of privately-owned land (DWR 2023).

3.12.3 Potentially Affected Archaeological and Historic Built Environment Resources

Lands within the FERC Project boundary were surveyed in August 2023 for archaeological and built environment resources and, therefore, additional survey of the FERC Project boundary is not necessary to document previously unrecorded resources. The Pine Flat Transmission Line itself was constructed in 1978 and will be 46 years old at the time of the new license application. The line will be evaluated for NRHP eligibility during the term of the new license once it is 50 years old.

Evaluating historic-era buildings, structures, and objects (i.e., built environment resources) for their potential eligibility for listing in the NRHP or the CRHR assists in determining whether significant, or important, resources are present within a project area, and subsequently whether a project may have the potential to affect properties eligible for listing in either register. NRHP determinations assist in NHPA Section 106 compliance, which is conducted by federal agencies when a federal undertaking could affect historic properties. The CRHR determinations assist California and local government agencies in complying with State regulations, including the California Environmental Quality Act, when it is found that a project will require State funding, permits, or approvals and could impact historical resources.

A review of available archival and online data sources indicates that prior to 1900, development in the vicinity of the FERC Project boundary is relatively sparse with only a few unnamed roads, fence lines, and a house identified. However, one notable feature downstream from the FERC Project boundary is the “Indian Rancheria” located northeast of the confluence of the Kings River and Mill Creek (approximately one mile downstream from the Pine Flat Transmission Line). The rancheria was recorded on the 1879 GLO plat but is not present on the subsequent 1916 GLO plat covering the same location. This rancheria is likely on the same location as the “Choinumni Cemetery,” a dedicated and currently used Native American cemetery within Fresno County’s Choinumni Park.

Between 1900 and 1940, development of the general vicinity surrounding the FERC Project boundary greatly increased. Notable linear features in the general vicinity of the FERC Project boundary developed during that time include the “Hume-Bennett Lumber Flume to Sanger” (also referred to as the Hume-Sanger Flume or simply the Sanger Flume) and the AT&SF, Reedley and Piedra Branch Railroad. The flume extended more than 60 miles along the Kings River connecting mill ponds in the Sierra Nevada with the finishing mill in Sanger and was reportedly the longest flume ever constructed. Additional notable features from the early-twentieth century include the towns of Piedra and Avocado, the Road to Trimmer, and Pine Flat School. By the mid-twentieth century, the historic USGS 7.5 minute topographic quadrangle maps show many of the landscape features still observable today including Elwood and Trimmer Springs roads, White Deer Road, Pine Flat Dam, and Pine Flat Lake.

Finally, as noted in Section 3.12.1, the existing FERC Project boundary intersects with two additional built environment facilities (the Pine Flat Power Plant and the Pine Flat Power Plant Intake Structure) which are managed separately by KRCD under FERC Project No. 2741. Neither resource is considered further in support of FERC Project No. 2876. The Pine Flat Transmission Line also traverses two Pine Flat Dam access roads under the jurisdiction of USACE. The roads consist of the primary access route connecting Pine Flat Road to the crest of the dam and an auxiliary route connecting the dam access road to a USACE water tank. Both roads are actively used and maintained by USACE and are located on USACE-managed lands. Based on a review of design drawings, historic aerial photographs, and historic topographic maps, it appears as though both roads date to the 1950s and were originally associated with dam construction. They have since been repurposed for access and continue to be used

today. Neither road is considered a Primary Project Road for the purposes of FERC Project No. 2876 and DWR does not have jurisdiction over their use, maintenance, or management. Neither road has any potential to be impacted by operations and maintenance of the Pine Flat Transmission Line.

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3.13 TRIBAL RESOURCES

The existing FERC Project boundary and surrounding area are traditional and ancestral lands and waters of Foothill Yokuts peoples. The following section provides cultural-environmental context pertinent to the current state of the existing environment as it relates to Tribal resources. This section also discusses potentially affected Native American Tribes, Lands, and Interests.

3.13.1 Cultural-Environmental Context

For Native peoples of North America, *where* traditional events, practices, and lifeway processes have occurred are often much more important than *when* they have occurred. As this suggests, geography—and the stories, songs, prayers, and other traditions that tie intimately and indelibly to place—simultaneously speaks to history and time.

Yokuts history tells of creation, a time when the world was flooded. Eagle and Crow were flying, looking for a place to land. Eagle and Crow asked Duck to bring up mud from the water, which became land. The place of creation is the Sierra Nevada Mountains and the Coast Mountain Range (Kroeber 1907:204-205; Kroeber 1925:510). Geographical formations of these events continue to serve as landmarks and educational lessons on cosmology and transformation integral to everyday functions and capacities for Yokuts peoples. From time immemorial, unique ancestral and traditional cultural land/waterscapes have provided capacities, functions, meanings, power, and life to Yokuts peoples for navigating processes of change through cultural compasses and traditional knowledge systems of continuity. The Choinumni Yokuts traditional cultural land/waterscape is situated “along Mill Creek from the junction of its north and south forks to its union with Kings River” and envelopes the Project area (Gayton 1948:143; see also Spier 1978:437 and Figure 1 and Figure 2).¹

¹ Alternatively spelled “Choinimni” by some sources, including Gayton (1948) and Kroeber (1925). Spelling in this report is in following local Tribal governance conventions as “Choinumni.”

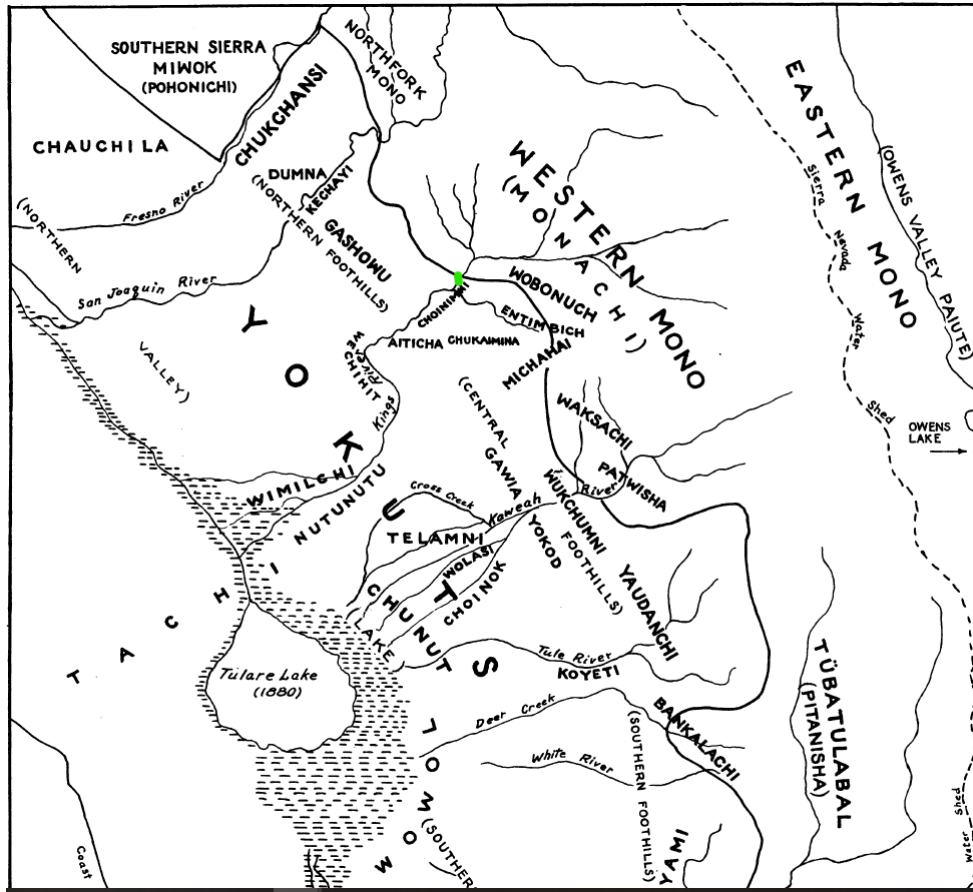


Figure 3.13-1. Excerpt of “Map 1. Yokuts and Western Mono tribes” (Gayton 1948). The green dot represents the general Project location.

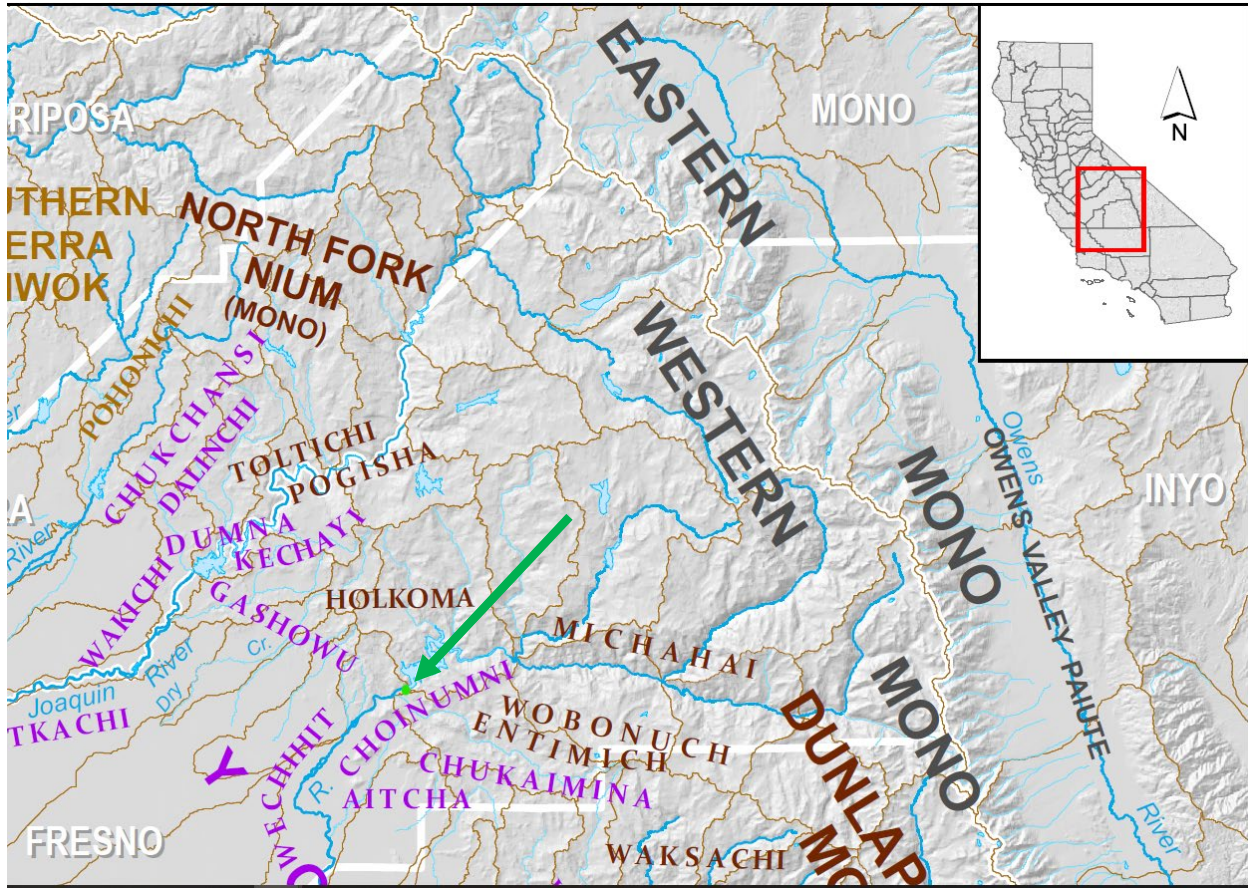


Figure 3.13-2. Excerpt of “Historic Tribal Groups of the South Central Homeland” prepared by the California Department of Water Resources, South Central Region Office; note the specific identifier for Choinumni.² The green dot represents the general Project location.

Native identity and relationships to the environment are partially defined by linguistics (Silverstein 1996; Kroskrity 2009, 2018). The Yokuts language is included in the broader Penutian family, a diverse group of languages including Miwok, Costanoan, Maiduan, and Wintuan (Silverstein 1978). The traditional and ancestral lands and waters of the linguistically related Northern Valley Yokuts are situated to the north, and Miwok traditional and ancestral lands and waters lie to the north-northeast. Southern Valley Yokuts traditional cultural subsistence focuses on Tulare, Buena Vista, and Kern lakes that are fed by the lower Kings, Kaweah, Tule, and Kern rivers from the western slope of the Sierra Nevada. The lower elevations in the San Joaquin Valley have been home to Southern Valley Yokuts tribes. Traditional territories of a few localized Foothill Yokuts tribes are indelibly connected to the foothills. Higher elevations (typically above 3,000 feet) marked the transition to typical Western Mono territory. Yokuts, Mono, and Southern Sierra Miwok groups have shared an otherwise regionally unique moiety

² Available online at <https://www.lessonsofourland.org/wp-content/uploads/2017/08/HistoricalTribalGroupsSouthCentralHomeland20110719.pdf>.

system of social organization and are traditionally multilingual, bringing forward the importance of recognizing “the practical significance of Indigenous patterns of multilingualism and the prescriptive force they exercise on contemporary and future linguistic adaptations of these communities” (Kroskrity 2018:11; see also Kroskrity 2009).

The Kings River and its tributaries have provided food (i.e., fish and waterfowl), riparian plants for gathering and basket making, and avenues of travel for small watercraft. Ancestral Yokuts villages are situated near major waterways and originally built on low mounds to prevent spring flooding. Villages were occupied for the majority of the year as cycles of movement-pause-and-return allowed seasonal resource gathering (McCarthy 1995). Northern Foothill Yokuts, including the Dumna and Gashowu, located immediately to the north, may have entered the vicinity by way of the rough country forming a loose boundary with the central Foothill Yokuts. Yokuts traditionally have patrilineal lineages with two moieties. Yokuts patrilineal lineages are each associated with a totem such as Eagle, Falcon, Dove, Crow, Rattlesnake, Coyote, Bluejay or Cougar. The lineages belong to one of two moieties, translated as “upriver” and “downriver.” A person’s lineage influenced their social roles, with each moiety including a chiefly lineage (Spier 1978:471).

Hunters used both plain and sinew-backed bows. Most Yokuts bows were made by Mono people, from whom Yokuts procured them in trade (Spier 1978:474-75). Arrows were tipped with either locally available quartz or obsidian imported from Owens Valley or the Coast Ranges. The area remains important for hunting and for gathering plant foods and basketry materials.

As with other native communities in California, Spanish explorers and missionaries, miners, ranchers, and other European immigrants who entered the San Joaquin Valley after 1700 dramatically altered and impacted Southern Valley Yokuts families, communities, cultural and religious practices, and viable futures. The introduction of European culture and new diseases proved devastating to the native population. Traditional lifestyles were diminished, numerous people died from disease, and tribal sovereignty was both threatened and attacked (Moratto 1988:174).

Although California was relatively distant from the early-sixteenth century actions of explorers and conquistadors in Mexico, the smallpox epidemic introduced by Cortés and his army in 1519 reached mainland North America, and likely spread to California populations. The extent of this epidemic is not quantified, but later disease events decimated California Native populations, through waves of “Old World” diseases like smallpox, measles, influenza, and diphtheria. These epidemics killed thousands of enslaved and converted Native people at the California missions beginning in 1769, and effects proliferated to Yokuts populations as those escaping and fleeing from the missions brought diseases with them to remote hiding areas, and mission agents sought and captured some Foothill Yokuts as replacements for the dying and escaping (Preston 1996).

Spanish expeditions reached the hinterlands with frequent confrontations with Yokuts communities (Cook 1960, 1962). Relations between Native and non-Native people worsened with Mexico's acquisition of California once it won independence from Spain in 1821. Settlers arrived in Alta California to receive land grants. Some Native groups resisted, including the Yokuts and Miwok, who conducted guerilla raids on ranchos, often to steal horses (Castillo 1978:106). The 1830–1833 malaria epidemic was also devastating. According to Cook (1955), the population of interior tribes may have been reduced by 75 percent. Tribal communities were undoubtedly profoundly affected in every way and their social patterns were changed in ways that are not fully understood. Stories of the annihilation and decimation of Yokuts have been recounted by Gayton (1946, 1948) and Davis-King (2009).

After defeating Mexico in the 1840s, the U.S. acquired California through the signing of the Treaty of Guadalupe Hidalgo in 1848, giving the U.S. full ownership of California. As Americans flooded into California in the same year the treaty was signed in response to the discovery of gold, indigenous populations were further displaced as prospectors and settlers sought to acquire land and mining claims. In response to resultant conflicts within the State, the U.S. Senate appointed a commission to negotiate with Native communities, resulting in the Camp Belt Treaty of 1851, signed by representatives of the “Holcumas and Tuhucmaches” among others. These treaties promised the retention of some ancestral land and various farming aids in exchange for a majority of traditional territories (U.S. Congress, House, Committee on Indian Affairs 1920; Theodoratus et al. 1985:40). These treaties were never ratified.

The Tule River War of 1856 consisted of a clash of nearby Yokuts groups with settlers encroaching on lands promised in the treaty. In a six-week period, the conflict escalated to include the California State Militia and a detachment of the army from Fort Miller. The heightened tensions extended to all groups in the area, regardless of their participation in raids. The Tule River Farm near Porterville was established in 1858, and became a federal reservation in 1864, housing local Tule River groups as well as Owens Valley Paiute who had been removed from their lands after the Owens Valley War of 1863. Nearby settlers soon objected to the reservation, resulting in the relocation of the Tule River Reservation in 1873. The reservation was established by a Presidential Executive Order of Ulysses S. Grant as a homeland for Tule River, Kings River, Owens River, Monache, Cajon and other scattered tribal groups.

In 1858, 200 Native people from the Kings River were relocated by the Fresno Indian Agency to the “Fresno Farm,” located on the Fresno River (Theodoratus et al. 1985:46). The Fresno Farm was the nearest reservation to the Kings River people that had been created by the treaties; it lasted only until 1859. It never succeeded in any sense due to underfunding and corrupt agents. People left the reservation and returned to their previous homes (McCarthy 2011:20).

As a result of the Gold Rush, the lumber business became a thriving industry and “working in the woods” for these enterprises in the cash economy became a common career for many Native American men (McCarthy 2011). Men worked in many capacities such as limbers, fallers, and choker-setters. Some women worked in the

kitchens at the lumber camps (Theodoratus et al. 1985:88–89). This work allowed people to return to their former territories.

Congress passed the Indian Homestead Act of 1884 and the Indian Allotment Act of 1887 (aka the Dawes Act), which permitted Indians to obtain land legally for the first time. It was hoped that by allowing people to take individual allotments, larger groups could be separated into nuclear family farming units, which were seen as more appropriate for capitalism (Casey 2020; Garza 2015; Noguchi 2009). In many cases, however, people chose allotments near old villages or other culturally valued places and maintained their communities. Unfortunately, many allotments were lost, either through the sale of the property due to great financial need, or because they were ceded when taxes became due. Rancherias allowed people to continue to live on their traditional territories pursuing a mixed economy, with wages, gardens, and traditional foods supporting their livelihoods. This strategy was particularly successful when consistent jobs, such as logging, were locally available. When they were not the conditions were marginal for those who wished to remain in their homeland and many communities were not afforded the opportunity to return.

Tribes continued to face pressures to abandon traditional religious and cultural practices through the twentieth century. Congressional and State mandates for reservation and rancheria termination as well as federal recognition status hurdles prevented equitable consideration, treatment, and support of Indigenous people.

However, Tribes continue to steward their language, culture, traditions, and viable futures through various programs within their communities and Tribal governments. Several Tribes have been successful at gaining federal recognition of their sovereign nations, while others are not yet recognized. Networks of resilient Indigenous people and their communities continue their stewardship commitments to the natural-cultural environment that overlaps and envelopes the Project.

3.13.2 Potentially Affected Native American Tribes and Lands

The traditional and ancestral lands and waters of Yokuts peoples include what are known today as the Southern San Joaquin Valley and the adjacent Sierra Nevada. Southern Valley Yokuts traditional religious and cultural practice is indelibly connected to interrelated and interfunctional geographical areas of the Tulare, Buena Vista, and Kern lakes that are fed by the lower Kings, Kaweah, Tule, and Kern rivers from the western slope of the Sierra Nevada (Callaghan 1958; Gayton 1948; Spier 1978; Wallace 1978:448). The Kings River and its tributaries integrally sustain an environment of plants, animals, and minerals that, in turn, has historically supported places of intensive dwelling and homecoming, and avenues of travel and trade since time immemorial..

Southern Valley and Foothill Yokuts-affiliated Tribes include (alphabetically listed).³

- Dumna Wo-Wah Tribal Government
- Kings River Choinumni Farm Tribe
- Kitanemuk & Yowlumne Tejon Indians
- Picayune Rancheria of Chukchansi Indians
- Santa Rosa Rancheria Tachi Yokut Tribe
- Table Mountain Rancheria
- Tejon Indian Tribe
- Traditional Choinumni Tribe
- Tule River Indian Tribe
- Wuksache Indian Tribe/Eshom Valley Band

As discussed above in Section 3.12, preliminary outreach for the relicensing was sent via certified mail on July 16, 2019 to the following representatives and Tribes:

- Chairperson Robert Ledger Sr. of the Dumna Wo-Wah Tribal Government
- Stan Alec of the Kings River Choinumni Tribe
- Chairperson Rueben Barrios Sr. of the Santa Rosa Rancheria Tachi Yokut Tribe
- Chairperson Leanne Walker-Grant of the Table Mountain Rancheria
- Cultural Resources Director Robert Pennell of Table Mountain Rancheria

Robert Pennell, Tribal Cultural Resources Director for Table Mountain Rancheria, responded in a letter dated August 1, 2019, that the Rancheria is very interested in the Project as it lies within its cultural area of interest. HDR responded via email and telephone on August 14, 2019, acknowledging the Rancheria's interest in the Project and that further consultation would occur once the NHPA Section 106 compliance process was initiated during relicensing (Lloyd et al. 2020).

Additional outreach was conducted in April 2023 to contact Tribes listed above, as well as neighboring Tribes with potential interest and concerns for the Project, in accordance with "reasonable and good faith efforts to identify Indian Tribes and Native Hawaiian organizations that shall be consulted in the Section 106 process" (36 CFR 800.2(c)(2)(ii)(A)). Phone calls and emails were made to provide initial information on the Project and an invitation to a meeting held on May 12, 2023. In addition to the Tribes listed above, the following Tribes were contacted:

³ Cultural affiliations are self-reported by Tribes as listed with the State of California Native American Heritage Commission.

- Big Sandy Rancheria of Western Mono Indians
- Chicken Ranch Rancheria of Me-Wuk Indians
- Cold Springs Rancheria
- Dunlap Band of Mono Indians
- Nashville Enterprise Miwok-Maidu-Nishinam Tribe
- North Fork Mono Tribe
- North Fork Rancheria of Mono Indians

Of those Tribes contacted, the Dunlap Band of Mono Indians was the only Tribe to have a representative at the meeting on May 12, 2023.

No tribal lands⁴ are located within the FERC Project boundary. According to the United States Census Bureau and the California Native American Heritage Commission (NAHC) digital atlas (NAHC 2020), the closest tribal lands are Public Domain Allotment (PDA) lands held in trust by the government for Indian individuals or families. The PDA is approximately 4.0 miles east of the FERC Project boundary, and south/southeast of Pine Flat Lake adjacent to Zebe Creek.

3.13.3 Potentially Affected Native American Interests

Indigenous communities do not view natural and cultural resources differently; they are considered one and the same. Natural resources used by tribal communities within the Central Valley/Sierra Nevada region that overlap with the Project include all waters, as well as the following plants (Lightfoot and Parris 2009):

Bear grass	Coffeeberry	Mountain mahogany	Sugar Pine
Big-leaf maple	Currants	Mugwort	Sunflowers
Black oak	Dandelions	Mushrooms, unidentified	Tarweeds
Blackberry	Deer grass	Native barley	Thimbleberry
Blue oak	Dogbane	Nightshades	Tobaccos
Bracken fern	Elderberry	Onions	Toloache
Brodiaeas	Foothill/gray pine	Oregon oak	Toyon
Buckbrush	Gooseberries	Pinyon pine	Tules
California bay	Goosefoots	Ponderosa pine	Turkey mullein
California blackberry	Incense-cedar	Raspberries	Valley/white oak
California buckeye	Interior live oak	Red alder	Western redbud
California hazel	Ithuriel's spear	Red maids	White fir
California maiden-hair fern	Juniper	Redberry	Wild oats
California wild grape	Laurel	Redbud	Wild rose

⁴ The term "tribal land" means any land or interests in land owned by any Indian tribe, title to which is held in trust by the United States, or is subject to a restriction against alienation under laws of the United States.

Canary grasses	Manzanita	Sedge	Willow
Canyon live oak	Mariposa lilies	Skunkbush	Wormwoods
Cattails	Milkweed	Snow bush	Yerba Aanta
Ceanothus	"Miner's lettuce"	Soaproot	-
Clarkias	Monkeyflower	Sour berry	-
Clovers	Mountain dogwood	Strawberries	-

Animal natural/cultural resources include (Lightfoot and Parris 2009):

American coot	Ducks	Honeybee	Sacramento Sucker
Angleworms	Dusky grouse	Horseflies	Salmon flies
anta	Falcons	Jays	Squirrels
Band-tailed pigeon	Foxes	Loons	Steelhead Thicktail chub
Bears	Freshwater clams	Mourning dove	Sturgeons
Blackbirds	Freshwater pearl mussel	Owls	Tule Elk
Black-tailed deer	Geese	Pacific lamprey	Turtles
California gall wasp	Golden eagle	Polyphemus moth	Western rattlesnake
California quail	Gophers	Pronghorn	Western ridged mussel
Caterpillars	Grasshoppers	Rabbits	Woodpeckers
Ceanothus silk moth	Greater roadrunner	Rails	Woodrats
Chinook	Grebes	Rainbow trout	Yellow-billed magpie
Chipmunks	Hardhead	Ravens	Yellowjacket larvae
Crayfish	Hares	Sacramento perch	-
Crows	Hawks	Sacramento splittail	-

Minerals of natural/cultural importance include: basalt, chert, clay, hematite, magnesite, obsidian, salt, and steatite/soapstone (Lightfoot and Parris 2009).

A review of historic General Land Office (GLO) plats of the general FERC Project boundary noted an "Indian Rancheria" located northeast of the confluence of the Kings River and Mill Creek (approximately 0.8-mile west and outside of the FERC Project boundary). The rancheria was recorded on the 1879 GLO plat but is not present on the subsequent 1916 plat covering the same location. This rancheria is likely on the same location as the "Choinumni Cemetery," a dedicated and currently used Native American cemetery across the river from Fresno County's Choinumni Park and about one mile downstream of Pine Flat Lake.

Named places and features often reflect focal points in a culture: traditional religious and cultural importance is often reflected by some of the most durable and remembered place names. Anthropologist Keith Basso (1996) has detailed at length how named places impart the wisdom and lessons of Indigenous traditional knowledge and value systems. Anthropologist Peter Nabakov (2006:x-xi) has similarly identified how Native

peoples often “named places to commemorate where the earliest mythic figures had played out their great adventures” and how “[t]hrough place-names ... [they] staked user claims to ... foraging areas, hunting grounds, fishing stations and historical and sacred locations.” Anthropologist Brian Thom (2005:197) expands on this, explaining that how Native place names function as “important linguistic devices for evoking and negotiating ... attachments to place.... [and] are called on to engage social discourses outside the culturally in situ talk of landscape, myth and spirit and ex situ talk of identity and property.” Thom further (2005:197) observes that Native place names both “reflect ideas of territory” and convey “culturally implicit knowledge of land use, personal history, charter myth, and deep history.” Such expressions make “these names ... powerful linguistic devices in social contexts” and they, along with associated cultural stories, function as “sophisticated linguistic tools that bind people to place” (Thom 2005:214). As this suggests, for Native people in general and Yokuts people specifically, place names and traditional history are often interrelated and symbiotic to the integrity and perseverance of the traditional religious and cultural importance of places and land/waterscapes that function and convey traditional cultural property/traditional cultural landscape significance.

Community historians, documentarians, cultural practitioners, and knowledge bearers have informed ethnographic investigations of several Tribal ancestral places in the vicinity of the FERC Project boundary that are components of the Choinumni Yokuts traditional cultural land/waterscape, inclusive of: the Kings River, four Yokuts villages, a fishing camp, and cemetery (Gayton 1948; Hoover 1966). Components of these ancestral places have been identified through archaeological investigation as well, reporting at a minimum of four ancestral places with archaeological designations (CA-FRE-1674H, CA-FRE-1675, CA-FRE-1676, and P-10-005296) that form a “larger complex of permanently occupied villages” west of and outside the FERC Project boundary (Meighan et al. 1988:137; Armstrong and DeCorse 1983; Armstrong and Kenton 1983; Fenenga 1948: 6-7; Hickey and Rechtman 1983; Monastero 2009; Powers 1877; Hodge 1912; Kroeber 1925; Gayton 1948). Additionally, an ancestral food processing site recorded archaeologically as CA-FRE-665 located on the right bank of the Kings River about 0.6 mile outside of the FERC Project boundary and about 0.8 mile west of Pine Flat Dam. Although a site visit to the ancestral site designated as CA-FRE-665 was conducted in 2019, and subsequent assessment incorporated previous documentation that stated the site was not considered eligible for the NRHP (FERC 1979; Lloyd et al. 2020; Varner 1976), Tribal expertise (36 CFR §800.4[c][1]) on the significance of the resource was not considered or included in the resource assessment. Under the NHPA Section 106 process as outlined at 36 CFR § 800.16(l)(1), “historic properties” are defined as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the [NRHP] [... and] includes properties of traditional religious and cultural importance to an Indian tribe.”⁵ Historic properties are evaluated for their eligibility to the NRHP using specific

⁵ As indicated in National Register Bulletin 36: *Guidelines for Evaluating and Registering Archaeological Properties* (Bulletin 36; Little et al. 2000), “[a]n archeological property may be ‘prehistoric’ (precontact), ‘historic’ (post-contact), or contain components from both periods. What is often termed prehistoric archeology studies the archeological remains of indigenous American societies as they existed before substantial contact with Europeans and resulting

criteria found at 36 CFR § 60.4. *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation* (Bulletin 15; NPS 1997) states that information and guidance on traditional cultural values and their associations to historic properties should be sought from National Register Bulletin 38, *National Register Guidelines for Evaluating and Documenting Traditional Cultural Properties* (Bulletin 38; Parker and King 1998). Designations of Traditional Cultural Properties (TCPs) and Traditional Cultural Landscapes (TCLs) serve as expressions of significance rather than NRHP property types, and which should be identified, evaluated, and assessed through the same considerations, professional standards, methods, and sensibilities as TCPs (Advisory Council on Historic Preservation [ACHP] 2012:2).

If a property that has TCP/TCL significance is evaluated as eligible or potentially eligible for listing on the NRHP, it becomes the responsibility of the lead federal agency, per 36 CFR §800.4(d) *et seq.*, to assess, in coordination or consultation with the community or communities for whom it is important, whether the proposed project actions and activities would have an adverse effect on it. In this context, it is important to note the importance of inclusion of Indigenous Knowledge (IK) of affiliated Tribes and that the ACHP stresses in their historic preservation guidance that:

There are very different views [between Federal agencies and Native American Tribes] on *the treatment of effects* to traditional cultural landscapes. Non-native people tend to think in a linear fashion while native peoples tend to think cyclically. This difference in world view affects not only whether or not the significance of sacred places is understood but also how such places should be treated. These places are part of living communities and are their actual history (ACHP 2011:2).

As stipulated at 36 CFR §800.4(c)(1):

The passage of time, changing perceptions of significance, or incomplete prior evaluations may require the agency official to reevaluate properties previously determined eligible or ineligible. The agency official shall acknowledge that Indian tribes and Native Hawaiian organizations possess special expertise in assessing the eligibility of historic properties that may possess religious and cultural significance to them.

The Native American interests identified in this section as overlapping and enveloping the FERC Project boundary (e.g., natural/cultural resources including plants, animals, minerals, and tribal ancestral places, etc.) have not explicitly been identified as properties of traditional religious and cultural importance to an Indian tribe (i.e., historic properties), nor have they each been evaluated for their eligibility to the NRHP in accordance with guidance from Bulletin 15, Bulletin 38, and the ACHP (2012) for

written records. The [NHPA] treats prehistory as a part of history for purposes of national policy; therefore, the terms 'historic,' and, 'historical,' as used in [Bulletin 36], refer to both pre- and post-contact periods." As is done in Bulletin 36, the term "precontact" is used throughout this report instead of "prehistoric" unless directly quoting materials that use "prehistoric," quoting legislation or regulations.

TCP/TCL significance for those that may experience Project-related effects. In consideration of the framework and context provided above, the Licensees will coordinate with Tribes to better understand and consider the effects of the Project.

4.0 ISSUES AND PROPOSED STUDIES

This section is divided into three subsections. Section 4.1 provides DWR’s “data gap analysis”, which includes a preliminary list of potential environmental issues that may need to be evaluated during the relicensing process. Section 4.1 also identifies known Project effects¹ and existing, relevant, and reasonably available information regarding potentially affected resources that would inform an analysis of each identified potential environmental issue and requirements in a new license regarding the issue and, if there is a data gap, any relicensing studies² DWR proposes to undertake to close the data gap. Section 4.2 describes Project O&M activities DWR proposes to undertake as a condition (i.e., Protection, Mitigation, and Enhancement [PM&E] measure) of the new license for the purpose of: (1) protecting or mitigating impacts from continued Project O&M; or (2) enhancing resources affected by continued Project O&M (proposed PM&E measures). Section 4.3 provides a list of relevant qualifying federal and State of California comprehensive waterway plans and resource management plans.

4.1 DATA GAP ANALYSIS

4.1.1 Known Project Effects

DWR is unaware of any significant existing Project effects.

The Project occupies 11.52 acres of semi-disturbed lands uphill of the Kings River. Outside of annual inspections that lead to occasional vegetation management to meet regulatory requirements, Project O&M is infrequent and localized. Vegetation management is performed outside of the nesting bird season, and Project activities follow all regulatory requirements, including for the protection of nesting birds. All of the poles were identified as generally meeting APLIC standards, and there have been no reports of birds strikes or electrocutions. One likely perennial drainage runs through the FERC Project boundary, along with the Kings River, but there are no routine (or known non-routine) Project activities that would impact any aquatic resources. The only other sensitive resources identified within the FERC Project boundary are wildlife species that would primarily travel through or forage within the Project. They would be expected to move out of the area when Project activities occur, and O&M does not result in habitat loss or change.

¹ In this PAD, consistent with the April 20, 2022, Council on Environmental Quality (CEQ) rule amending its regulations implementing the National Environmental Policy Act of 1969, an effect is a change to the human environment from the proposed Project (or alternatives) that is reasonably foreseeable and include direct, indirect and cumulative effects. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Cumulative effects are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

² For the purpose of this PAD, a “study” is any data gathering effort to be undertaken by DWR as part of the relicensing needed for DWR, FERC, and others to assess Project effects and inform proposed requirements in the new license. Studies may or may not include fieldwork, and do not include analysis of Project effects.

4.1.2 Identification of Study Needs

Identification of potential environmental issues is a key step in the relicensing process because the issues represent specific concerns or questions that may need to be addressed. Once environmental issues that are to be evaluated are identified, existing information relevant to the issues can be assessed for adequacy, and additional information and potential studies needed to augment existing information can be identified. Identified potential environmental issues may or may not ultimately warrant specific PM&E measures.

DWR contacted agencies, Native American tribes, and NGOs on April 14, 2023, and requested a description of any issues they believed should be addressed during relicensing as well as information, including studies, they believed necessary to assess the issues and inform requirements in the new license. DWR held a meeting with the agencies, Native American tribes, and NGOs on May 12, 2023 where participants were reminded of the request. No replies were received. DWR's April 14, 2023, outreach is provided in Attachment A to this PAD.

Table 4.1-1 includes a list of preliminary potential environmental issues DWR believes are relevant to the Project relicensing. For each potential environmental issue, Table 4.1-1 identifies DWR's assessment of existing information to address the issue; DWR's identification of data gaps, if any; and, if a data gap is identified, DWR's proposed study to address the data gaps.

Table 4.1-1. Summary of preliminary potential environmental effect, existing information to address the effect, data gaps, and DWR's proposed relicensing studies, if any, to close the data gaps.

Preliminary Potential Environmental Effect within the Project Boundary	Existing, Relevant, and Reasonably Available Information	Identified Data Gap(s), If Any	Proposed Study to Close Data Gap(s), If Any
Soil erosion	As described in Section 3.2.2.2 of this PAD, the Project includes no spoil/borrow areas. A census of the area did not reveal any active erosion areas associated with the Project. Ground-disturbing Project O&M is minimal and concentrated in already disturbed areas around the transmission line towers and transmission line corridor.	Additional data gathering is not needed because Project O&M activities have very limited potential to cause erosion. Existing information is adequate to assess potential Project effects on soil erosion and to inform requirements in the new license.	None
Water quality and quantity	As described in Section 3.3.2, the Project does not use water. The transmission line passes well above the Kings River and several drainages, the largest of which is likely perennial.	Additional data gathering is not needed. The Project does not use water, so there are no effects on water quantity. All waterbodies in or near the FERC Project boundary are identified, and Project O&M does not occur in or near any known waterbodies. Existing information is adequate to assess potential Project effects on water quality and quantity and to inform requirements in the new license.	None
Aquatic resources, including fish	As described in 3.4, all facilities, maintenance, and operations of the Project are outside of watercourses and the FEMA Special Flood Hazard Areas. Three special-status fish and the special-status WPT are known to occur in the Kings River below the Project. Additionally, three AIS have the potential to occur either in the unnamed drainage and/or in Kings River below the Project.	Additional data gathering is not needed because none of the identified species occur in the area that is impacted by Project activities. Existing information is adequate to assess potential Project effects on aquatic resources and to inform requirements in the new license.	None
Riparian habitat	As described in Section 3.5.1.1 of this PAD, vegetation mapping was conducted in 2023 and one riparian alliance occurs in the FERC Project boundary, occupying 0.36 acre (3.15 percent).	A data gap does not exist. Existing information is sufficient to assess potential Project effects and to inform requirements in the new license.	None
Wetlands	As described in Section 3.5.5, the Project does not include a reservoir or any impoundments. No wetlands were mapped in the FERC Project boundary during terrestrial surveys in 2023.	Additional data gathering is not needed because recent surveys found no wetlands within or adjacent to the FERC Project boundary. Existing information is adequate to assess potential Project effects on wetlands and to inform requirements in the new license.	None
Special-status plants	Plant surveys were conducted on April 12 and June 1, 2023, and found no special-status plants within or adjacent to the FERC Project boundary. Vegetation mapping was also conducted, and sensitive vegetation communities were identified and mapped.	Surveys for botanical resources and sensitive vegetation communities were performed in 2023 and are provided in the PAD. Existing information is adequate to assess potential Project effects on special-status plants and inform requirements in the new license.	None

Table 4.1-1. (Continued)

Preliminary Potential Environmental Effect within the Project Boundary	Existing, Relevant, and Reasonably Available Information	Identified Data Gap(s), If Any	Proposed Study to Close Data Gap(s), If Any
Invasive plant species	Plant surveys were conducted on April 12 and June 1, 2023, and found 13 invasive weed species with Cal-IPC ratings.	Recent plant surveys were conducted within and adjacent to the FERC Project boundary and information on invasive plant species was collected at that time. This information is adequate to assess potential Project effects and inform requirements in the new license.	None
Avian species, including avian collision	As described in Section 3.5.2 of this PAD, data from a variety of sources, including the CNDDB, IPaC, and recent surveys at the Project determined that nesting and foraging bird species could potentially be affected by the Project. Incidental observations of nesting and foraging bird species were also taken during 2023 surveys within the FERC Project boundary. Additionally, in Section 3.5.2.5, the transmission line was assessed for compatibility with APLIC guidelines and information on bird collisions was gathered.	Data on avian species known or with the potential to be located within the FERC Project boundary was collected in 2023 through database searches, surveys, and habitat assessment. The transmission line's potential for avian collisions was also assessed. These data provide sufficient recent information on bird species that do or may use the habitat in the Project area for nesting and foraging and how they might be impacted by the Project, including through avian collision. This existing information is adequate to assess potential Project effects on birds and inform requirements in the new license.	None
Special-status bats	As described in Section 3.5.2 of this PAD, data from a variety of sources, including the CNDDB, IPaC, and recent surveys at the Project determined a list of potential special-status bats that may be affected by the Project. There are no Project facilities that provide bat habitat.	No Project facilities provide bat habitat. There is a possibility that bats could roost in trees and other locations along or near the FERC Project boundary. The information on special-status bat species with the potential to occur within the FERC Project boundary, combined with knowledge of where the bats could occur, is adequate to assess potential Project effects on special-status bats and inform requirements in the new license.	None
Other special-status wildlife species	As described in Section 3.5.2 of this PAD, data from a variety of sources, including the CNDDB, IPaC, habitat assessments, and recent surveys at the Project and neighboring Jeff L. Taylor-Pine Flat Hydroelectric Project determined a list of potential special-status wildlife species with the potential to occur within the FERC Project boundary.	Data on special-status wildlife known or with the potential to be located on the Project was collected in 2023 through database searches and combined with surveys and habitat assessment from 2020. These data are adequate to assess potential Project effects on special-status wildlife species and inform requirements in the new license.	None
ESA-listed plants	As described in 3.5.2.1, plant surveys were conducted in the FERC Project boundary on April 12 and June 1, 2023. No ESA-listed plants were identified. Suitable habitat for one ESA-listed plant species was present, but no designated critical habitat is present. A 2023 database search of the CNDDB, IPaC and CNPS did not reveal any additional potential ESA-listed plant species.	2023 botanical surveys, reinforced by 2023 database searches provide adequate information to assess potential Project effects on ESA-listed plants and inform requirements in the new license. Further, this existing information is adequate for Section 7 consultation with USFWS under the ESA.	None

Table 4.1-1. (Continued)

Preliminary Potential Environmental Effect within the Project Boundary	Existing, Relevant, and Reasonably Available Information	Identified Data Gap(s), If Any	Proposed Study to Close Data Gap(s), If Any
ESA-listed wildlife species and their critical habitats	Per Section 3.6.1, data from a variety of sources, including the CNDDB, IPaC, and recent surveys at the Project and neighboring Jeff L. Taylor-Pine Flat Hydroelectric Project determined a list of potential ESA-listed wildlife species with the potential to occur within the FERC Project boundary. A habitat assessment of the FERC Project boundary was performed during surveys on April 12 and June 1, 2023. Per IPaC, there are no critical habitats for terrestrial ESA-listed wildlife species within the FERC Project boundary, and no ESA-listed wildlife species have been documented to occur in the boundary.	The data from the 2023 surveys and habitat assessment, reinforced by the database searches, are adequate to assess potential Project effects on ESA-listed wildlife species and their critical habitats and inform requirements in the new license. Further, this existing information is adequate for Section 7 consultation with USFWS under the ESA.	None
Recreation	There are no recreation facilities, nor can the public access the Project, as described in Section 3.7.1 of this PAD.	The public is not allowed to access the Project, and no recreation occurs on the Project. Existing information is adequate to assess potential effects on recreation in and surrounding the Project and inform requirements in the new license.	None
Land use	Per Section 3.8.2, the lands within the FERC Project boundary are minimal (11.52 acres) and all Project facilities are on lands closed to the public. There are 7.94 acres of federal lands administered by the USACE, 1.11 acres of State of California lands submerged by the Kings River, and 2.46 acres of private lands. Surrounding lands are predominantly undeveloped.	The Project is on a very small footprint, with little development beyond the Project. Existing information is adequate to assess potential Project effects on land uses and to inform requirements in the new license.	None
Visual resources.	Per Section 3.9.2.4, the Project is not viewable from publicly accessible locations.	The public does not have access to the Project. Existing information is adequate to assess potential Project effects on visual resources and to inform requirements in the new license.	None
Environmental justice.	Per Section 3.11, the Project is an existing transmission line facility that has been operating for more than 44 years under the existing FERC license. DWR proposes no changes to the existing Project's facilities and features, FERC Project boundary, or operations.	The Project has been in existence for nearly over 44 years and does not propose any changes to operations. As part of the relicensing, DWR will conduct outreach and collaboration with various entities including local, State, and federal agencies, Native American Tribes and tribal representatives, NGOs and businesses and any member of the public that may be interested in the relicensing, where their input is anticipated to further inform this topic.	None

Table 4.1-1. (Continued)

Preliminary Potential Environmental Effect within the Project Boundary	Existing, Relevant, and Reasonably Available Information	Identified Data Gap(s), If Any	Proposed Study to Close Data Gap(s), If Any
Cultural resources.	Cultural resource studies were conducted in 2023 and are summarized in Section 3.12 of the PAD. The studies included a review of existing, relevant, and easily available information and a pedestrian survey in addition to information solicited from Native American tribes and agencies and gathered from DWR's archives. There are no archaeological resources in the FERC Project boundary. The Pine Flat Transmission Line was constructed in 1978 and does not meet the 50-year-old threshold for NRHP consideration. The Transmission Line will be evaluated for NRHP eligibility during the term of the new license.	Existing data from the 2023 background research and cultural resource studies are adequate to demonstrate that no archaeological resources are present in the FERC Project boundary. The only built environment resource, the Pine Flat Transmission Line, was constructed in 1978 and does not yet meet the 50-year-old threshold for NRHP consideration. This data is adequate to assess Project effects and inform requirements in the new license related to cultural resources. Existing information is adequate at this time to initiate NHPA Section 106 consultation with stakeholders. DWR anticipates this Section 106 consultation will result in the development of an HPMP that will be included in the new license.	None
Tribal resources.	T The results of the background and archival research identified no TCPs, ITAs, Indian Reservations, lands designated under tribal ownership, or specific ethnographic locales within the FERC Project boundary, as described in Section 3.13. Potentially interested Native American tribes and organizations have been identified with the assistance of the NAHC. Initial correspondence began in 2023 with potentially interested Native American tribes and organizations to provide Project information, to request information about tribal resources within the FERC Project boundary and general vicinity, and to solicit any concerns about the Project. No tribal resources within or adjacent to the FERC Project boundary have been identified to date and no specific concerns regarding the Project were identified by the individuals that were contacted.	Existing information is adequate to initiate NHPA Section 106 consultation with interested tribes and Native Americans. DWR anticipates this Section 106 consultation will result in the development of an HPMP that will be included in the new license.	None

4.1.3 DWR Proposed Studies

As shown in Table 4.1-1, existing information is adequate to assess Project effects and inform requirements in the new license. DWR will also conduct, as FERC's designated Federal Representative, informal consultation under Section 7 of the ESA and Section 106 of the NHPA and will incorporate any relevant information from those consultations into the License Application.

DWR contacted agencies, Native American tribes, and NGOs on April 14, 2023, and requested a description of any issues they believed should be addressed in the relicensing and information, including studies, they believed necessary to assess the issues and inform requirements in the new license. No replies were received.

At this time, DWR believes no relicensing studies are needed.

4.2 DWR PROPOSED MEASURES

DWR will propose measures in the License Application stage of relicensing the Project.

4.3 RELEVANT QUALIFYING PLANS

Section 10(a)(2)(A) of the FPA (16 U.S.C. § 803[a][2][A]) requires the Commission to consider the extent to which a project is consistent with federal and State comprehensive plans for improving, developing, or conserving waterways affected by the Project. On April 27, 1988, FERC issued Order No. 481 A, which revised Order No. 481, issued on October 26, 1987. This order provides that FERC give FPA Section 10(a)(2)(A) comprehensive plan status to any federal or State plan that meet each of the following three criteria: (1) it is a comprehensive study of one or more of the beneficial uses of a waterway or waterways; (2) it specifies the standards, the data, and the methodology used to develop the plan; and (3) it is filed with FERC. FERC's Revised List of Comprehensive Plans, dated August 2022, can be found at FERC's eLibrary (<https://cms.ferc.gov/media/list-comprehensive-plans>). A review of this list shows that the Commission has listed, under FPA Section 10(a), 94 comprehensive plans for the State of California. Provided below is a list of Qualifying Plans currently on file with the Commission that may be relevant to the Project relicensing.

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4. California Department of Parks and Recreation. 1994. Statewide California Outdoor Recreation Plan (SCORP). Sacramento, California. April 1994.
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6. U.S. Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American Waterfowl Management Plan. U.S. Department of the Interior. Environment Canada. May 1986.

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None

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5.7 SECTION 3.4 FISH AND AQUATICS

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5.17 SECTION 4.0 ISSUES, PROPOSED STUDIES AND QUALIFIED PLANS

None

Attachment A
Consultation

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From: [Kent, Robin](#)
To: colleen@hydroreform.org; theresa@americanwhitewater.org; lkipp@bsrnation.com; scott@lagunaaid.com; pubinfo@parks.ca.gov; julie.vance@wildlife.ca.gov; gerald.hatler@wildlife.ca.gov; abimael.leon@wildlife.ca.gov; brian.beal@wildlife.ca.gov; calshpo.ohp@parks.ca.gov; blancapaloma@msn.com; Oscar.Biondi@Waterboards.ca.gov; cknight@caltrout.org; pdesatoff@cidwater.com; bill@bmiguel.com; pdesatoff@cidwater.org; deagle@corcoranid.com; ClerkBOS@fresnocountyca.gov; markmckeanfarms@gmail.com; scott@lagunaaid.com; brandi.richard-thompson@fema.dhs.gov; FresnoFlyFishers@gmail.com; bstretch@fresnoirrigation.com; rstork@friendsoftheriver.org; mamorelli@jamesid.org; lcic1902@yahoo.com; glasselk@earthlink.net; cmk@altaid.org; shaugen@kingsriverwater.org; mmeadows@kingsriverwater.org; kingsriverwd@gmail.com; scott@lagunaaid.com; lastchanceditch@sbcglobal.net; lcic1902@yahoo.com; scott@lagunaaid.com; scott@lagunaaid.com; dsween@igboswell.com; vmcrowder@gmail.com; northkingsgsa@gmail.com; scott.flake; ahemans.peoplesditch@yahoo.com; markmckeanfarms@gmail.com; riverdaleirrig@gmail.com; dpeters@peters-engineering.com; munruh@igboswell.com; Brian.Bugsch@slc.ca.gov; Thaler.Parker@Waterboards; savannah.downey@waterboards.ca.gov; AnnMarie.Ore@waterboards.ca.gov; hbm1100@aol.com; lcic1902@yahoo.com; danny@trgid.com; bjohnson@tu.org; jwestra@tlbwsd.com; munruh@igboswell.com; wilcox.carlo@gmail.com; randy.p.olsen@usace.army.mil; david.m.simpson@usace.army.mil; Calvin.Foster@usace.army.mil; Jacob.K.Severns@usace.army.mil; Zeferina.J.Ruvalcaba@usace.army.mil; [Erskine,Michael R CIV USARMY CESPK \(USA\)](mailto:Erskine,Michael R CIV USARMY CESPK (USA)); scott@lagunaaid.com; Thomas.Holley@noaa.gov; steve.edmondson@noaa.gov; patricia_cole@fws.gov; richard_kuyper@fws.gov; Bowes,Stephen M; Samples.Sarah@epa.gov; r9.info@epa.gov
Cc: Jeremiah.McNeil@water.ca.gov; [Joseph.Muradyan \(Ovsep.Muradyan@water.ca.gov\)](mailto:Joseph.Muradyan (Ovsep.Muradyan@water.ca.gov)); [David.Merritt \(dmerritt@krcd.org\)](mailto:David.Merritt (dmerritt@krcd.org)); Charlotte.Gallock
Subject: KRCD/DWR: Pine Flat Relicensings Initial Relicensing Meeting and Request for Information
Date: Friday, April 14, 2023 4:11:28 PM
Importance: High

KINGS RIVER CONSERVATION DISTRICT
JEFF L. TAYLOR – PINE FLAT HYDROELECTRIC PROJECT, FERC PROJECT NO. 2741

DEPARTMENT OF WATER RESOURCES
PINE FLAT TRANSMISSION LINE PROJECT, FERC PROJECT NO. 2867

INVITATION TO MAY 12, 2023, INITIAL RELICENSING MEETING
AND
REQUEST FOR INFORMATION BY JUNE 15, 2023

The Kings River Conservation District (KRCD) is preparing to relicense its Jeff L. Taylor - Pine Flat Hydroelectric Project, FERC Project No. 2741 (KRCD Project) and the California Department of Water Resources (DWR) is preparing to relicense its Pine Flat Transmission Line Project, FERC Project No. 2876 (DWR Project), each of which is described below. The projects are located in the Kings River basin in Fresno County near the United States Army Corps of Engineers' (USACE) Pine Flat Dam. The two separate and distinct projects have current licenses from the Federal Energy Regulatory Commission (FERC) that expire on August 1, 2029. KRCD and DWR each plan to use FERC's Traditional Licensing Process (TLP) to relicense their respective project; and KRCD and DWR are each using HDR, Inc. to assist them in their relicensing. For these reasons, KRCD and DWR have decided, to the extent practical, to cooperate and coordinate on their relicensing efforts. Through this cooperative effort, KRCD and DWR hope to: (1) streamline the relicensing process for agencies, Native American tribes, and the public by coordinating the release and format of information; (2) reduce the relicensing costs for all interested parties by sharing information related to these projects; (3) maintain and enhance the overall comprehensive value of the projects; and (4) develop with agencies, Native American tribes, and the public a comprehensive plan for the management of resources affected by the projects.

One of the first steps under the TLP regulations is for KRCD and DWR to each prepare a Pre-

Application Document (PAD). The PAD will provide FERC and other potentially interested parties with existing, relevant, and reasonably available information pertaining to each project. The PAD also helps to identify issues and information needs.

This e-mail advises you of KRCD's and DWR's coordinated relicensings: (1) invites you to an initial meeting for the relicensings on May 12, 2023, and (2) respectively request your help in identifying existing, relevant, and reasonably available information that describes the existing environment near these projects or known potential impacts of one or more of the projects.

-

RSVP FOR INVITATION TO MAY 12, 2023, INITIAL MEETING

KRCD and DWR plan to hold a 1-hour virtual meeting ^[1] on May 12, 2023, to answer any questions you may have regarding the information in this e-mail and concerning the relicensings. **If you are interested in participating in this virtual meeting, please let us know by return e-mail no later than by May 8, 2023.** By May 10, 2023, we will send an invite to those who advise us they wish to participate in the virtual meeting.

PROJECT DESCRIPTIONS

KRCD Project

The KRCD Project is located on the north bank of the Kings River approximately 200 feet downstream of USACE's Pine Flat Dam. The KRCD Project is an energy-recovery project that operates in run-of-river mode to generate power from water released by the USACE from Pine Flat Dam. Releases are requested by the Kings River Water Association (KRWA) through its Water Master for irrigation use or to meet other KRWA flow requirements, except during mandatory flood control operations when all releases are determined by the USACE. KRCD has no authority to schedule releases from Pine Flat Dam for power generation. The main project components include: (1) six fixed-wheel emergency gates (two per intake), each approximately 9 feet wide by 15 feet high located on USACE's intake and associated gate hoists controlled by equipment in USACE's hoist room located near the top of Pine Flat Dam; (2) three penstock extensions, one from the three USACE 13.5-foot-diameter underground penstocks; (3) the outdoor Jeff L. Taylor Powerhouse, which contains three Francis turbines and associated generating units each with an installed name-plate capacity of 55 megawatts (MW) and each with air injection systems; (4) three generator leads and a step-up transformer bank at the powerhouse, consisting of three 70 megavolt-amperes single-phase units; and (5) the public fishing access containing an approximately 1,050-foot-long access road from North Piedra Road, a 0.1 acre parking area, three roadside parking areas/pullouts, five day-use sites each with a picnic table, and three barbecue grills. On December 21, 2021, KRCD filed with FERC an application to amend its current license to include a fourth unit, which would increase the project's overall installed capacity to 161.3 MW. KRCD assumes the fourth unit will be approved by FERC, constructed and operating by the time KRCD files its application for new license (i.e., will be part of the existing project). The 11.87-acre FERC Project Boundary includes 4.94 acres of federal lands administered by the USACE, 4.55 acres of State of California lands submerged by the Kings River, and 2.38 acres of Fresno County lands. The KRCD Project does not include dams (i.e., Pine Flat Dam and Lake are federal facilities operated by USACE and are not under FERC's jurisdiction), impoundments, transmission lines, or open water conduits.

DWR Project

The DWR Project is 0.8-miles-long extending from KRCD Project switchyard across the Kings River and south in a draw to the crest of a nearby ridge, and then southeast, terminating at a point on Pacific Gas and Electric Company's Balch #2-McCall Transmission Line. The main project components

include a single-circuit 230-kilovolt conductor hung on three self-supporting, square-based steel lattice towers. The FERC Project Boundary includes a 120-foot-wide right-of-way, which encompasses 12.33 acres of land. Approximately 6.45 acres are United States lands under the management of the USACE. The remaining 5.88 acres are in private ownership. The DWR Project does not include any dams or reservoirs, open water conveyance facilities, streamflow gages, recreation facilities, or borrow or spoil areas.

REQUESTED EXISTING, RELEVANT, AND REASONABLY AVAILABLE INFORMATION

At this time, **KRCD and DWR request you provide to Robin Kent of HDR, Inc. by return e-mail no later than June 1, 2023** the following:

1. Any existing, relevant, and reasonably available information in your possession, or a link to where that information may be accessed, that describes the potentially affected environment. Assume that KRCD and DWR already have in their possession all materials and plans regarding their respective projects.
2. A list of any issues you believe each Licensee should address in its PAD and subsequent application, including potential Project effects.
3. Given existing information, a description of any information you believe will be needed to assess the projects' effects and inform licenses' requirements.
4. If you are not the primary contact for your agency or affiliation, please provide the information for the person we should contact regarding the relicensings.
5. The contact information for any other persons outside your agency or affiliation you believe would be interested in the relicensings.

Contact Robin Kent (robin.kent@hdrinc.com) if you have any questions regarding this e-mail.

Robin Kent, MESM
She/her
Project Manager, FERC
HDR
2379 Gateway Oaks Drive, Suite 200
Sacramento, CA 95833
D 916.679.8733 M 530.220.4283
robin.kent@hdrinc.com

hdrinc.com/follow-us

^[1] The virtual platform will be included in the invitation to the meeting.

Kent, Robin

Subject: KRCD and DWR Pine Flat Relicensings: Initial Relicensing Meeting
Location: <https://ca-water-gov.zoom.us/j/83948644046?pwd=TmpXaFdFQ0MxZ0FqcXA1b0NZUWhJdz09>

Start: Fri 5/12/2023 1:00 PM
End: Fri 5/12/2023 2:00 PM

Recurrence: (none)

Meeting Status: Meeting organizer

Organizer: Kent, Robin

Required Attendees: Kent, Robin; abimael.leon@wildlife.ca.gov; leeadrian019@gmail.com; csrwellnessmanager1@gmail.com; ben.charley@yahoo.com; dcharley2016@gmail.com; chanson@hansonenv.com; alecmarcia@rocketmail.com; 2deedominguez@gmail.com; smccarty@tachi-yokut-nsn.gov; escalon@tachi-yokut-nsn.gov; Hoffmann, Glenn@Waterboards; Nathan.Fisch@Waterboards.ca.gov; dave@davealvarez.com; lemek@att.net; lkipp@bsrnation.com; Simpson, David M CIV USARMY CESPK (USA); Foster, Calvin CIV USARMY CESPK (USA); Jacob.K.Severns@usace.army.mil; rsewell@bsrnation.com; rpennell@tmr.org; Adams, LaVerne F (Verne) CIV USARMY CESPK (USA); David Merritt; Charlotte Gallock; Joseph Muradyan, P.E.; Parsons, Jeffrey@DWR; Gleim, James@DWR; Lee, Lisa D.@DWR; Stoddard, Tera@DWR; Miller, Aaron S.@DWR; Jeremiah.McNeil@water.ca.gov; Lynch, Jim; oescobedo@tejonindiantribe-nsn.gov

Optional Attendees: Prasad, Rodney@DWR; Rebecca Riley; Agustinez, Anecita S.@DWR; Lau, Richard@DWR

INVITATION TO MAY 12, 2023, INITIAL MEETING

Thank you for requesting to attend the May 12 initial relicensing meeting for the KRCD Jeff L Taylor- Pine Flat Hydroelectric Project and DWR Pine Flat Transmission Line Project, which will be held from 1-2 on Friday, May 12. We will be opening the Zoom meeting room a little early and starting promptly at 1pm.

The link: Topic: Initial Relicensing Meeting - Kings River Conservation District and California Department of Water Resources

Time: May 12, 2023 12:30 PM Pacific Time (US and Canada)

Join from PC, Mac, Linux, iOS or Android: <https://ca-water-gov.zoom.us/j/83948644046?pwd=TmpXaFdFQ0MxZ0FqcXA1b0NZUWhJdz09>

Password: 856760

Or Telephone:

USA 215 446 0155

USA 8886848852 (US Toll Free)

Conference code: 839066

Find local AT&T

Numbers: <https://www.teleconference.att.com/servlet/glbAccess?process=1&accessNumber=2154460155&accessCode=839066>

Please let me know if you have any questions.

Thank you!

Robin Kent, MESM
She/her
Project Manager, FERC
D 916.679.8733 M 530.220.4283

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From: [Kent, Robin](#)
To: ["abimael.leon@wildlife.ca.gov"](#); ["leeadrian019@gmail.com"](#); ["csrwellnessmanager1@gmail.com"](#); ["ben.charley@yahoo.com"](#); ["dcharley2016@gmail.com"](#); [chanson@hansonenv.com](#); ["alecmarcia@rocketmail.com"](#); ["2deedominguez@gmail.com"](#); ["smccarty@tachi-yokut-nsn.gov"](#); ["escalon@tachi-yokut-nsn.gov"](#); [Hoffmann, Glenn@Waterboards](#); ["Nathan.Fisch@Waterboards.ca.gov"](#); ["dave@davealvarez.com"](#); ["lemek@att.net"](#); ["lkipp@bsrnation.com"](#); [Simpson, David M CIV USARMY CESPCK \(USA\)](#); [Foster, Calvin CIV USARMY CESPCK \(USA\)](#); [Jacob.K.Severns@usace.army.mil](#); ["rsewell@bsrnation.com"](#); ["rpennell@tmr.org"](#); [Adams, LaVerne F \(Verne\) CIV USARMY CESPCK \(USA\)](#); [David Merritt \(dmerritt@krcd.org\)](#); [Charlotte Gallock](#); [Joseph Muradyan \(Ovsep.Muradyan@water.ca.gov\)](#); [Parsons, Jeffrey@DWR](#); [Gleim, James@DWR](#); [Lee, Lisa D.@DWR](#); [Stoddard, Tera@DWR](#); [Miller, Aaron S.@DWR](#); [Jeremiah.McNeil@water.ca.gov](#); [Lynch, Jim](#); ["oescobedo@tejonindiantribe-nsn.gov"](#)
Cc: [Prasad, Rodney@DWR](#); [Rebecca Riley](#); [Agustinez, Anecita S.@DWR](#); [Lau, Richard@DWR](#)
Subject: KRCD and DWR Pine Flat Relicensings: Initial Relicensing Meeting Presentation
Date: Thursday, May 18, 2023 9:21:59 AM
Attachments: [KRCD DWR Relicen Intro Presentation final.pdf](#)

MAY 12, 2023, INITIAL MEETING PRESENTATION

Thank you all for your interest in the May 12 initial relicensing meeting for the KRCD Jeff L Taylor-Pine Flat Hydroelectric Project and DWR Pine Flat Transmission Line Project, which was held from 1-2 on Friday, May 12. A pdf of the meeting presentation is enclosed.

We look forward to working with everyone during the relicensing.

Thank you again!

Robin Kent, MESM
She/her
Project Manager, FERC
HDR
2379 Gateway Oaks Drive, Suite 200
Sacramento, CA 95833
D 916.679.8733 **M** 530.220.4283
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Welcome to the Relicensing Meeting!

The meeting will begin shortly.



Before We Begin...

- Ensure your microphone is muted; unmute yourself to speak and be sure to mute again when finished.
- Wear headphones, if you have them, to reduce ambient noise.
- All questions will be taken at the end. Please wait until the end and either unmute to speak or type your question in the chat.
- Use only ONE audio source - computer or phone.
- For computer audio, to select your microphone and speaker, access the 'Device settings' menu.
- When speaking, state your name, focus on the topic, and be respectful of other people's time.

We will acknowledge everyone at the beginning of the meeting.

Technical Problems?

- Use the “Chat”; or
- e-mail Robin.Kent@hdrinc.com; or
- text (530) 220-4283



Jeff L. Taylor - Pine Flat Hydroelectric Project (P-2741)

Pine Flat Transmission Line Project (P-2876)

Initial Relicensing Meeting

May 12, 2023

Introductions

- KRCDD Participants:
 - David Merritt, General Manager
 - Charlotte Gallock, Director of Water Resources/Chief Engineer, Project Manager
- DWR Primary Participants:
 - Jeremiah McNeil, Relicensing Program Manager
 - Joseph Muradyan, Project Manager
 - Anecita Agustinez, DWR Tribal Policy Advisor
- Relicensing Consultant Team Participants:
 - Jim Lynch, HDR
 - Robin Kent, HDR
- Stakeholders: Roundtable Introductions

Agenda

- **Safety Moment**
- **Purpose of Meeting**
- **Coordinated Relicensings**
- **Brief Description of Projects**
- **Relicensing Milestones**
- **Requested Information**
- **Questions**
- **Action Items**
- **Adjourn**

Safety Moment

Sharing the Road with Bicycles

As the weather improves more people will be out and about on bikes. Each year in California, more than 100 bicyclists are killed and over 10,000 are injured in collisions.

- Bicycles are considered vehicles and should follow the same rules as cars.
- Double check for a bicyclist before opening your car doors parked on the street. Doors are dangerous to bike riders!
- In a lot of cities, bikes share the streets with cars without a bike lane.
- Drivers, be extra vigilant for bicyclists. Check mirrors and continue with caution.
- Learn the hand signals bicyclists may use to signal turns.
- Be patient. Only pass a bicyclist when it is safe to do so. Give all bikes at least 3 feet when passing them from behind.



Purpose of the Meeting


- Familiarize agencies, Native American tribes and members of the public with the two projects being relicensed
- Provide agencies, Native American tribes and members of the public with an opportunity to submit available information to Licensees



Coordinated Relicensings



- Kings River Conservation District (KRCDD) and the California Department of Water Resources (DWR) will cooperate and coordinate on their relicensing efforts to:
 - Streamline the relicensing process by coordinating the release and format of information
 - Reduce relicensing costs for all interested parties by sharing information related to these projects
 - Maintain and enhance the overall comprehensive value of the projects
 - Develop a comprehensive plan for the management of resources affected by the projects
- Public relicensing documents will be shared on KRCDD's website (once NOIs and PADs filed with FERC) and can be accessed on the Project dockets (FERC.gov)



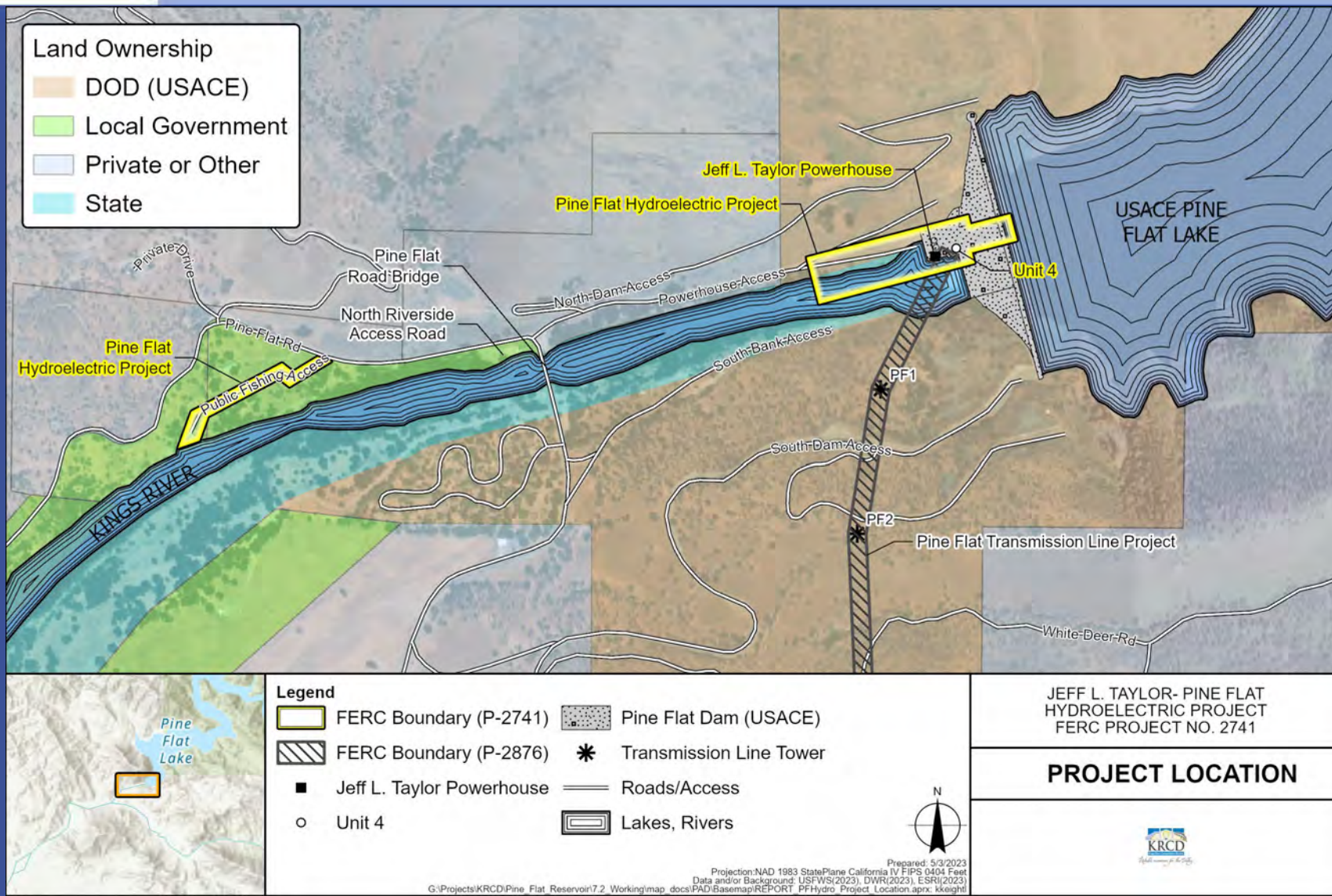
Jeff L. Taylor - Pine Flat Hydroelectric Project (P-2741)

Existing Facilities

- Initial license issued on September 25, 1979
- The 11.87-acre FERC Project boundary consists of: 4.94 acres DOD (USACE) lands, 4.55 acres of State of California lands, and 2.38 acres of Fresno County lands
- No dams, reservoirs or open water conduits
- Project power is provided from the Pine Flat Switchyard to the grid via DWR's Pine Flat Transmission Line (P-2876)
- Project facilities include:
 - Six fixed-wheel emergency gates (two per intake)
 - Three penstock extensions
 - Jeff L. Taylor Powerhouse: three Francis turbines and associated generating units each with an installed name-plate capacity of 55 MW
 - Unit 4 Powerhouse: outdoors, one unit with a 6.3 MW Francis turbine and associated generator (FERC approved on May 3, 2023)
 - Public Fishing Access: approximately 1,050-foot-long access road from North Piedra Road, a 0.1-acre parking area, three roadside parking areas/pullouts, five-day use sites

Jeff L. Taylor - Pine Flat Hydroelectric Project (P-2741)

Existing Facilities





Pine Flat Transmission Line Project (P-2876)

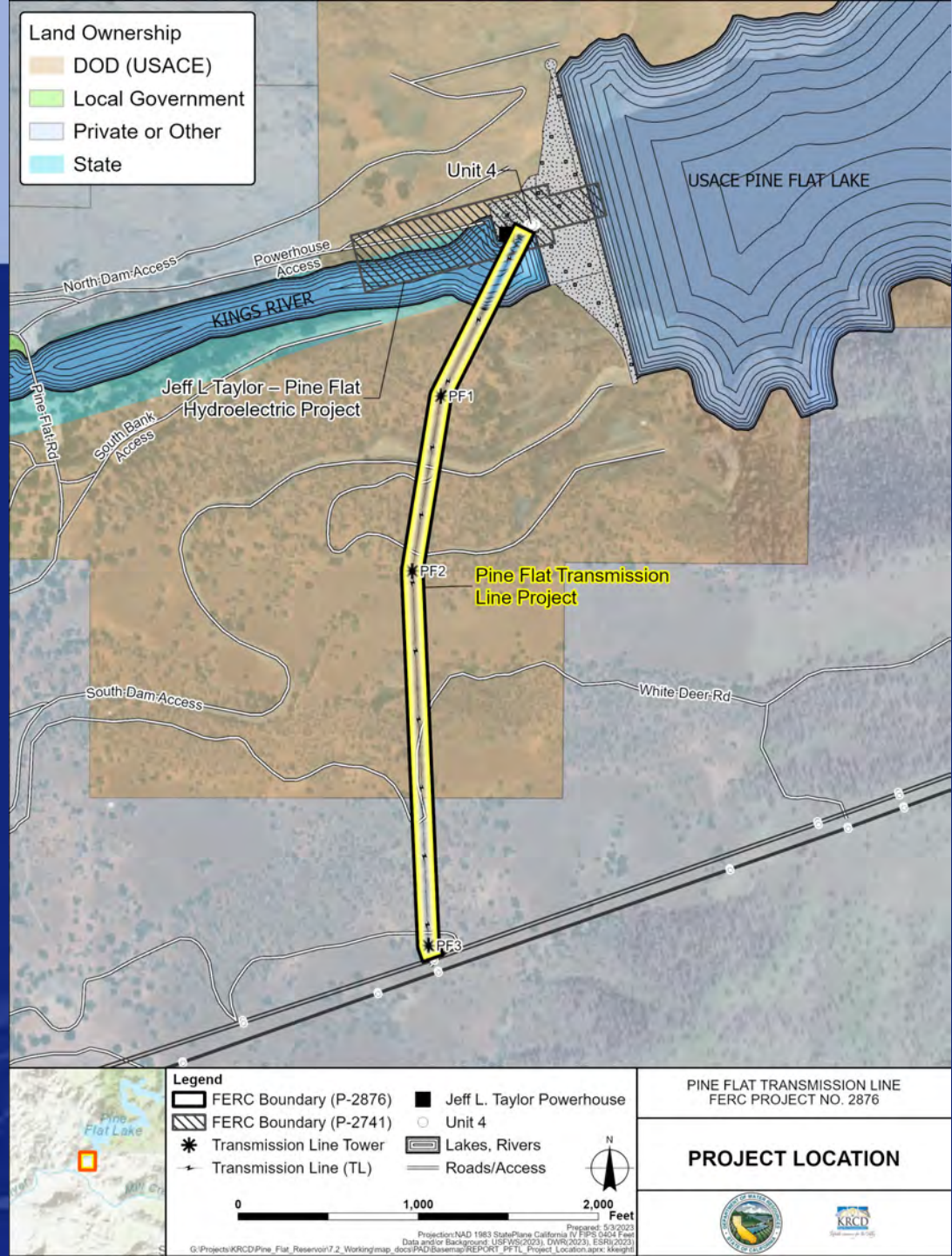
Existing Facilities

- Initial license issued on March 24, 1980.
- The 11.52-acre FERC Project boundary consists of: 7.94 acres DOD (USACE) lands, 1.11 acres of State of California lands, and 2.46 acres of private lands.
- Consists of a 0.8-mile long, single-circuit 230 kV transmission line constructed on three self-supporting, square-based steel lattice towers. Three towers vary in height from 79 to 112 feet.
- No dams, powerhouses, reservoirs or open water conduits.
- Crosses Kings River from the Jeff L. Taylor Pine Flat Powerhouse switchyard (P-2741) and proceeds until it connects with PG&E's 230-kV Balch #2-McCall transmission line.



Existing Facilities

Pine Flat Transmission Line Project (P-2876)



Proposed Changes

- At this time, Licensees propose no changes to either Projects' facilities or operations.
- The Unit 4 addition to the Jeff L Taylor – Pine Flat Hydroelectric Project is under the current license. FERC amended the existing license on May 3, 2023, to include Unit 4. KRC's relicensing assumes Unit 4 will be in place and operating before new license is issued.

Relicensing Milestones



- 2/1/24 to 8/1/24 - Window to file with FERC Notices of Intent (NOIs) and Pre-Application Documents (PADs)
- 2/1/24 to 8/1/24 - Window to file with FERC a request to use the Traditional Licensing Process for both projects
- 8/31/27 - Deadline to file with FERC the final applications for new licenses (FLA)
- 8/31/29 - Existing licenses expire



Requested Information by 6/15/23



- Existing, relevant, and reasonably available information in your possession, or a link to where that information may be accessed, that describes the potentially-affected environment.
- List of any issues you believe should be addressed in the relicensing.
- Description of any additional information you believe is needed for KRCDD/DWR, FERC, and stakeholders to assess Project effects and inform license requirements.
- Please send the information by close of business on June 15 to: Robin Kent (robin.kent@hdrinc.com).



Reliable resources for the Valley

Questions





Action Items From Today's Meeting



- Update presentation, pdf and provide to attendees
- Develop and provide a glossary of commonly used FERC terms as part of the PAD



Reliable resources for the Valley

Adjourn



Thank
you !

Attachment B

Glossary

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COMMON FERC TERMS

Term	Definition
Other	
°C	Celsius
A	
ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act
AGR	Agricultural Supply
AGS	annual grassland
AIS	aquatic invasive species
APLIC	Avian Power Line Interaction Committee
AT&SF	Atchison Topeka and Santa Fe
AW	American Whitewater
B	
BAR	Barren
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BP	Before Present
C	
C.F.R.	Code of Federal Regulations
CAISO	California Independent System Operator
Cal-IPC	California Invasive Plant Council
CCC	Civilian Conservation Corps
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CDPR	California Department of Pesticide Regulation
CDRP	California Department of Parks and Recreation
CEII	Critical Energy/Electric Infrastructure Information
CEQ	Council on Environmental Quality
cfs	cubic feet per second
CHRIS	California Historical Resources Information System
CNDDB	CDFW's California Natural Diversity Database
CNPS	California Native Plant Society
COLD	Cold Freshwater Habitat
CPRC	California Public Resources Code
CPRC	Central Pacific Railroad Company
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CTS	California tiger salamander
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationship
CWHR	California Wildlife Habitat Relationship
CY	Calendar Years
D	
DBOW	California State Parks, Division of Boating and Waterways
DCNPP	Diablo Canyon Nuclear Power Plant
DCPP	Diablo Canyon Power Plant

Term	Definition
DEV	developed
DLA	Draft License Application
DO	dissolved oxygen
DPR	Fresno County Department of Parks and Recreation
DPR	Fresno County Department of Pesticide Regulation
DPS	distinct populations segment
DRP	Dispute Resolution Panel
DWR	Department of Water Resources
E	
EDD	California Employment Development Department
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
F	
FE	Federally endangered under the ESA
FEMA	Federal Emergency Management Agency
FERC FPA	FPA Part 8 relates to making reasonable efforts in keeping the public informed of recreational opportunities and development at FERC licensed projects
FERC	Federal Energy Regulatory Commission
FLA	Final License Application
FP	fully protected under California Fish and Game Code § 3511
FPC	Federal Power Commission
FR	Federal Register
FRSH	Freshwater Replenishment
FT	Federally threatened under the ESA
G	
GLO	General Land Office
GWR	Ground Water Recharge
H	
Helms PSP	Helms Pumped Storage Project
HPMP	Historic Properties Management Plan
HU	Hydro Unit
HUC	Hydrologic Unit Code
I	
IECO	International Engineering Company, Inc.
IK	Indigenous Knowledge
ILP	Integrated Licensing Process
IPaC	USFWS's Information for Planning and Consultation
K	
KRCD Act	Assembly Bill 340, Chapter 931, Stats. Of 1951
KRCD	Kings River Conservation District
KRFMP	Kings River Fisheries Management Program
KRWA	Kings River Water Association
M	
MK	Morrison Knudsen Company, Inc.
Mm	millimeters
MRZ-1	Mineral Resource Zone 1
MRZ-2	Mineral Resource Zone 2
MUN	Municipal and Domestic Supply
MVA	megavolt amperes

Term	Definition
MW	megawatts
N	
NAHC	California Native American Heritage Commission
NCP	Notice of Commencement of Proceeding
ND	Non-detection based on laboratory reporting limits
NEPA	National Environmental Policy Act
NET	no earlier than
NGOs	non-governmental organizations
NGVD 29	National Geodetic Survey
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NNIP	Non-native invasive plants
No.	FERC Project Number
NOD	Notice of Dispute
NOI	Notice of Intent
NPS	National Park Service
NRHP	National Register of Historic Places
NTL	no later than
NTU	Nephelometric Turbidity Units
O	
O&M	operations and maintenance
OAK	Interior live oak riparian
OHP	Office of Historic Preservation
P	
PAD	Pre-Application Document
PCT	Pacific Crest National Scenic Trail
PDA	Public Domain Allotment
PG&E	Pacific Gas and Electric Company
PLP	Preliminary Licensing Proposal
PM&E	Protection, Mitigation, and Enhancement
PNFQ	USGS Gage 11221500
POW	Hydropower Generation
ppb	parts per billion
ppm	parts per million
PSP	Pumped Storage Project
R	
REC-1	Water Contact Recreation
REC-2	Non-Contact Water Recreation
RIV	Riverine (Kings River)
RM	River Mile
RWQCB	Regional Water Quality Control Board
S	
SCD	State Candidate for delisting under the CESA
SCE	Southern California Edison
SCE	State Candidate endangered for listing under the CESA
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SCT	State Candidate threatened under the CESA
SD1	Scoping Document 1
SD2	Scoping Document 2
SE	CESA listed as endangered
SHPO	State Historic Preservation Officer

Term	Definition
SJLPC	San Joaquin Light and Power Company
SPD	Study Plan Determination
SPOA	Survey on Public Opinions and Attitude on Outdoor Recreation
SPWN	Spawning, Reproduction, and/or Early Development
SQF	Sequoia National Forest
SR	California State Rare
SSC	considered a Species of Special Concern by CDFW
SSJVIC	Southern San Joaquin Valley Information Center
ST	CESA listed as threatened
SWAMP	Surface Water Ambient Monitoring Program
SWP	State Water Project
SWRCB	California State Water Resources Control Board
T	
TCLs	Traditional Cultural Landscapes
TCPs	Traditional Cultural Properties
TDG	total dissolved gasses
TL	total length
TLP	Traditional Licensing Process
TMDL	Total Maximum Daily Load
U	
USACE	U.S. Army Corps of Engineers
USBR	U.S. Department of the Interior, Bureau of Reclamation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
V	
VFR	Valley foothill riparian
W	
WARM	Warm Freshwater Habitat
WILD	Wildlife Habitat

Attachment C

Exhibit G Project Maps

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G.0 PROJECT MAPS

G.1 INTRODUCTION

The California Department of Water Resources (DWR or Licensee) has prepared this Exhibit G, Project Maps, as part of its Application for a New License - Existing Transmission Line Only - from the Federal Energy Regulatory Commission (FERC or Commission) for a new license for the Pine Flat Transmission Line Project, FERC Project Number (No.) 2876 (Project). This exhibit is prepared in conformance with Title 18 of the Code of Federal Regulations (CFR), Subchapter B (Regulations under the Federal Power Act), Part 4 (Licenses, Permits, Exemptions and Determination of Project Costs), Subpart F and, as applicable, Part 16 (Traditional Licensing Process). In particular, this exhibit conforms to the regulations in 18 CFR Section 4.51(h), which directs an applicant to 18 CFR Section 4.41(h). 18 CFR Section 4.41(h) describes the contents of Exhibit G, and makes reference to CFR Section 4.39, Specifications for maps and drawings. As a reference, 18 CFR Sections 4.41(h) and 4.39 state:

18 C.F.R. § 4.41(g): Exhibit G is a map of the project that must conform to the specifications of § 4.39. In addition, to the other components of Exhibit G, the applicant must provide the project boundary data in a geo-referenced electronic format - such as ArcView shape files, GeoMedia files, MapInfo files, or any similar format. The electronic boundary data must be positionally accurate to ± 40 feet, in order to comply with the National Map Accuracy Standards for maps at a 1:24,000 scale (the scale of USGS quadrangle maps). The electronic Exhibit G data must include a text file describing the map projection used (*i.e.*, UTM, State Plane, Decimal Degrees, etc.), the map datum (*i.e.*, feet, meters, miles, etc.). Three sets of the maps must be submitted on compact disk or other appropriate electronic media. If more than one sheet is used for the paper maps, the sheets must be numbered consecutively, and each sheet must bear a small insert sketch showing the entire project and indicate that portion of the project depicted on that sheet. Each sheet must contain a minimum of three known reference points. The latitude and longitude coordinates, or state plane coordinates, of each reference point must be shown. If at any time after the application is filed there is any change in the project boundary, the applicant must submit, within 90 days following the completion of project construction, a final exhibit G showing the extent of such changes. The map must show:

- (1) *Location of the project and principal features.* The map must show the location of the project as a whole with reference to the affected stream or other body of water and, if possible, to a nearby town or any other permanent monuments or objects, such as roads, transmission lines or other structures, that can be noted on the map and recognized in the field. The map must also show the relative locations and physical interrelationships of the principal project works and other features described under paragraph (b) of this section (Exhibit A).
- (2) *Project boundary.* The map must show a project boundary enclosing all project works and other features described under paragraph (b) of this section (Exhibit A) that are to be licensed. If accurate survey information is not available at the time the application is filed, the applicant must so state, and a tentative boundary may be submitted. The boundary must enclose only those lands necessary for operation and maintenance of the project and for other project purposes, such as recreation, shoreline control, or protection of environmental resources (see paragraph (f) of this section [Exhibit E]). Existing residential, commercial, or other structures may be included within the boundary only to the extent that underlying lands are needed for project purposes (e.g., for flowage, public recreation, shoreline control, or protection of environmental resources). If the boundary is on land covered by a public survey, ties must be shown on the map at sufficient points to permit accurate platting of the position of the boundary relative to the lines of the public land survey. If the lands are not covered by a public land survey, the best available legal description of the position of the boundary must be

provided, including distances and directions from fixed monuments or physical features. The boundary must be described as follows:

- (i) *Impoundments.*
 - (A) The boundary around a project impoundment must be described by one of the following:
 - (1) Contour lines, including the contour elevation (preferred method);
 - (2) Specified courses and distances (metes and bounds);
 - (3) If the project lands are covered by a public land survey, lines upon or parallel to the lines of the survey; or
 - (4) Any combination of the above methods.
 - (B) The boundary must be located no more than 200 feet (horizontal measurement) from the exterior margin of the reservoir, defined by the normal maximum surface elevation, except where deviations may be necessary in describing the boundary according to the above methods or where additional lands are necessary for project purposes, such as public recreation, shoreline control, or protection of environmental resources.
- (ii) *Continuous features.* The boundary around linear ("continuous") project features such as access roads, transmission lines, and conduits may be described by specified distances from center lines or offset lines of survey. The width of such corridors must not exceed 200 feet unless good cause is shown for a greater width. Several sections of a continuous feature may be shown on a single sheet with information showing the sequence of contiguous sections.
- (iii) *Noncontinuous features.*
 - (A) The boundary around noncontinuous project works such as dams, spillways, and powerhouses must be described by one of the following:
 - (1) Contour lines;
 - (2) Specified courses and distances;
 - (3) If the project lands are covered by a public land survey, lines upon or parallel to the lines of the survey; or
 - (4) Any combination of the above methods.
 - (B) The boundary must enclose only those lands that are necessary for safe and efficient operation and maintenance of the project or for other specified project purposes, such as public recreation or protection of environmental resources.
- (3) *Federal lands.* Any public lands and reservations of the United States ("Federal lands") [see 16 U.S.C. 795(1) and (2)] that are within the project boundary, such as lands administered by the U.S. Forest Service, Bureau of Land Management, or National Park Service, or Indian tribal lands, and the boundaries of those Federal lands, must be identified as such on the map by:
 - (i) Legal subdivisions of a public land survey of the affected area (a protraction of identified township and section lines is sufficient for this purpose); and
 - (ii) The Federal agency, identified by symbol or legend, that maintains or manages each identified subdivision of the public land survey within the project boundary; or
 - (iii) In the absence of a public land survey, the location of the Federal lands according to the distances and directions from fixed monuments or physical features. When a Federal survey monument or a Federal bench mark will be destroyed or rendered unusable by the construction of project works, at least two permanent, marked witness monuments or bench marks must be established at accessible points. The maps show the location (and elevation, for bench marks) of the survey monument or bench mark which will be destroyed or rendered unusable, as well as of the witness monuments or bench marks. Connecting courses and distances from the witness monuments or benchmarks to the original must also be shown.
 - (iv) The project location must include the most current information pertaining to affected Federal lands as described under §4.81(b)(5).

(4) *Non-Federal lands.* For those lands within the project boundary not identified under paragraph (h)(3) of this section, the map must identify by legal subdivision:

- (i) Lands owned in fee by the applicant and lands that the applicant plans to acquire in fee; and
- (ii) Lands over which the applicant has acquired or plans to acquire rights to occupancy and use other than fee title, including rights acquired or to be acquired by easement or lease.

18 C.F.R. § 4.39: Specifications for maps and drawings. All required maps and drawings must conform to the following specifications, except as otherwise prescribed in this chapter:

- (a) Each original map or drawing must consist of a print on silver or gelatin 35mm microfilm mounted on Type D (3 1/4" by 7 3/8") aperture cards. Full-sized prints of maps and drawings must be on sheets no smaller than 24 by 36 inches and no larger than 28 by 40 inches. A space five inches high by seven inches wide must be provided in the lower right hand corner of each sheet. The upper half of this space must bear the title, numerical and graphical scale, and other pertinent information concerning the map or drawing. The lower half of the space must be left clear. Exhibit G drawings must be stamped by a Registered Land Surveyor. If the drawing size specified in this paragraph limits the scale of structural drawings (exhibit F drawings) described in paragraph (c) of this Section, a smaller scale may be used for those drawings. Potential applicants or licensees may be required to file maps or drawings in electronic format as directed by the Commission.
- (b) Each map must have a scale in full-sized prints no smaller than one inch equals 0.5 miles for transmission lines, roads, and similar linear features and no smaller than one inch equals 1,000 feet for other project features, including the project boundary. Where maps at this scale do not show sufficient detail, large scale maps may be required. Each map must show:
 - (1) True and magnetic meridians;
 - (2) State, county, and town lines; and
 - (3) Boundaries of public lands and reservations of the United States [see 16 U.S.C. 796 (1) and (2)], if any. If a public land survey is available, the maps must show all lines of that survey crossing the project area and all official subdivisions of sections for the public lands and reservations, including lots and irregular tracts, as designated on the official plats of survey that may be obtained from the Bureau of Land Management, Washington, D.C., or examined in the local land survey office; to the extent that a public land survey is not available for public lands and reservations of the United States, the maps must show the protractions of townships and section lines, which, if possible, must be those recognized by the Federal agency administering those lands.
- (c) Drawings depicting details of project structures must have a scale in full-sized prints no smaller than:
 - (1) One inch equals 50 feet for plans, elevations, and profiles; and
 - (2) One inch equals 10 feet for sections.
- (d) Each map or drawing must be drawn and lettered to be legible when it is reduced to a print that is 11 inches on its shorter side. Following notification to the applicant that the application has been accepted for filing [see §4.31(c)], prints reduced to that size must be bound in each copy of the application which is required to be submitted to the Commission or provided to any person, agency, or other entity.
- (e) The maps and drawings showing project location information and details of project structures must be filed in accordance with the Commission's instructions on submission of Critical Energy Infrastructure Information in §§388.112 and 388.113 of subchapter X of this chapter.

Besides this introductory material, this Exhibit G includes three sections. Section G.2 describes Project maps in the existing license, Section G.3 states any changes to the

Project boundary proposed by DWR at this time, and Section G.4 includes a list of references cited in this exhibit.

See Exhibit E for a discussion of potential environmental effects and DWR's proposed resource management measures. Project maps are included in this Exhibit G. All elevation data in this exhibit is in United States Department of Commerce, National Oceanic and Atmospheric Administration, National Geodetic Survey Vertical Datum of 1929, unless otherwise stated.

G.2 EXISTING PROJECT MAPS AND FEDERAL LANDS

The existing FERC license includes one Project map: Exhibit K-1, Pine Flat Power Project Transmission Facilities. FERC approved the map in an order (18 FERC 62,536) dated March 30, 1982, and assigned the map drawing number K-2876-3.¹ The map shows land ownership and acreage for each area. DWR is submitting an updated Exhibit G drawing showing changes in land ownership and acreage.

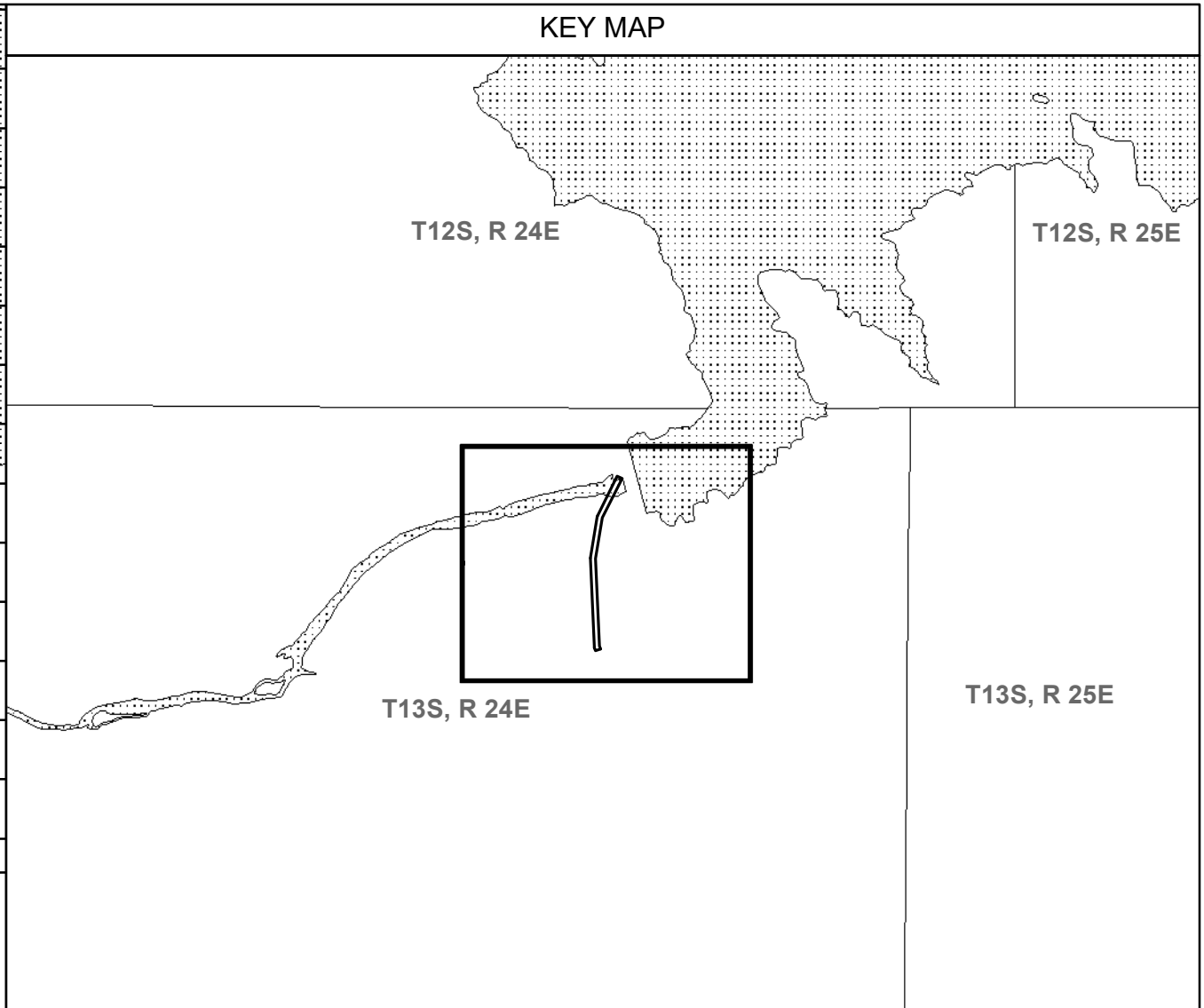
G.3 DWR'S PROPOSED CHANGES TO EXISTING PROJECT BOUNDARY

At this time, DWR does not propose any changes to the existing FERC Project boundary as shown in Exhibit K-1 of the existing license.

G.4 REFERENCES CITED

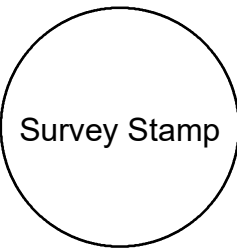
None.

¹ The Exhibit K-1 Pine Flat Power Project Transmission Facilities map is available on FERC's eLibrary at accession number 19820218-0290.



SURVEYORS STATEMENT

I HEREBY CERTIFY TO THE FEDERAL ENERGY REGULATORY COMMISSION (FERC) THAT THIS PLAN MEETS THE CONDITIONS SET FORTH BY FERC FOR ITS EXPRESSED PURPOSE. THE PURPOSE OF THIS MAP IS TO PROVIDE A GEOREFERENCED VISUAL DEPICTION OF THE LOCATION OF PROJECT FEATURES AND BOUNDARIES BASED ON THE BEST AVAILABLE HISTORICAL DRAWINGS AND DIGITAL REFERENCE SOURCES INCORPORATED INTO THE GEOGRAPHIC INFORMATION SYSTEM (GIS). LOCATIONS HAVE NOT BEEN VERIFIED BY PHYSICAL FIELD SURVEYS AND THIS DRAWING SHOULD NOT BE USED FOR PURPOSES OF DEVELOPING PROPERTY BOUNDARY DESCRIPTIONS.



DRAWING COORDINATE SYSTEM

PROJECTION - STATE PLANE
DATUM - NAD83
ZONE - CA IV
UNITS - FEET

BASE MAP DATA SOURCES

ROADS: ESRI 9.3 (TELE ATLAS),
HYDROGRAPHY: DIGITIZED FROM USDA
NAIP AERIAL IMAGERY

LEGEND

- FERC Project No. 2876
- Reference Point
- Pine Flat Reservoir
- Paved Road
- Township & Range Section

- Utility Pole
- Transmission Lines**
- Project
- Non-Project

Ownership

- DOD (USACE)
- County
- Private or Other
- State

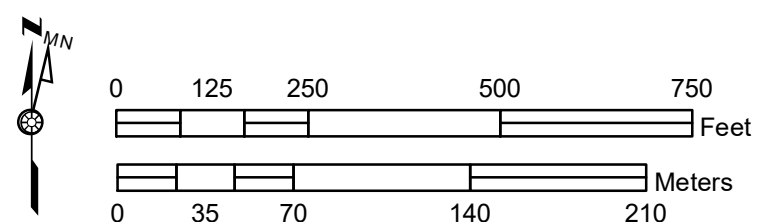


EXHIBIT G-1

**PINE FLAT TRANSMISSION LINE
PROJECT BOUNDARY MAP**

PINE FLAT TRANSMISSION LINE PROJECT (FERC NO. 2876)
CALIFORNIA DEPARTMENT OF WATER RESOURCES

DATE: 5/5/2023	SCALE: 1 inch = 250 feet	DRAWING NUMBER: P-2876-
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Attachment D

Exhibit F General Design Drawings

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F.0 GENERAL DESIGN DRAWINGS

F.1 INTRODUCTION

The California Department of Water Resources (DWR or Licensee) has prepared this Exhibit F, General Design Drawings, as part of its Application for a New License from the Federal Energy Regulatory Commission (FERC or Commission) for the Pine Flat Transmission Line Project, FERC Project Number (No.) 2876 (Project). This exhibit is prepared in conformance with Title 18 of the Code of Federal Regulations (CFR), Subchapter B (Regulations under the Federal Power Act), Part 4 (Licenses, Permits, Exemptions and Determination of Project Costs), Subpart F and, as applicable, Part 16 (Traditional Licensing Process). In particular, this exhibit conforms to the regulations in 18 CFR Section 4.51(g), which directs an applicant to 18 CFR Section 4.41(g). 18 CFR Section 4.41(g) describes the contents of Exhibit F and makes reference to 18 CFR Section 4.39, Specifications for maps and drawings. As a reference, 18 CFR Sections 4.41(g) and 4.39 state:

18 C.F.R. § 4.41(g): Exhibit F consists of general design drawings of the principal project works described under paragraph (b) of this section (Exhibit A) and supporting information used as the basis of design. If the Exhibit F submitted with the application is preliminary in nature, applicant must so state in the application. The drawings must conform to the specifications of § 4.39.

- (1) The drawings must show all major project structures in sufficient detail to provide a full understanding of the project, including:
 - (i) Plans (overhead view);
 - (ii) Elevations (front view);
 - (iii) Profiles (side view); and
 - (iv) Sections.
- (2) The applicant may submit preliminary design drawings with the application. The final Exhibit F may be submitted during or after the license process and must show the precise plans and specifications for proposed structures. If the project is licensed on the basis of preliminary designs, the applicant must submit the final Exhibit F for Commission approval prior to the commencement of any construction of the project.
- (3) Supporting design report. The applicant must furnish, at a minimum, the following supporting information to demonstrate that existing and proposed structures are safe and adequate to fulfill their stated functions, and must submit such information in a separate report at the time the application is filed. The report must include:
 - (i) An assessment of the suitability of the site and the reservoir rim stability based on geological and subsurface investigations, including investigations of soils and rock borings and tests for the evaluation of all foundations and construction materials sufficient to determine the location and type of dam structures suitable for the dam site;
 - (ii) Copies of all boring logs, geology reports and laboratory test reports;
 - (iii) An identification of all borrow areas and quarry sites and an estimate of required quantities and suitable construction material;
 - (iv) Stability and stress analyses for all major structures and critical abutment slopes under all probable loading conditions, including seismic and hydrostatic forces induced by water loads up to the Probable Maximum Flood as appropriate; and
 - (v) The basis for determination of seismic loading and the Spillway Design Flood in sufficient detail to permit independent staff evaluation.
- (4) The applicant must submit two copies of the supporting design report described in paragraph (g)(3) of this section at the time preliminary and final design drawings are submitted to the Commission for review. If the report contains preliminary drawings, it must be designated a "Preliminary Supporting Exhibit Report."

18 C.F.R. § 4.39: Specifications for maps and drawings. All required maps and drawings must conform to the following specifications, except as otherwise prescribed in this chapter:

- (a) Each original map or drawing must consist of a print on silver or gelatin 35mm microfilm mounted on Type D (3 1/4" by 7 3/8") aperture cards. Full-sized prints of maps and drawings must be on sheets no smaller than 24 by 36 inches and no larger than 28 by 40 inches. A space five inches high by seven inches wide must be provided in the lower right hand corner of each sheet. The upper half of this space must bear the title, numerical and graphical scale, and other pertinent information concerning the map or drawing. The lower half of the space must be left clear. Exhibit G drawings must be stamped by a Registered Land Surveyor. If the drawing size specified in this paragraph limits the scale of structural drawings (exhibit F drawings) described in paragraph (c) of this Section, a smaller scale may be used for those drawings. Potential applicants or licensees may be required to file maps or drawings in electronic format as directed by the Commission.
- (b) Each map must have a scale in full-sized prints no smaller than one inch equals 0.5 miles for transmission lines, roads, and similar linear features and no smaller than one inch equals 1,000 feet for other project features, including the project boundary. Where maps at this scale do not show sufficient detail, large scale maps may be required. Each map must show:
 - (1) True and magnetic meridians;
 - (2) State, county, and town lines; and
 - (3) Boundaries of public lands and reservations of the United States [see 16 U.S.C. 796 (1) and (2)], if any. If a public land survey is available, the maps must show all lines of that survey crossing the project area and all official subdivisions of sections for the public lands and reservations, including lots and irregular tracts, as designated on the official plats of survey that may be obtained from the Bureau of Land Management, Washington, D.C., or examined in the local land survey office; to the extent that a public land survey is not available for public lands and reservations of the United States, the maps must show the protractors of townships and section lines, which, if possible, must be those recognized by the Federal agency administering those lands.
- (c) Drawings depicting details of project structures must have a scale in full-sized prints no smaller than:
 - (1) One inch equals 50 feet for plans, elevations, and profiles; and
 - (2) One inch equals 10 feet for sections.
- (d) Each map or drawing must be drawn and lettered to be legible when it is reduced to a print that is 11 inches on its shorter side. Following notification to the applicant that the application has been accepted for filing [see §4.31(c)], prints reduced to that size must be bound in each copy of the application which is required to be submitted to the Commission or provided to any person, agency, or other entity.
- (e) The maps and drawings showing project location information and details of project structures must be filed in accordance with the Commission's instructions on submission of Critical Energy Infrastructure Information in §§388.112 and 388.113 of subchapter X of this chapter.

Besides this introductory material, this Exhibit F includes four sections. Section F.2 provides a list of all existing design drawings needed to show all major Project structures in sufficient detail to provide a full understanding of the Project. These include plans, elevations, and profiles. Section F.3 addresses the requirement for a supporting design report. Section F.4 states any changes to Project facilities proposed by DWR at this time, and Section F.5 includes a list of references cited in this exhibit.

See Exhibit E of this PAD for a discussion of potential environmental effects and DWR's proposed resource management measures. Project maps are included in Exhibit G of this PAD.

F.2 EXISTING GENERAL DESIGN DRAWINGS

The existing FERC license does not include any general design drawings. Information about the types of structures that comprise the Project are presented in Figure F-1.

Proposed drawings to constitute Exhibit F are included and described in Table F.2-1

Table F.2-1. Proposed Exhibit F Drawings

Exhibit F Potential Drawing Number	Exhibit L Drawing Name
F-1	Plan and Profile
F-2	Basic Tower Outline for PF-1 and PF-2
F-3	Basic Tower Outline For PF-3
F-4	Schematic of PF-1
F-5	Schematic of PF-2
F-6	Schematic of PF-3
F-7	230kV Switchyard Layout Plan
F-8	230kV Switchyard Section and Details

In accordance with 18 CFR Sections 5.30 and 4.32(k) of FERC's regulations and in light of heightened national security concerns, FERC and DWR treat Exhibit F drawings as Critical Energy Infrastructure Information (CEII) under 18 CFR Section 388.113 of FERC's regulations because they contain detailed design information about existing critical infrastructure that relates details about power generation which could be useful to a person planning an attack on critical infrastructure. Therefore, DWR is not filing the drawings as Public information. Procedures for the public to obtain access to CEII may be found at 18 CFR Section 388.113. Requests for access to CEII information should be made to FERC's CEII Coordinator.

F.3 SUPPORTING DESIGN REPORT FOR EXISTING FACILITIES

The Project does not include any dams or reservoirs. FERC's San Francisco Regional Office inspects the Project periodically and no safety issues have been identified. DWR believes a supporting design report is not required for this Project relicensing.

F.4 PROPOSED CHANGES TO EXISTING PROJECT FACILITIES, FEATURES, AND BOUNDARY

At this time, DWR does not propose any changes to existing Project facilities and does not propose any new Project facilities.

F.5 REFERENCES CITED

None.

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Attachment E

IPaC Resource List

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IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Fresno County, California



Local office

Sacramento Fish And Wildlife Office

☎ (916) 414-6600

📅 (916) 414-6713

Federal Building

2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Fisher <i>Pekania pennanti</i> There is proposed critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3651	Endangered
San Joaquin Kit Fox <i>Vulpes macrotis mutica</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2873	Endangered

Birds

NAME	STATUS
California Condor <i>Gymnogyps californianus</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8193	Endangered

Reptiles

NAME	STATUS
Northwestern Pond Turtle <i>Actinemys marmorata</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Amphibians

NAME	STATUS
California Tiger Salamander <i>Ambystoma californiense</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened

Foothill Yellow-legged Frog *Rana boylei*
No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/5133>

Endangered

Western Spadefoot *Spea hammondi*
Wherever found
No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/5425>

Proposed Threatened

Insects

NAME

STATUS

Monarch Butterfly *Danaus plexippus*
Wherever found
No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/9743>

Candidate

Flowering Plants

NAME

STATUS

Keck's Checker-mallow *Sidalcea keckii*
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
<https://ecos.fws.gov/ecp/species/5704>

Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act¹ and the Migratory Bird Treaty Act².

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats³, should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below.

Specifically, please review the ["Supplemental Information on Migratory Birds and Eagles"](#).

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Golden Eagle <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read ["Supplemental Information on Migratory Birds and Eagles"](#), specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

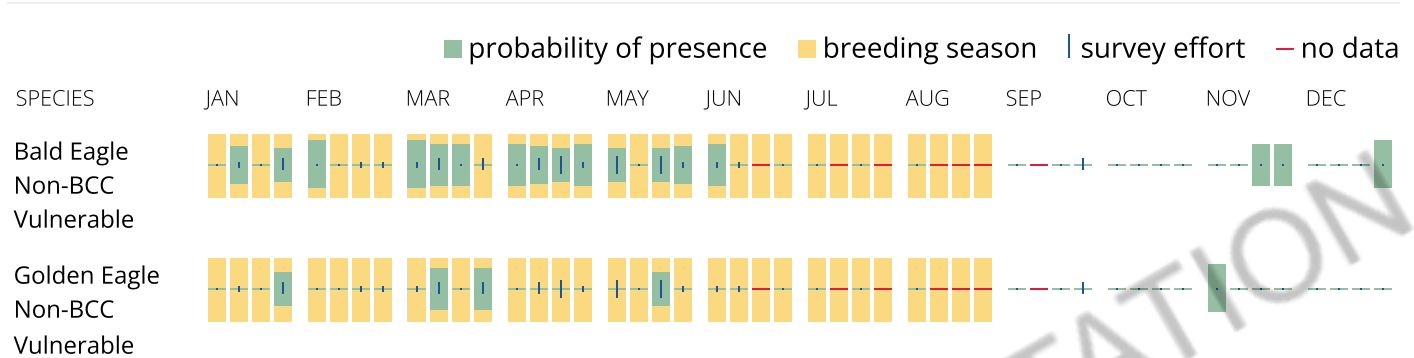
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply). To see a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the [Eagle Act](#) should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats³ should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the ["Supplemental Information on Migratory Birds and Eagles"](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Belding's Savannah Sparrow <i>Passerculus sandwichensis beldingi</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Bullock's Oriole <i>Icterus bullockii</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull <i>Larus californicus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
California Thrasher <i>Toxostoma redivivum</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31
Cassin's Finch <i>Carpodacus cassinii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15
Clark's Grebe <i>Aechmophorus clarkii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31

Golden Eagle *Aquila chrysaetos*

Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1680>

Lawrence's Goldfinch *Carduelis lawrencei*

Breeds Mar 20 to Sep 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9464>

Nuttall's Woodpecker *Picoides nuttallii*

Breeds Apr 1 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/9410>

Oak Titmouse *Baeolophus inornatus*

Breeds Mar 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9656>

Olive-sided Flycatcher *Contopus cooperi*

Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3914>

Tricolored Blackbird *Agelaius tricolor*

Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3910>

Western Grebe *Aechmophorus occidentalis*

Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/6743>

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read

["Supplemental Information on Migratory Birds and Eagles"](#), specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

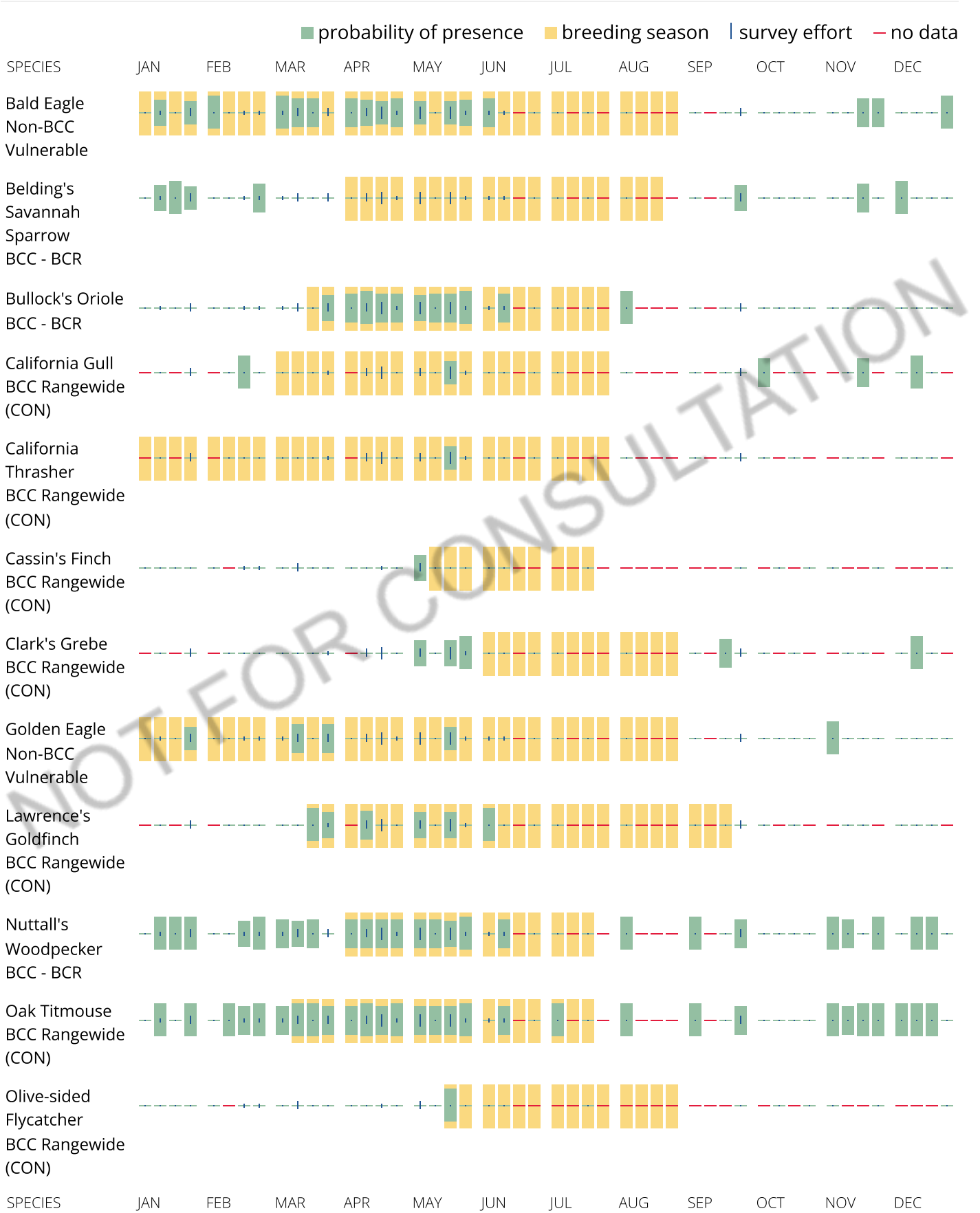
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

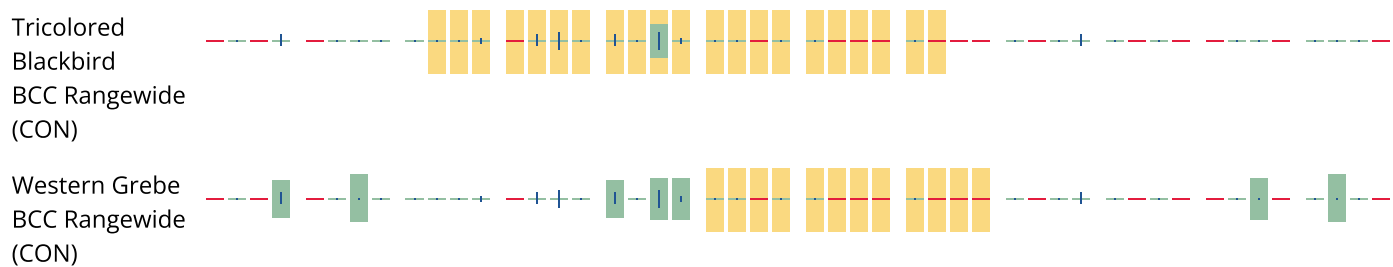
No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of

presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

[PEM1B](#)

FRESHWATER FORESTED/SHRUB WETLAND

[PFOA](#)

[PFOC](#)

LAKE

[L1UBHh](#)

RIVERINE

[R3UBH](#)

[R4SBC](#)

[R5UBF](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or

submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Attachment F

Botanical Compendium

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Species	Common Name	Special-Status	Wetland Rank	Weed Rank
FERNS				
PTERIDACEAE – BRAKE FAMILY				
<i>Pentagramma triangularis</i>	goldback fern			
EUDICOTS				
ANACARDIACEAE – SUMAC FAMILY				
<i>Toxicodendron diversilobum</i>	western poison oak		FAC	
APIACEAE – CARROT FAMILY				
<i>Sanicula bipinnata</i>	poison sanicle			
<i>Torilis arvensis</i> *	tall sock-destroyer			
APOCYNACEAE – DOGBANE FAMILY				
<i>Asclepias californica</i>	California milkweed			
ASTERACEAE – SUNFLOWER FAMILY				
<i>Carduus pycnocephalus ssp. pycnocephalus</i> *	Italian thistle			4500
<i>Centaurea melitensis</i> *	Maltese star-thistle			4500
<i>Cirsium vulgare</i> *	bull thistle		FACU	4500
<i>Helianthus annuus</i>	annual sunflower		FACU	
<i>Holocarpha heermannii</i>	Heermann's tarplant			
<i>Hypochaeris glabra</i> *	smooth cat's-ear			
<i>Madia elegans</i>	common madia			
<i>Matricaria chamomilla</i> *	german chamomile			
<i>Micropus californicus var. californicus</i>	California cottontop		FACU	
<i>Senecio flaccidus</i>	threadleaf ragwort			
<i>Silybum marianum</i> *	blessed milk thistle			
BORAGINACEAE – BORAGE FAMILY				
<i>Amsinckia intermedia</i>	common fiddleneck			
<i>Plagiobothrys nothofulvus</i>	rusty popcornflower		FAC	
BRASSICACEAE – MUSTARD FAMILY				
<i>Cardamine oligosperma</i>	few-flowered bitter-cress		FAC	
ERICACEAE – HEATH FAMILY				
<i>Arctostaphylos viscida ssp. mariposa</i>	Mariposa viscid manzanita			
FABACEAE – LEGUME FAMILY				
<i>Acemispou americanus var. americanus</i>	American deervetch		FACU	
<i>Lupinus albilfrons var. albilfrons</i>	white leaf lupine			
<i>Lupinus latifolius var. latifolius</i>	broad leaf lupine		FAC	
<i>Lupinus polyphyllus var. burkei</i>	Burk's big leaf lupine		FAC	
<i>Medicago polymorpha</i> *	variable burclover		FACU	
<i>Trifolium hirtum</i> *	rose clover			
<i>Trifolium willdenovii</i>	tomcat clover		FACU	
<i>Vicia villosa ssp. varia</i> *	diverse hairy vetch			

Species	Common Name	Special-Status	Wetland Rank	Weed Rank
<i>Vicia villosa</i> ssp. <i>villosa</i> *	hairy vetch			
FAGACEAE – OAK FAMILY				
<i>Quercus douglasii</i>	blue oak			
<i>Quercus lobata</i>	valley oak		FACU	
<i>Quercus wislizeni</i>	interior live oak			
GENTIANACEAE – GENTIAN FAMILY				
<i>Zeltnera venusta</i>	California centaury			
GERANIACEAE – GERANIUM FAMILY				
<i>Erodium botrys</i> *	long-beaked filaree		FACU	
<i>Geranium carolinianum</i>	Carolina geranium			
HYDROPHYLLACEAE – WATERLEAF FAMILY				
<i>Nemophila menziesii</i> var. <i>menziesii</i>	menzie's baby blue-eyes			
<i>Phacelia cicutaria</i> var. <i>cicutaria</i>	cicuta-leaved phacelia			
<i>Phacelia racemosa</i>	racemose phacelia			
<i>Pholistoma auritum</i> var. <i>auritum</i>	fiesta flower			
LAMIACEAE – MINT FAMILY				
<i>Trichostema lanceolatum</i>	vinegar weed		FACU	
MONTIACEAE – MINER'S-LETTUCE FAMILY				
<i>Calandrinia menziesii</i>	red maids		FACU	
MORACEAE – MULBERRY FAMILY				
<i>Ficus carica</i> *	edible fig		FACU	
ONAGRACEAE – EVENING PRIMROSE FAMILY				
<i>Clarkia cylindrica</i> ssp. <i>clavicarpa</i>	club-fruited cylindrical clarkia			
<i>Clarkia modesta</i>	modest clarkia			
<i>Clarkia purpurea</i>	purple clarkia			
<i>Clarkia unguiculata</i>	elegant clarkia			
PAPAVERACEAE – POPPY FAMILY				
<i>Eschscholzia caespitosa</i>	tufted poppy			
PHRYMACEAE – LOPSEED FAMILY				
<i>Erythranthe guttata</i>	red-dotted monkeyflower		OBL	
PLANTAGINACEAE – PLANTAIN FAMILY				
<i>Plantago erecta</i>	erect plantain			
POLEMONIACEAE – PHLOX FAMILY				
<i>Gilia tricolor</i> ssp. <i>diffusa</i>	loose-spreading bird's-eye gilia			
<i>Leptosiphon montanus</i>	mustang clover			
POLYGONACEAE – BUCKWHEAT FAMILY				
<i>Chorizanthe membranacea</i>	pink spineflower			
SALICACEAE – WILLOW FAMILY				
<i>Salix exigua</i> var. <i>hindsiana</i>	Hinds' willow		FACW	

Species	Common Name	Special-Status	Wetland Rank	Weed Rank
<i>Salix gooddingii</i>	Goodding's black willow		FACW	
SAPINDACEAE – SOAPBERRY FAMILY				
<i>Aesculus californica</i>	California buckeye			
VIBURNACEAE – MUSKROOT FAMILY				
<i>Sambucus mexicana</i>	blue elderberry		FAC	
MONOCOTS				
AGAVACEAE – AGAVE FAMILY				
<i>Chlorogalum pomeridianum</i>	afternoon soap plant			
POACEAE – GRASS FAMILY				
<i>Aira caryophyllea</i> *	silver hair grass		FACU	
<i>Avena fatua</i> *	wild oat			
<i>Briza minor</i> *	annual quaking grass		FAC	
<i>Bromus diandrus</i> *	ripgut grass			
<i>Bromus hordeaceus</i> *	soft chess		FACU	
<i>Bromus sp.</i>	brome			
<i>Cynosurus echinatus</i> *	bristly dogtail grass			
<i>Poa annua</i> *	annual blue grass		FAC	
<i>Poa bulbosa ssp. vivipara</i> *	live bearing bulbous blue grass		FACU	
THEMIDACEAE – BRODIAEA FAMILY				
<i>Brodiaea elegans ssp. elegans</i>	harvest brodiaea		FACU	
<i>Dipterostemon capitatus</i>	blue dicks		FACU	
<i>Triteleia ixioides</i>	corn lily-like triplet lily		FAC	
<i>Triteleia laxa</i>	loose triplet lily			

Legend

Symbols:

* Non-native species

cf. confer: This designation is used when a species or infraspecific taxon cannot be confirmed, but is believed to be the selected species of infraspecific taxon based on available anatomy

Federal Designations:

U.S. Fish and Wildlife Service:

FE Endangered
FT Threatened
FC Candidate Species

U.S. Forest Service:

FSS Forest Service Sensitive
WL Watch List

U.S. Army Corps of Engineers Wetland Rank:

OBL: Obligate Wetland - Almost always occur in wetlands. With few exceptions, these plants are found in standing water or seasonally saturated soils near the surface.

FACW: Facultative Wetland - Usually occur in wetlands, but may occur in non-wetlands. These plants predominately occur with hydric soils, often in geomorphic settings where water saturates the soils or floods the soil surface at least seasonally.

FAC: Facultative - Occur in wetlands and non-wetlands. These plants can grow in hydric, mesic, or xeric habitats.

FACU Facultative Upland - Usually occur in non-wetlands, but may occur in wetlands. These plants predominately occur on drier or more mesic sites in geomorphic settings where water rarely saturates the soils or floods the soil surface seasonally.

None (UPL): Upland - Almost never occur in wetlands. These plants occupy mesic to xeric non-wetland habitats. They almost never occur in standing water or saturated soils.

Other Designations:

California Invasive Plant Council Rank:

High These species have severe ecological impacts on the surrounding habitat. They have moderate to high rates of dispersal and establishment, and most are widely distributed.

Moderate These species have substantial and apparent—but generally not severe—ecological impacts on the surrounding habitat. They have moderate to high rates of dispersal. Distribution may range from limited to widespread.

Limited These species are invasive, but their ecological impacts are minor on a statewide level. They have low to moderate rates of colonization. Although their distribution is generally limited, these species may be locally persistent and problematic.

Watch List These species are predicted to become invasive if no further actions are taken. Distribution may range from limited to widespread in specific regions.

State of California Designations:

California Department of Fish and Wildlife:

SE Endangered
ST Threatened
SR Rare

California Rare Plant Rank:

1A Plants presumed extirpated in California and either rare or extinct elsewhere

1B Plants Rare, Threatened, or Endangered in California and elsewhere

2A Plants presumed extirpated in California, but more common elsewhere

2B Plants Rare, Threatened, or Endangered in California, but more common elsewhere

3 Plants about which we need more information - review list

4 Plants of limited distribution - watch list

Threat Code Extensions:

None Plants lacking any threat information

.1 Seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat)

.2 Moderately threatened in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)

.3 Not very threatened in California (<20% of occurrences threatened; low degree and immediacy of threat or no current threats known)

California Department of Food and Agriculture Weed Rank:

A eradication, containment, rejection, or other holding action at the state-County level is mandated

B eradication, containment, control, or other holding action is at the discretion of the commissioner

C no state action is required except to retard the speed of spreading

4500 this plant is included in CCR Section 4500 list of state noxious weeds