CALAVERAS COUNTY WATER DISTRICT

North Fork Stanislaus River Hydroelectric Project
FERC Project No. 2409

Pre-Application Document (PAD)

Volume 1 (Public)






September 2026

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SECTION 1.0

INTRODUCTION

This section consists of seven subsections. Section 1.1 presents the Calaveras County Water District's (CCWD or Licensee) intent to apply to the Federal Energy Regulatory Commission (FERC or Commission) for a new license for the North Fork Stanislaus River Hydroelectric Project, FERC Project Number (No.) 2409 (Project), and CCWD's designated agent for the relicensing. Section 1.2 provides a description of CCWD. 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 CCWD implemented to acquire the existing, relevant, and available information provided in this PAD. Section 1.6 presents CCWD's proposed relicensing process plan and schedule, Section 1.7 provides the communication guidelines that CCWD will follow during the relicensing.

1.1 CCWD's Intent to Apply For a New License for the North Fork Stanislaus River Hydroelectric FERC Project and its Designated Agent

Pursuant to Section (§) 5.5 of Title 18 of the Code of Federal Regulations (C.F.R.), on September 29, 2026, CCWD filed with FERC a Notice of Intent to Apply for a New License for a Major Project - Existing Dam (NOI) for the Project. CCWD is the current licensee and sole owner of the Project. In 1985, CCWD designated the Northern California Power Agency (NCPA) as Project Manager during construction and as the operator and maintainer of the Project during the term of the original license. The Commission issued the Project's original license to CCWD on February 8, 1982, stating that the new license would be effective from the first day of the month of license issuance through January 31, 2032.

The exact name, business address, and telephone number of the person authorized to act as agent for CCWD for the Project relicensing is:

Michael Minkler
General Manager
Calaveras County Water District
120 Toma Court
San Andreas, California 95249
(209) 754-3001
Michaelm@ccwd.org

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1.2 Calaveras County Water District

Formed in 1946, CCWD was established to provide water and sewer services to residents throughout Calaveras County. Operations began in 1947 and have continued uninterrupted since that time. CCWD is an independent special district. CCWD is governed by a five-member Board of Directors who are elected to four-year terms by qualified voters in CCWD's service territory. Day-to-day management of CCWD is delegated to the general manager and other staff members.

CCWD spans approximately 1,037 square miles, covering the entire Calaveras County from the San Joaquin Valley in the west to the Sierra Nevada in the east. CCWD is headquartered in San Andreas, about 100 miles east of San Francisco and 60 miles southeast of Sacramento. CCWD provides water service to approximately 13,500 connections across six service areas and sewer service to about 5,500 connections in 12 service areas.

CCWD is a not-for-profit public agency. As a California special district, CCWD's jurisdiction includes provision of public water service, water supply development and planning, wastewater treatment and disposal, and recycling. CCWD has broad general jurisdiction over the use of water within its boundaries, including the right of eminent domain; authority to acquire, control, distribute, store, spread, sink, treat, purify, reclaim, process, and salvage any water for beneficial use; to provide sewer service; to sell treated or untreated water; to acquire or construct hydroelectric facilities and sell the power and energy produced to public agencies or public utilities engaged in the distribution of power; to contract with the United States, other political subdivisions, public subdivisions, public utilities, or other persons; and – subject to Article XIIIA of the State constitution – to levy taxes and improvements.

1.3 Brief Description of the Project

The Project is located on the west slope of the Sierra Nevada in the North Fork Stanislaus River (NFSR) and mainstem Stanislaus River basins in Calaveras, Tuolumne, and Alpine counties, California, with portions on lands of the United States managed by the United States Department of Agriculture, Forest Service (Forest Service), as part of the Stanislaus National Forest (STF), the United States Department of the Interior (USDOI), Bureau of Land Management (BLM) as part of the Sierra Resource Management Area, and the USDOI, Bureau of Reclamation (BOR) as part of the New Melones Reservoir Area.

The Project consists primarily of the following features:

1) North Fork Diversion Dam Impoundment on the NFSR, formed by the North Fork Diversion Dam on the NFSR immediately downstream of the confluence of Silver and Duck creeks;

2) North Fork Diversion Tunnel and outlet channel, which diverts water from the North Fork Diversion Dam to New Spicer Meadow Reservoir;

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3) New Spicer Meadow Reservoir on Highland Creek, a tributary to the NFSR, formed by New Spicer Meadow Dam;

4) New Spicer Meadow Power Intake;

5) New Spicer Meadow Powerhouse located at the outlet works of the dam;

6) Beaver Creek Diversion Dam impoundment on Beaver Creek, a tributary to the NFSR, formed by the Beaver Creek Diversion Dam;

7) Beaver Creek Diversion Tunnel and Penstock, which diverts water from the Beaver Creek Diversion Dam to McKays Point Reservoir;

8) McKays Point Reservoir on the NFSR, formed by McKays Point Diversion Dam;

9) McKays Point Microturbine, located at the base of McKays Point Dam;

10) Collierville Intake and Tunnel, which diverts water from the McKays Point Diversion Dam to the Collierville Powerhouse;

11) Collierville Powerhouse, located on the Stanislaus River just upstream of BOR's New Melones Reservoir, part of the Central Valley Project;

12) Collierville Tailrace, which delivers water from the Collierville Powerhouse to the Stanislaus River immediately upstream of BOR's New Melones Reservoir;

13) New Spicer Meadow Reservoir Campground, Group Campground, and Boat Launch; and

14) Other appurtenant works.

The Project does not include a transmission line. Power from the powerhouses is transmitted to the grid via Northern California Power Agency's (NCPA) Collierville and Spicer Meadow Transmission Line Project, FERC Project No. 11197 (P-11197).

Figure 1.3-1 illustrates the regional location of the Project. Figure 1.3-2 shows existing Project facilities and features and the FERC Project Boundary. Refer to Section 2 of this PAD for a detailed description of existing Project facilities, features, operations, and boundary.

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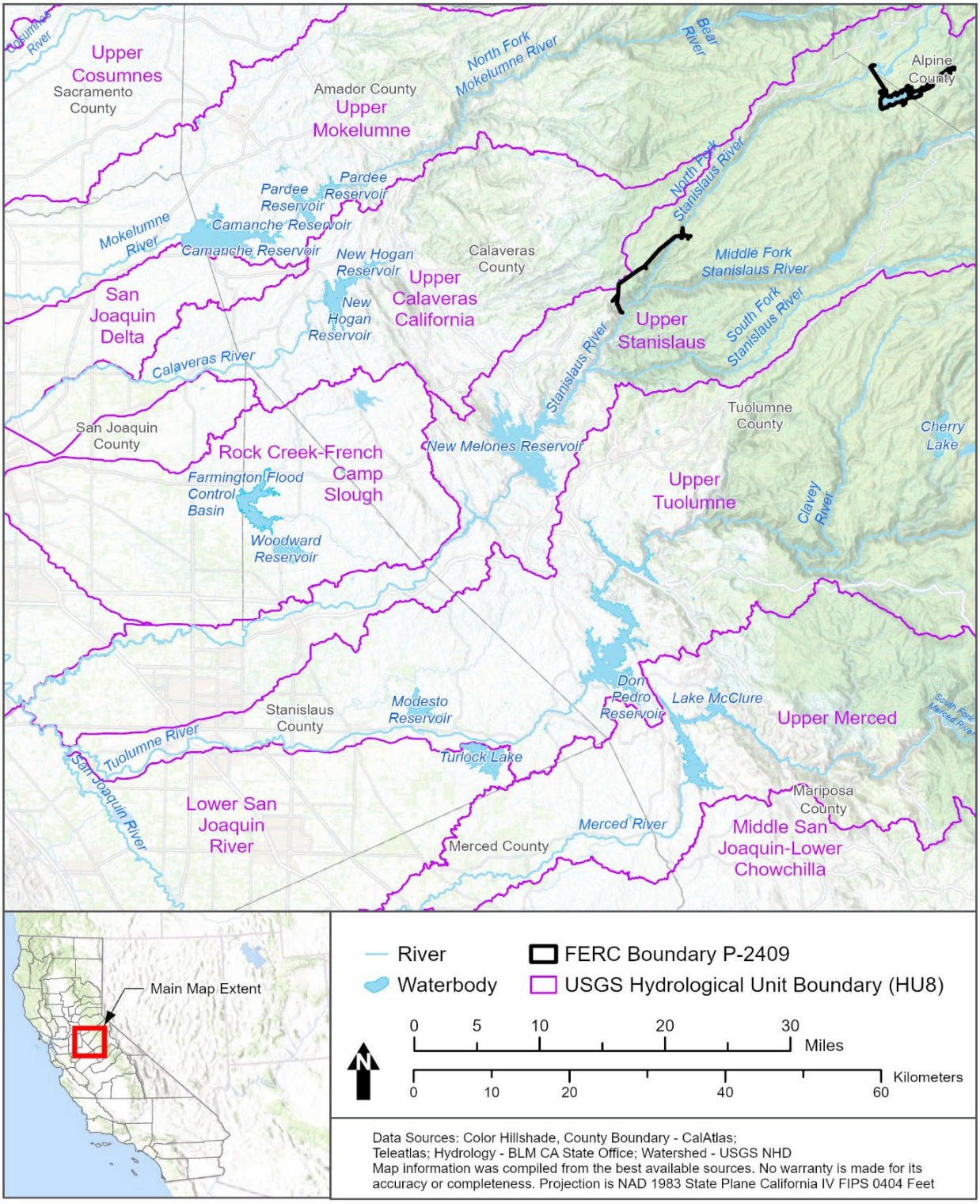


Figure 1.3-1. North Fork Stanislaus River Hydroelectric Project and Stanislaus River watershed in relation to the San Joaquin River and other tributaries.

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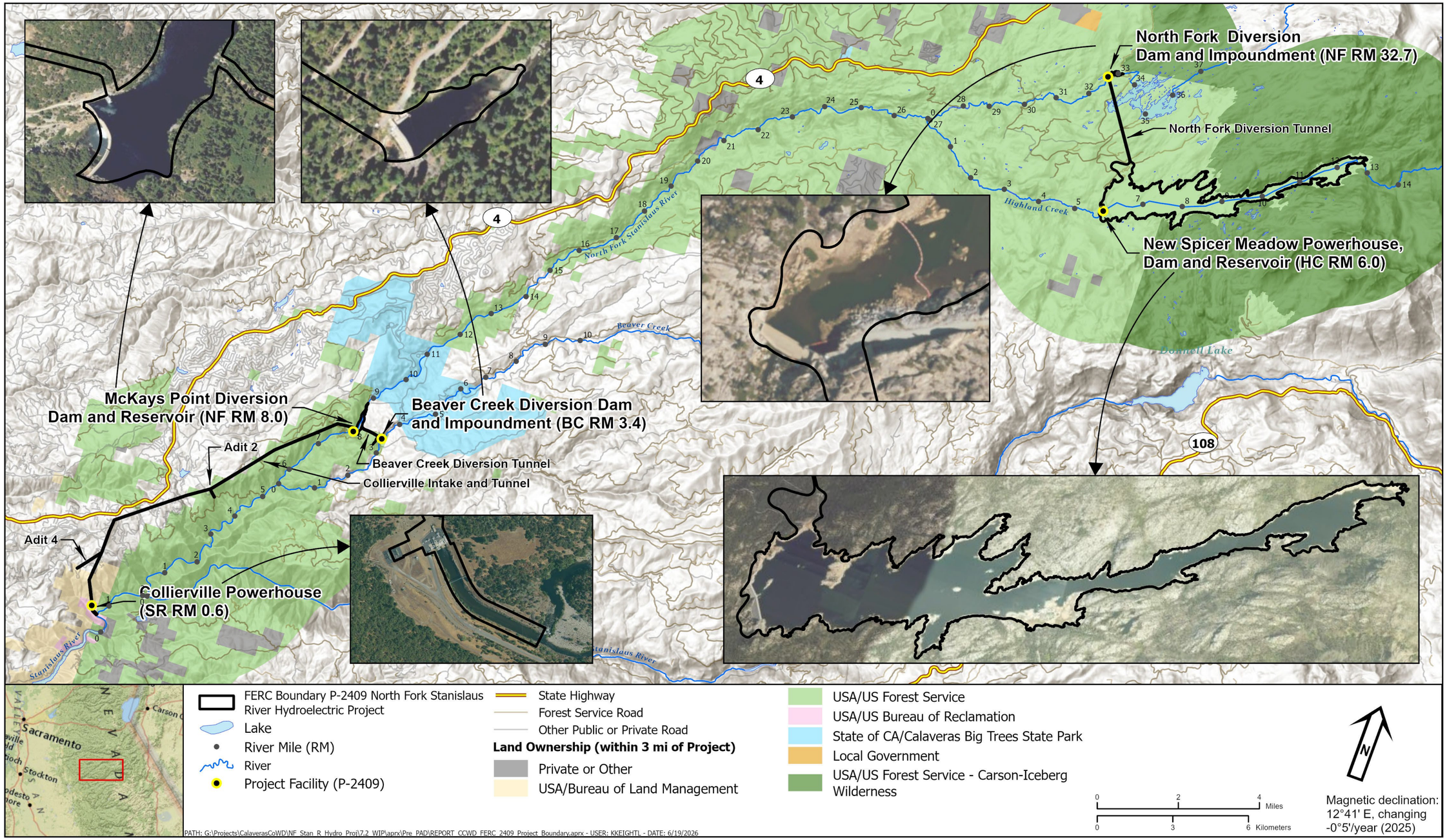


Figure 1.3-2. North Fork Stanislaus River Hydroelectric Project overview map.

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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 who may be interested in the Project relicensing (singularly, Interested Party, and collectively, Interested Parties) summaries of existing, relevant, and reasonably available information that is in CCWD's possession at the time the PAD is filed, related to the Project and resources that may be potentially affected by the Project. In addition, the PAD presents CCWD's proposal for gathering additional information, if needed, to inform requirements of the new license.

1.5 Acquisition of Information

CCWD conducted searches of its own files and other existing sources of information to compile existing, relevant, and reasonable available information for this PAD. To support this effort, CCWD contacted agencies, Native American tribes, and NGOs on October 15, 2025, and November 21, 2025, via email. CCWD also reached out separately to Native American tribes on November 24, 2025. Documentation of this outreach and responses are included in Attachment 1A, Consultation. The agencies, Native American tribes, and NGOs contacted included:

Federal Agencies

- BLM
- BOR
- Environmental Protection Agency (EPA)
- USDOI, Fish and Wildlife Service (USFWS)
- Forest Service - STF
- United States Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS)
- USDOI, National Park Service (NPS)

State of California Agencies

- California Natural Resources Agency (CNRA), Department of Parks and Recreation (State Parks), Calaveras Big Trees State Park
- CNRA, Department of Forestry and Fire Protection (CAL FIRE), Tuolumne-Calaveras Unit
- California Department of Transportation, District 10 (Caltrans)

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- CNRA, Department of Fish and Wildlife, Region 2 (CDFW)
- CNRA, CDFW, Region 4
- CNRA, State Parks, State Office of Historic Preservation (OHP)
- California State Water Resources Control Board (State Water Board)

Local Agencies

- Alpine County
- Blue Lake Springs Mutual Water Company
- Calaveras County
- Calaveras County Regional Conservation District
- City of Angels Camp
- Northern California Power Agency (NCPA)
- Tri-Dam Project
- Tri-Dam Power Authority
- Tuolumne County
- Utica Water and Power Authority (UWPA)
- Union Public Utility District (UPUD)

Native American Tribes and Tribal Representatives

- Buena Vista Rancheria of Me-Wuk Indians[1]
- Calaveras Band of Mi-Wuk Indians
- California Valley Miwok Tribe[1]
- Chicken Ranch Rancheria of Me-Wuk Indians[1]
- Ione Band of Miwok Indians[1]

[1] Tribe is federally recognized

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- Jackson Rancheria Band of Miwuk Indians[1]
- Nashville Enterprise Miwok-Maidu-Nishinam Tribe
- Pakan'yani Maidu of Strawberry Valley Rancheria
- Susanville Indian Rancheria[1]
- Tule River Indian Tribe[1]
- Tuolumne Band of Me-Wuk Indians[1]
- Washoe Tribe of Nevada and California[1]

Non-Governmental Organizations and Businesses

- All Outdoors (AO)
- American Rivers (AR)
- American Whitewater (AW)
- Calaveras Big Trees Association
- Calaveras County Historical Society
- California Sport Fishing Alliance (CSPA)
- California Trout (CalTrout)
- California Hydropower Reform Coalition (CHRC)
- Central Sierra Environmental Resource Center (CSERC)
- Ebbots Pass Forest Watch
- Ebbots Pass Property Owners Council (EPPOC)
- Friends of the River (FOR)
- Foothill Conservancy
- National Heritage Institute
- Outdoor Adventure River Specialists (OARS)
- Pacific Gas and Electric Company (PG&E)

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- Sierra Club, Mother Lode Chapter
- Sierra Pacific Industries (SPI)

1.6 CCWD's Relicensing Process Plan And Schedule

1.6.1 Regulatory Relicensing Deadlines

On September 29, 2026, CCWD filed a request with FERC for FERC to authorize CCWD to use the Traditional Licensing Process (TLP), as described in 18 C.F.R., Part 4 and Part 16, rather than the Integrated Licensing Process (ILP), as described in 18 C.F.R., Part 5, to relicense the Project. FERC's authorization is pending as of the date of this PAD. However, regardless of whether CCWD uses the TLP or ILP, some dates going forward from filing of the NOI and PAD are fixed by the current license expiration date. These fixed dates are:

- January 31, 2030 – The latest date that CCWD may file a Final Application for New License (FLA), two years prior to the expiration of the current license.
- January 31, 2032 – The date the original FERC license for the Project expires.

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

Since, as of the date of this PAD, it is uncertain whether FERC will approve CCWD'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. CCWD developed the table using the time limits set forth in 18 C.F.R., Part 4, for the TLP and in 18 C.F.R., Part 5, for the ILP, and based the table on an NOI and PAD filing date of September 29, 2026. 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 the activity; 3) a description of the activity including, where appropriate, a previous activity linked to this activity; and 4) 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 on the latest possible date shown for that previous activity, unless otherwise indicated.

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Table 1.6-1. North Fork Stanislaus River Hydroelectric Project relicensing schedule assuming the Notice of Intent (NOI) and Pre-Application Document (PAD) are filed with FERC on September 29, 2026.

Integrated Licensing Process (ILP)				Traditional Licensing Process (TLP)			
18 C.F.R. Subsection(s)	**Responsible Party**	**Activity[1]**	**Period (Start and Finish)[2, 3]**	**18 C.F.R. Subsection(s)**	**Responsible Party**	**Activity[1]**	**Period (Start and Finish)[2, 3]**
				18 C.F.R. § 5.3			
				(2)(c) & (d)	CCWD	File and make available to agencies, potentially affected federally recognized and other stakeholders[4] request to use TLP (*when NOI to file an application for a new license is filed*)	9/29/2026 (Tuesday)
18 C.F.R. § 5.5 NOTIFICATION OF INTENT				**18 C.F.R. § 16.8 NOTIFICATION OF INTENT**			
(a)-(g)	CCWD	File and make available NOI and request for non-federal representative status under § 7 of the Endangered Species Act (ESA) and § 106 of the National Historic Preservation Act (NHPA) *(no earlier than 5.5 years and no later than 5 years prior to expiration of the current license)*	9/29/2026 (Tuesday)	(a)(3)	CCWD	File and make available NOI and request for non-federal representative status under § 7 of the ESA and § 106 of the NHPA *(no earlier than 5.5 years and no later than 5 years prior to expiration of the current license)*	9/29/2026 (Tuesday)
18 C.F.R. § 5.6 PRE-APPLICATION DOCUMENT				**18 C.F.R. § 16.8 PRE-APPLICATION DOCUMENT**			
(a)-(e)	CCWD	File and make available PAD *(no earlier than 5.5 years and no later than 5 years prior to expiration of the current license)*	9/29/2026 (Tuesday)	(a)(3)	CCWD	File and make available PAD *(no earlier than 5.5 years and no later than 5 years prior to expiration of the current license)*	9/29/2026 (Tuesday)
18 C.F.R. § 5.7 TRIBAL CONSULTATION				**18 C.F.R. § 5.7 TRIBAL CONSULTATION**			
--	FERC	Hold meeting with/contact potentially affected federally recognized Native American tribes *(no later than (NLT) 30 days of date NOI and PAD filed)*	10/29/2026 (Thursday)	--	FERC	Hold meeting with/contact potentially affected federally recognized Native American tribes *(NLT 30 days of date NOI and PAD filed)*	10/29/2026 (Thursday)
18 C.F.R. § 5.8 NOTICE OF COMMENCEMENT OF PROCEEDING, AND INITIATION OF ESA AND NHPA INFORMAL CONSULTATION				**18 C.F.R. § 5.8 NOTICE OF INTENT TO FILE A LICENSE APPLICATION, FILING OF PRE-APPLICTAION DOCUMENT AND INITIATION OF ESA AND NHPA INFORMAL CONSULTATION**			
(a) & (e)	FERC	Issue Notice of Commencement of Proceeding (NCP) including dates for site visit and joint meeting *(NLT 60 days of date NOI and PAD filed)*	11/30/26 (Monday)[2]	(a)	FERC	Issue NOI, Filing of PAD (NOI/PAD Notice) and decision regarding CCWD's request to use the TLP. If use of the TLP is approved, follow TLP schedule. If use of the TLP is not approved, follow ILP schedule. *(NLT 60 days of date NOI and PAD filed)*	11/30/26 (Monday)[2]
(b)	FERC	Initiate informal consultation with NMFS and USFWS under § 7 of the ESA and consultation with SHPO and Native American tribes under § 106 of the NHPA, if appropriate *(NLT 60 days of date NOI and PAD filed)*	11/30/26 (Monday)[2]	(b)	FERC	Initiate informal consultation with NMFS and USFWS under § 7 of the ESA and consultation with SHPO and Native American tribes under § 106 of the NHPA, if appropriate *(NLT 60 days of date NOI and PAD filed)*	11/30/26 (Monday)[2]
18 C.F.R. § 5.8 ISSUE SCOPING DOCUMENT 1							
(c)	FERC	Issue Scoping Document 1 (SD1) *(NLT 60 days of date NOI and PAD filed)*	11/30/26 (Monday)[2]				
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)	CCWD	Consult with the resource agencies, potentially affected federally recognized Native American tribes, and members of the public on the scheduling of a joint meeting *(NLT 15 days in advance of the joint meeting*)	NLT 15 days in advance of the joint meeting
				(b)(3)(i)(B) [and 18 C.F.R. § 16.8(h)(i)]	CCWD	Post notice of joint meeting in local newspapers, including purpose, location, time, and agenda *(NLT 14 days in advance of the joint meeting*)	NLT 14 days in advance of the joint meeting
				(b)(3)(i)(B)	CCWD	Provide to resource agencies, potentially affected federally recognized 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 *(NLT 15 days in advance of the joint meeting*)	NLT 15 days in advance of the joint meeting

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Table 1.6-1. (Continued)

Integrated Licensing Process (ILP)				Traditional Licensing Process (TLP)			
18 C.F.R. Subsection(s)	**Responsible Party**	**Activity[1]**	**End Date[2, 3]**	**18 C.F.R. Subsection(s)**	**Responsible Party**	**Activity[1]**	**End Date[2, 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)	FERC	Hold National Environmental Policy Act (NEPA) scoping meeting and conduct site visit *(NLT 30 days of date when NCP issued)*	12/30/2026 (Wednesday)	(b)(3)(ii)(B)	CCWD	Hold the joint meeting and provide an opportunity for a site visit to review the information and discuss the data and studies to be provided by CCWD as part of the consultation process (*No earlier than [NET] 30 days but NLT 60 days of date NOI/PAD Notice is issued*)	1/29/2027 (Friday)
(d)	CCWD & Stakeholders	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 (*(NLT 30 days of date when NCP issued*)	12/30/2026 (Wednesday)	(b)(4)	Stakeholders	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. Attendance of the public at the site visit is at the discretion of CCWD. (*NET 30 days but NLT 60 days of date NOI/PAD Notice is issued*)	1/29/2027 (Friday)
--	FERC	Post either an audio recording or written transcript of the joint meeting on e-Library	--	(b)(4)	CCWD	Make either an audio recording or written transcript of the joint meeting, and promptly provide copies of these recordings, upon request (*Promptly provide to FERC, agencies, and potentially affected federally recognized Native American tribes, upon request*)	Promptly file 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)	CCWD & Stakeholders	Stakeholders and CCWD may file comments on the PAD and SD1, and request studies *(NLT 60 days of date NCP issued)*	1/29/2027 (Friday)	(b)(5)	Stakeholders	Stakeholders may provide to CCWD written comments identifying stakeholder's determination of necessary studies to be performed or the information to be provided by CCWD in its application (*NLT 60 days after joint meeting. Upon a stakeholder's request, FERC may extend the deadline up to 120 days*)	3/20/2027 (Tuesday)
18 C.F.R. § 5.10 SCOPING DOCUMENT 2				(b)(6)(i)	CCWD & Stakeholders	During first stage consultation, if CCWD and a stakeholder disagree regarding any matter or regarding the need to conduct a study or gather information, CCWD or the disagreeing stakeholder may refer the disagreement in writing to FERC for resolution, providing a copy to other affected parties (*any time during first stage consultation*).	Until first stage consultation ends[6]
--	FERC	Issue Scoping Document 2 (SD2), if needed *(NLT 45 days of the end of PAD and SD1 comment period)*	3/15/2027 (Monday)				
18 C.F.R. § 5.11 APPLICANT'S PROPOSED STUDY PLAN AND STUDY PLAN MEETING				(b)(6)(ii)	CCWD & Disagreeing Party	If a dispute is filed with FERC, the disagreeing party may file a response (*NLT 15 days from the date the dispute is filed with FERC*)	NLT 15 days from the date the dispute is filed with FERC
(a)	CCWD	File Proposed Study Plan *(NLT 45 days of the end of PAD and SD1 comment period)*	3/15/2027 (Monday)				
(e)	CCWD	Hold Proposed Study Plan meeting *(NLT 30 days after date Proposed Study Plan filed)*	4/14/2027 (Wednesday)	(b)(6)(iv)	FERC	FERC resolves dispute	--
18 C.F.R. § 5.12 COMMENTS ON PROPOSED STUDY PLAN							
--	Stakeholders	File comments on Proposed Study Plan *(NLT 90 days after date Proposed Study Plan is filed)*	6/14/2027 (Monday)[2]				
18 C.F.R. § 5.13 REVISED STUDY PLAN AND STUDY PLAN DETERMINATION							
(a)	CCWD	File Revised Study Plan (*NLT 30 days of date Proposed Study Plan comment period ends)*	7/14/2027 (Wednesday)				
(b)	Stakeholders	File comments on Revised Study Plan *(NLT 15 days of the date Revised Study Plan is filed)*	7/29/2027 (Thursday)				
(c)	FERC	Issue Study Plan Determination *(NLT 30 days of date Revised Study Plan is filed)*	8/13/2027 (Friday)				
(d)	FERC	Revised Study Plan deemed approved *(20th day after FERC Determination if no study plan disputes filed)*	9/2/2027 (Thursday)				
18 C.F.R. § 5.14 FORMAL STUDY DISPUTE RESOLUTION PROCESS							
(a)	Mandatory Conditioning Agencies & Native American Tribes	File Notice of Dispute (NOD) *(NLT 20 days of date FERC Determination issued)*	9/2/2027 (Thursday)				

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Table 1.6-1. (Continued)

Integrated Licensing Process (ILP)				Traditional Licensing Process (TLP)			
18 C.F.R. Subsection(s)	**Responsible Party**	**Activity[1]**	**End Date[2, 3]**	**18 C.F.R. Subsection(s)**	**Responsible Party**	**Activity[1]**	**End Date[2, 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 (*NLT 20 days of date NOD filed)*	9/22/2027 (Wednesday)				
(i)	CCWD & Stakeholders	File comments on NOD *(NLT 25 days of date NOD filed)*	9/27/2027 (Monday)				
(k)	Dispute Resolution Panel	Deliver to FERC finding on NOD *(NLT 50 days of date NOD filed)*	10/22/2027 (Friday)				
(l)	FERC	Director of Office of Energy Projects issues written determination regarding NOD *(NLT 70 days of date NOD filed)*	11/11/2027 (Thursday)				
18 C.F.R. § 5.15 CONDUCT STUDIES[5]				**18 C.F.R. § 16.8 SECOND STAGE CONSULTATION – CONDUCT STUDIES[6]**			
(a)	CCWD	Conduct studies[5]	After FERC determination and disputes are resolved	(c)(1)	CCWD	Conduct studies[6]	Once first stage consultation ends
(b)	CCWD	File periodic progress reports in addition to annual reports	FERC determines frequency				
(c)(1)	CCWD	File Initial Study Report *(NLT 1 year after FERC's approval of Revised Study Plan deemed final)*	9/1/2028 (Friday)				
(c)(2)	CCWD	Hold Initial Study Report meeting *(NLT 15 days of date Initial Study Report filed)*	9/18/2028 (Monday)[2]				
(c)(3)	CCWD	File Initial Study Report meeting summary including CCWD's proposed plan modifications and new studies *(NLT 15 days after Initial Study Report meeting)*	10/3/2028 (Tuesday)				
(c)(7)	FERC	Approval of meeting summary and study plan modifications if no disagreements filed *(NLT 30 days after Initial Study Report meeting summary filed)*	11/2/2028 (Thursday)				
(c)(4)	Stakeholders	File disagreements with meeting summary including CCWD's proposed study plan modifications and new studies *(NLT 30 days after Initial Study Report meeting summary filed)*	11/2/2028 (Thursday)				
(c)(5)	CCWD & Stakeholders	File responses to disagreements *(NLT 30 days after disagreement period ends)*	12/4/2028 (Monday)[2]				
(c)(6)	FERC	Resolve disagreement and amend study plan *(NLT 30 days after responses to disagreements period ends)*	1/3/2029 (Wednesday)				
(f)	CCWD	File Updated Study Report, including election of CCWD to file a Draft License Application (DLA) rather than a Preliminary Licensing Proposal (PLP) if CCWD chose to do so *(NLT 2 years after FERC's approval of Revised Study Plan deemed final)*	9/3/2029 (Monday)[2]				
(c)(2)	CCWD	Hold Updated Study Report meeting *(NLT 15 days of date Updated Study Report filed)*	9/18/2029 (Tuesday)				
(c)(3)	CCWD	File Updated Study Plan meeting summary including CCWD's proposed study plan modifications and new studies *(NLT 15 days after Updated Study Report meeting)*	10/3/2029 (Wednesday)				
(c)(7)	FERC	Approve meeting summary and study plan modifications if no disagreements filed *(NLT 30 days after Updated Study Report meeting summary filed)*	11/2/2029 (Friday)				
(c)(4)	Stakeholders	File disagreements with meeting summary and proposed study modifications and new studies *(NLT 30 days after Updated Study Report meeting summary filed)*	12/3/2029 (Monday)[2]				
(c)(5)	CCWD & Stakeholders	File response to disagreements *(NLT 30 days after disagreement period ends)*	1/2/2030 (Wednesday)				
(c)(6)	FERC	Resolve disagreement and amend study plan *(NLT 30 days after response to disagreements period ends)*	1/2/2030 (Wednesday)				

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Table 1.6-1. (Continued)

Integrated Licensing Process (ILP)				Traditional Licensing Process (TLP)			
18 C.F.R. Subsection(s)	**Responsible Party**	**Activity[1]**	**End Date[2, 3]**	**18 C.F.R. Subsection(s)**	**Responsible Party**	**Activity[1]**	**End Date[2, 3]**
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)	CCWD	File PLP or DLA *(No less than 150 days prior to deadline for filing license application*)	9/3/2029 (Monday)	c(4)	CCWD	Provide to agencies and Native American tribes a copy of the DLA, including full documentation of consultation. *(No deadline in regulations; assumed for this schedule filing 150 days prior to deadline for filing of FLA*)	7/31/2029 (Tuesday)
(e)	Stakeholders	File comments on PLP/DLA *(NLT 90 days of date PLP or DLA filed)*	12/3/2029 (Monday)[2]	c(5)	Resource Agencies & Native American Tribes	Provide written comments on DLA to CCWD (*NLT 90 days of date PLP or DLA made available*)	10/29/2029 (Monday)
				c(6)(i)	CCWD, Resource Agencies & Native American Tribes	If comments indicate that a resource agency or Native American tribe has a substantive disagreement with CCWD's conclusions regarding resource impacts or proposed protection, mitigation, and enhancement (PM&E) measures, CCWD hold 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. CCWD 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. (*NLT 60 days from the date of the written comments of the disagreeing agency or Native American tribe*)	12/28/2029 (Friday)
				c(6)(ii)	CCWD	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 (*NLT 15 days in advance of the joint meeting*)	NLT 15 days in advance of the joint meeting
				c(7)	CCWD & Disagreeing Party	CCWD 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	--
				c(8)	CCWD	CCWD describes all disagreements with a resource agency or Native American tribe on technical or PM&E measures in its FLA, including an explanation of the basis for CCWD'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**			
(a)–(e)	CCWD	File FLA, make available to agencies, Native American tribes, governmental offices, and consulted members of the public, and post notice of availability in local newspapers *(NLT 2 years prior to expiration of the current license, which is January 31, 2032)*	January 31, 2030 (Thursday)	(d)(1)	CCWD	File FLA, make available to agencies, Native American tribes, governmental offices, and consulted members of the public, and post notice of availability in local newspapers *(NLT 2 years prior to expiration of the current license, which is January 31, 2032)*	January 31, 2030 (Thursday)

[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 at the latest date possible for that previous activity, unless otherwise indicated.
[4] Stakeholders refers to potentially affected federal and state agencies, Native American tribes, non-governmental organization, businesses, and unaffiliated members of the public.
[5] The ILP schedule assumes that studies begin when FERC's Study Determination is deemed final, may continue for 2 years or more as determined by FERC, and Initial and Updated Study Reports are due 1 year and 2 years, respectively, after Study Plan Determination is deemed final
[6] The TLP schedule assumes that studies begin after the deadline for providing to CCWD written comments identifying necessary studies or information, and may continue until CCWD files its FLA.

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1.6.2 CCWD's 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 CCWD to use the TLP and based on the TLP process schedule in Table 1.6-1, CCWD's proposed date and location of the TLP joint meeting and site visit are as follows:

- Proposed Joint Meeting – Thursday, January 7, 2027, at CCWD's office at 120 Toma Ct, San Andreas, CA 95249 and virtually.
- Proposed Site Visit – Wednesday, January 6, 2027, at the Project.[2]

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

1.6.2.2 ILP NEPA Scoping Meeting and Site Visit

If FERC does not authorize CCWD 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 the ILP NEPA scoping meeting and site visit. Based on the ILP process schedule in Table 1.6-1, CCWD's proposed dates for the ILP NEPA scoping meeting and site visit are as follows:

- Proposed NEPA Scoping Meeting – Wednesday, December 16, 2026, at CCWD's office at 120 Toma Ct, San Andreas, CA 95249 and virtually.
- Proposed Site Visit – To be determined by FERC.

FERC will ultimately set the schedule and location for the NEPA scoping meeting and site visit, 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 Interested Parties, including CCWD and FERC. However, within the confines of those regulations, CCWD may choose to undertake discretionary activities to facilitate the relicensing, such as holding additional meetings/workshops to collaboratively develop study outlines, review study results, and develop resource management measures.

[2] Vehicle accessible to some higher elevation facilities (e.g., New Spicer Meadow Dam and North Fork Diversion Dam) may be precluded due to snow conditions. If some facilities cannot be accessed during the site visit, CCWD will offer a visit to those facilities as soon as access is available. In the off chance that all Project facilities cannot be visited during the site visit, CCWD requested FERC modify the requirement at 18 C.F.R. Section 4.38(b)(3)(B)(3)(ii) to allow a visit to those facilities with interested parties in spring 2027 when vehicular access is possible.

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1.7 Relicensing Communication Guidelines

1.7.1 Objectives

The communication guidelines describe how CCWD plans to communicate and interact with Interested Parties during the relicensing, regardless of whether the ILP or TLP is used. These guidelines:

- Do not supersede or in any way modify FERC's regulations, or any other federal or State of California regulations related to the relicensing, including those related to Section 106 of the National Historic Preservation Act (NHPA), Section 7 of the Endangered Species Act (ESA), or Section 401 of the Clean Water Act (CWA).
- Do not apply to FERC or any documents, meetings, correspondence, or other actions for which FERC is responsible during the relicensing process.
- Do not apply to Interested Parties or members of the public who may choose how it wishes to communicate during the relicensing.
- May be revised by CCWD 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; NGOs; Native American tribes, including tribes that are formally recognized by the federal government, tribes that are not formally recognized by the federal government, and members of tribes; businesses; and unaffiliated members of the public. CCWD assumes that each Interested Party 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 Participation in the Relicensing

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

1.7.2.3 Relicensing Participants Contact List

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

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CCWD will request that each Interested Party provide appropriate information (i.e., name, title, affiliation, mailing address, telephone number, and e-mail address) for its designated contact for the relicensing. CCWD assumes that designated contacts will keep the appropriate members of their agency, tribe, or NGO advised of relicensing activities. Also, CCWD anticipates that each Interested Party will notify CCWD if contact information for its designated contact changes.

Relicensing is a lengthy process that will extend for at least 5 years. To keep the Interested Parties Contact List (Contact List) current, CCWD will periodically issue an e-mail to all those on the Contact List asking for each contact to confirm that he or she wishes to remain on the Contact List. CCWD will assume that those who do not respond in a timely fashion are no longer interested in the relicensing and remove those individuals from the Contact List.

1.7.2.4 Relicensing Website

CCWD has established and will maintain a publicly accessible internet website (Relicensing Website) as a means of making information regarding the relicensing readily available to Interested Parties. Examples of information that will be provided on the Relicensing Website include the initial FERC license for the Project including an annotated current license, FERC filings, FERC orders regarding the relicensing, and relicensing documents (e.g., the NOI and PAD, as well as other documents as they are developed). Many of the folders on the Relicensing Website will be empty until the documents for each folder are developed.

CCWD's Relicensing Website can be accessed at https://www.ccwd.org/p-2409-relicense.

1.7.2.5 Meetings

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

1.7.2.6 In-Person and Virtual Meetings

CCWD will plan, arrange, and facilitate formal public meetings during relicensing for gathering comments from Interested Parties. Depending on the mix of meeting attendees, CCWD may choose to hold meetings in-person, virtually, or a combination (i.e., hybrid). CCWD does not guarantee the quality of the phone or web connections or that the Interested Party participating will have access to all the materials that may potentially be reviewed at the meeting. If hybrid meetings are held, CCWD will use a meeting space that can accommodate in-person attendees as well as virtual attendees such as CCWD's Board Room in San Andreas, California.

1.7.2.7 Meeting Locations and Start Time

CCWD intends that meeting locations, including those for regularly scheduled meetings, and start times will be selected by CCWD in consultation with Interested Parties to ensure the greatest participation by those who wish to attend the meeting and the least amount of inconvenient travel

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for meeting participants overall. CCWD assumes that each Interested Party will be aware of any meeting start time and location posted on the Relicensing Website Meetings & Outreach page.

1.7.2.8 Meeting Notification

For formal meetings, CCWD will provide prior notice of the meeting to contacts on the Contact List. Notification will occur through e-mail, unless other arrangements are made, and will be posted on the Relicensing Website. CCWD may use discretion on a case-by-case basis on which Interested Parties are invited to certain meetings involving specific topics. CCWD will strive to provide the meeting notice and materials seven calendar days in advance of the meeting.

In some cases, FERC's regulations require that an applicant post notices in newspapers or periodicals in the county in which the project is located. When required, CCWD will post notices in the following newspapers:

- Calaveras County - Calaveras Enterprise
- Tuolumne County - Union Democrat
- Alpine County - Alpine County Monitor

1.7.2.9 Meeting Agenda

CCWD will develop an agenda for an upcoming meeting based on regulatory requirements and input from Interested Parties 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 CCWD-sponsored meeting should understand that those at the meeting may re-organize the agenda or proceed through an agenda at a faster or slower pace than anticipated when the agenda was developed.

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1.7.2.10 Meeting Moderation/Facilitation

CCWD is committed to an open and transparent process with a free exchange of information and interests among CCWD and all Interested Parties during meetings. CCWD anticipates that CCWD will lead CCWD-sponsored meetings. CCWD will make a good-faith effort to ensure that all meeting participants are heard during the meeting.

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

1.7.2.11 Meeting Action Items and Decisions

CCWD does not intend to prepare a summary of CCWD-sponsored meetings unless: 1) CCWD and Interested Parties 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 CCWD prepares a summary, CCWD will post the summary on the Relicensing Website for that meeting.

1.7.2.12 Privileged Meetings

Some meetings and information prepared for or shared during a meeting may be Privileged. For example, information on Native American resources and locations of sensitive environmental and cultural resources are considered Privileged material with restrictions on their distribution. This material is typically marked "CONTAINS CUI[3]/PRIV - DO NOT RELEASE". In addition, some material may be considered business sensitive and treated as confidential. CCWD will share Privileged and confidential information with only those Interested Parties who CCWD deems to have a need to view the material. Furthermore, CCWD anticipates that any Interested Parties providing Privileged information to CCWD will identify the information as Privileged or confidential in advance of providing it to CCWD.

1.7.2.13 Preparation for Meetings

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

1.7.2.14 Relicensing Participants Unable to Attend a Meeting

If an Interested Party finds that he or she is unable to attend or is unable to have a representative attend a CCWD-sponsored meeting, the Interested Party may provide CCWD input to be considered at the meeting. If this occurs, CCWD will make a good faith effort to convey the

[3] CUI = Controlled Unclassified Information.

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information accurately, disclosing who provided the information and when they provided it, to Relicensing Participants at the meeting.

1.7.2.15 Documents

FERC's regulations identify a number of 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. CCWD anticipates that there will also be other informal documents generated during the relicensing.

FERC's Documents

For documents issued by FERC, CCWD anticipates that FERC will distribute the documents in accordance with FERC's protocols. CCWD anticipates that all documents issued or received by FERC will be posted and publicly available in the e-Library on FERC's website at www.ferc.gov. FERC's website provides further instructions for obtaining documents and creating an account.

Non-CCWD or FERC-Generated Documents

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

CCWD reminds Interested Parties that FERC encourages parties when filing material with FERC to submit an electronic filing pursuant to 18 C.F.R. § 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 Project (North Fork Stanislaus River Hydroelectric Project) and FERC Project number (2409).

CCWD's Documents

CCWD anticipates using FERC's e-Filing whenever possible for documents CCWD files with FERC and anticipates distributing such documents to Interested Parties by posting on the Relicensing Website and an e-mail notice. In certain cases, documents may be provided digital media (i.e., Universal Serial Bus [USB] drive or Digital Versatile Disc [DVD]), or paper copy to Interested Parties. The distribution will also go to FERC's Service List after FERC's Secretary establishes a formal Service List. CCWD plans to use e-mail for distribution of informal documents it initiates. CCWD will place the date, the name of the document, and the page number on each page of each document CCWD produces. Other miscellaneous information, such as "draft," will be shown in the footer of each page of the document, if appropriate.

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Collaboratively Developed Documents

CCWD anticipates that at times CCWD, at its sole discretion, may desire to develop a document collaboratively with certain Interested Parties. In those cases, and unless otherwise agreed to by CCWD and Interested Parties, CCWD plans to use a single-text approach. Specifically, once an initial draft of the document is developed, CCWD plans to post the document on its Relicensing Website in Microsoft Word or other appropriate format that can be downloaded from the Relicensing Website and used by Interested Parties. This is referred to as a "Posted File."

As a Posted File is revised, CCWD anticipates that CCWD or the Interested Party 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 "Water Quality Study Outline CDFW110126.docx" to indicate the Posted File is a version of a water quality study outline, the revisions were made by CDFW, and the date of the file is November 1, 2026. CCWD 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 CCWD's responsibility. CCWD plans to post the revised file on the Relicensing Website if CCWD made the revision, or post the file once provided to CCWD if a Relicensing Participant made the revision.

CCWD 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. CCWD plans that Track Changes on a Posted File may be accepted if CCWD and Interested Parties developing the document agree with the revisions.

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

1.7.2.16 Personal Conduct

Respect for Participants

CCWD will always respect the personal integrity, values, and legitimacy of the interests of each Interested Party, and expects that each Interested Party will do the same.

Commitments

CCWD will not make commitments lightly and expects that Interested Parties will do the same.

Communicating Interests

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

CCWD will communicate its interests in topics under consideration and expects Interested Parties will do the same. CCWD believes that it is incumbent upon CCWD and each Interested Party to

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state his or her interests, and that voicing of these interests in a timely manner is essential to enable meaningful dialogue and full consideration of different points of view. CCWD will make a good faith effort to share non-confidential resource information and identify its understanding of relevant agency laws, regulations, and policies with regard to assessment of potential impacts and development of potential resource management measures and encourages Interested Parties to do the same.

1.7.2.17 Communications

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

Other than verbal communications at meetings or where required by FERC regulations, CCWD will use e-mail as the primary means of formal communication among Interested Parties.

CCWD will treat telephone calls with Interested Parties informally, with no specific documentation.

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Pre-Application Document

Attachment 1A

Consultation Documentation

North Fork Stanislaus River Hydroelectric Project
FERC Project No. 2409

Prepared by:
Calaveras County Water District

September 2026

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ATTACHMENT 1A
CCWD'S CONSULTATION HISTORY AND DOCUMENTATION

This Attachment 1A to Section 1, *Introduction*, documents Calaveras County Water District's (CCWD) consultation with federal, State of California and local agencies, Native American tribes, non-governmental organizations (NGO), and unaffiliated members of the public (collectively referred to as Relicensing Participants in this attachment) conducted to support CCWD's Notice of Intent (NOI) and Pre-Application Document (PAD) as well as the overall relicensing for the North Fork Stanislaus Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC) Project Number (No.) 2409. Consultation documentation is included in Appendix A to this attachment.

FERC's relicensing process does not require that an applicant for a new license hold any meetings with Relicensing Participants prior to filing its NOI and PAD. For the Project relicensing, CCWD conducted 10 meetings with Relicensing Participants prior to filing its NOI and PAD. CCWD's pre-NOI and PAD filing activities are described below.

1.1 Relicensing Introduction and Invitation to Kickoff Meeting

CCWD contacted agencies, Native American tribes, and NGOs on September 23, 2025, via email, to confirm interest in the relicensing, correct contact information for individuals from each organization that should receive future communications, and an invitation to an October 29, 2025 relicensing kickoff meeting.

1.2 Request for Existing, Relevant, and Reasonably Available Information

CCWD contacted federal, State, and local agencies, Native American tribes, and NGOs on October 15, 2025, and November 21, 2025, via email, to request existing, relevant, and reasonable available information for consideration for inclusion in the PAD. CCWD also reached out separately to Native American tribes on November 24, 2025. The agencies, Native American tribes, and NGOs contacted are listed in Section 1.5 of the PAD.

CCWD 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.

2. A list of any issues they believe CCWD should address in its PAD and license application, including potential Project effects.

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

Responses to the information request were received from California Department of Fish and Wildlife (CDFW), Calaveras Band of Mi-Wuk Indians, All-Outdoors, Central Sierra Environmental Resource Center (CSERC), Forest Service, Utica Water and Power Authority (UWPA), and Chicken Ranch Rancheria of Me-Wuk Indians.

1.3 Relicensing Kickoff Meeting (Meeting #1)

On October 29, 2025, CCWD held a relicensing kickoff meeting at its office in San Andreas, California (CA), as well as virtually. The meeting included an introduction to CCWD and the Project, CCWD's anticipated overall relicensing process and schedule, and an opportunity for attendees to ask questions and share initial feedback.

Besides CCWD and its consultant, representatives from the following organizations attended the meeting: Forest Service; United States Department of the Interior (USDOI), Bureau of Land Management (BLM); USDOI, Bureau of Reclamation (BOR); CDFW; California State Water Resources Control Board (State Water Board); Calaveras County; Alpine County; Calaveras County Resource Conservation District; City of Angels Camp; CSERC; California Sportfishing Protection Alliance (CSPA); Friends of the River (FOR); Pacific Gas and Electric Company (PG&E); Sierra Pacific Industries (SPI); Tri-Dam Project; UWPA; Washoe Tribe of Nevada and California; Restoring the Stanislaus; Utica Public Utility District (UPUD); Northern California Power Agency (NCPA); and Calaveras Band of Mi-Wuk Indians.

As a follow-up to the kickoff meeting, on January 23, 2026, CCWD met with the Forest Service at CCWD's office in San Andreas, CA, to discuss the Project and Forest Service's specific concerns and available information. Similarly, on June 4, 2026, CCWD met with the Calaveras Band of Mi-Wuk Indians at CCWD's office in San Andreas, CA, to discuss the Project and tribe's initial comments and concerns.

1.4 Study Description Development

CCWD chose to begin development of Study Descriptions ahead of filing the NOI and PAD. To support this, CCWD held a series of meeting in-person at CCWD's office in San Andreas, CA, as well as available virtually to discuss CCWD's draft study descriptions and solicit comments from Relicensing Participants. Besides CCWD and its consultant, representatives from STF, CDFW, BLM, NCPA, UWPA CSERC, CSPA, and Calaveras Band of Mi-Wuk Indians attended one or more of the meetings as well as several other organizations who attended only those meetings related to their interests in relicensing.

CCWD posted the draft study descriptions on its website two to three weeks ahead of the meetings when a particular study description would be discussed. During each meeting, CCWD reviewed the work completed to date on the study descriptions, opened the study descriptions for that meeting so proposed edits and comments could be discussed, and closed with a review of action items and upcoming meetings. All presentations, attendee lists, and notes are posted to CCWD's

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website after each meeting at https://www.ccwd.org/p-2409-relicensing-meetings-outreach. CCWD developed 19 study descriptions and through this process believes it reached agreement on 14 of the 19 study descriptions. The studies and their current status are described in Section 4.2 of the PAD. In total, CCWD held seven in-person / virtual meetings and three virtual follow-up calls to discuss the study descriptions including:

- February 19, 2026 (Meeting #2) – Meeting to review initial list of study descriptions and process discussion.
- April 13, 2026 (Meeting #3) – Meeting to discuss terrestrial resources-related Study Descriptions TR-1, TR-2, and TR-3
- April 24, 2026 (Meeting #4) – Meeting with Native American Tribes to discuss Study Descriptions CR-1 and CR-2
- May 11, 2026 (Meeting #5) – Meeting to discussion recreation, land use, and aesthetics related Study Descriptions RR-1, RR-2, RR-3, LU-1, and VR-1
- June 2, 2026 (Meeting #6) – Meeting to discuss aquatic resources related Study Descriptions AR-1, AR-2, AR-3, and AR-4
- June 9, 2026 (Meeting #7) – Follow-up call to discuss Study Description TR-1
- July 17, 2026 (Meeting #8) – Meeting to discuss water and aquatic resources related Study Descriptions WR-1, WR-2, AR-6, and AR-7
- August 18, 2026 (Meeting #9) – Call to discuss Study Description AR-5 and follow-up on AR-6 and AR-7
- September 8, 2026 (Meeting #10) – Follow-up call to discuss Study Descriptions LU-1 and RR-1

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Pre-Application Document

Appendix A

Consultation Documentation

North Fork Stanislaus River Hydroelectric Project
FERC Project No. 2409

Prepared by:
Calaveras County Water District

September 2026

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From:	P2409 Relicense
To:	P2409 Relicense
Bcc:	Dawn.Alvarez@usda.gov; Monique.sanchez@usda.gov; jason.kuiken@usda.gov; Raymond.Cablayan@usda.gov; casey.jardine@usda.gov; allison.stevenot@usda.gov; castatedirector@blm.gov; BLM_CA_Web_ML@blm.gov; ntriplett@blm.gov; cdavenport@usbr.gov; rsanchez@usbr.gov; dlessard@usbr.gov; michelle_havens@fws.gov; Torres.Tomas@epa.gov; steve.edmondson@noaa.gov; Barabara_rice@nps.gov; Susan_rosebrough@nps.gov; parker.thaler@waterboards.ca.gov; morgan.kilgour@wildlife.ca.gov; michael.maher@wildlife.ca.gov; beth.lawson@wildlife.ca.gov; calshpo.ohp@parks.ca.gov; nick.casci@fire.ca.gov; Grace.Magsayo@dot.ca.gov; armando.quintero@parks.ca.gov; randy.howard@ncpa.com; jake.eymann@ncpa.com; gm@uticawater.com; Jessica Self; Steve Williams; chrisoflinn@angelscamp.gov; twoodrow@alpinecountyca.gov; awg.rachel@gmail.com; awg.kimra@gmail.com; mhuberty@co.calaveras.ca.us; lmedina@co.calaveras.ca.us; rcampbell@co.tuolumne.ca.us; shembree@co.tuolumne.ca.us; tmayo@blsmwc.com; snicotero@tridamproject.com; twalley@calaverasrcd.org; Jessalynn@bvtribe.com; Jesus@bvtribe.com; calaverasmiwukpreservation@gmail.com; Adam2191983@gmail.com; calaverasband.miwukindians@gmail.com; office@cvmt.net; mfox@crbtribal.com; ssuess@crtribal.com; Creyes@crtribal.com; jportillo@crtribal.com; Consultation@ionemiwok.net; jereme@ionemiwok.net; Adalton@jacksoncasino.com; Valdezcome@comcast.net; sdinsmore@strawberryvalleymaidu.org; ahart@sir-nsn.gov; serrell.smokey@washoetribe.us; THPO@washoeTribe.us; Charmaine.McDarment@Tulerivertribe-nsn.gov; kday@mewuk.com; theresa@americanwhitewater.org; janndorman@friendsoftheriver.org; rstork@friendsoftheriver.org; cshutes@calsport.org; blancapaloma@msn.com; cknight@caltrout.org; rene.henery@tu.org; sterling@hydroreform.org; kelly@hydroreform.org; johnb@cserc.org; fhc@foothillconservancy.org; gat@n-h-i.org; Info@MLC.sierraclub.org; stevelauterbach@comcast.net; accounting@bigtrees.org; historicalcalaveras@gmail.com; epfw@goldrush.com; janet.walther@pge.com; kimberly.ognisty@pge.com; JFrancis@spi-ind.com; tylerw@oars.com; rivers@aorafting.com; Michael Minkler; Kelly Gerkensmeyer; Andrew Renshaw; Vertucci, Charles; jim.lynch@hdrinc.com; charles.sensiba@troutman.com; jjdevine51@outlook.com; Bowersox, Randy; russ@stillwatersci.com
Subject:	Calaveras County Water District - North Fork Stanislaus River Hydroelectric Project, P-2409
Date:	Tuesday, September 23, 2025 9:34:14 AM
Attachments:	P2409 Initial Outreach PDF.pdf

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
RELICENSING INTRODUCTION
REQUEST TO IDENTIFY INTERESTED PARTIES
INVITATION TO INITTIAL KICKOFF MEETING

Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, Federal Energy Regulatory Commission (FERC) Project No. 2409 (P-2409), described below. The project consists of two developments – New Spicer Meadow and Collierville – that, in total, include: four dams, two powerhouses, one microturbine, recreation facilities, and appurtenant facilities and structures. P-2409 has a current license from FERC that expires on January 31, 2032. CCWD has retained HDR Engineering, Inc. to assist them in the relicensing. This email advises Interested Parties of CCWD's intention to relicense P-2409 and provides initial details about CCWD and P-2409 facilities (attached).

CCWD requests that Interested Parties who wish to receive future communications and participate in the relicensing confirm and/or update the contact information for their organization. CCWD also invites interested parties to an initial relicensing kick-off meeting on October 29, 2025.

INTERESTED PARTIES' CONTACT INFORMATION

CCWD requests that Interested Parties who wish to continue to receive communications related to the P-2409 relicensing confirm their contact information by replying to this email. If additional members of your organization should be added, please provide their names and email addresses. Please provide this information by October 15, 2025.

INVITATION TO OCTOBER 29, 2025, INITIAL RELICENSING MEETING

CCWD plans to hold an initial relicensing kickoff meeting from 10AM – 12PM on October 29, 2025 at CCWD's office at 120 Toma Ct, San Andreas, CA 95249 as well as virtual participation via Microsoft Teams. The meeting will include an introduction to CCWD and the P-2409 project, overall relicensing schedule, and an opportunity for attendees to ask questions and share initial feedback. If you plan to attend virtually, please respond to this email by October 15, 2025 so you can be included on the Teams meeting invitation.

If you have any questions, please reply to this email.

Thank you,

Michael Minkler
General Manager
Calaveras County Water District
michaelm@ccwd.org
Office (209) 754-3001
www.ccwd.org

CALAVERAS COUNTY WATER DISTRICT

NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409

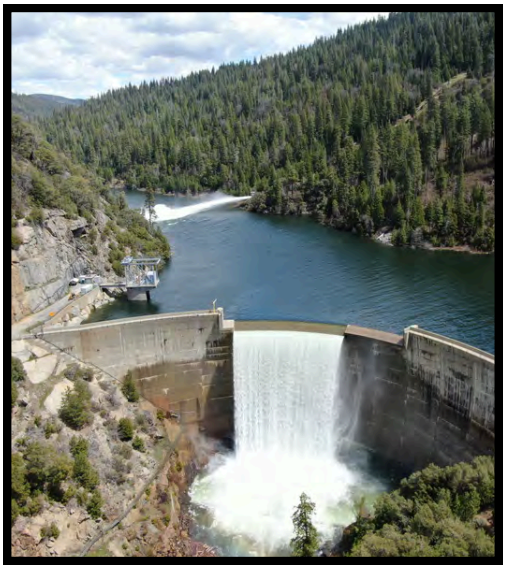
Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, Federal Energy Regulatory Commission (FERC) Project No. 2409 (P-2409). The project consists of two developments – New Spicer Meadow and Collierville – that, in total, include: four dams, two powerhouses, one microturbine, recreation facilities, and appurtenant facilities and structures. P-2409 has a current license from FERC that expires on January 31, 2032. CCWD has retained HDR Engineering, Inc. to assist them in the relicensing.

The Project is located on the west slope of the Sierra Nevada in the North Fork Stanislaus River (NFSR) Basin in Calaveras, Tuolumne, and Alpine counties, California. The project exists on State, Federal, and Private Lands.

Melting snow and spring runoff collect in the New Spicer Meadow Reservoir. Additional water from the North Fork Stanislaus River is diverted to the reservoir through the two-mile North Fork Diversion Tunnel. Water is released from New Spicer Meadow Reservoir to meet recreational needs, maintain fish flows, support domestic and irrigation use, and generate power. This water flows through Highland Creek, which joins the North Fork Stanislaus River. With additional water from the Beaver Creek Diversion, the North Fork Stanislaus is finally impounded at McKays Point Reservoir, where water is diverted into an eight-mile tunnel to provide communities with water and generate power at the Collierville Powerhouse.

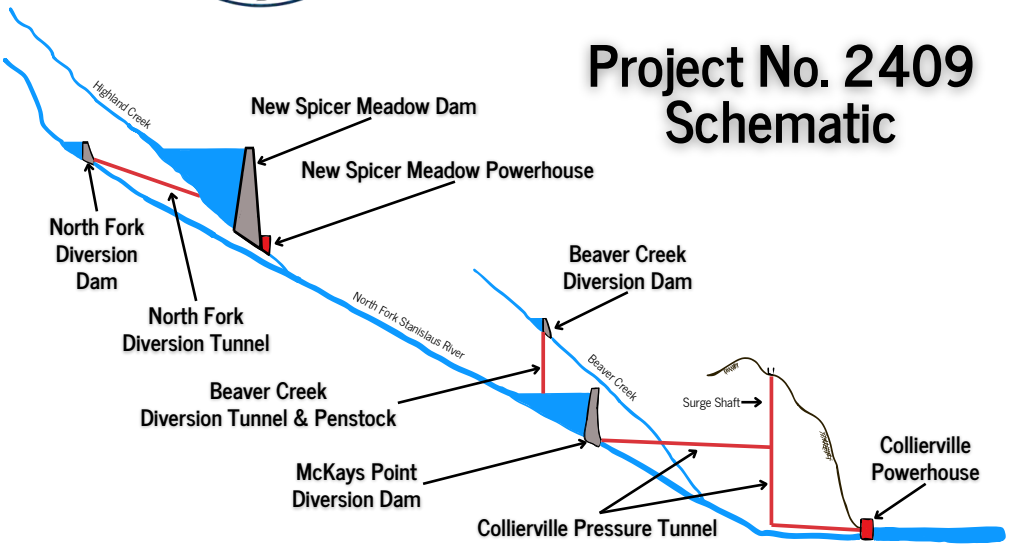


New Spicer Meadow Dam



McKays Point Dam

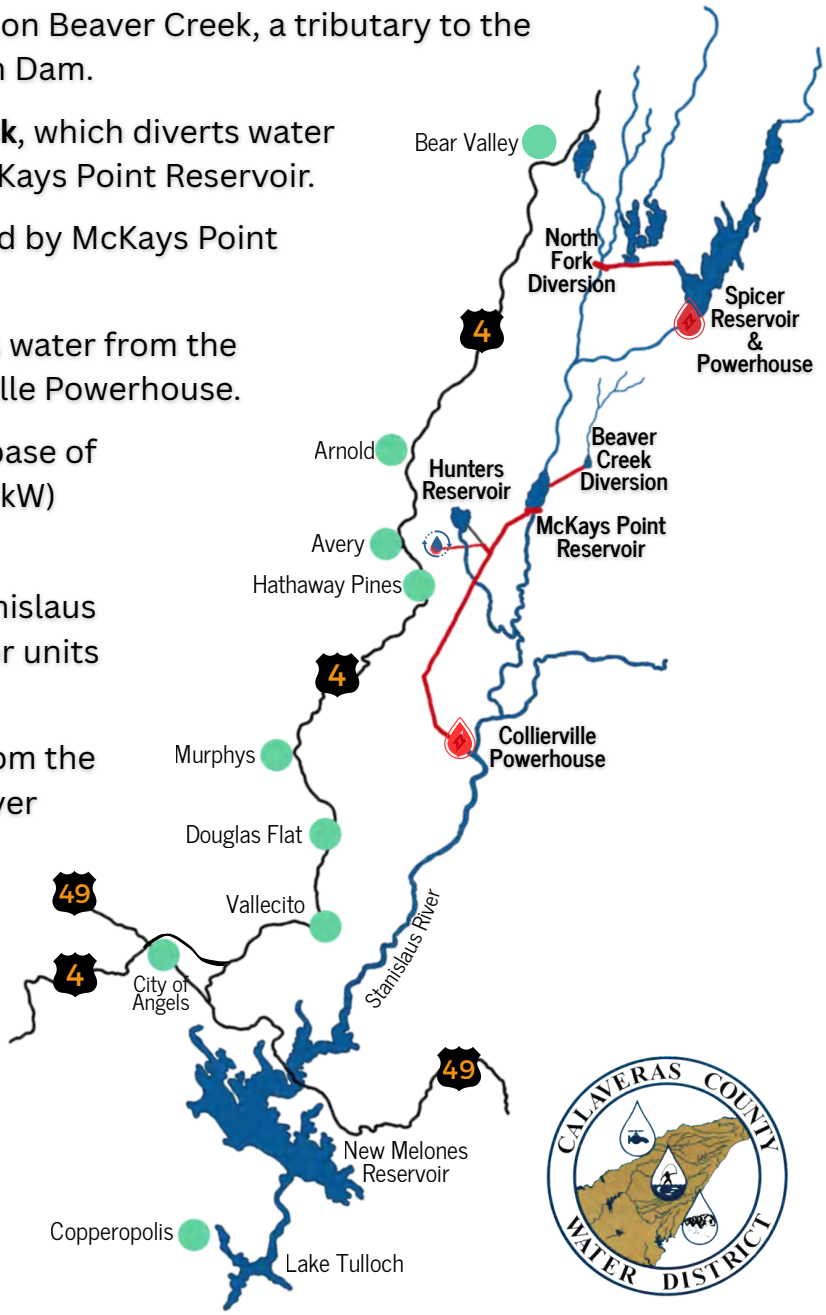
Project No. 2409 Schematic



P-2409 Includes:

- **North Fork Diversion Dam** impoundment on the NFSR, formed by the North Fork Diversion Dam.
- **North Fork Diversion Tunnel** and outlet channel, which diverts water from the North Fork Diversion Dam to New Spicer Meadow Reservoir.
- **New Spicer Meadow Reservoir** on Highland Creek, a tributary to the NFSR, formed by New Spicer Meadow Dam.
- **New Spicer Meadow Intake**, containing three multi-level gates to deliver water to the New Spicer Meadow Powerhouse.
- **New Spicer Meadow Powerhouse**, located at the outlet works of the dam, includes three turbines with a total generating capacity of 5.7 megawatts (MW).
- **Beaver Creek Diversion Dam** impoundment on Beaver Creek, a tributary to the NFSR, formed by the Beaver Creek Diversion Dam.
- **Beaver Creek Diversion Tunnel and Penstock**, which diverts water from the Beaver Creek Diversion Dam to McKays Point Reservoir.
- **McKays Point Reservoir** on the NFSR, formed by McKays Point Diversion Dam.
- **Collierville Intake and Tunnel**, which diverts water from the McKays Point Diversion Dam to the Collierville Powerhouse.
- **McKays Point Microturbine**, located at the base of McKays Point Dam, includes a 200 kilowatt (kW) microturbine.
- **Collierville Powerhouse**, located on the Stanislaus River, with two equal-sized turbine-generator units with a total rated capacity of 256.8 MW.
- **Collierville Tailrace**, which delivers water from the Collierville Powerhouse to the Stanislaus River immediately upstream of PG&E's Stanislaus Powerhouse (P-2130) and BOR's New Melones Reservoir.
- **New Spicer Meadow Campground, New Spicer Meadow Boat Launch** and **Day Use Area**.

Power from the project is transmitted by Northern California Power Agency's Collierville and Spicer Meadow Transmission Line Project, FERC Project No. 11197.





New Spicer Meadow Powerhouse



Collierville Powerhouse



District Overview

Formed in 1946, CCWD was established to provide water and sewer services to residents throughout Calaveras County. Operations began in 1947 and have continued uninterrupted since.

CCWD is an independent special district. The District spans approximately 1,037 square miles (640,000 acres), covering the entire county, from the San Joaquin Valley in the west to the Sierra Nevada in the east. Headquartered in San Andreas, about 100 miles east of San Francisco and 60 miles southeast of Sacramento.

The District provides water service to approximately 13,500 connections across six service areas and sewer service to about 5,500 connections in twelve service areas. In addition to its core services, CCWD is involved in hydroelectric power development to support financial sustainability and water resources.

From:	P2409 Relicense
Bcc:	Dawn.Alvarez@usda.gov; victor.aguirreorozco@usda.gov; Raymond.Cablayan@usda.gov; todd.newburger@usda.gov; allison.stevenot@usda.gov; castatedirector@blm.gov; BLM_CA_Web_ML@blm.gov; ntriplett@blm.gov; cdavenport@usbr.gov; rsanchez@usbr.gov; dlessard@usbr.gov; michelle_havens@fws.gov; Torres.Tomas@epa.gov; steve.edmondson@noaa.gov; Barabara_rice@nps.gov; Susan_rosebrough@nps.gov; parker.thaler@waterboards.ca.gov; rajaa.hassan@waterboards.ca.gov; morgan.kilgour@wildlife.ca.gov; michael.maher@wildlife.ca.gov; beth.lawson@wildlife.ca.gov; abimael.leon@wildlife.ca.gov; calshpo.ohp@parks.ca.gov; nick.casci@fire.ca.gov; Grace.Magsayo@dot.ca.gov; armando.quintero@parks.ca.gov; randy.howard@ncpa.com; jake.eymann@ncpa.com; gm@uticawater.com; admin@uticawater.com; frankf@uticawater.com; jself@upudwater.org; stevewilliams@angelscamp.gov; chrisoflinn@angelscamp.gov; twoodrow@alpinecountyca.gov; awg.rachel@gmail.com; awg.kimra@gmail.com; mhuberty@co.calaveras.ca.us; lmedina@co.calaveras.ca.us; rcampbell@co.tuolumne.ca.us; shembree@co.tuolumne.ca.us; tmayo@blsmwc.com; snicotero@tridamproject.com; twalley@calaverasrcd.org; Jessalynn@bvtribe.com; Jesus@bvtribe.com; calaverasmiwukpreservation@gmail.com; Adam2191983@gmail.com; calaverasband.miwukindians@gmail.com; office@cvmt.net; mfox@crbtribal.com; ssuess@crtribal.com; Creyes@crtribal.com; jportillo@crtribal.com; Consultation@ionemiwok.net; jereme@ionemiwok.net; Adalton@jacksoncasino.com; Valdezcome@comcast.net; sdinsmore@strawberryvalleymaidu.org; ahart@sir-nsn.gov; serrell.smokey@washoetribe.us; THPO@washoeTribe.us; Charmaine.McDarment@Tulerivertribe-nsn.gov; kday@mewuk.com; theresa@americanwhitewater.org; janndorman@friendsoftheriver.org; execdirector@friendsoftheriver.org; keiko@friendsoftheriver.org; cshutes@calsport.org; blancapaloma@msn.com; ewoodruff@calsport.org; cknight@caltrout.org; rene.henery@tu.org; sterling@hydroreform.org; kelly@hydroreform.org; johnb@cserc.org; stan@cserc.org; fhc@foothillconservancy.org; gat@n-h-i.org; Info@MLC.sierraclub.org; stevelauterbach@comcast.net; accounting@bigtrees.org; historicalcalaveras@gmail.com; epfw@goldrush.com; janet.walther@pge.com; kimberly.ognisty@pge.com; snicotero@tridamproject.com; JFrancis@spi-ind.com; tylerw@oars.com; claveyw@oars.com; rivers@aorafting.com; Michael Minkler; Kelly Gerkensmeyer; Andrew Renshaw; Vertucci, Charles; Lynch, Jim; Sensiba, Charles R.; jjdevine51@outlook.com; Bowersox, Randy; russ@stillwatersci.com
Subject:	Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION
Date:	Wednesday, October 15, 2025 9:42:00 AM

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
REQUEST FOR INFORMATION BY DECEMBER 19, 2025

Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409 (Project). The Project has a current license from the Federal Energy Regulatory Commission (FERC) that expires on January 31, 2032. One of the first steps in relicensing is for CCWD to 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 the Project. The PAD also helps to identify potential issues and information needs.

CCWD requests you provide the following to the CCWD relicensing team at P2409Relicense@ccwd.org by return e-mail no later than December 19, 2025:

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 CCWD already has in their possession materials and plans produced by CCWD.

2. A list of any issues you believe CCWD should address in its PAD and subsequent application, including potential Project impacts.

3. Given existing information, a description of any information you believe will be needed to assess the Project's potential impacts and inform license requirements.

4. If you have not done so already, please confirm the name, title, and contact information (email at minimum) of staff from your organization who may participate during the relicensing.

If while gathering existing information and considering potential issues and studies related to the relicensing of the Project, your organization believes CCWD would benefit from one-on-one discussions, please let CCWD know.

Thank you,

Michael Minkler
General Manager
Calaveras County Water District

From: P2409 Relicense
To: P2409 Relicense
Bcc: "Dawn.Alvarez@usda.gov"; "victor.aguirreorozco@usda.gov"; "andrew.welsh@usda.gov"; "todd.newburger@usda.gov"; "carinna.robertson@usda.gov"; "allison.stevenot@usda.gov"; "castatedirector@blm.gov"; "BLM_CA_Web_ML@blm.gov"; "ntriplett@blm.gov"; "cdavenport@usbr.gov"; "rsanchez@usbr.gov"; "dlessard@usbr.gov"; "mgiraldperez@usbr.gov"; "michelle_havens@fws.gov"; "Torres.Tomas@epa.gov"; "steve.edmondson@noaa.gov"; "Barabara_rice@nps.gov"; "catherine_brown@nps.gov"; "Susan_rosebrough@nps.gov"; "parker.thaler@waterboards.ca.gov"; "rajaa.hassan@waterboards.ca.gov"; "morgan.kilgour@wildlife.ca.gov"; "michael.maher@wildlife.ca.gov"; "beth.lawson@wildlife.ca.gov"; "Leslie.Call@Wildlife.ca.gov"; "Ben.Ewing@wildlife.ca.gov"; "Angie.Montalvo@wildlife.ca.gov"; "Lauren.Mulloy@wildlife.ca.gov"; "abimael.leon@wildlife.ca.gov"; "calshpo.ohp@parks.ca.gov"; "nick.casci@fire.ca.gov"; "Grace.Magsayo@dot.ca.gov"; "armando.quintero@parks.ca.gov"; "randy.howard@ncpa.com"; "michael.debortoli@ncpa.com"; "jake.eymann@ncpa.com"; "nicolas.potter@ncpa.org"; "gm@uticawater.com"; "admin@uticawater.com"; "frankf@uticawater.com"; "brandis@uticawater.com"; "rmasuda@calwaterlaw.com"; "jpolk@calwaterlaw.com"; "jself@upudwater.org"; "stevewilliams@angelscamp.gov"; "chrisoflinn@angelscamp.gov"; "twoodrow@alpinecountyca.gov"; "awg.neil@gmail.com"; "awg.kimra@gmail.com"; "mhuberty@co.calaveras.ca.us"; "lmedina@co.calaveras.ca.us"; "rcampbell@co.tuolumne.ca.us"; "shembree@co.tuolumne.ca.us"; "tmayo@blsmwc.com"; "snicotero@tridamproject.com"; "twalley@calaverasrcd.org"; "Jessalynn@bvtribe.com"; "Jesus@bvtribe.com"; "calaverasmiwukpreservation@gmail.com"; "Adam2191983@gmail.com"; "calaverasband.miwukindians@gmail.com"; "office@cvmt-nsn.gov"; "office@cvmt-nsn.gov"; "mfox@crbtribal.com"; "ssuess@crtribal.com"; "Creyes@crtribal.com"; "jportillo@crtribal.com"; "Consultation@ionemiwok.net"; "jeremie@ionemiwok.net"; "Adalton@jacksoncasino.com"; "Valdezcome@comcast.net"; "sdinsmore@strawberryvalleymaidu.org"; "ahart@sir-nsn.gov"; "serrell.smokey@washoetribe.us"; "THPO@washoeTribe.us"; "Charmaine.McDarment@Tulerivertribe-nsn.gov"; "kday@mewuk.com"; "theresa@americanwhitewater.org"; "janndorman@friendsoftheriver.org"; "execdirector@friendsoftheriver.org"; "keiko@friendsoftheriver.org"; "cshutes@calsport.org"; "blancapaloma@msn.com"; "ewoodruff@calsport.org"; "cknight@caltrout.org"; "rene.henery@tu.org"; "sterling@hydroreform.org"; "kelly@hydroreform.org"; "johnb@cserc.org"; "stan@cserc.org"; "chelsea@cserc.org"; "tomh@cserc.org"; "fhc@foothillconservancy.org"; "gat@n-h-i.org"; "Info@MLC.sierraclub.org"; "stevelauterbach@comcast.net"; "tychildress@gmail.com"; "anehenningchildress@gmail.com"; "accounting@bigtrees.org"; "historicalcalaveras@gmail.com"; "epfw@goldrush.com"; "janet.walther@pge.com"; "kimberly.ognisty@pge.com"; "BALU@pge.com"; "a9l6@pge.com"; "snicotero@tridamproject.com"; "JFrancis@spi-ind.com"; "tylerw@oars.com"; "claveyw@oars.com"; "rivers@aorafting.com"; Michael Minkler; Kelly Gerkensmeyer; Andrew Renshaw; Vertucci, Charles; Lynch, Jim; Sensiba, Charles R.; "jjdevine51@outlook.com"; Bowersox, Randy; Russell Liebig; stevefelte@gmail.com
Subject: RE: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION
Date: Friday, November 21, 2025 11:53:00 AM

P-2409 Interested Parties,

Thank you to those who were able to participate in the October 29, 2025, North Fork Stanislaus River Hydroelectric Project FERC relicensing meeting at CCWD's office or virtually. As discussed at the meeting, CCWD has made the following information available on its relicensing website:

- 10/29/25 Meeting slides and sign-in sheets - P-2409 Relicensing Meetings & Outreach - Calaveras County Water District
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CCWD continues to request information related to the P-2409 relicensing as described below. CCWD would appreciate information by December 19, 2025. Please reach out if you would like to

discuss this information request further.

Thank you,

P-2409 Relicensing Team

From: P2409 Relicense
Sent: Wednesday, October 15, 2025 9:51 AM
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
REQUEST FOR INFORMATION BY DECEMBER 19, 2025

Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409 (Project). The Project has a current license from the Federal Energy Regulatory Commission (FERC) that expires on January 31, 2032. One of the first steps in relicensing is for CCWD to 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 the Project. The PAD also helps to identify potential issues and information needs.

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4. If you have not done so already, please confirm the name, title, and contact information (email at minimum) of staff from your organization who may participate during the relicensing.

If while gathering existing information and considering potential issues and studies related to the relicensing of the Project, your organization believes CCWD would benefit from one-on-one discussions, please let CCWD know.

Thank you,

Michael Minkler
General Manager
Calaveras County Water District

Faer, Samantha

From: Faer, Samantha
Sent: Monday, November 24, 2025 10:08 AM
To: Jessalynn@bvtribe.com
Cc: Jesus "Jesse" Galvan; Risse, Danielle; Vertucci, Charles; michaelm@ccwd.org; kellyg@ccwd.org; andrewr@ccwd.org; P2409Relicense@ccwd.org; Lloyd, John
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

Dear Honorable Chairperson Pastran of the Buena Vista Rancheria of Me-Wuk Indians,

Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409 (Project). The Project spans three counties: Alpine, Calaveras, and Tuolumne, and has a current license from the Federal Energy Regulatory Commission (FERC) that expires on January 31, 2032. CCWD is using HDR Engineering, Inc. (HDR) to assist them in their relicensing.

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At this time, we are sending this email for the following reasons:

1. To invite you to review the prior emails sent below and to review the Project information linked to in the emails below, and
2. To respectfully request your help in identifying existing, relevant, and reasonably available information that describes the existing environment near this Project or known potential impacts of the Project.

Any information you would like to share can be sent to myself or John (Jay) Lloyd, both cultural resources specialists with HDR. If requested, your information will be treated as privileged/confidential and will be housed in privileged/confidential Project files.

If you have any questions, or would like to meet with us, please do not hesitate to contact me at the contact info below, or Jay Lloyd at John.Lloyd@hdrinc.com or +1 (916) 679-8715.

Respectfully,

Samantha Faer, BA
Cultural Resources Specialist 1

HDR
1 Capitol Mall, Suite 500
Sacramento, CA 95814
D 916-679-8795 **M** 480-213-1522
samantha.faer@hdrinc.com

hdrinc.com/follow-us

From: P2409 Relicense
Sent: Friday, November 21, 2025 11:53 AM
To: P2409 Relicense P2409Relicense@ccwd.org
Subject: RE: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

P-2409 Interested Parties,

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CCWD continues to request information related to the P-2409 relicensing as described below. CCWD would appreciate information by December 19, 2025. Please reach out if you would like to discuss this information request further.

Thank you,

P-2409 Relicensing Team

From: P2409 Relicense
Sent: Wednesday, October 15, 2025 9:51 AM
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
REQUEST FOR INFORMATION BY DECEMBER 19, 2025

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If while gathering existing information and considering potential issues and studies related to the relicensing of the Project, your organization believes CCWD would benefit from one-on-one discussions, please let CCWD know.

Thank you,

Michael Minkler
General Manager
Calaveras County Water District

Faer, Samantha

From: Faer, Samantha
Sent: Monday, November 24, 2025 10:18 AM
To: calaverasband.miwukindians@gmail.com
Cc: calaverasmiwukpreservation@gmail.com; Adam2191983@gmail.com; Risse, Danielle; Vertucci, Charles; michaelm@ccwd.org; kellyg@ccwd.org; andrewr@ccwd.org; P2409Relicense@ccwd.org; Lloyd, John
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

Dear Honorable Chairperson Grimes of the Calaveras Band of Mi-Wuk Indians,

Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409 (Project). The Project spans three counties: Alpine, Calaveras, and Tuolumne, and has a current license from the Federal Energy Regulatory Commission (FERC) that expires on January 31, 2032. CCWD is using HDR Engineering, Inc. (HDR) to assist them in their relicensing.

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Any information you would like to share can be sent to myself or John (Jay) Lloyd, both cultural resources specialists with HDR. If requested, your information will be treated as privileged/confidential and will be housed in privileged/confidential Project files.

If you have any questions, or would like to meet with us, please do not hesitate to contact me at the contact info below, or Jay Lloyd at John.Lloyd@hdrinc.com or +1 (916) 679-8715.

Respectfully,

Samantha Faer, BA
Cultural Resources Specialist 1

HDR
1 Capitol Mall, Suite 500
Sacramento, CA 95814
D 916-679-8795 **M** 480-213-1522
samantha.faer@hdrinc.com

hdrinc.com/follow-us

From: P2409 Relicense
Sent: Friday, November 21, 2025 11:53 AM
To: P2409 Relicense P2409Relicense@ccwd.org
Subject: RE: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

P-2409 Interested Parties,

Thank you to those who were able to participate in the October 29, 2025, North Fork Stanislaus River Hydroelectric Project FERC relicensing meeting at CCWD's office or virtually. As discussed at the meeting, CCWD has made the following information available on its relicensing website:

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CCWD continues to request information related to the P-2409 relicensing as described below. CCWD would appreciate information by December 19, 2025. Please reach out if you would like to discuss this information request further.

Thank you,

P-2409 Relicensing Team

From: P2409 Relicense
Sent: Wednesday, October 15, 2025 9:51 AM
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
REQUEST FOR INFORMATION BY DECEMBER 19, 2025

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Thank you,

Michael Minkler
General Manager
Calaveras County Water District

Faer, Samantha

From: Faer, Samantha
Sent: Monday, November 24, 2025 11:28 AM
To: office@cvmt-nsn.gov
Cc: Risse, Danielle; Vertucci, Charles; michaelm@ccwd.org; kellyg@ccwd.org; andrewr@ccwd.org; P2409Relicense@ccwd.org; Lloyd, John
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

Dear Honorable Chairperson Del Rio of the California Valley Miwok Tribe,

Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409 (Project). The Project spans three counties: Alpine, Calaveras, and Tuolumne, and has a current license from the Federal Energy Regulatory Commission (FERC) that expires on January 31, 2032. CCWD is using HDR Engineering, Inc. (HDR) to assist them in their relicensing.

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Samantha Faer, BA
Cultural Resources Specialist 1

HDR
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Sacramento, CA 95814
D 916-679-8795 **M** 480-213-1522
samantha.faer@hdrinc.com

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From: P2409 Relicense
Sent: Friday, November 21, 2025 11:53 AM
To: P2409 Relicense P2409Relicense@ccwd.org
Subject: RE: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

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Thank you,

P-2409 Relicensing Team

From: P2409 Relicense
Sent: Wednesday, October 15, 2025 9:51 AM
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

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NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
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Thank you,

Michael Minkler
General Manager
Calaveras County Water District

Faer, Samantha

From: Faer, Samantha
Sent: Monday, November 24, 2025 11:41 AM
To: jmathiesen@crtribal.com
Cc: mfox@crbtribal.com; Stephanie Suess; creyes@crtribal.com; jportillo@crtribal.com; Risse, Danielle; Vertucci, Charles; michaelm@ccwd.org; kellyg@ccwd.org; andrewr@ccwd.org; P2409Relicense@ccwd.org; Lloyd, John
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

Dear Honorable Chairperson Mathiesen-Powell of the Chicken Ranch Rancheria of Me-Wuk Indians,

Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409 (Project). The Project spans three counties: Alpine, Calaveras, and Tuolumne, and has a current license from the Federal Energy Regulatory Commission (FERC) that expires on January 31, 2032. CCWD is using HDR Engineering, Inc. (HDR) to assist them in their relicensing.

One of the first steps of relicensing is for CCWD to prepare a Pre-Application Document (PAD). The PAD will provide FERC, Tribes, agencies, and other potentially interested parties with existing, relevant, and reasonably available information pertaining to the Project. The PAD also helps to identify issues and information needs.

At this time, we are sending this email for the following reasons:

1. To invite you to review the prior emails sent below and to review the Project information linked to in the emails below, and
2. To respectfully request your help in identifying existing, relevant, and reasonably available information that describes the existing environment near this Project or known potential impacts of the Project.

Any information you would like to share can be sent to myself or John (Jay) Lloyd, both cultural resources specialists with HDR. If requested, your information will be treated as privileged/confidential and will be housed in privileged/confidential Project files.

If you have any questions, or would like to meet with us, please do not hesitate to contact me at the contact info below, or Jay Lloyd at John.Lloyd@hdrinc.com or +1 (916) 679-8715.

Respectfully,

Samantha Faer, BA
Cultural Resources Specialist 1

HDR
1 Capitol Mall, Suite 500
Sacramento, CA 95814
D 916-679-8795 **M** 480-213-1522
samantha.faer@hdrinc.com

hdrinc.com/follow-us

From: P2409 Relicense
Sent: Friday, November 21, 2025 11:53 AM
To: P2409 Relicense P2409Relicense@ccwd.org
Subject: RE: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

P-2409 Interested Parties,

Thank you to those who were able to participate in the October 29, 2025, North Fork Stanislaus River Hydroelectric Project FERC relicensing meeting at CCWD's office or virtually. As discussed at the meeting, CCWD has made the following information available on its relicensing website:

- 10/29/25 Meeting slides and sign-in sheets - P-2409 Relicensing Meetings & Outreach - Calaveras County Water District
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CCWD continues to request information related to the P-2409 relicensing as described below. CCWD would appreciate information by December 19, 2025. Please reach out if you would like to discuss this information request further.

Thank you,

P-2409 Relicensing Team

From: P2409 Relicense
Sent: Wednesday, October 15, 2025 9:51 AM
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
REQUEST FOR INFORMATION BY DECEMBER 19, 2025

Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409 (Project). The Project has a current license from the Federal Energy Regulatory Commission (FERC) that expires on January 31, 2032. One of the first steps in relicensing is for CCWD to 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 the Project. The PAD also helps to identify potential issues and information needs.

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If while gathering existing information and considering potential issues and studies related to the relicensing of the Project, your organization believes CCWD would benefit from one-on-one discussions, please let CCWD know.

Thank you,

Michael Minkler
General Manager
Calaveras County Water District

Faer, Samantha

From: Faer, Samantha
Sent: Monday, November 24, 2025 11:50 AM
To: 'mfox@crtribal.com'
Subject: FW: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

Good morning Monica,

I had a typo in your email address in the original email below and received a bounce-back email. Sorry about that! Let me know if you have any trouble accessing information below.

Thank you,

Samantha Faer, BA
Cultural Resources Specialist 1

HDR
1 Capitol Mall, Suite 500
Sacramento, CA 95814
D 916-679-8795 **M** 480-213-1522
samantha.faer@hdrinc.com

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From: Faer, Samantha
Sent: Monday, November 24, 2025 11:41 AM
To: jmathiesen@crtribal.com
Cc: mfox@crbtribal.com; Stephanie Suess <ssuess@crtribal.com>; creyes@crtribal.com; jportillo@crtribal.com; Risse, Danielle <danielle.risse@hdrinc.com>; Vertucci, Charles <charles.vertucci@hdrinc.com>; michaelm@ccwd.org; kellyg@ccwd.org; andrewr@ccwd.org; P2409Relicense@ccwd.org; Lloyd, John <John.Lloyd@hdrinc.com>
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

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HDR
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D 916-679-8795 **M** 480-213-1522
samantha.faer@hdrinc.com

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From: P2409 Relicense
Sent: Friday, November 21, 2025 11:53 AM
To: P2409 Relicense P2409Relicense@ccwd.org
Subject: RE: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

P-2409 Interested Parties,

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NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
REQUEST FOR INFORMATION BY DECEMBER 19, 2025

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Thank you,

Michael Minkler
General Manager
Calaveras County Water District

Faer, Samantha

From: Faer, Samantha
Sent: Monday, November 24, 2025 11:54 AM
To: Consultation
Cc: 'jereme@ionemiwok.net'; Vertucci, Charles; 'michaelm@ccwd.org'; 'kellyg@ccwd.org'; 'andrewr@ccwd.org'; 'P2409Relicense@ccwd.org'; Lloyd, John
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

Dear Honorable Chairperson Dutschke of the Ione Band of Miwok Indians,

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Respectfully,

Samantha Faer, BA
Cultural Resources Specialist 1

HDR
1 Capitol Mall, Suite 500
Sacramento, CA 95814
D 916-679-8795 **M** 480-213-1522
samantha.faer@hdrinc.com

hdrinc.com/follow-us

From: P2409 Relicense
Sent: Friday, November 21, 2025 11:53 AM
To: P2409 Relicense P2409Relicense@ccwd.org
Subject: RE: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

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Thank you,

P-2409 Relicensing Team

From: P2409 Relicense
Sent: Wednesday, October 15, 2025 9:51 AM
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
REQUEST FOR INFORMATION BY DECEMBER 19, 2025

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Thank you,

Michael Minkler
General Manager
Calaveras County Water District

Faer, Samantha

From: Faer, Samantha
Sent: Monday, November 24, 2025 11:57 AM
To: adalton@jacksoncasino.com
Cc: Vertucci, Charles; 'michaelm@ccwd.org'; 'kellyg@ccwd.org'; 'andrewr@ccwd.org'; 'P2409Relicense@ccwd.org'; Lloyd, John; Risse, Danielle
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

Dear Honorable Chairperson Dalton of the Jackson Rancheria Band of Miwuk Indians,

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Cultural Resources Specialist 1

HDR
1 Capitol Mall, Suite 500
Sacramento, CA 95814
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samantha.faer@hdrinc.com

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From: P2409 Relicense
Sent: Friday, November 21, 2025 11:53 AM
To: P2409 Relicense P2409Relicense@ccwd.org
Subject: RE: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

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P-2409 Relicensing Team

From: P2409 Relicense
Sent: Wednesday, October 15, 2025 9:51 AM
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
REQUEST FOR INFORMATION BY DECEMBER 19, 2025

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Thank you,

Michael Minkler
General Manager
Calaveras County Water District

Faer, Samantha

From: Faer, Samantha
Sent: Monday, November 24, 2025 11:59 AM
To: valdezcome@comcast.net
Cc: Vertucci, Charles; 'michaelm@ccwd.org'; 'kellyg@ccwd.org'; 'andrewr@ccwd.org'; 'P2409Relicense@ccwd.org'; Lloyd, John; Risse, Danielle
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

Dear Honorable Chairperson Valdez of the Nashville Enterprise Miwok-Maidu-Nishinam Tribe,

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Cultural Resources Specialist 1

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1 Capitol Mall, Suite 500
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samantha.faer@hdrinc.com

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From: P2409 Relicense
Sent: Friday, November 21, 2025 11:53 AM
To: P2409 Relicense P2409Relicense@ccwd.org
Subject: RE: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

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Thank you,

Michael Minkler
General Manager
Calaveras County Water District

Faer, Samantha

From: Faer, Samantha
Sent: Monday, November 24, 2025 12:06 PM
To: sdinsmore@strawberryvalleymaidu.org
Cc: Vertucci, Charles; michaelm@ccwd.org; kellyg@ccwd.org; andrewr@ccwd.org; P2409Relicense@ccwd.org; Lloyd, John; Risse, Danielle
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

Dear Honorable Chairperson Dinsmore of the Pakan'yani Maidu of Strawberry Valley Rancheria,

Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409 (Project). The Project spans three counties: Alpine, Calaveras, and Tuolumne, and has a current license from the Federal Energy Regulatory Commission (FERC) that expires on January 31, 2032. CCWD is using HDR Engineering, Inc. (HDR) to assist them in their relicensing.

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From: P2409 Relicense
Sent: Friday, November 21, 2025 11:53 AM
To: P2409 Relicense P2409Relicense@ccwd.org
Subject: RE: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

P-2409 Interested Parties,

Thank you to those who were able to participate in the October 29, 2025, North Fork Stanislaus River Hydroelectric Project FERC relicensing meeting at CCWD's office or virtually. As discussed at the meeting, CCWD has made the following information available on its relicensing website:

- 10/29/25 Meeting slides and sign-in sheets - P-2409 Relicensing Meetings & Outreach - Calaveras County Water District
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- Existing FERC Project Boundary (KMZ) - P-2409 Relicensing Documents - Calaveras County Water District under "P-2409 Project Maps"

CCWD continues to request information related to the P-2409 relicensing as described below. CCWD would appreciate information by December 19, 2025. Please reach out if you would like to discuss this information request further.

Thank you,

P-2409 Relicensing Team

From: P2409 Relicense
Sent: Wednesday, October 15, 2025 9:51 AM
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
REQUEST FOR INFORMATION BY DECEMBER 19, 2025

Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409 (Project). The Project has a current license from the Federal Energy Regulatory Commission (FERC) that expires on January 31, 2032. One of the first steps in relicensing is for CCWD to 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 the Project. The PAD also helps to identify potential issues and information needs.

CCWD requests you provide the following to the CCWD relicensing team at P2409Relicense@ccwd.org by return e-mail no later than December 19, 2025:

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 CCWD already has in their possession materials and plans produced by CCWD.

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3. Given existing information, a description of any information you believe will be needed to assess the Project's potential impacts and inform license requirements.

4. If you have not done so already, please confirm the name, title, and contact information (email at minimum) of staff from your organization who may participate during the relicensing.

If while gathering existing information and considering potential issues and studies related to the relicensing of the Project, your organization believes CCWD would benefit from one-on-one discussions, please let CCWD know.

Thank you,

Michael Minkler
General Manager
Calaveras County Water District

Faer, Samantha

From: Faer, Samantha
Sent: Monday, November 24, 2025 12:08 PM
To: 'ahart@sir-nsn.gov'
Cc: Vertucci, Charles; 'michaelm@ccwd.org'; 'kellyg@ccwd.org'; 'andrewr@ccwd.org'; 'P2409Relicense@ccwd.org'; Lloyd, John; Risse, Danielle
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

Dear Honorable Chairperson Hart of the Susanville Indian Rancheria,

Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409 (Project). The Project spans three counties: Alpine, Calaveras, and Tuolumne, and has a current license from the Federal Energy Regulatory Commission (FERC) that expires on January 31, 2032. CCWD is using HDR Engineering, Inc. (HDR) to assist them in their relicensing.

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If you have any questions, or would like to meet with us, please do not hesitate to contact me at the contact info below, or Jay Lloyd at John.Lloyd@hdrinc.com or +1 (916) 679-8715.

Respectfully,

Samantha Faer, BA
Cultural Resources Specialist 1

HDR
1 Capitol Mall, Suite 500
Sacramento, CA 95814
D 916-679-8795 **M** 480-213-1522
samantha.faer@hdrinc.com

hdrinc.com/follow-us

From: P2409 Relicense
Sent: Friday, November 21, 2025 11:53 AM
To: P2409 Relicense P2409Relicense@ccwd.org
Subject: RE: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

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Thank you,

P-2409 Relicensing Team

From: P2409 Relicense
Sent: Wednesday, October 15, 2025 9:51 AM
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
REQUEST FOR INFORMATION BY DECEMBER 19, 2025

Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409 (Project). The Project has a current license from the Federal Energy Regulatory Commission (FERC) that expires on January 31, 2032. One of the first steps in relicensing is for CCWD to 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 the Project. The PAD also helps to identify potential issues and information needs.

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If while gathering existing information and considering potential issues and studies related to the relicensing of the Project, your organization believes CCWD would benefit from one-on-one discussions, please let CCWD know.

Thank you,

Michael Minkler
General Manager
Calaveras County Water District

Faer, Samantha

From: Faer, Samantha
Sent: Monday, November 24, 2025 12:12 PM
To: Charmaine.McDarment@Tulerivertribe-nsn.gov
Cc: Vertucci, Charles; 'michaelm@ccwd.org'; 'kellyg@ccwd.org'; 'andrewr@ccwd.org'; 'P2409Relicense@ccwd.org'; Lloyd, John; Risse, Danielle
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

Dear Honorable Chairperson McDarment of the Tule River Indian Tribe,

Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409 (Project). The Project spans three counties: Alpine, Calaveras, and Tuolumne, and has a current license from the Federal Energy Regulatory Commission (FERC) that expires on January 31, 2032. CCWD is using HDR Engineering, Inc. (HDR) to assist them in their relicensing.

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If you have any questions, or would like to meet with us, please do not hesitate to contact me at the contact info below, or Jay Lloyd at John.Lloyd@hdrinc.com or +1 (916) 679-8715.

Respectfully,

Samantha Faer, BA
Cultural Resources Specialist 1

HDR
1 Capitol Mall, Suite 500
Sacramento, CA 95814
D 916-679-8795 **M** 480-213-1522
samantha.faer@hdrinc.com

hdrinc.com/follow-us

From: P2409 Relicense
Sent: Friday, November 21, 2025 11:53 AM
To: P2409 Relicense P2409Relicense@ccwd.org
Subject: RE: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

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Thank you,

P-2409 Relicensing Team

From: P2409 Relicense
Sent: Wednesday, October 15, 2025 9:51 AM
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
REQUEST FOR INFORMATION BY DECEMBER 19, 2025

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Thank you,

Michael Minkler
General Manager
Calaveras County Water District

Faer, Samantha

From: Faer, Samantha
Sent: Monday, November 24, 2025 12:14 PM
To: 'kday@mewuk.com'
Cc: Vertucci, Charles; 'michaelm@ccwd.org'; 'kellyg@ccwd.org'; 'andrewr@ccwd.org'; 'P2409Relicense@ccwd.org'; Lloyd, John; Risse, Danielle
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

Dear Honorable Chairperson Day of the Tuolumne Band of Me-Wuk Indians,

Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409 (Project). The Project spans three counties: Alpine, Calaveras, and Tuolumne, and has a current license from the Federal Energy Regulatory Commission (FERC) that expires on January 31, 2032. CCWD is using HDR Engineering, Inc. (HDR) to assist them in their relicensing.

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Samantha Faer, BA
Cultural Resources Specialist 1

HDR
1 Capitol Mall, Suite 500
Sacramento, CA 95814
D 916-679-8795 **M** 480-213-1522
samantha.faer@hdrinc.com

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From: P2409 Relicense
Sent: Friday, November 21, 2025 11:53 AM
To: P2409 Relicense P2409Relicense@ccwd.org
Subject: RE: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

P-2409 Interested Parties,

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Thank you,

P-2409 Relicensing Team

From: P2409 Relicense
Sent: Wednesday, October 15, 2025 9:51 AM
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
REQUEST FOR INFORMATION BY DECEMBER 19, 2025

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Thank you,

Michael Minkler
General Manager
Calaveras County Water District

Faer, Samantha

From: Faer, Samantha
Sent: Monday, November 24, 2025 12:10 PM
To: Serrell.Smokey@washoetribe.us
Cc: THPO@WashoeTribe.us; Vertucci, Charles; michaelm@ccwd.org; kellyg@ccwd.org; andrewr@ccwd.org; P2409Relicense@ccwd.org; Lloyd, John; Risse, Danielle
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

Dear Honorable Chairperson Smokey of the Washoe Tribe of Nevada and California,

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Samantha Faer, BA
Cultural Resources Specialist 1

HDR
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P-2409 Relicensing Team

From: P2409 Relicense
Sent: Wednesday, October 15, 2025 9:51 AM
Subject: Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409 - REQUEST FOR INFORMATION

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NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
REQUEST FOR INFORMATION BY DECEMBER 19, 2025

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Thank you,

Michael Minkler
General Manager
Calaveras County Water District

P2409 Relicense

Subject:	Calaveras County Water District's North Fork Stanislaus River Hydroelectric Project, P-2409 - OCTOBER 29, 2025 MEETING INVITATION
Location:	No location added
Start:	Wed 10/29/2025 10:00 AM
End:	Wed 10/29/2025 12:00 PM
Show As:	Busy
Meeting Status:	Organizer
Organizer:	P2409 Relicense
Required Attendees:	Dawn.Alvarez@usda.gov; Aguirre orozco, Victor - FS, CA; Raymond.Cablayan@usda.gov; Newburger, Todd - FS, CA; allison.stevenot@usda.gov; castatedirector@blm.gov; BLM_CA_Web_ML@blm.gov; Triplett, Noah R; cdavenport@usbr.gov; rsanchez@usbr.gov; dlessard@usbr.gov; michelle_havens@fws.gov; Torres.Tomas@epa.gov; steve.edmondson@noaa.gov; Barabara_rice@nps.gov; Susan_rosebrough@nps.gov; parker.thaler@waterboards.ca.gov; Hassan, Rajaa@Waterboards; morgan.kilgour@wildlife.ca.gov; Maher, Michael@Wildlife; Beth.Lawson@wildlife.ca.gov; abimael.leon@wildlife.ca.gov; calshpo.ohp@parks.ca.gov; nick.casci@fire.ca.gov; Grace.Magsayo@dot.ca.gov; armando.quintero@parks.ca.gov; randy.howard@ncpa.com; Jake Eymann; gm@uticawater.com; admin@uticawater.com; frankf@uticawater.com; brandis@uticawater.com; jself@upudwater.org; Steve Williams; chrisoflinn@angelscamp.gov; twoodrow@alpinecountyca.gov; awg.neil@gmail.com; awg.kimra@gmail.com; mhuberty@co.calaveras.ca.us; lmedina@co.calaveras.ca.us; rcampbell@co.tuolumne.ca.us; shembree@co.tuolumne.ca.us; tmayo@blsmwc.com; twalley@calaverasrcd.org; Jessalynn@bvtribe.com; Jesus@bvtribe.com; calaverasmiwukpreservation@gmail.com; Adam Lewis; calaverasband.miwukindians@gmail.com; office@cvmt.net; mfox@crbtribal.com; ssuess@crtribal.com; Creyes@crtribal.com; jportillo@crtribal.com; Consultation@ionemiwok.net; jereme@ionemiwok.net; Adalton@jacksoncasino.com; Valdezcome@comcast.net; sdinsmore@strawberryvalleymaidu.org; ahart@sir-nsn.gov; serrell.smokey@washoetribe.us; THPO@washoeTribe.us; Charmaine.McDarment@Tulerivertribe-nsn.gov; kday@mewuk.com; theresa@americanwhitewater.org; Jann Dorman; ExecDirector@friendsoftheriver.org; keiko@friendsoftheriver.org; cshutes@calsport.org; blancapaloma@msn.com; ewoodruff@calsport.org; cknight@caltrout.org; rene.henery@tu.org; sterling@hydroreform.org; kelly@hydroreform.org; John Buckley; Stan Dodson; fhc@foothillconservancy.org; gat@n-h-i.org; Info@MLC.sierraclub.org; stevelauterbach@comcast.net; accounting@bigtrees.org; historicalcalaveras@gmail.com; epfw@goldrush.com; janet.walther@pge.com; kimberly.ognisty@pge.com; snicotero@tridamproject.com; Jay Francis; tylerw@oars.com; claveyw@oars.com; rivers@aorafting.com; Michael Minkler; Kelly Gerkensmeyer; Andrew Renshaw; Vertucci, Charles; jim.lynch@hdrinc.com; charles.sensiba@troutman.com; jjdevine51@outlook.com; rbowersox@gfnet.com; russ@stillwatersci.com; John.Lloyd@hdrinc.com
Optional Attendees:	reception@uticawater.com; William Enos; Cajun James; Chellman, Isaac@Wildlife; Call, Leslie@Wildlife; Holm, Sara@Wildlife; rbowersox@gftinc.com; Jesus "Jesse" Galvan; rmasuda@calwaterlaw.com; Scott Dinsmore; BALU@pge.com; Welsh, Andrew - FS, CA; Sanguinetti, Tanya@DOT; Alicea, Jose A@DOT; Girald Perez, Myrna N; Ewing, Ben@Wildlife; Dylan Smith; Blair, Shelly@Wildlife

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT,
FERC PROJECT NO. 2409
INVITATION TO OCTOBER 29, 2025 HYBRID RELICENSING MEETING

Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, Federal Energy Regulatory Commission (FERC) Project No. 2409 (P-2409), described below. The project consists of two developments

– New Spicer Meadow and Collierville – that, in total, include: four dams, two powerhouses, one microturbine, recreation facilities, and appurtenant facilities and structures. P-2409 has a current license from FERC that expires on January 31, 2032.

CCWD plans to hold an initial relicensing kickoff meeting from 10AM – 12PM on October 29, 2025, at CCWD's office at 120 Toma Ct, San Andreas, CA 95249 as well as virtual participation via Microsoft Teams (link below).

The meeting will include an introduction to CCWD and the P-2409 project, overall relicensing process and schedule, and an opportunity for attendees to ask questions and share initial feedback. CCWD will also be prepared to answer questions regarding its recent request for information (sent under separate email) to support development of the Pre-Application Document.

If you have any questions, please email P2409Relicense@ccwd.org. CCWD looks forward to meeting with interested parties on October 29.

Thank you,

Michael Minkler
General Manager
Calaveras County Water District

Microsoft Teams Need help?

Join the meeting now

Meeting ID: 287 870 756 837 1

Passcode: Dj3ev7hf

For organizers: Meeting options

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NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT
FERC NO. 2409

OCTOBER 29, 2025
MEETING #1

NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT

FERC P-2409

WELCOME & INTRODUCTIONS

MICHAEL MINKLER - GENERAL MANAGER, CCWD

ANDREW RENSHAW - WATER RESOURCES MANAGER, CCWD

KELLY GERKENSMEYER - EXTERNAL AFFAIRS MANAGER, CCWD

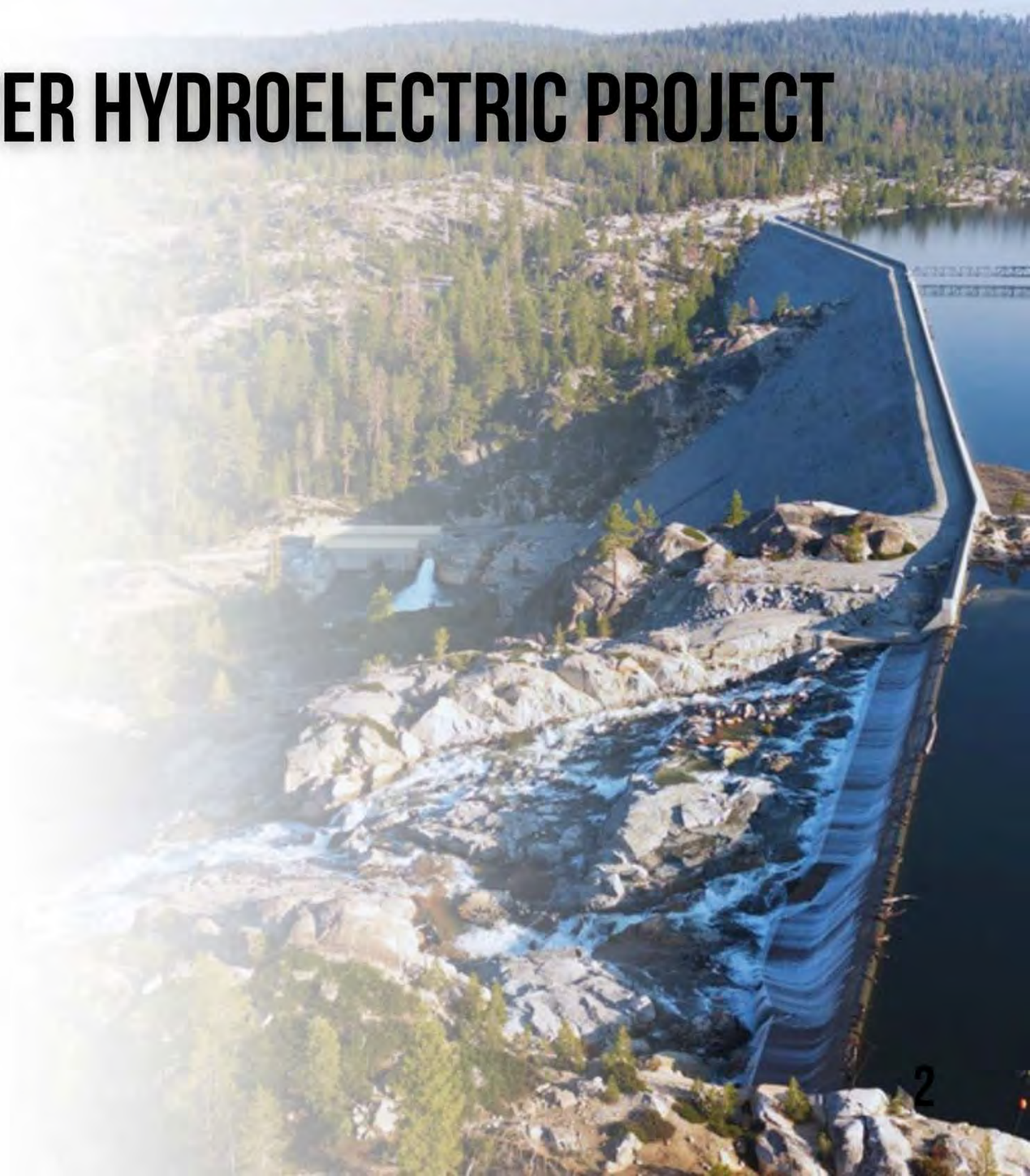
CHUCK VERTUCCI - PROJECT MANAGER, HDR

JIM LYNCH - FERC SPECIALIST, HDR

RANDY BOWERSOX - HYDRO OPERATIONS LEAD, GFT

RUSS LIEBIG - BIOLOGICAL RESOURCES SPECIALIST, STILLWATER SCIENCES

JAY LLOYD - CULTURAL RESOURCES LEAD, HDR

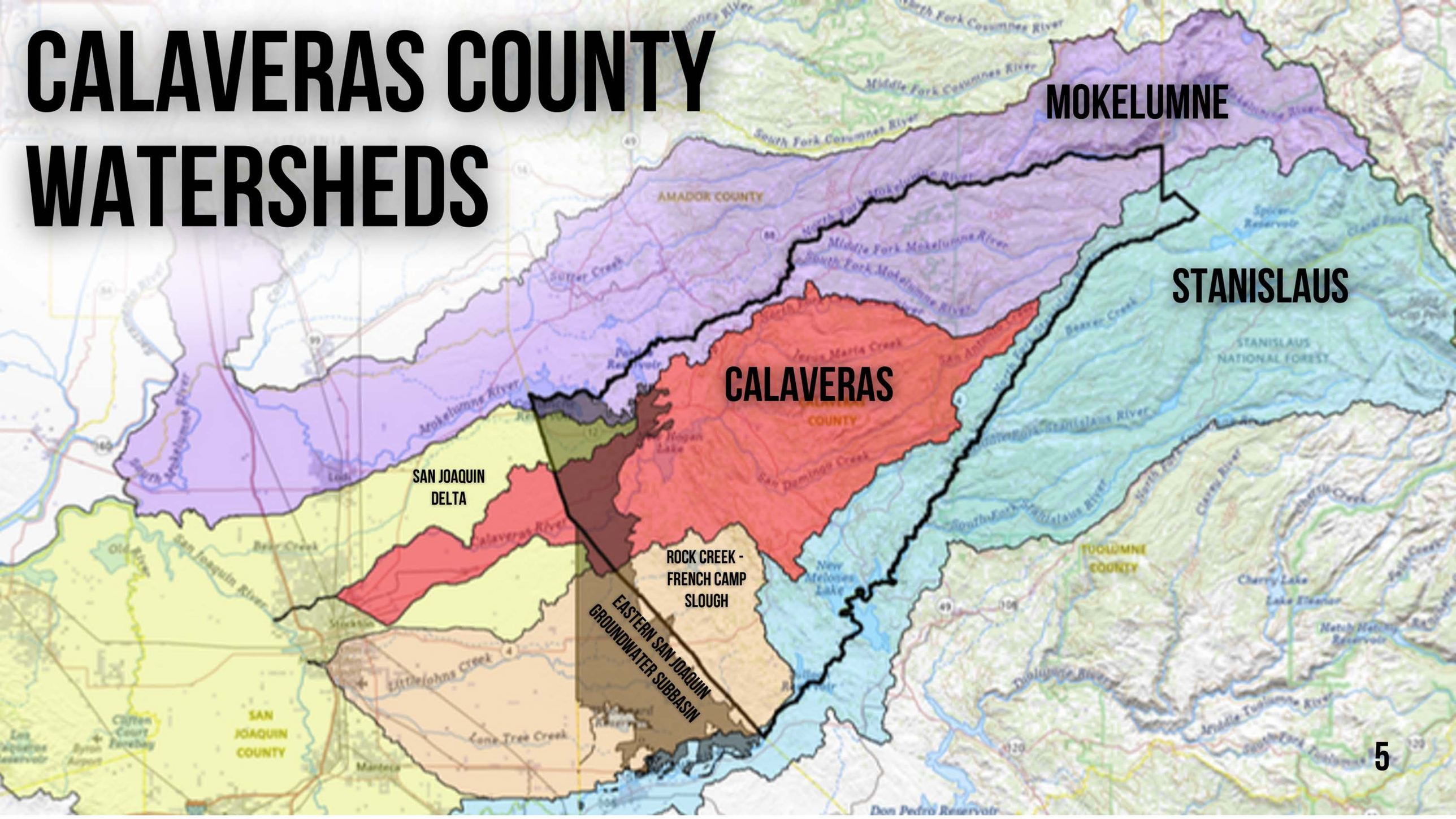


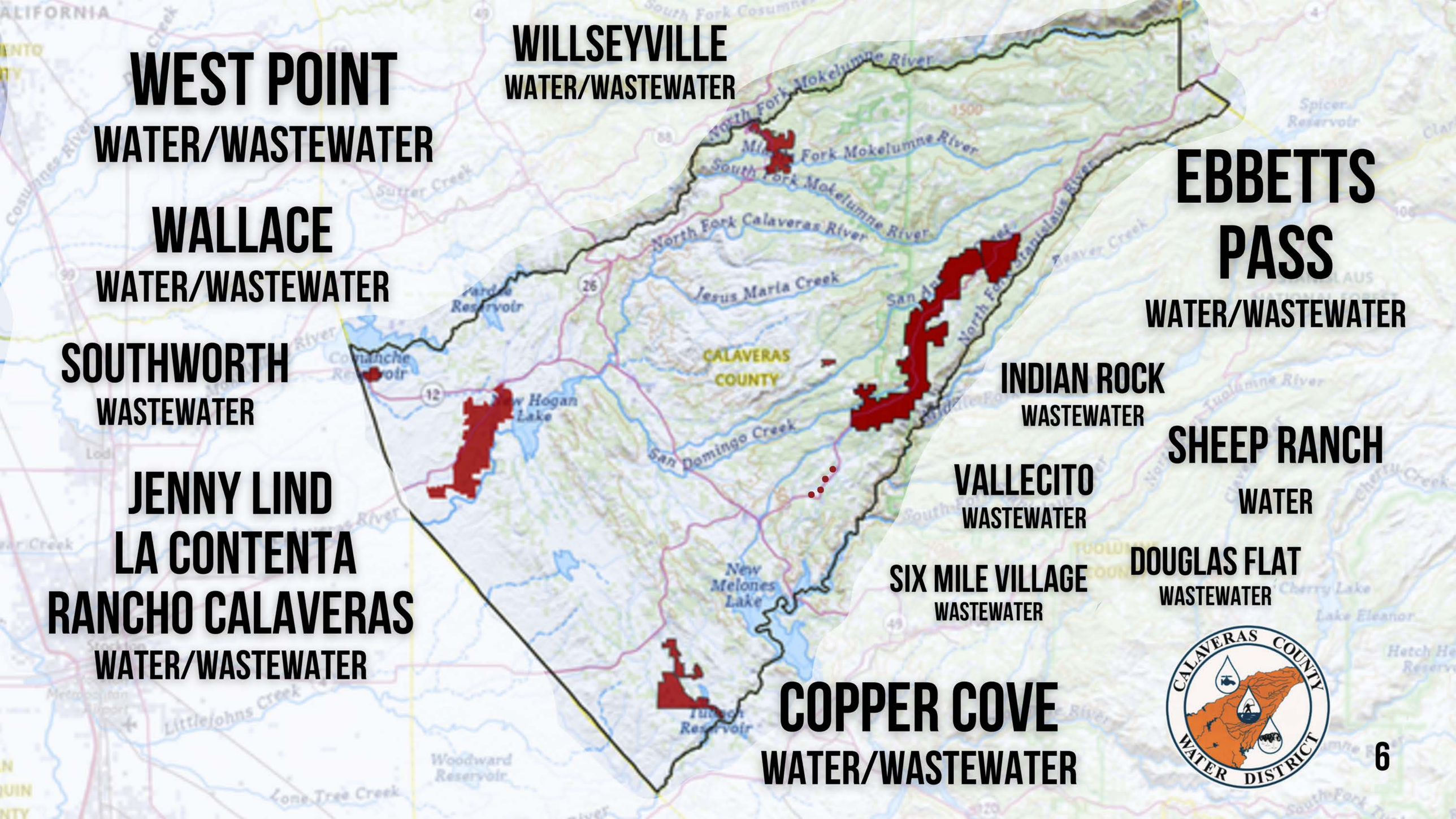
AGENDA

1. INTRODUCTIONS
2. CCWD OVERVIEW
3. CCWD HISTORY
4. P-2409 OVERVIEW
5. FERC RELICENSING PROCESS
6. QUESTIONS

CCWD OVERVIEW

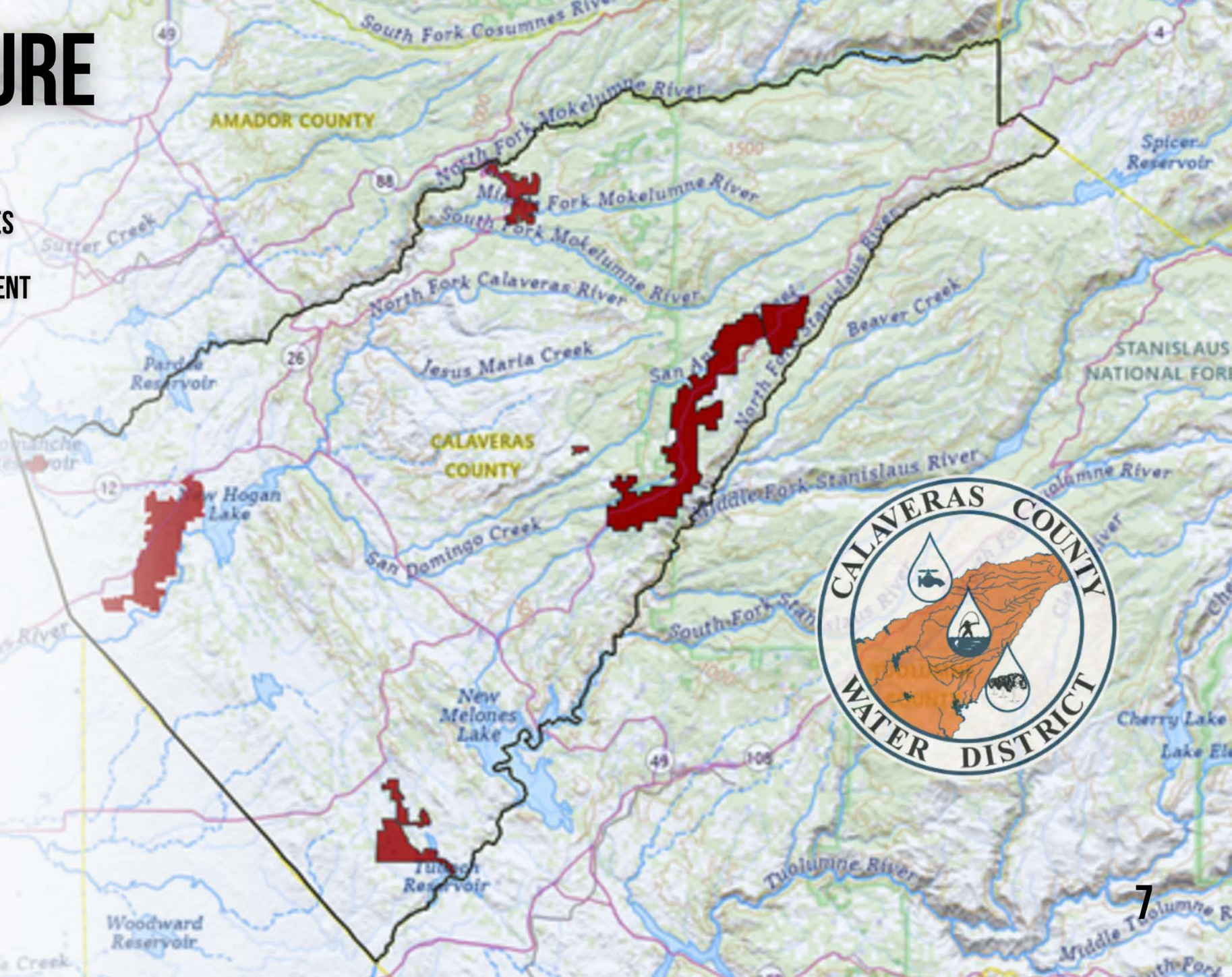
CALAVERAS COUNTY WATERSHEDS




WEST POINT
WATER/WASTEWATER
WILLSEYVILLE
WATER/WASTEWATER
WALLACE
WATER/WASTEWATER
SOUTHWORTH
WASTEWATER
JENNY LIND
LA CONTENTA
RANCHO CALAVERAS
WATER/WASTEWATER
EBBETTS PASS
WATER/WASTEWATER
INDIAN ROCK
WASTEWATER
SHEEP RANCH
WATER
VALLECITO
WASTEWATER
DOUGLAS FLAT
WASTEWATER
SIX MILE VILLAGE
WASTEWATER
COPPER COVE
WATER/WASTEWATER
CALAVERAS COUNTY
North Fork Mokelumne River
South Fork Mokelumne River
North Fork Calaveras River
Jesus Maria Creek
San Domingo Creek
New Hogan Lake
New Melones Lake
Tulloch Reservoir
Woodward Reservoir
Lone Tree Creek
Littlejohns Creek
CALAVERAS COUNTY WATER DISTRICT

INFRASTRUCTURE

6	WATER TREATMENT FACILITIES
13	WASTEWATER TREATMENT FACILITIES
3	RECLAIM FACILITIES
2	HYDROPOWER PROJECTS
9	DAMS
27	WATER STORAGE TANKS
18	WATER PUMP STATIONS
45	SEWER LIFT STATIONS



CALAVERAS COUNTY WATER DISTRICT

UNION PUBLIC UTILITY DISTRICT

CITY OF ANGELS

UTICA WATER AND POWER AUTHORITY

BLUE LAKE SPRINGS MUTUAL WATER COMPANY

BIG TREES STATE PARK

THE NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT P-2409

IS THE HEART AND SOUL OF THE HIGHWAY 4 CORRIDOR WATER SYSTEMS

CCWD HISTORY



1946

THE VOTERS OF CALAVERAS COUNTY CREATE THE CALAVERAS COUNTY WATER DISTRICT.



State of California

Office of the
Secretary of State

I, FRANK M. JORDAN, Secretary of State of the State of California, hereby certify:

That I have compared the annexed transcript with the RECORD on file in my office, of which it purports to be a copy, and that the same is a full, true and correct copy thereof.

IN WITNESS WHEREOF, I hereunto set my hand and affix the Great Seal of the State of California this 6th day of September, 1946

Frank M. Jordan
Secretary of State

By
Deputy

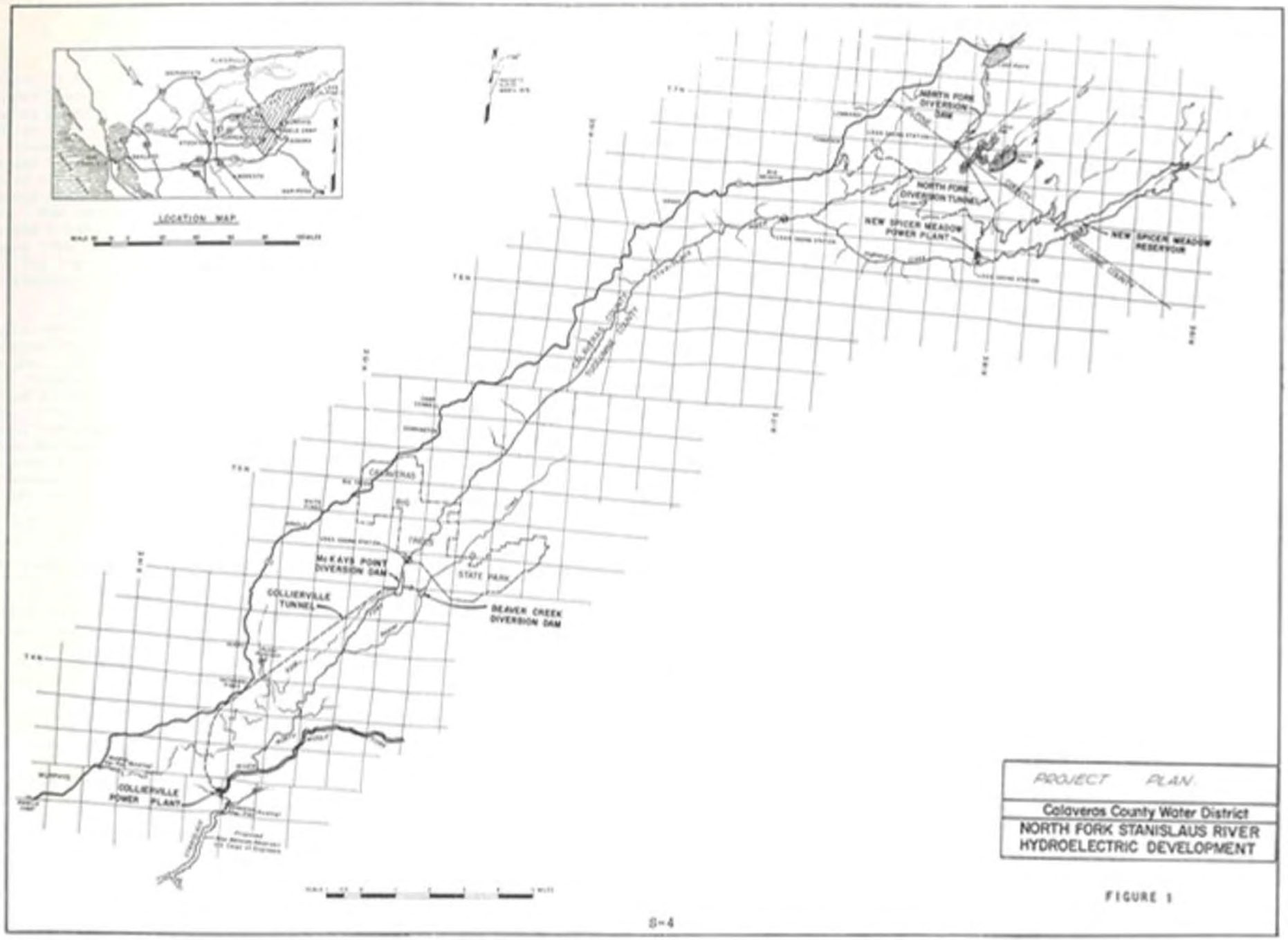
Res. 4

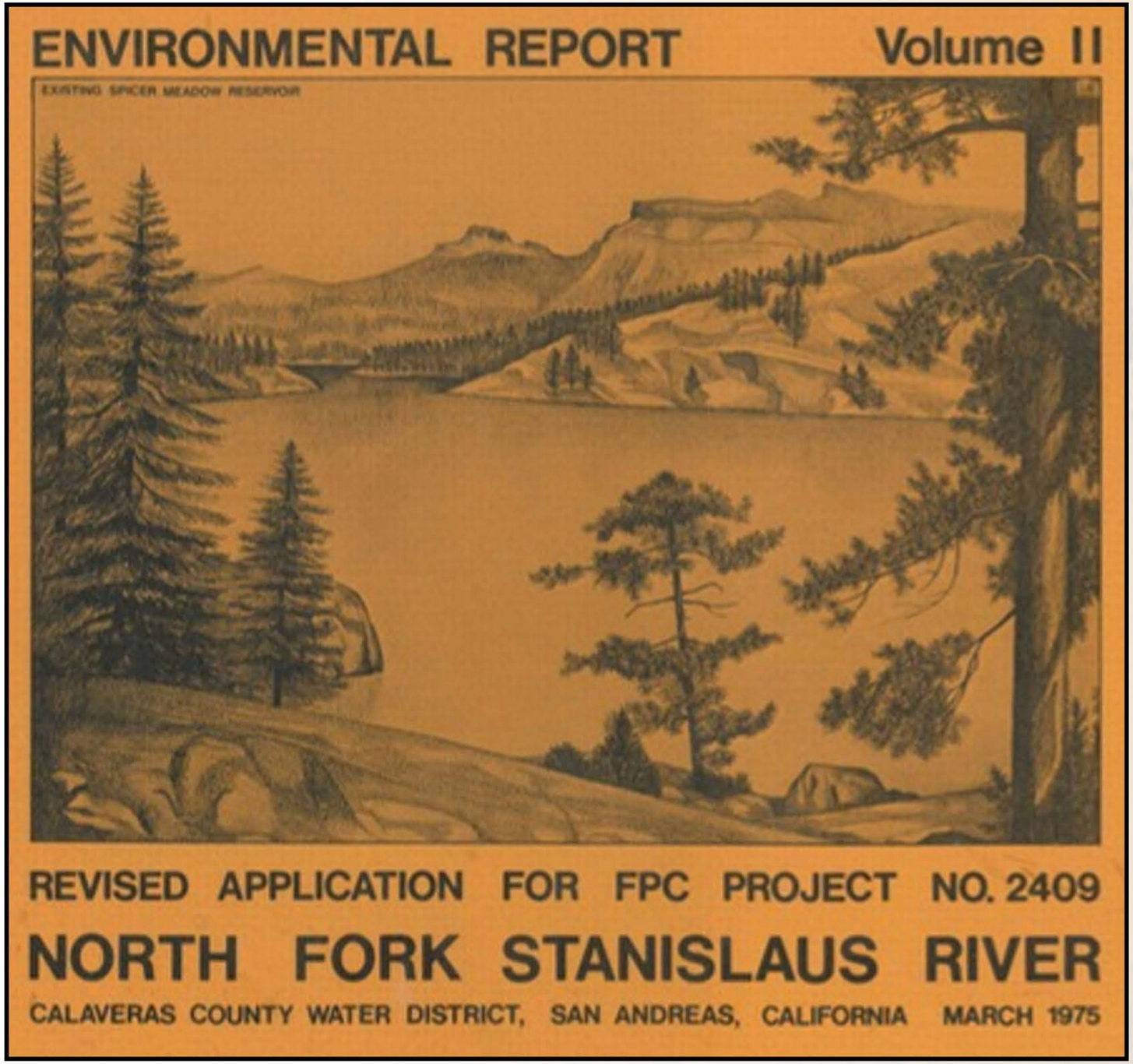
Resolution -4-

COPY OF RESOLUTION AND CERTIFICATE.

BE IT RESOLVED that Vernon Campbell, President of Calaveras County Water District, a county water district duly organized, incorporated and existing under the County Water District Act of the State of California, be, and he is hereby authorized, empowered and directed to make, sign and file on behalf of said Calaveras County Water District any and all applications for the storage of waters for all lawful uses and purposes upon the north fork of the Stanislaus River and upon the Calaveras and Mokelumne Rivers and any of the tributaries thereof in and before the Division of Water Resources of the State of California and any and all other proper governmental agencies, whether State or Federal, having jurisdiction in the premises and




LOCATION MAP
NORTH FORK DIVERSION DAM
NORTH FORK DIVERSION TUNNEL
NEW SPICER MEADOW POWER PLANT
NEW SPICER MEADOW RESERVOIR
CALAVERAS COUNTY
TUOLUMNE COUNTY
McKAYS POINT DIVERSION DAM
STATE PARK
COLLIERVILLE TUNNEL
BEAVER CREEK DIVERSION DAM
COLLIERVILLE POWER PLANT
PROJECT PLAN
Calaveras County Water District
NORTH FORK STANISLAUS RIVER HYDROELECTRIC DEVELOPMENT
FIGURE 1
S-4



- **1963** – CCWD FILED INITIAL POWER LICENSE APPLICATION
- **1975** – REVISED APPLICATION SUBMITTED TO MEET NEPA AND CEQA REQUIREMENTS
- **1977** – CCWD PARTNERED WITH NCPA
- **1979** – AMENDED APPLICATION SUBMITTED WITH REDUCED PROJECT FOOTPRINT

Filed Date: 02/08/1982

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: C. M. Butler III, Chairman;
Georgiana Sheldon, J. David Hughes
and A. G. Sousa.

Calaveras County Water District) Project No. 2409

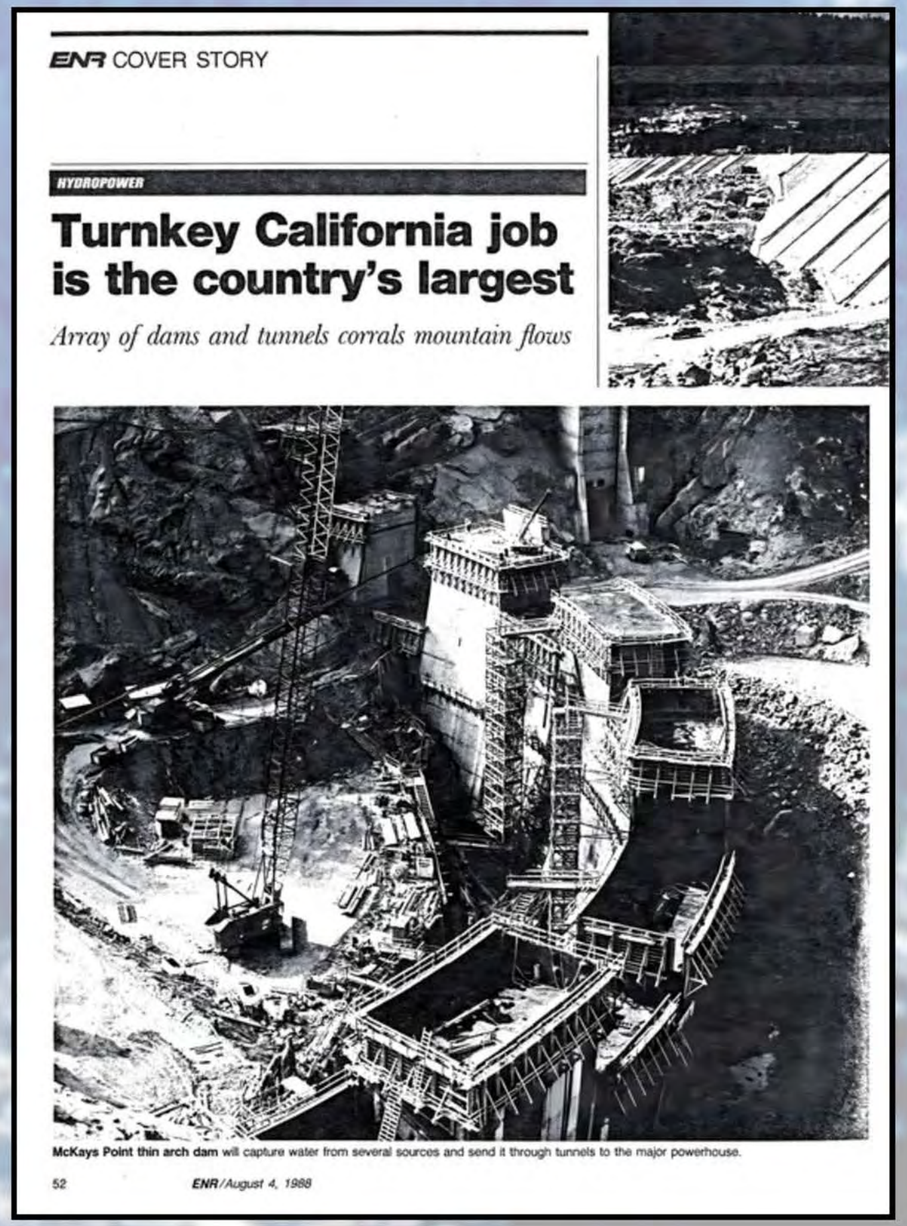
ORDER ISSUING LICENSE (MAJOR)
AND DENYING MOTIONS
(Issued February 8, 1982)

The Calaveras County Water District ("CCWD") has filed an amended application for a license under Part I of the Federal Power Act ("Act") to construct, operate and maintain the North Fork Stanislaus River Project No. 2409. The project would be located on the North Fork Stanislaus River, Stanislaus River, Highland Creek, Beaver Creek, Silver Creek, and Duck Creek in the Counties of Calaveras, Alpine, and Tuolumne, California. The project would affect lands of the United States within the Stanislaus National Forest and within the U.S. Army Corps of Engineers' New Melones Lake Project.

P-2409

CONSTRUCTION

1985 - 1989



ENR COVER STORY

HYDROPOWER

Turnkey California job is the country's largest

Array of dams and tunnels corrals mountain flows

McKays Point thin arch dam will capture water from several sources and send it through tunnels to the major powerhouse.

52 ENR/August 4, 1988

P-2409
PROJECT OVERVIEW





LOCATED IN CENTRAL CALIFORNIA

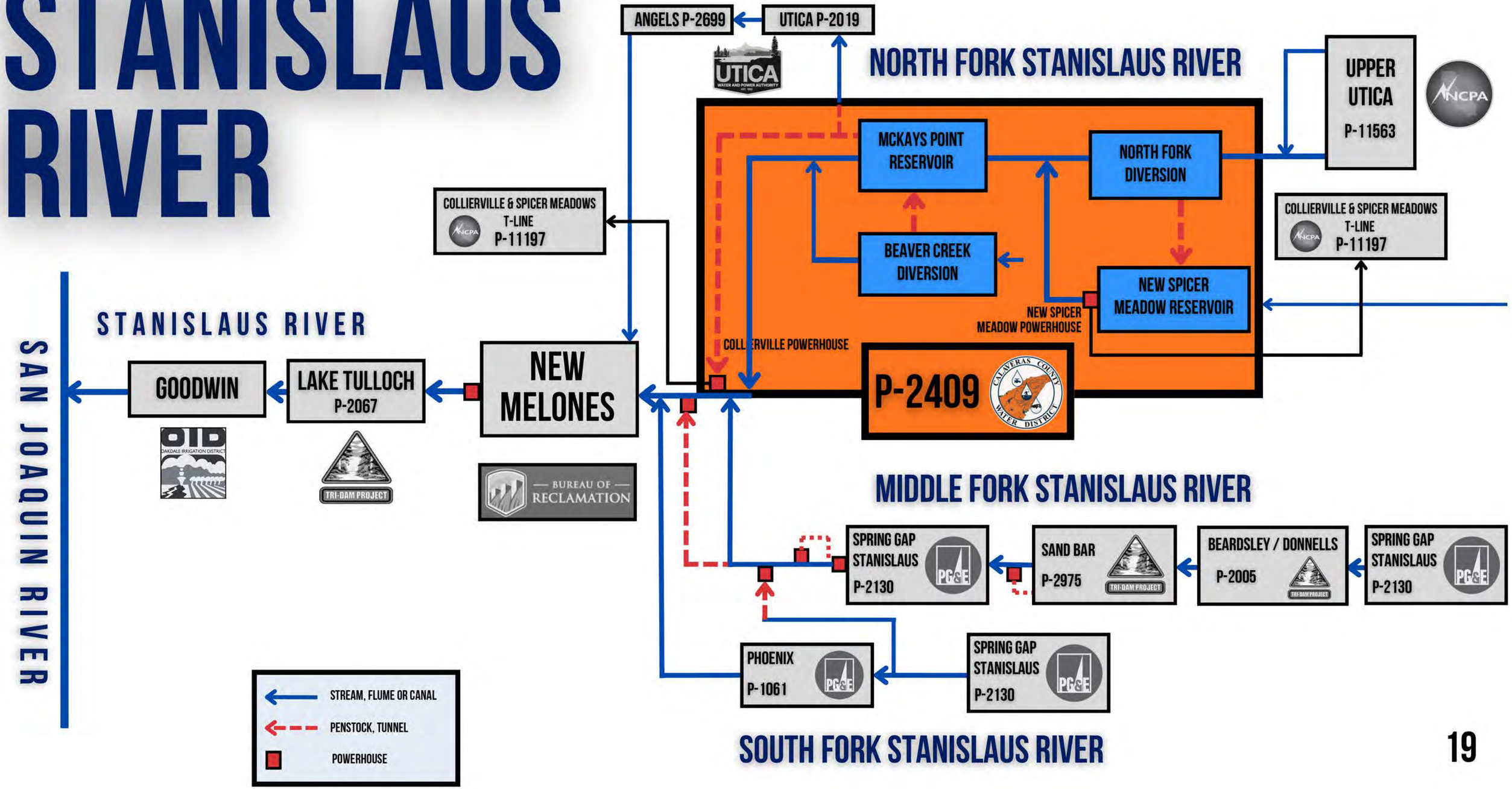
ALPINE COUNTY

CALAVERAS COUNTY

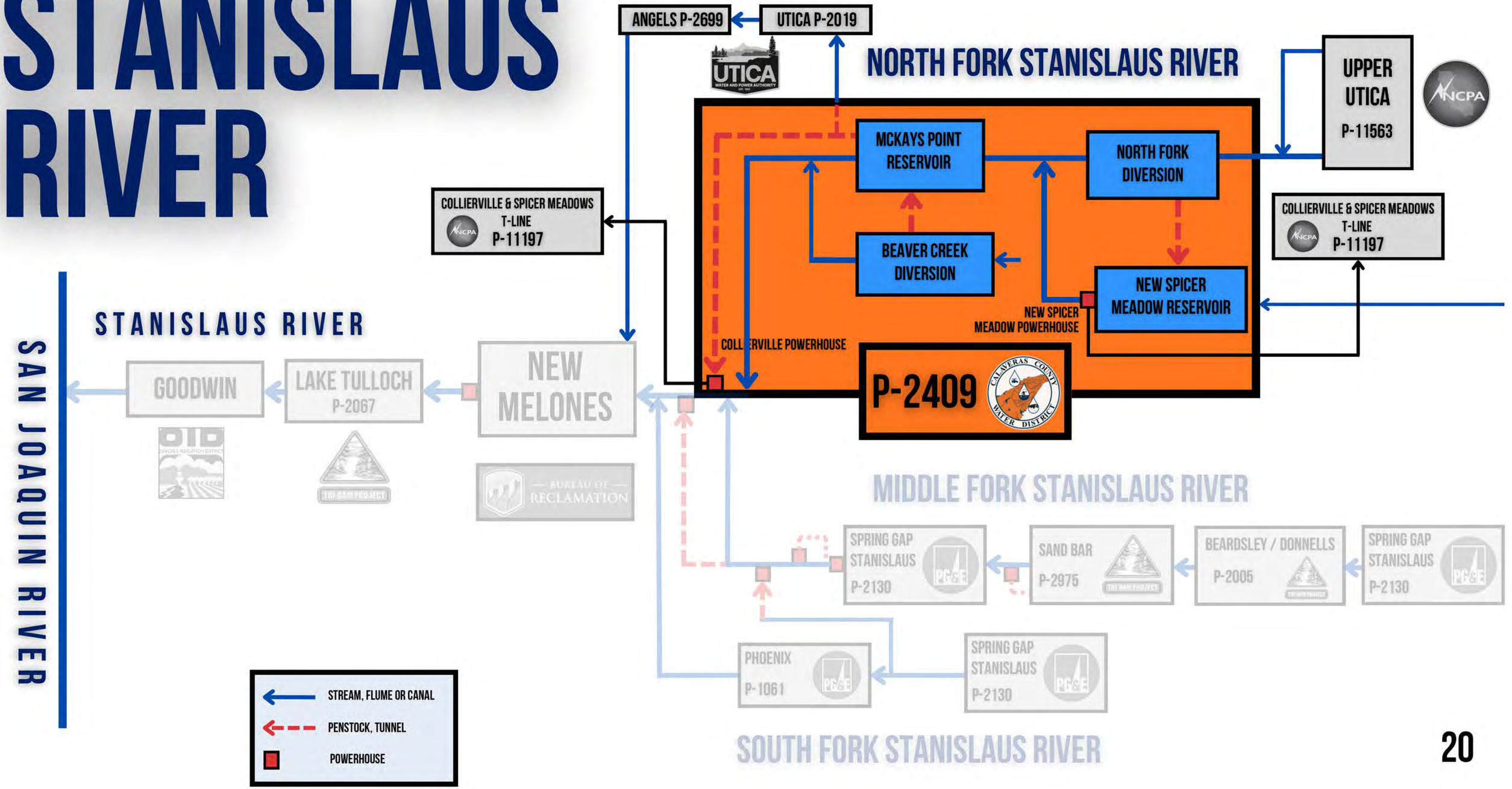
TUOLUMNE COUNTY

P-2409 SPANS 3 COUNTIES

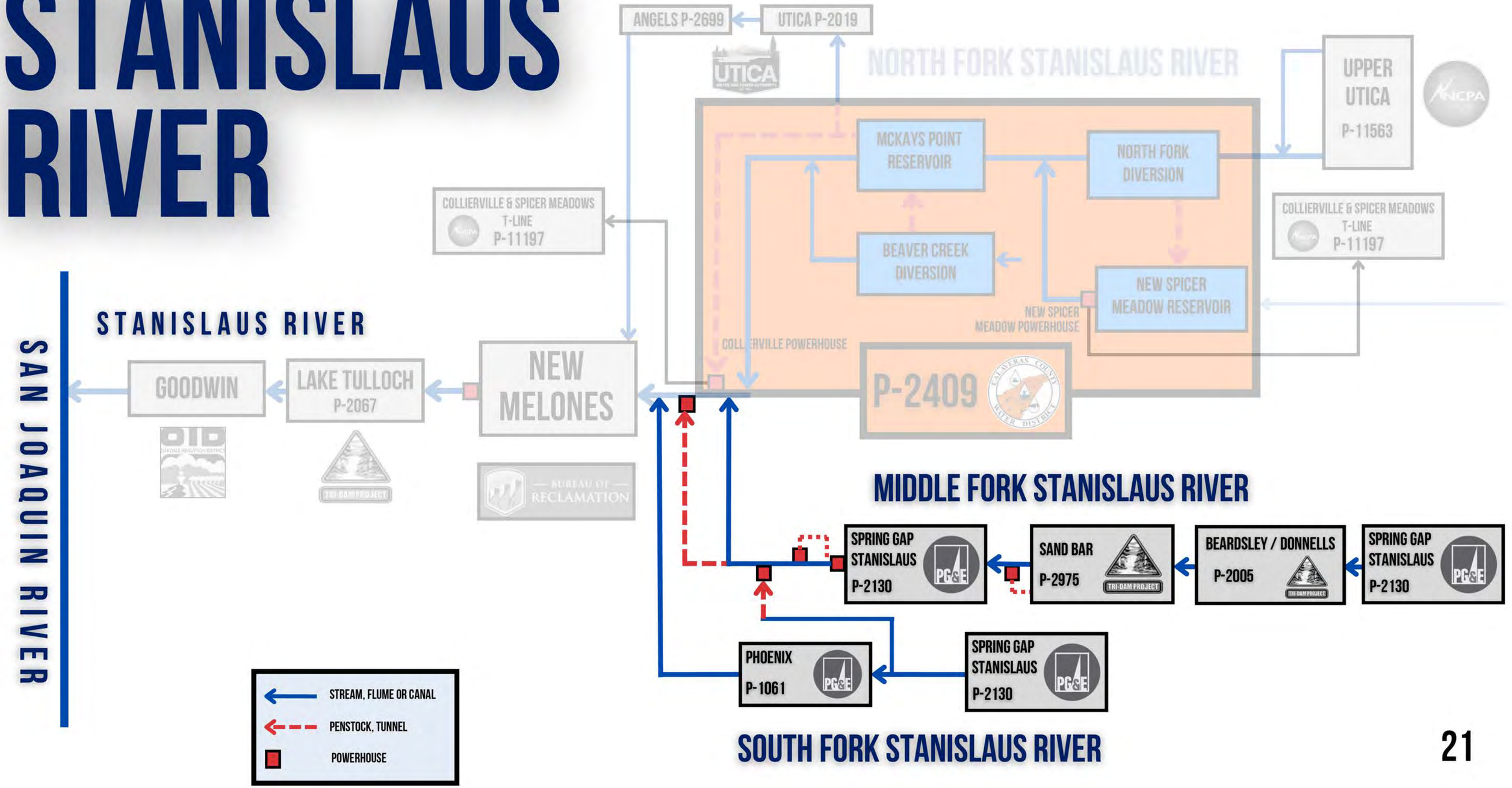
STANISLAUS RIVER



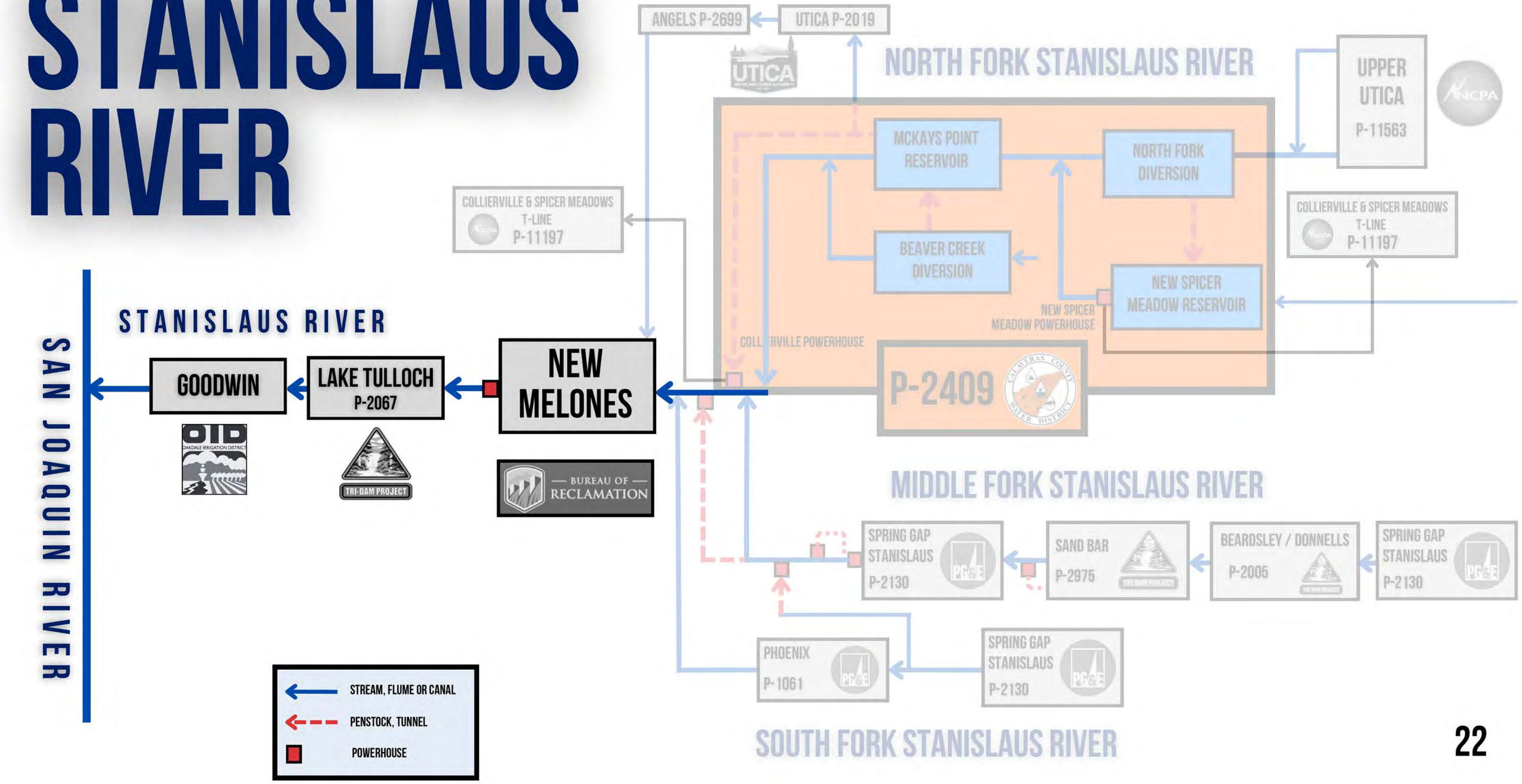
STANISLAUS RIVER



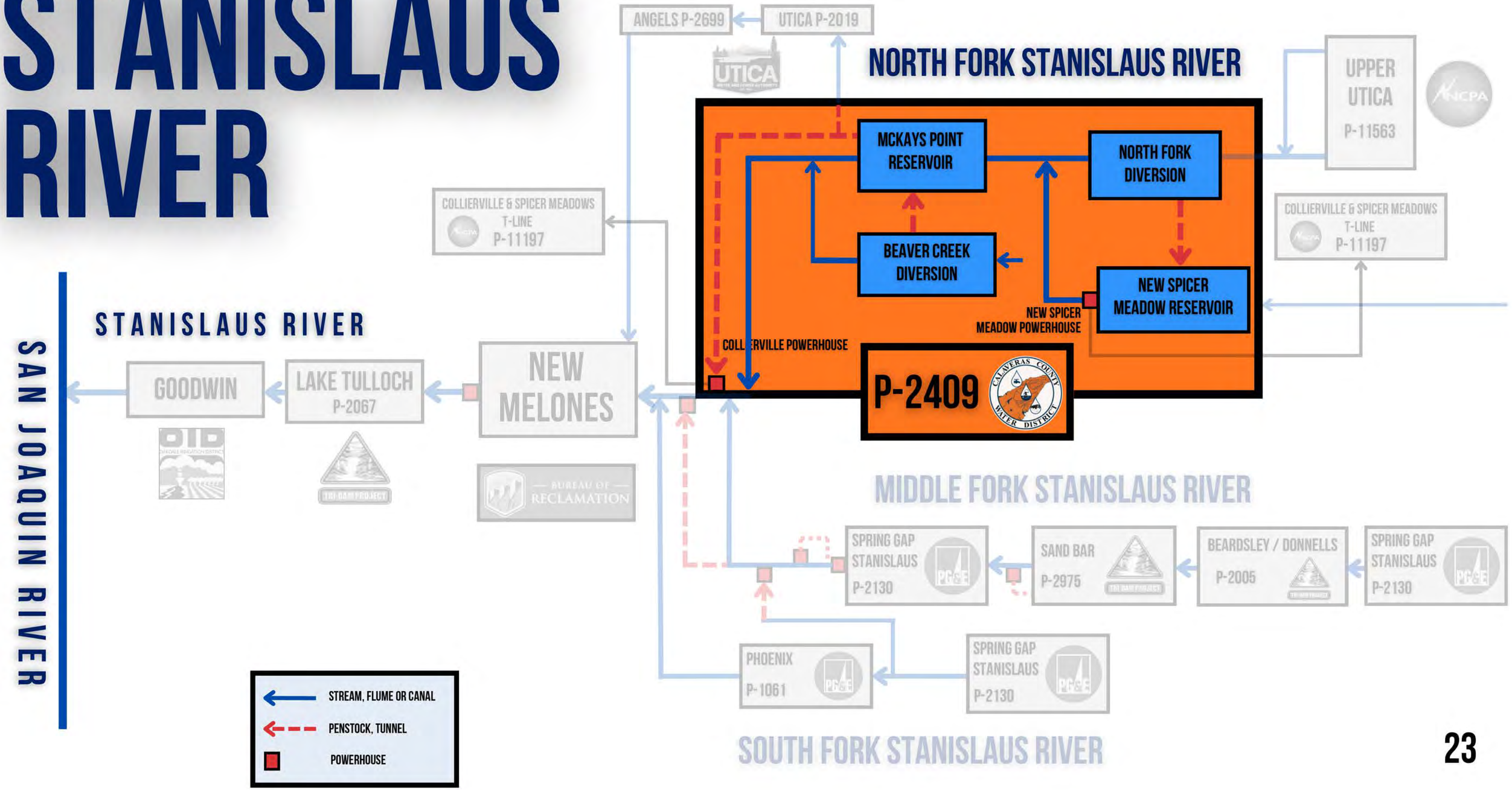
STANISLAUS RIVER

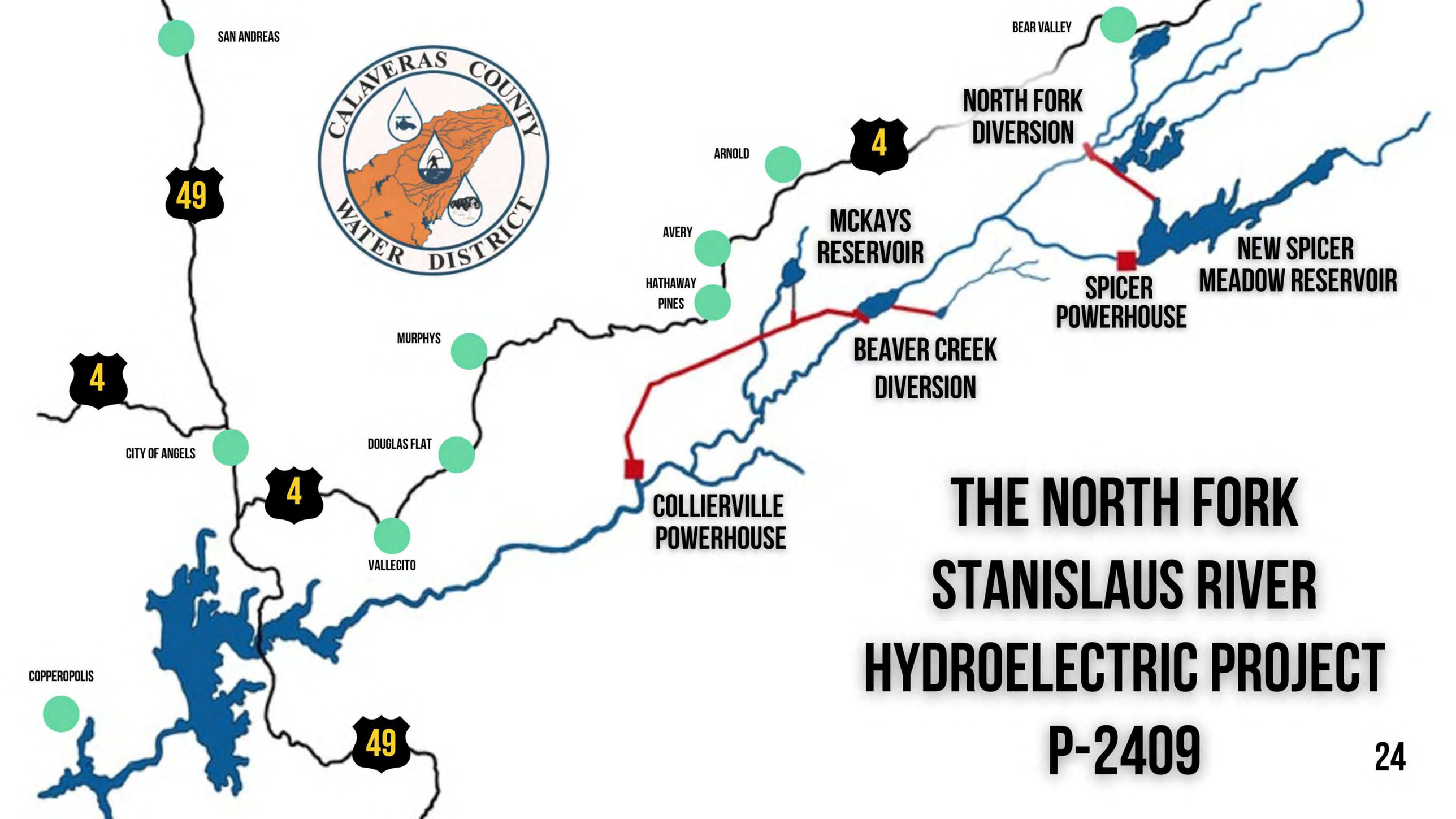


STANISLAUS RIVER

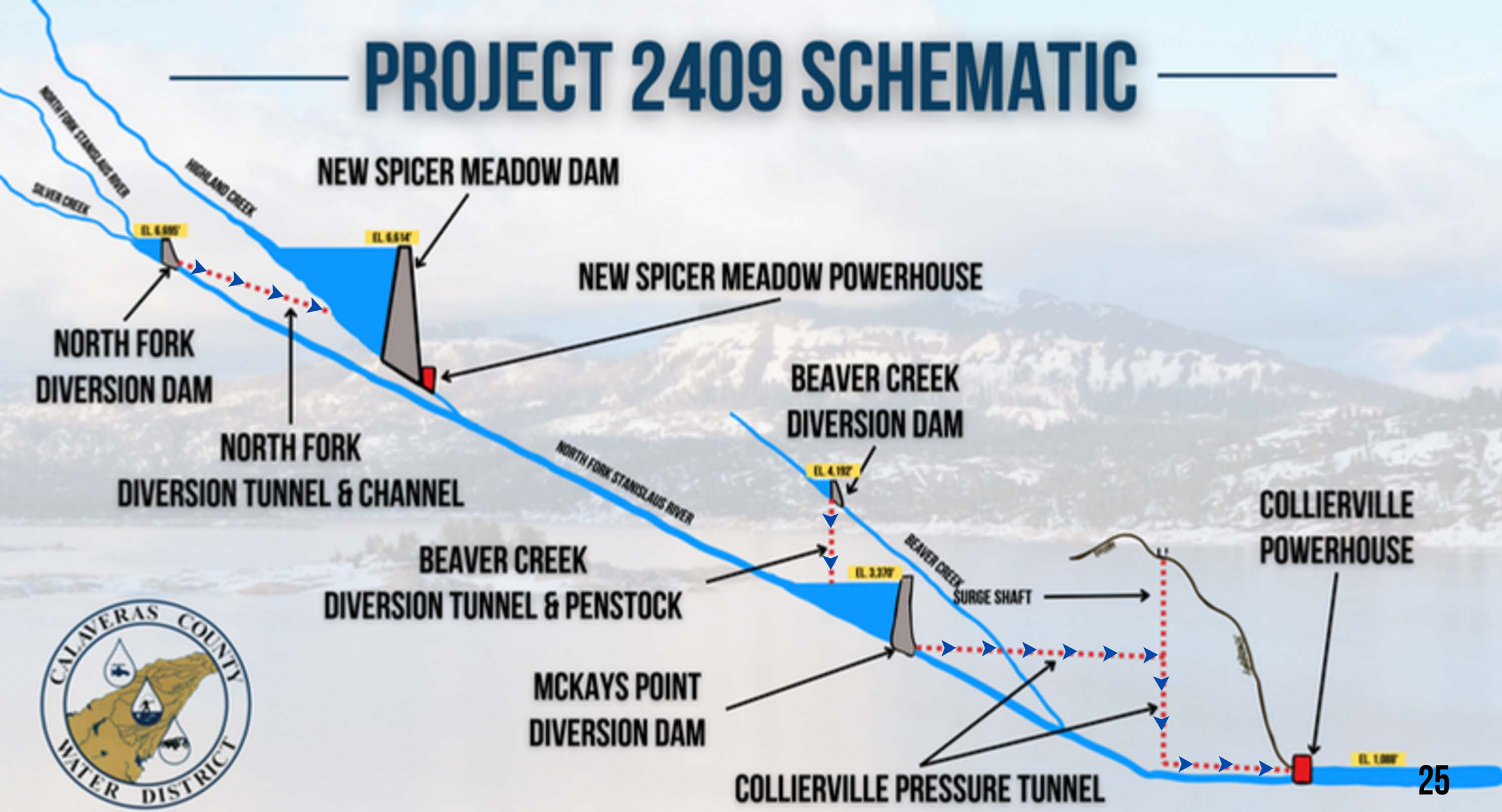


STANISLAUS RIVER



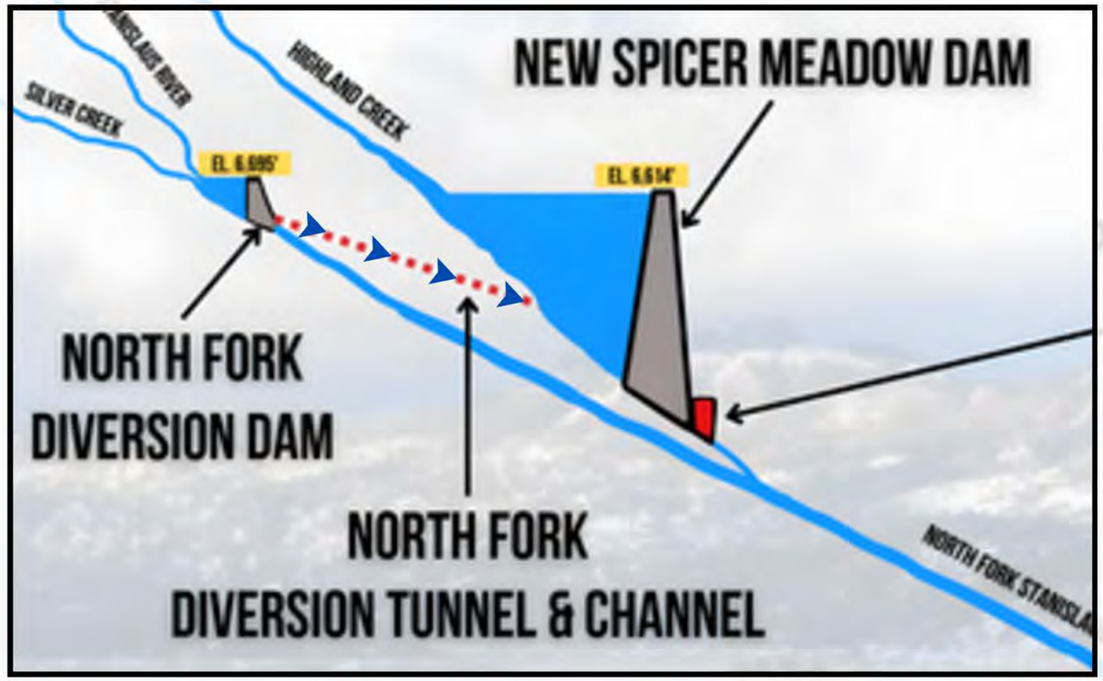

SAN ANDREAS
CALAVERAS COUNTY WATER DISTRICT
49
4
ARNOLD
AVERY
HATHAWAY PINES
MURPHYS
BEAR VALLEY
NORTH FORK DIVERSION
MCKAYS RESERVOIR
SPICER POWERHOUSE
NEW SPICER MEADOW RESERVOIR
BEAVER CREEK DIVERSION
CITY OF ANGELS
DOUGLAS FLAT
VALLECITO
COLLIERVILLE POWERHOUSE
COPPEROPOLIS
THE NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT
P-2409

PROJECT 2409 SCHEMATIC



CALAVERAS COUNTY WATER DISTRICT

NORTH FORK DIVERSION DAM





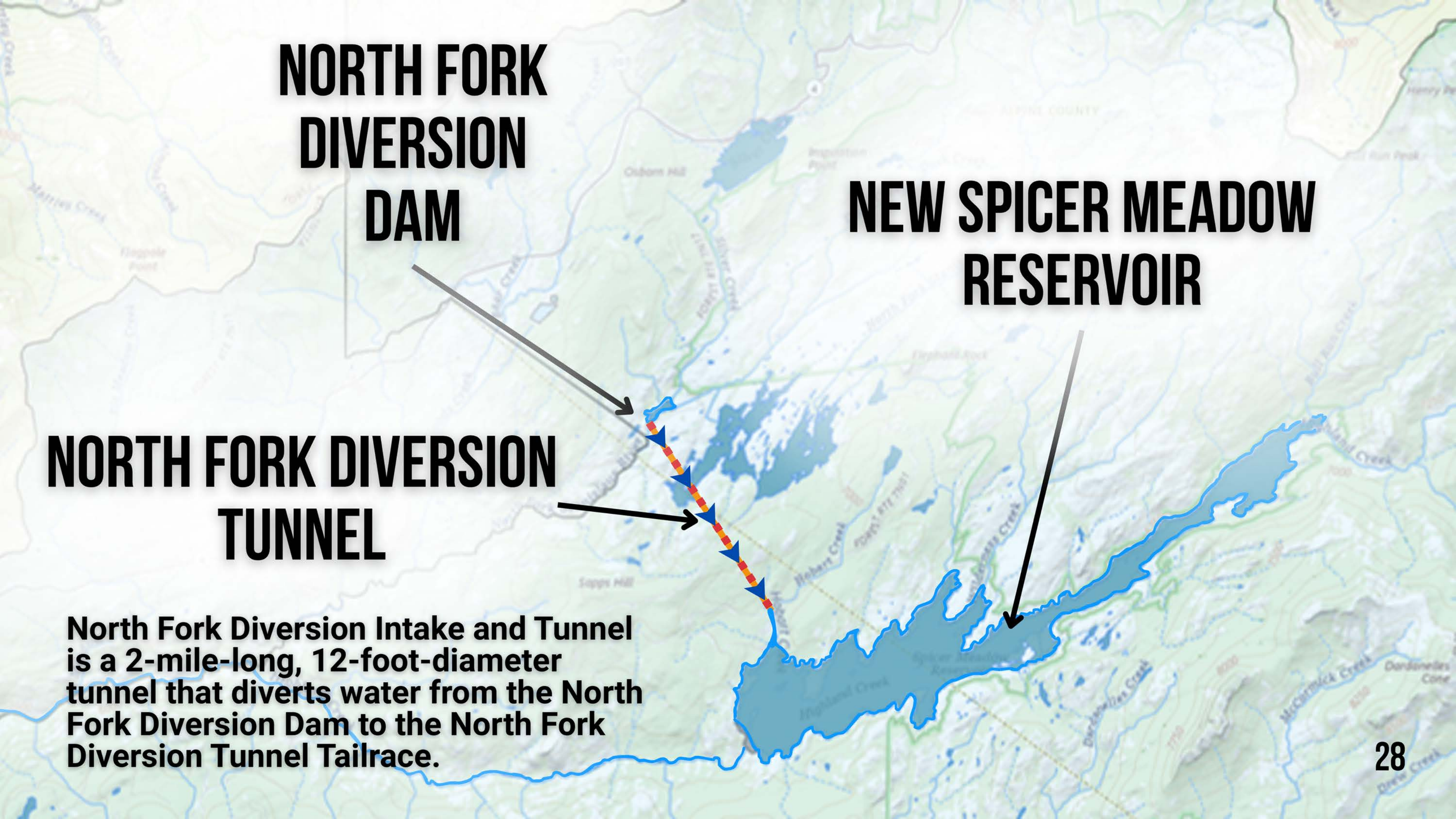
The North Fork Diversion Dam (NFDD) is the highest elevation Project 2409 feature. During spring runoff and other times of high flows in the watershed, the NFDD can passively divert up to 1,000 cfs into the North Fork Diversion Tunnel for seasonal storage in New Spicer Meadow Reservoir (NSM). Diversions only happen when inflows to NFDD exceed 16.5 cfs.



NORTH FORK DIVERSION DAM

The North Fork Diversion Dam is a 53-foot-high, 220-foot-long concrete gravity dam located on the North Fork Stanislaus River, immediately downstream of the confluence of Silver and Duck Creeks.

The North Fork Diversion Dam Spillway features an ungated, ogee-type spillway section that is 115 feet wide.



North Fork Diversion Intake and Tunnel is a 2-mile-long, 12-foot-diameter tunnel that diverts water from the North Fork Diversion Dam to the North Fork Diversion Tunnel Tailrace.

PROJECT 2409 SCHEMATIC





New Spicer Meadow (NSM) is the primary reservoir for the project.

Flows diverted through NFDD, along with natural inflows from the Highland Creek drainage, are stored in NSM until needed downstream for mandated regulatory flows or for power production.

NEW SPICER MEADOW RESERVOIR, DAM & POWERHOUSE

NEW SPICER MEADOW RESERVOIR & DAM

New Spicer Meadow Dam is a 240-foot-high rock-filled dam with a concrete face on Highland Creek.

The Spillway is a 370-foot-long, 30-foot-tall ungated continuous concrete ogee type spillway and discharges to an unlined chute.

New Spicer Meadow Reservoir has an estimated gross capacity of 189,000 acre-feet, a surface area of approximately 2,000 acres, and a shoreline of about 21 miles.

INTAKE STRUCTURE

The power intake is a 234-foot concrete structure with selective withdrawal from a 3-gate opening system that permits some control over the temperature of the outflow from the New Spicer Meadow Reservoir.



NEW SPICER MEADOW POWERHOUSE

The New Spicer Meadow Powerhouse is located immediately downstream of the dam and includes three horizontal shaft Francis Turbines.

Two of the turbines have an output of 3,900 horsepower (hp) (2.75 MW each).

The third, smaller unit has an output of 870 hp (500 KW)


NEW SPICER MEADOW RESERVOIR
TO HIGHLAND LAKES
HIGHLAND CREEK
TO MOSQUITO LAKES
BULL RUN CREEK
CARSON - ICEBERG WILDERNESS AREA
CARSON - ICEBERG WILDERNESS AREA
TO COUNTY LINE TRAILHEAD
TRAILS
ROAD
WILDERNESS BOUNDARY
WILDERNESS CREEK
TO SUMMIT LAKE TRAILHEAD
TO WHEATS MEADOW
NEW SPICER MEADOW DAM
BOAT LAUNCH
FAMILY CAMPGROUND
GROUP CAMPGROUND
TO WOLFBORO TRAIL
TO SUMMIT LAKE
TO HWY. 4
NO MOTORIZED BOATING IN YELLOW AREA
SUBMERGED OBSTACLES & SHALLOW AREAS NOT MARKED

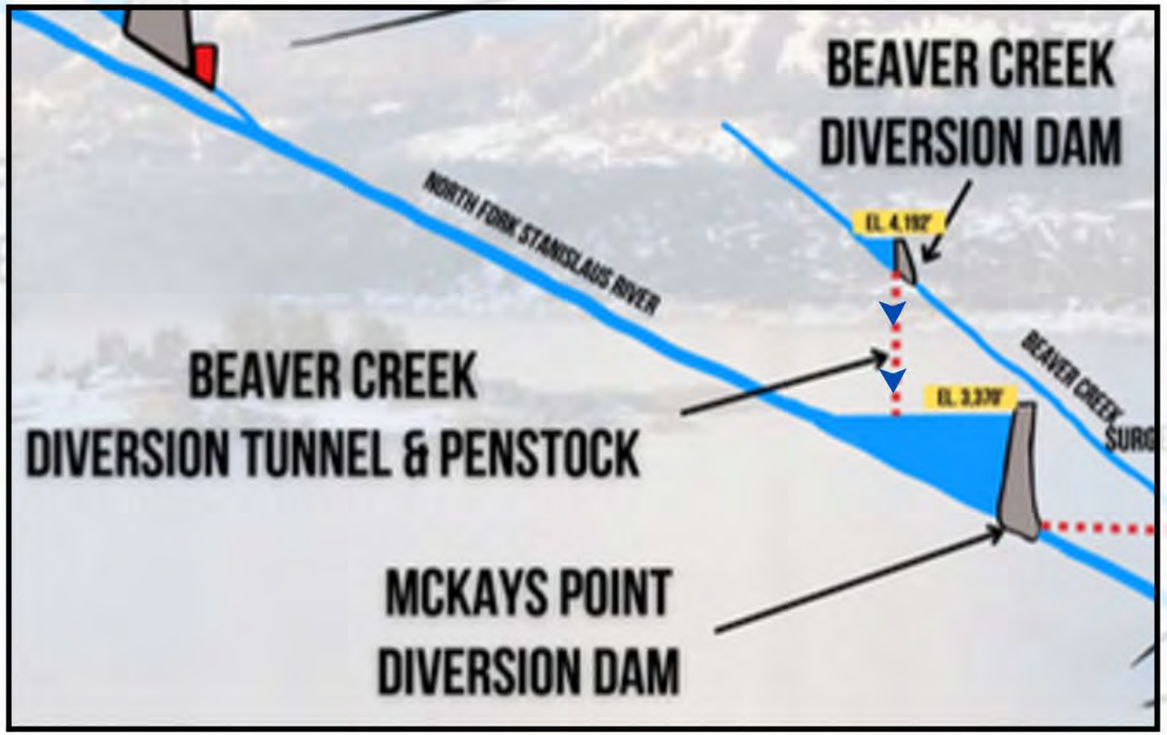

BOAT LAUNCH


FAMILY CAMPGROUND

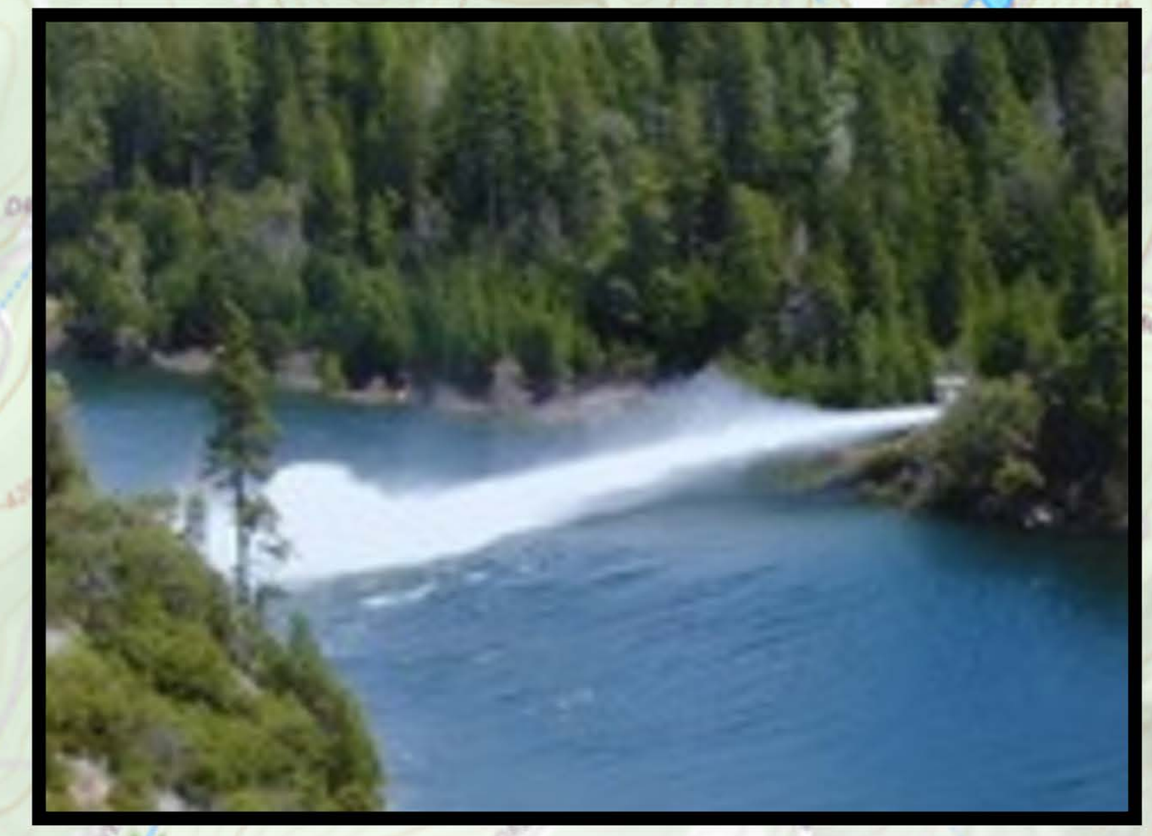

FAMILY CAMPGROUND
GROUP CAMPGROUND

BEAVER CREEK DIVERSION





Operating in a similar fashion as NFDD, Beaver Creek Diversion Dam (BCDD) also diverts water, from Beaver Creek, downstream of Big Trees State Park, and into MPDD during spring runoff and/or during periods of high natural flows.



MCKAYS POINT RESERVOIR

BEAVER CREEK PENSTOCK

BEAVER CREEK DIVERSION

Beaver Creek Diversion Intake, Tunnel, and Penstock is a 2,200-foot-long diversion tunnel and 2,100-foot-long penstock that diverts water from the Beaver Creek Diversion Dam to McKays Point Diversion Dam Impoundment just upstream of the McKays Point Diversion Dam

BEAVER CREEK DIVERSION DAM

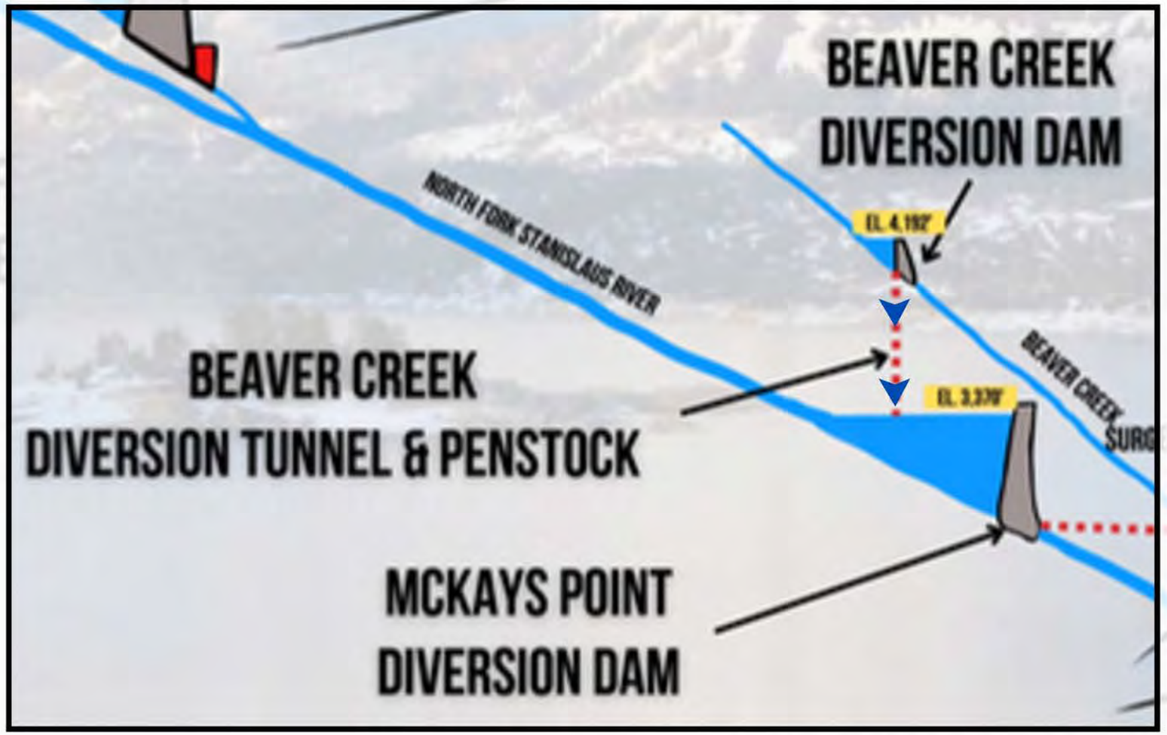
The dam is a 35-foot-high, 167-foot-long concrete gravity dam on Beaver Creek just downstream of Calaveras Big Trees State Park.

The Spillway consists of an ungated, ogee type spillway, 115-foot wide and a 100-foot-long section which discharges directly into Beaver Creek.

Beaver Creek Diversion Dam has an estimated gross storage capacity of 25 acre-feet.

MCKAYS POINT DAM





McKays Point Diversion Dam (MPDD) effectively functions as the forebay for the Collierville Powerhouse, providing limited capacity and providing a mechanism to divert water in excess of downstream regulatory flows into the Collierville Power Tunnel.



MCKAYS POINT DAM

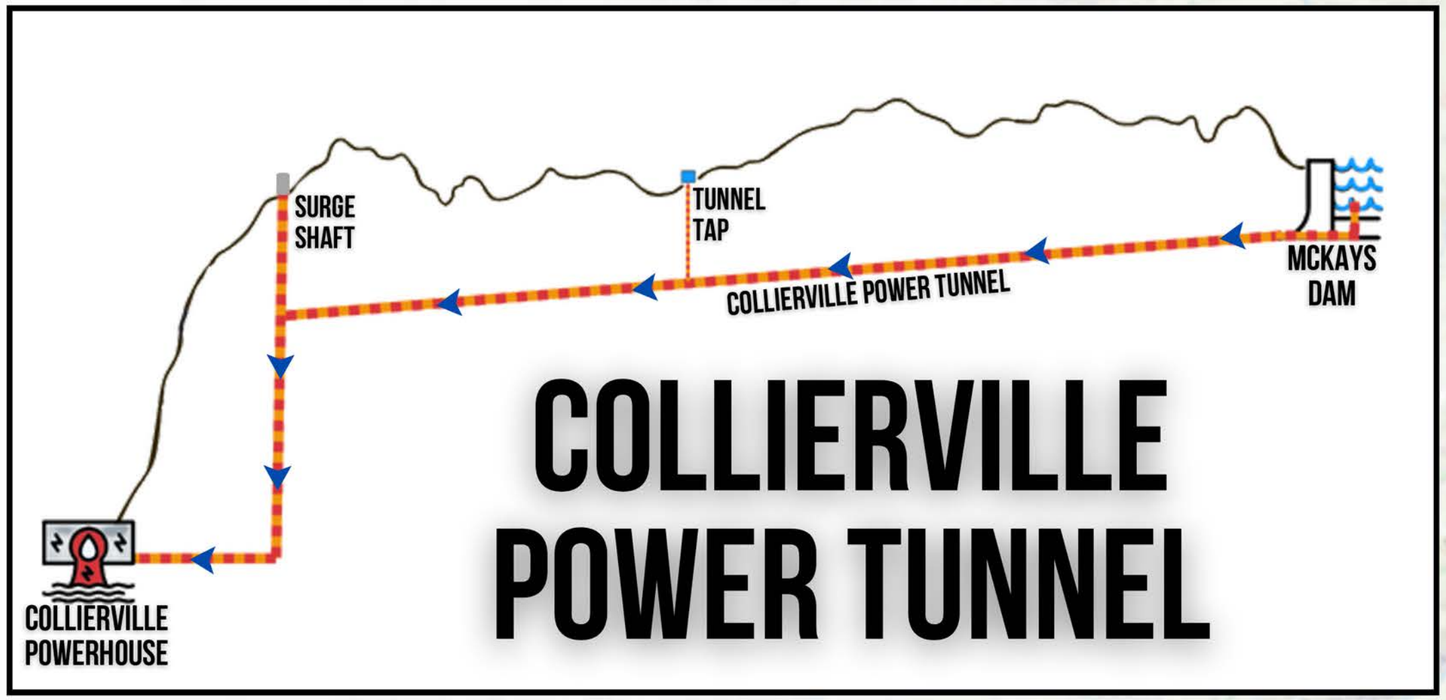
The McKays Point Diversion Dam is a 246-foot-high, double-curvature, thin-arch concrete structure on the North Fork Stanislaus River. It spans 800 feet across the crest, which sits at an elevation of 3,387 feet.

Its spillway is a dual-level, ungated overflow system measuring 160 feet in length, with a crest elevation of 3,370 feet. Two abutment sections add a combined 104 feet, each with a crest elevation of 3,374.5 feet.

McKays Point Reservoir has an estimated gross volume capacity of 2,088 acre-feet.

Collierville Intake and Tunnel is a single 150-foot-high concrete intake structure with a single gate to deliver water into an 18-foot-diameter, 8.5-mile-long tunnel that carries water from the McKays Point Reservoir to the Collierville Powerhouse.





COLLIERVILLE POWER TUNNEL

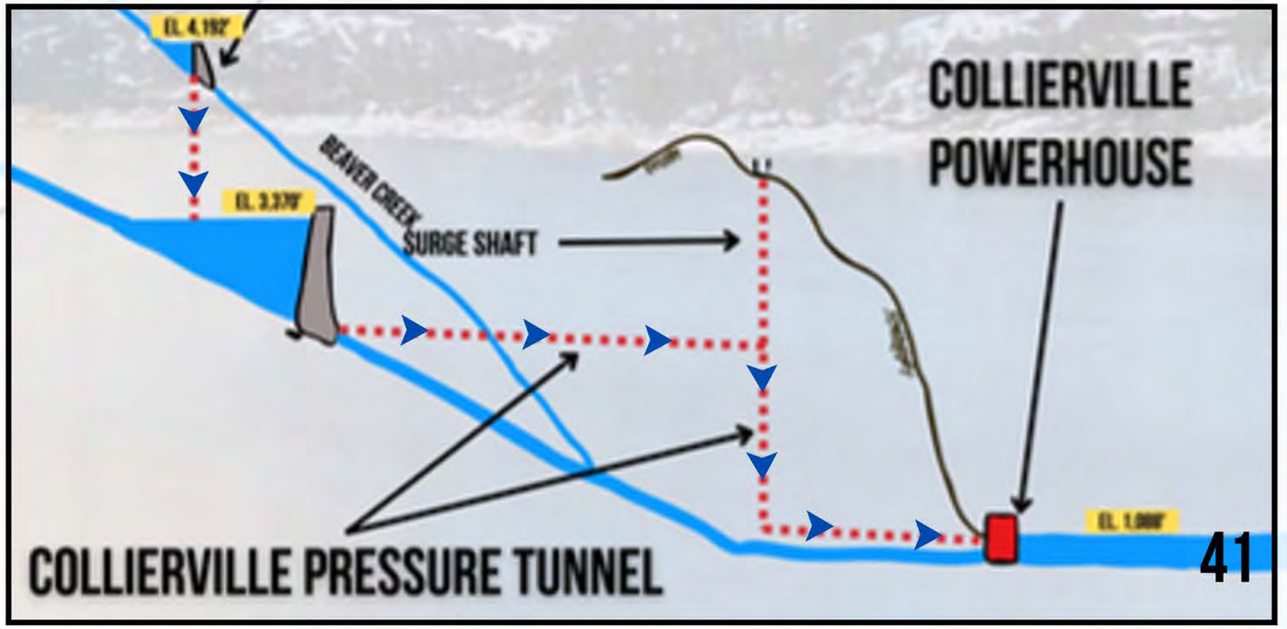
MCKAYS POINT RESERVOIR

COLLIERVILLE POWER TUNNEL

COLLIERVILLE POWERHOUSE

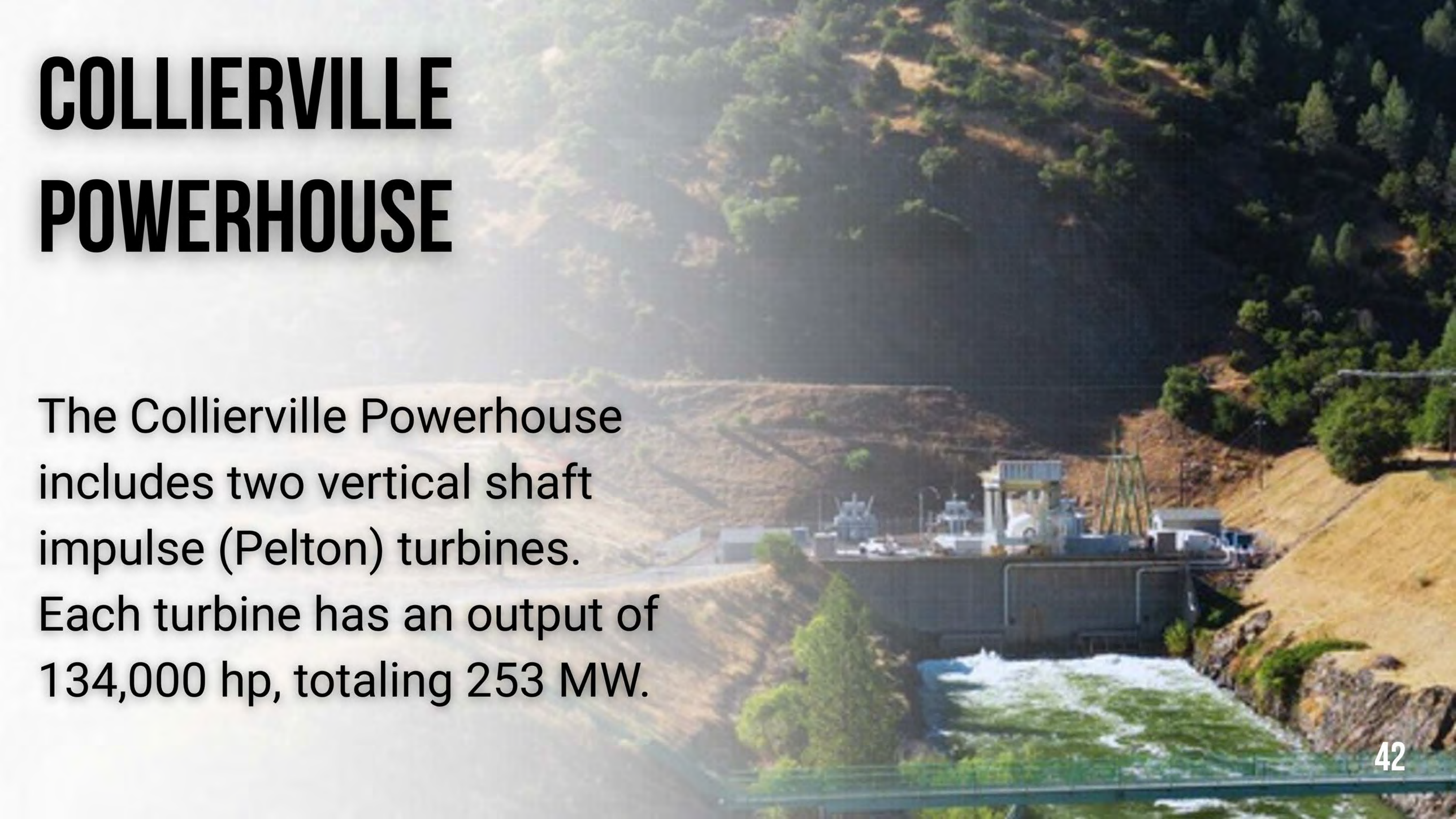


COLLIERVILLE POWERHOUSE



COLLIERVILLE POWERHOUSE

The Collierville Powerhouse includes two vertical shaft impulse (Pelton) turbines. Each turbine has an output of 134,000 hp, totaling 253 MW.



FERC RELICENSING OVERVIEW



WHAT IS FERC'S LICENSING JURISDICTION?

- Pursuant to section 23(b)(1) of the FPA, a non-federal hydroelectric project must be licensed if it falls under at least one of the following mandatory jurisdictional criteria:

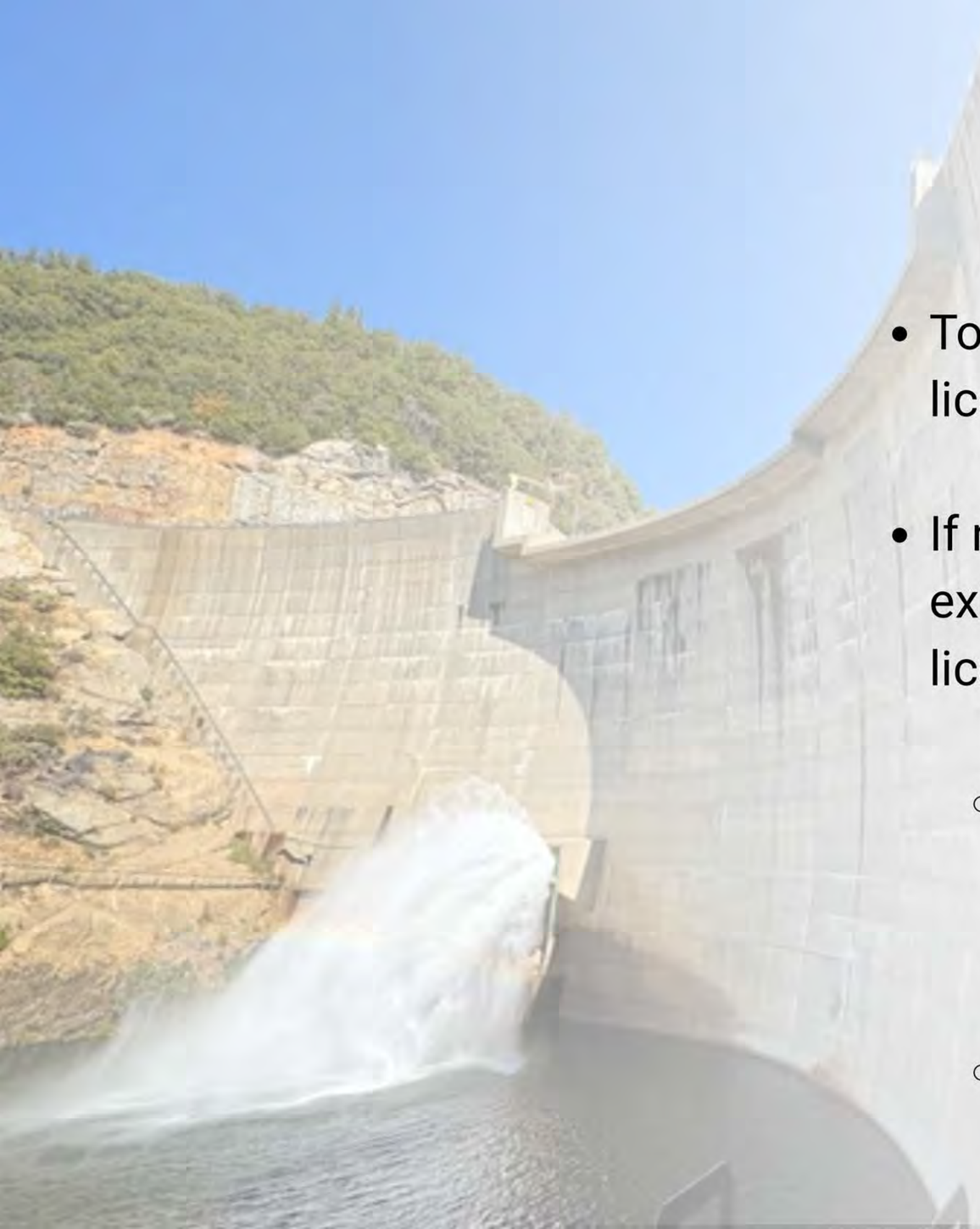
    - Located on a navigable water of the United States;
    - Occupies lands or reservations of the United States;
    - Utilizes surplus water or waterpower from a government dam; or
    - Located on a stream over which Congress has Commerce Clause jurisdiction, is constructed or modified on or after August 26, 1935, and affects the interests of interstate or foreign commerce.



WHAT IS RELICENSING?

- Process by which an applicant obtains a new/subsequent license from FERC.
- Transparent regulatory proceeding through which FERC “re-balances” the power and non-power benefits of the project.
- Term of new license is normally 40 years, but FERC can adjust down to 30 years or up to 50 years.
- Defined through:
  - Federal Power Act and Title 18 of Code of Federal Regulations;
  - Years of legal precedents and FERC Orders/decisions;
  - Various federal statutes and regulations;
  - Evolving regulatory and policy landscape; and
  - Relevant court cases.





WHY RELICENSE?

- To continue operating the project after the existing license term expires.
- If new/subsequent license is not issued by the time existing license term expires, FERC issues annual licenses until new license is issued.
    - Annual licenses are issued as an administrative process and have the same terms and conditions as the existing license.
    - No limit to how many annual licenses can be issued.

HOW LONG DOES RELICENSING TAKE?

- Formal Start: Applicant files with FERC a Notice of Intent to file an application for a new or subsequent license (NOI) and a Pre-Application Document (PAD) 5.5 to 5 years before existing license expires.

- License Application: Applicant must file a final license application at least 2 years before existing license expires.

- Formal End: FERC issues a new license or otherwise resolves the proceeding.



WHO CAN PARTICIPATE IN RELICENSING?

- Federal, state, & local agencies
- Non-governmental organizations (NGO's)
- Local special interest groups & groups from far away
- Landowners (public and private)
- Federally & non-federally recognized Indian tribes & non-tribal Native Americans
- Business interests including farmers & ranchers
- Industries
- Anybody!!!



WHAT RESOURCES ARE ASSESSED?



GEOLOGY, TOPOGRAPHY & SOILS



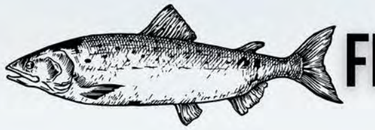
RECREATION & LAND USE



WATER QUALITY & QUANTITY



RARE, THREATENED & ENDANGERED SPECIES



FISH & AQUATIC



AESTHETICS & VISUAL



WILDLIFE & BOTANICAL



CULTURAL & TRIBAL



FLOODPLAINS, WETLANDS & RIPARIAN



SOCIOECONOMICS

MAJOR DOCUMENTS PREPARED BY APPLICANT DURING RELICENSING

- **Notice of Intent:** Required information, formal intent to relicense.

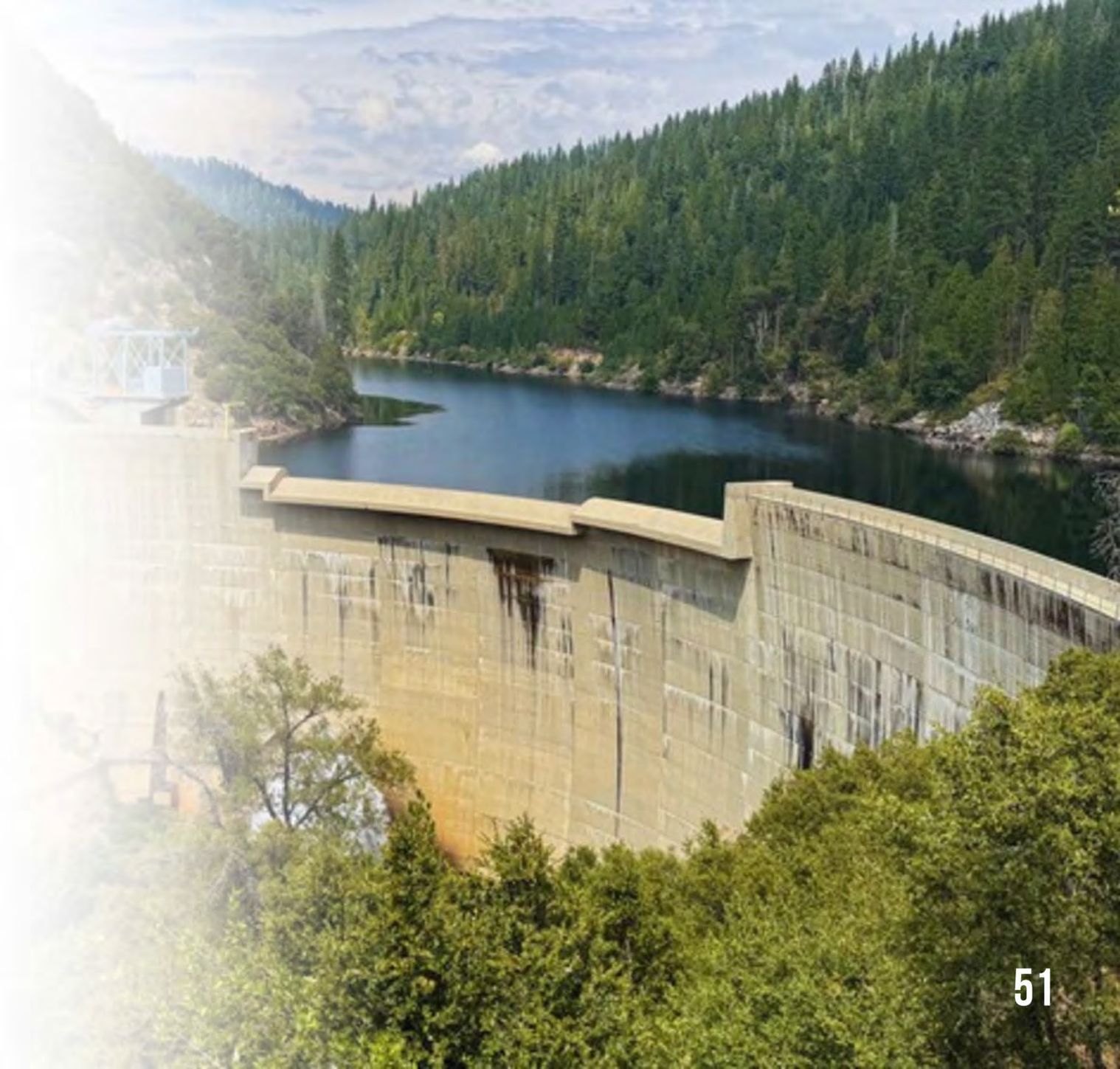
- **Pre-Application Document:** Summary of existing, relevant, and reasonably available information, and issues to be addressed in relicensing. Identifies data gaps and Applicant's proposed studies to close data gaps.

- **Draft License Application:** Draft of License Application including environmental impacts and Applicant's proposed protection, mitigation, and enhancement (PM&E) conditions.

- **Final License Application:** Final License Application including updates from DLA comments.

- Others, as appropriate.

P-2409 MAJOR MILESTONES & NEXT STEPS



KEY RELICENSING MILESTONES

- **July 31, 2026.** Earliest date CCWD can file the NOI and PAD (5.5 years before existing license expires).
- **January 31, 2027.** Latest date CCWD can file the NOI and PAD (5 years before existing license expires).
- **2027/2028.** Assumed study years and develop PM&E conditions.
- **~ Fall 2029.** Provide Draft License Application to agencies and tribes for 90-day review and comment period.
- **January 31, 2030.** Latest date CCWD can file the Final License Application (2 years before existing license expires).
- **January 31, 2032.** Existing P-2409 licenses expires.



REQUEST FOR INFORMATION

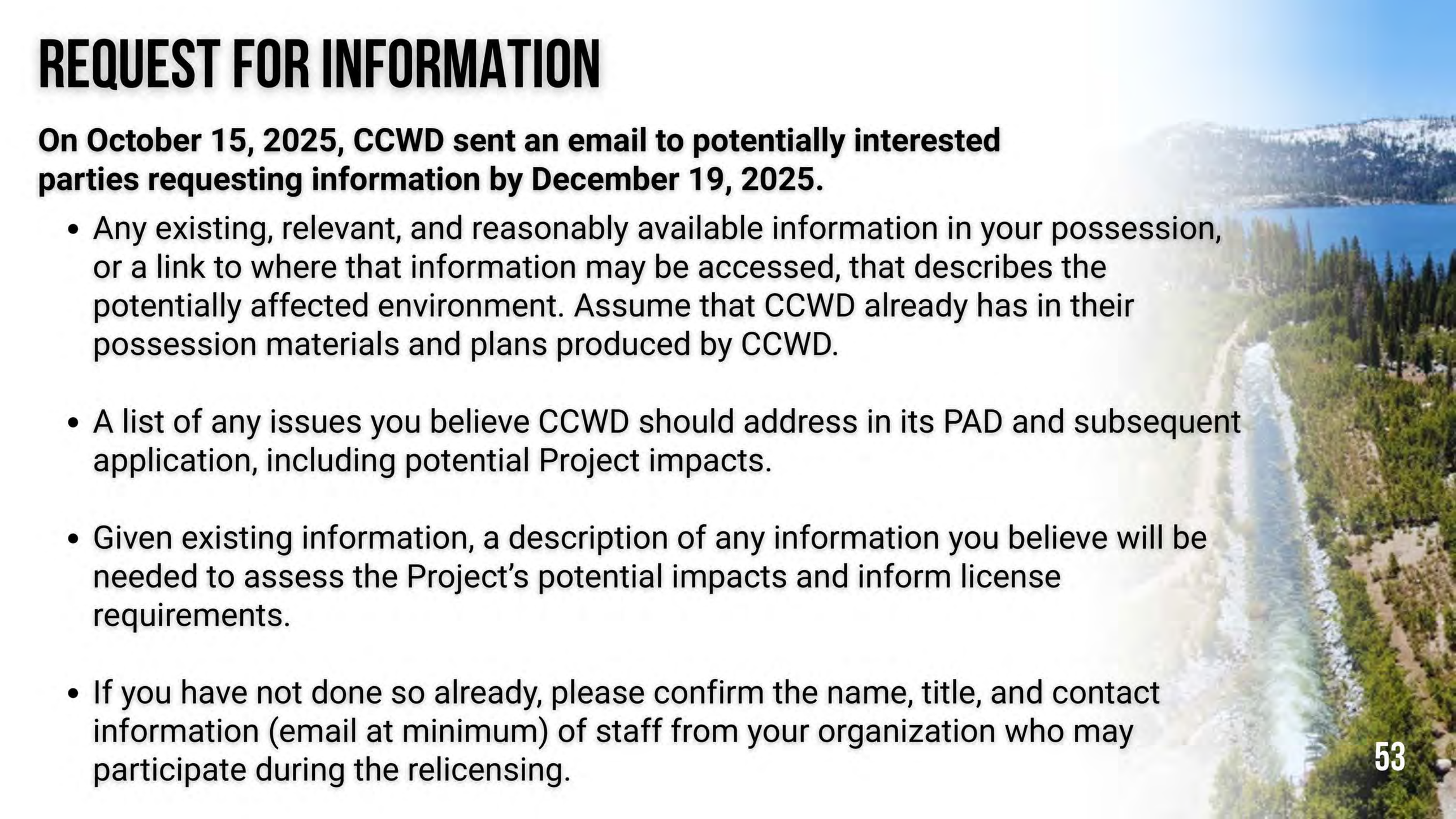
On October 15, 2025, CCWD sent an email to potentially interested parties requesting information by December 19, 2025.

- 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 CCWD already has in their possession materials and plans produced by CCWD.

- A list of any issues you believe CCWD should address in its PAD and subsequent application, including potential Project impacts.

- Given existing information, a description of any information you believe will be needed to assess the Project's potential impacts and inform license requirements.

- If you have not done so already, please confirm the name, title, and contact information (email at minimum) of staff from your organization who may participate during the relicensing.



EMAIL:

P2409Relicense@ccwd.org

Website:

WWW.CCWD.ORG/P-2409-RELICENSE



QUESTIONS



NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT
FERC NO. 2409

OCTOBER 29, 2025

Calaveras County Water District
North Fork Stanislaus River Hydroelectric Project
(FERC Project No. 2409)

Relicensing Meeting #1
Kick-Off
Wednesday, October 29, 2025 – 10:00 AM – 12:00PM
CCWD Offices and Virtual

Name	Title	Affiliation	Email
✓ Chuck Ventucci	Relicensing PM	HDR	cventucci@hdrinc.com
✓ TERRY WOODROW	ALPINE County Supervisor	ALPINE County	twoodrow@alpinecountyca.gov
✓ DAVE RIVERS	Interim General Manager	UWPA	gm@utica water.com
✓ Nicolas Potter	CDSE	NCPA	nicolas.potter@ncpa.com
✓ Stan Dodson	Program Director	CSERC	stan@cserc.org
✓ Chelsea Lewandowski	Conservation Director	CSERC	chelsea@cserc.org
✓ John Buckley	Ex. Director	CSERC	johnb@cserc.org
✓ Jessica Self	General Manager	VPUD	jself@vpudwater.org
✓ Jack Govoni	CCWD Director	CCWD	

Name	Title	Affiliation	Email
Jeff Roberson	CCWD Director	CCWD	
Steve Feit	Consultant		
Ty Childress	Advisor to the	Restoring the Stanislaus River	tychildress01@gmail.com
Jane Henning Childress	Advisor	Restoring the Stanislaus	janehenningchildress@gmail.com
Jake Eymann	NCPA Hydro Manager	NCPA	Jake.Eymann@ncpa.com
Michael DeBortoli	Assistant General Manager	NCPA	michael.debortoli@ncpa.com
Michael Minkler	General Manager	CCWD	michaelm@ccwd.org
Kelly GerkensMeyer	External Affairs	CCWD	Kellyg@ccwd.org
Andrew Renshaw	Water Resources	CCWD	andrewr@ccwd.org
Jim Lynch	FERC Advisor	HDR	jim.lynch@hdrinc.com
Randy Bowersox	Hydropower Advisor	GFT	rbowersox@gfnet.com

P-2409 Relicensing Kick Off Meeting
10/29/2025
Virtual Participants

Name	Affiliation	Email
Noah Triplett	BLM	ntriplett@blm.gov
Myrna Girald Perez	BOR	mgiraldperez@usbr.gov
Richard Sanchez	BOR	rsanchez@usbr.gov
Martin Huberty	Calaveras County	mhuberty@co.calaveras.ca.us
Trina Walley	Calaveras County Resource Conservation Distri	twalley@calaverasrcd.org
Lelslie Call	CDFW	Leslie.Call@Wildlife.ca.gov
Ben Ewing	CDFW	Ben.Ewing@wildlife.ca.gov
Beth Lawson	CDFW	beth.lawson@wildlife.ca.gov
Abimeal Leon	CDFW	abimael.leon@wildlife.ca.gov
Angie Montalvo	CDFW	Angie.Montalvo@wildlife.ca.gov
Lauren Milloy	CDFW	Lauren.Mulloy@wildlife.ca.gov
Steve Williams	City of Angels Camp	stevewilliams@angelscamp.gov
Tom Hofstra	CSERC	tomh@cserc.org
Chris Shutes	CSPA	cshutes@calsport.org
Eric Woodruff	CSPA	ewoodruff@calsport.org
Jan Dorman	FOR	janndorman@friendsoftheriver.org
Kieko Mertz	FOR	keiko@friendsoftheriver.org
Dawn Alverez	Forest Service	Dawn.Alvarez@usda.gov
Allison Stevenot	Forest Service	allison.stevenot@usda.gov
Jay Lloyd	HDR	John.Lloyd@hdrinc.com
Randy Howard	NCPA	randy.howard@ncpa.com
Ben Lloyd	PG&E	BALU@pge.com
Jay Francis	SPI	JFrancis@spi-ind.com
Russ Liebig	Stillwater	russ@stillwatersci.com
Rajaa Hassan	SWRCB	rajaa.hassan@waterboards.ca.gov
Summer Nicotero	Tri-Dam	snicotero@tridamproject.com
Frank Fields	UWPA	frankf@uticawater.com
Joself Polk	UWPA (legal)	jpolk@calwaterlaw.com
David Cameron	UWPA (legal)	david.cameron@aalrr.com
William Enos	Washoe Tribe of Nevada and California	William.Enos@washoetribe.us

P2409 Relicense

Subject:	P-2409 Relicensing Meeting #2 - Pre-PAD Study Plan Development Process
Location:	Calaveras County Water District; Boardroom
Start:	Thu 02/19/2026 1:00 PM
End:	Thu 02/19/2026 3:00 PM
Show As:	Busy
Meeting Status:	Organizer
Organizer:	P2409 Relicense
Required Attendees:	Michael Minkler; Kelly Gerkensmeyer; Andrew Renshaw; jim.lynch@hdrinc.com; russ@stillwatersci.com; rbowersox@gftinc.com; Vertucci, Charles; snicotero@tridamproject.com; Jake Eymann; Benjamin Guy; frankf@uticawater.com; Ewing, Ben@Wildlife; jself@upudwater.org; monica.gutierrez@noaa.gov; Triplett, Noah R; Shawn.Puzen@meadhunt.com; Beth.Lawson@wildlife.ca.gov; Maher, Michael@Wildlife; keiko@friendsoftheriver.org; rstork@friendsoftheriver.org; Jann Dorman; blancapaloma@msn.com; tomh@cserc.org; chelsea@cserc.org; Stan Dodson; John Buckley; Matt McKechnie; Benjamin.Onanian@hdrinc.com; stevefelte@gmail.com; Sophia.Weinmann@Wildlife.ca.gov; Steve Williams; jereme@ionemiwok.net; Hassan, Rajaa@Waterboards; Truc.Le@Waterboards.ca.gov; jose.l.hernandez@usda.gov; Raymond.Cablayan@usda.gov; Aguirre orozco, Victor - FS, CA; allison.stevenot@usda.gov; Adam Lewis; scott@aorafting.com; rmasuda@calwaterlaw.com
Optional Attendees:	Risse, Danielle; CCWD Boardroom; Jeff Venturino

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
PRE-PAD STUDY PLAN DEVELOPMENT PROCESS AND INVITATION TO FIRST MEETING

Calaveras County Water District (CCWD) is preparing to relicense its North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409 (Project). The Project has a current license from the Federal Energy Regulatory Commission (FERC) that expires on January 31, 2032. One of the first steps in relicensing is for CCWD to prepare a Pre-Application Document (PAD). The PAD helps to identify potential issues and information needs. Prior to issuance of the PAD, CCWD intends to meet with interested parties to develop studies needed for relicensing.

CCWD plans to hold an initial pre-PAD study planning process meeting from **1PM – 3PM on February 19, 2026**, at CCWD's office at 120 Toma Court, San Andreas, CA 95249 as well as virtual participation via Microsoft Teams. The meeting will include a description of CCWD's proposed pre-PAD study plan development process and discussion of CCWD's preliminary list of studies (the preliminary list will be provided approximately one week prior to the meeting). CCWD requests that participants review the preliminary list of studies and bring initial comments to the meeting. Specific study methodologies will be discussed in subsequent meetings.

Microsoft Teams meeting

Join: https://teams.microsoft.com/meet/29303497092383?p=gMox7Qzd18O0uV3c4z

Meeting ID: 293 034 970 923 83

Passcode: Yp9Cw7Rf

Need help? | System reference

North Fork Stanislaus River Hydroelectric Project (P-2409)

2nd Relicensing Stakeholders Meeting

- Discuss Process for Development of Study Descriptions –

February 19, 2026

Agenda

- Introductions
- CCWD's Pre-PAD Study Development Goals
- CCWD's Pre-PAD Study Development Process
- CCWD's Draft Preliminary List of Studies
- Schedule Resource-Specific Meetings
- Review Action Items

Welcome and Introductions

- CCWD and Consultant Staff
  - **Michael Minkler**, CCWD General Manager
  - **Kelly Gerkensmeyer**, CCWD External Affairs Manager
  - **Andrew Renshaw**, CCWD Water Resources Manager
  - **Jim Lynch**, HDR Senior FERC Regulatory Specialist
  - **Randy Bowersox**, GFT Senior Hydropower Operations Specialist
  - **Ben Onanian**, HDR FERC Regulatory Specialist
  - **Danielle Risse**, HDR Senior Cultural Resources Specialist
  - **Matt McKechnie**, Stillwater Sciences Fisheries Biologist
- Participating Agencies, Native American Tribes, NGOs, and Others – Name, Organization, and Role

CCWD's Pre-PAD Study Development Goals

- Reach agreement with as many Interested Parties as possible on as many Study Descriptions as possible by July 2026, and include those Study Descriptions in the PAD

CCWD's Pre-PAD Study Development Process (1 of 2)

- Review CCWD's Draft Preliminary List of Studies (previously provided to Interested Parties) and get feedback from Interested Parties. Agree on which Study Descriptions CCWD will prepare for future meetings. Schedule up to three future resource-specific meetings (today's meeting).
- CCWD develops initial Study Descriptions and provide those to Interested Parties for review and comment approximately 2 weeks prior to the appropriate resource-specific study meeting.
- Interested Parties provide comments on the draft Study Descriptions back to CCWD approximately 1 week prior to the study meeting.
- Hold meetings based on general resource topic to review comments on Study Descriptions including: 1) water and aquatic, 2) terrestrial, 3) recreation and land use, and 4) cultural and tribal.

CCWD's Pre-PAD Study Development Process (2 of 2)

- At each resource-specific study meeting:
  - Discussions will focus on addressing comments and proposed edits on Study Description from Interested Parties that CCWD needs clarification on or proposes changes with the goal to try to reach agreement.
  - Comments received from Interested Parties that CCWD agrees with will be incorporated prior to the meeting.
- After each meeting, CCWD will provide agreed upon Study Descriptions to Interested Parties.
- If there are items with some studies where agreement is close, CCWD may schedule additional discussions to attempt to resolve differences.
- Final versions of agreed upon Study Descriptions will be included in the PAD.

CCWD's Draft Preliminary List of Studies

- CCWD prepared its Draft Preliminary List of Studies based on its knowledge of the Project, potentially affected resources, and replies to CCWD's Request for Information.
  - Some studies (e.g., wildlife drownings in Project water conduits, Ops Model, unimpaired hydrologic timeseries, climate change) are not included in CCWD's Draft Preliminary List of Studies.
- Open CCWD's Draft Preliminary List of Studies and review.

Schedule Resource-Specific Meetings (1 of 3)

- Schedule Terrestrial Resource-Specific Meetings (Virtual)
  - Option 1: April 13
  - Option 2: April 16
  - Option 3: April 20

Schedule Resource-Specific Meetings (2 of 3)

- Schedule Land Use, Aesthetics, Recreation Resource-Specific Meetings (Virtual)
  - Option 1: May 11
  - Option 2: May 12
  - Option 3: May 21

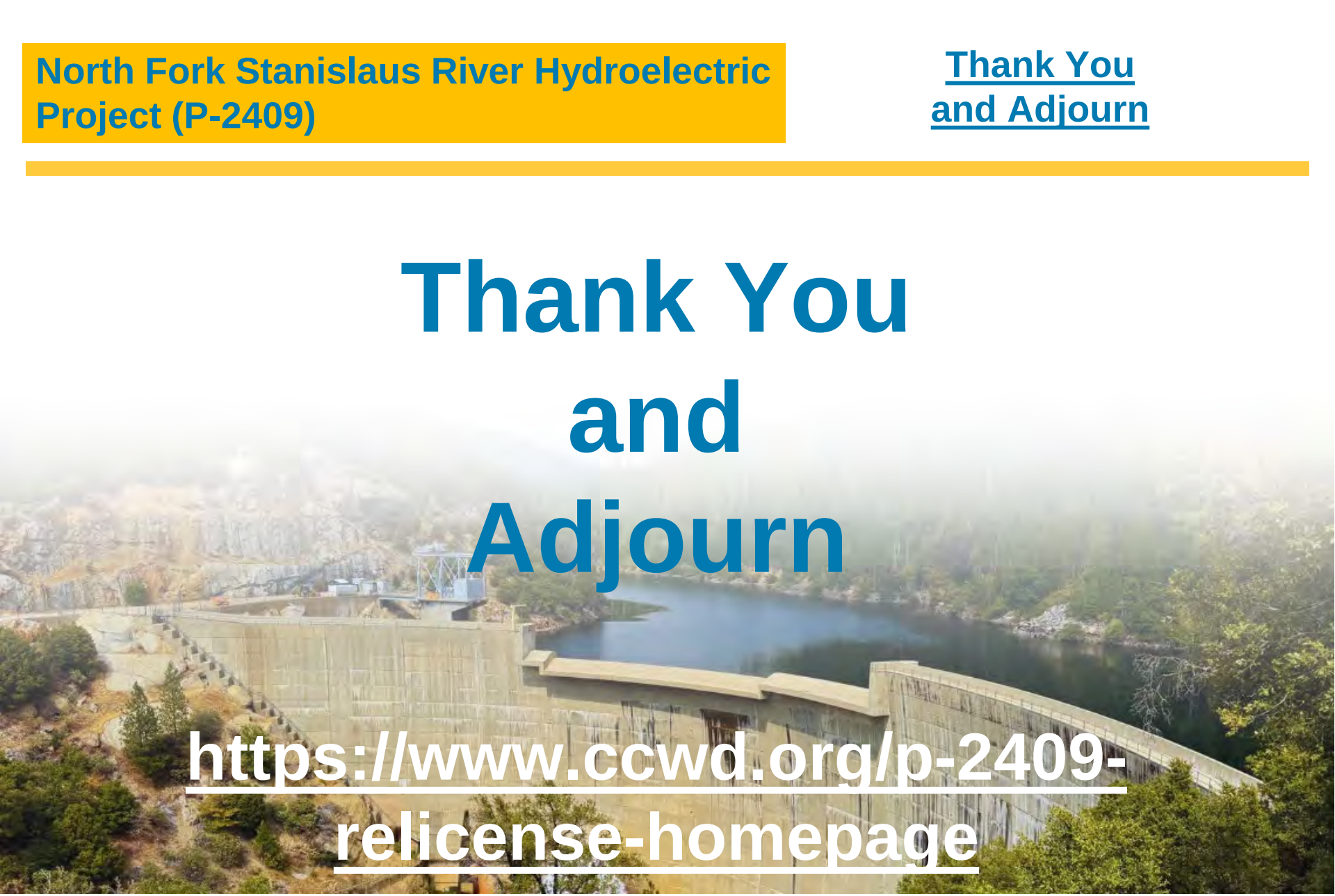
Schedule Resource-Specific Meetings (3 of 3)

- Schedule Water and Aquatic Resource-Specific Meetings (Virtual)
  - Option 1: June 1
  - Option 2: June 2
  - Option 3: June 4

[Cultural lead will organize Cultural and Tribal resources discussions]

- Review Action Items

Thank You and Adjourn



https://www.ccwd.org/p-2409-relicense-homepage

Calaveras County Water District
North Fork Stanislaus River Hydroelectric Project, P-2409
List of Preliminary Studies

This list includes CCWD's preliminary draft list of studies it feels may be needed to fill data gaps related to the relicensing of its North Fork Stanislaus River Hydroelectric Project (P-2409). As CCWD consults with Interested Parties and continues development of its Pre-Application Document (PAD), CCWD may identify additional data gaps that require additional studies or that existing information is adequate to address an issue below and the study is not needed.

	Study
WATER RESOURCES	
WR-1	Water quality sampling in the Project-affected reaches, in New Spicer Meadow and McKays reservoirs, and near Project recreation facilities
WR-2	Water temperature model of Project-affected reaches and in New Spicer Meadow Reservoir
AQUATIC RESOURCES	
AR-1	Fish sampling in New Spicer Meadow Reservoir
AR-2	Fish sampling in Project-affected reaches
AR-3	Benthic macroinvertebrate sampling in Project-affected reaches
AR-4	Assessment of potential for fish entrainment at New Spicer Meadow and McKays intakes (desktop)
AR-5	Instream flow study of New Spicer Meadow (Highland Creek and NFSR) and McKays Dam reaches
AR-6	eDNA sampling and incidental observations of ESA-listed and special status amphibians in Project-affected reaches and impoundments
AR-7	ESA-listed species (SNYLF and FYLF) visual encounter surveys in Project-affected reaches
TERRESTRIAL RESOURCES	
TR-1	Vegetation mapping (Desktop using CalVeg) and botanical surveys, including non-native invasive species, special status plants, and ESA-listed plants in areas disturbed by the Project (Protocol level)
TR-2	Bald eagle surveys at New Spicer Meadow Reservoir (Protocol level)
TR-3	ESA-listed and special status wildlife habitat assessment in areas disturbed by the Project (Desktop using CWHR)
RECREATION, AESTHETICS, AND LAND USE	
LU-1	Primary Project roads and trails assessment
RR-1	Recreation user assessment and demand at New Spicer Meadow Reservoir recreation facilities
RR-2	Assess effects on Big Trees whitewater boating run (Sourgrass to Big Trees State Park)
RR-3	Assess effects on swimming and wading at Big Trees State Park
RR-4	Assess visual and aesthetic resources related to Project facilities
CULTURAL AND TRIBAL	
CR-1	Archeological and historic sites inventory to support Section 106
CR-2	Traditional cultural sites and tribal consultation to support Section 106
Total = 19	

Stan D. - Climate Change Model (Hydrology/Snowpack)
Unimpaired Flow

Ops Model to be included in PAD
Hourly time step - OASIS

Chriss. - Concern w/ availibility of model and use of OASIS

USFS - Reservoir bathy/sediment study

Studies
WR-1 - Agreement
WR-2 - Agreement
AR-1 - Agreement
AR-2 - Agreement
AR-3 - " "
AR-4 - " " - consider other reaches
AR-5 - " " - includes WPT
AR-6 - " " - request for Westernpond turtle
AR-7 - " "

CDFW - AIS/Geomorp/Riparian Studies?
Stan - Can Riparian Study address Sediment Transport

2/19/26

TR-1 - Agreement
TR-2 - " "
TR-3 - " "
- USFS - Disturbed vs Effected
Disturbed - Project OM
Concern w/ terminology
LU-1 - " "
RR-1 - " "
RR-2 - " "
Jeff - Other whitewater boating reaches?
- include other reaches potentially effected
- Sourgrass to Mckays - reach
RR-3 - " " - effects on Fishing (Chris)
Stan - Will include Beaver Crk ~~up~~ upstream of Project
USFS - ~~ABA~~ compliance? Included in Study
ABA "Architecual Barrier Act"
RR-4 - " "

Stan - Active grazing allotments upstream WQ impacts

CR-1 -
CR-2 -

2/19/26

Terrestrial Meeting

- Tentative - 4/13
  - 16th Fallback date
- CDFW / USFS to confirm by mid-next week (2/25)
  - HDR to send out email

Rec Meeting

- Tentative - 11th (Fallback 12th)
  - USFS to confirm by 2/25

Aquatics Meeting

- All 3 work for State Water Board
- Chris - 2nd
- FS - 2nd CDFW
- 6/2 - confirmed

* All meetings to be Hybrid
  - Teams meeting invites

HDR to provide presentation / Notes / meeting dates

February 19, 2026 Relicensing Meeting #2 Attendee List

Name	Organization
Scott Armstrong	All-Outdoors Whitewater
Jeff Venturino	American Whitewater
Vanessa Armenta	Calaveras Band of Me-Wuk Indians
Andrew Renshaw	CCWD
Michael Minkler	CCWD
Michael Maher	CDFW
Sophia Weinmann	CDFW
Beth Lawson	CDFW
Stan Dodson	CSERC
Chelsea Lewandowski	CSERC
Chris Shutes	CSPA
Spencer Nicholas	Friends of the River
Randy Bowersox	GFT
Jim Lynch	HDR
Ben Onanian	HDR
Daneille Risse	HDR
Shawn Puzen	Mead & Hunt
Jake Eymann	NCPA
Ben Guy	NCPA
Matt McKechnie	Stillwater Sciences
Truc Le	SWRCB
Rajaa Hassan	SWRCB
Jessica Self	Union PUD
Victor Aguirre Orozco	USFS
Frank Fields	UWPA
Erik Holt	UWPA
Josef Polk	Griffith, Masuda & Hobbs

P2409 Relicense

Subject:	P-2409 Relicensing Meeting #3 - Terrestrial Resources Study Discussion
Location:	Calaveras County Water District
Start:	Mon 04/13/2026 12:00 PM
End:	Mon 04/13/2026 3:00 PM
Show As:	Busy
Meeting Status:	Organizer
Organizer:	P2409 Relicense
Required Attendees:	Michael Minkler; Kelly Gerkensmeyer; Andrew Renshaw; jim.lynch@hdrinc.com; rbowersox@gftinc.com; Vertucci, Charles; snicotero@tridamproject.com; Jake Eymann; Benjamin Guy; frankf@uticawater.com; Ewing, Ben@Wildlife; jself@upudwater.org; monica.gutierrez@noaa.gov; Triplett, Noah R; Shawn.Puzen@meadhunt.com; Beth.Lawson@wildlife.ca.gov; Maher, Michael@Wildlife; keiko@friendsoftheriver.org; rstork@friendsoftheriver.org; Jann Dorman; blancapaloma@msn.com; tomh@cserc.org; chelsea@cserc.org; Stan Dodson; John Buckley; Matt McKechnie; Benjamin.Onanian@hdrinc.com; stevefelte@gmail.com; Sophia.Weinmann@Wildlife.ca.gov; Steve Williams; jereme@ionemiwok.net; Hassan, Rajaa@Waterboards; Truc.Le@Waterboards.ca.gov; jose.l.hernandez@usda.gov; Raymond.Cablayan@usda.gov; Aguirre orozco, Victor - FS, CA; allison.stevenot@usda.gov; scott@aorafting.com; rmasuda@calwaterlaw.com; Newburger, Todd - FS, CA; jpolk@calwaterlaw.com; Adam Lewis; Sara.Holm@wildlife.ca.gov; Helayna.Pera@wildlife.ca.gov
Optional Attendees:	ewoodruff@calsport.org; Estenson, Lauren; CCWD Boardroom

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
TERRESTRIAL RESOURCES STUDY DISCUSSION

This meeting will review comments received on CCWD's proposed studies related to terrestrial resources including:

TR-1 Botanical Resources Study including vegetation mapping and protocol surveys for special-status species and non-native invasive plants

TR-2 Bald eagle surveys at New Spicer Meadow Reservoir (Protocol level)

TR-3 ESA-listed and special status wildlife habitat assessment in areas disturbed by the Project (Desktop using CWHR from ground-truthed vegetation maps)

CCWD will make drafts of each study description available to meeting attendees approximately two weeks prior to the meeting and ask that comments be returned to CCWD approximately one week prior to the meeting. CCWD will review comments received prior to the meeting and be prepared to discuss them.

Microsoft Teams meeting

Join: https://teams.microsoft.com/meet/244738558064 84?p=uezO1Efy3CvfsR4Muz

Meeting ID: 244 738 558 064 84

Passcode: Y6XC989e

Need help? | System reference

North Fork Stanislaus River Hydroelectric Project (P-2409)

3rd Relicensing Stakeholders Meeting

- Terrestrial Resources Study Descriptions –

April 13, 2026

Agenda

- Welcome & Introductions
- Meeting Goal and Process
- Discuss and Attempt to Finalize Terrestrial Study Descriptions
- Review Schedule for Upcoming Meetings
- Review Action Items
- Adjourn

Welcome and Introductions

- CCWD and Consultant Staff
  - **Michael Minkler** (CCWD) General Manager
  - **Kelly Gerkensmeyer** (CCWD) External Affairs Manager
  - **Andrew Renshaw** (CCWD) Water Resources Manager
  - **Jim Lynch** (HDR) Senior FERC Regulatory Specialist
  - **Ben Onanian** (HDR) FERC Regulatory Specialist
  - **Randy Bowersox** (GFT) Senior Hydropower Operations Specialist
- Participating Agencies, Native American Tribes, NGOs, and Others

Meeting Goal and Process

- Goal: Develop the best possible study descriptions through meaningful engagement with interested parties
- Process:
  - Review and discuss comments received by CCWD prior to the meeting on each study description distributed by CCWD on April 1, 2026
  - Discuss any other comments on each study description
  - Assess whether there is agreement on each study description and, if not identify remaining differences

Concepts Applicable to All Study Descriptions

- Concepts and Practices Applicable to All Relicensing Studies
  - Open Word version of April 1, 2026, draft

- Botanical Resources Study including Vegetation Mapping and Protocol Surveys for Special-Status Species and Non-Native Invasive Plants
  - Open Word version of April 1, 2026, draft

- Protocol-level Surveys for Bald Eagle
  - Open Word version of April 1, 2026, draft

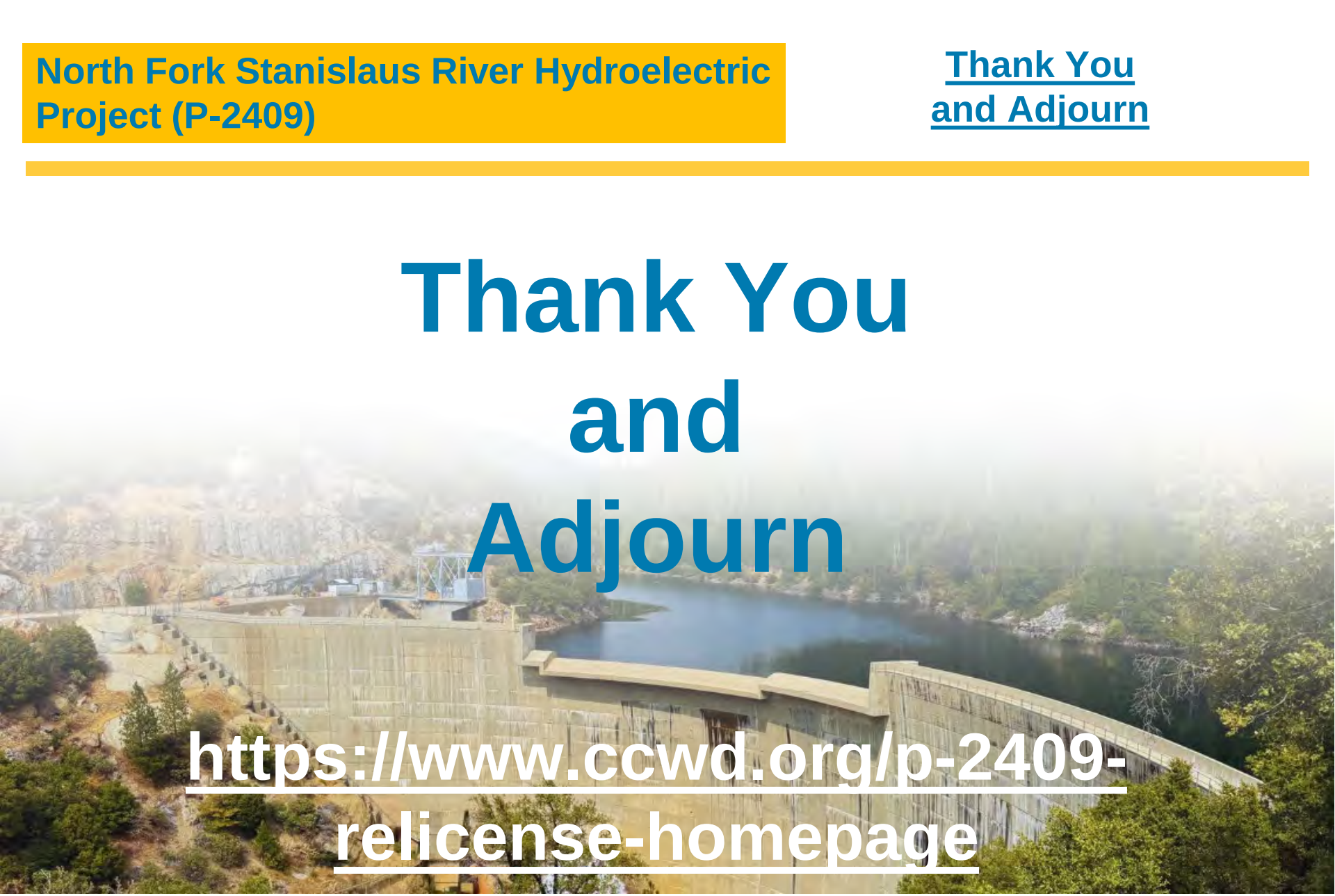
- Special-Status Terrestrial Wildlife Study
  - Open Word version of April 1, 2026, draft

Schedule for Upcoming Meetings

- Upcoming Study Description Meetings
  - May 11, 2026 (1:00 PM) - Land Use and Recreation Resources
  - June 2, 2026 (noon) - Water and Aquatic Resources
- Process:
  - CCWD will distribute applicable draft study descriptions 2 weeks prior to each meeting
  - Interested parties will target providing CCWD red-lined study descriptions 1 week prior to the meeting
  - At each meeting, we will follow the same process we followed for Terrestrial Resources study descriptions

- Review Action Items

Thank You and Adjourn



https://www.ccwd.org/p-2409-relicense-homepage

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P-2409 Calaveras County Water District – Terrestrial Resources Study Discussion Sign-in Sheet

Name & Title	Representing	Email
Jim Lynch	CCWD	jim.lynch@hdrinc.com
Ben Oranian	CCWD/HDR	benjamin.oranian@hdrinc.com
Ben Guy	NCPA	benjamin.guy@ncpa.com
Randy Bowersox	CCWD/GFT	rbowersox@gftinc.com
Stan Dodson	CSTRC	stan@csrc.org
John Buckley	CSERC	johnb@cserc.org
Crispin Holland	USFS	crispin.holland@USDA.gov
Michael Minkler	CCWD	
Todd Newburger	USFS	Todd.Newburger@usda.g

P-2409 Calaveras County Water District – Terrestrial Resources Study Discussion Sign-in Sheet

Name & Title	Representing	Email
Victor Aguirre Orozco	USFS	Virtual
Anna Bonnette	USFS	online
Noah Triplett	BLM	online
Lauren Estenson	USFWS	online
Michael Maher	CDFW	online
Sara Holm	CDFW	online
Truc Le	SWRCB	online
Tom Hofstra	CSERC	online
Eric Woodruff	CSFPA	online
Keiko Mertz	Friends of the River	online

Name & Title	Representing	Email & Phone
Shawn Puzen	Mead and Hunt	online
Jake Eymann	NCPA	online
Josef Polk	UWPA Council	Online

Pg 1

Terrestrial Resources (TR1, TR2, TR3)

CSERC - Held off on redline comments due to not having a complete understanding of Project Ops. and Facility locations
- Hard to determine potential impacts to species

CDFW (Michael M.) - Have comment on Deer herds

USFS - requests 2 weeks for review * 4/14

USFS - General description comments to be shared after meeting (4/17

** HDR to number these
- Bullet *5 - clarification request
  - Answer - Project vs. cummulative
- Incidental observations - request more detail
  - Field staff not experts in every resource
- Buffer around Project Features - for Botanical Surveys
- non-Project Facilities in FERC Boundary not studied

Anna (USFS) - Follow USFS protocols specifically for Botany

CSERC - Cummulative impacts will be addressed at appropriate time
- Follow FERC NEPA guidlines

TR-1

USFS - use NNIP

- Buffer - where 20/50 Ft. came from? Use in other Projects
  - Anna. - Good with 50 Ft. buffer
- use special-status Botanical species
- Anna - Track any species with "Rare" status

USFWS (Lauren E.) - Include plants that can be used by SS species - milkweed

USFS - complete = covering 100% of Project Area
controlled = Targeted Approach

CSERC - Include all Facilities in Study area, comment added to TR-1

* Comments Back From CCWD/HDR ~~4/15~~ COB 4/22

TR-2

CSERC - Nesting Territories - Potential vs. Known
- Answer - using known detections for territories

NCPA - Helicopter access when not car accessible

4/13/26

TR-3

CSERC - When would TR3 trigger a study need for a specific species
- most likely conversations to be had in 2028 but dependent on resource and when data collection is complete

---

CDFW - Deer herds moving through Project
- Request wildlife study on Deer herds
  - CDFW will get back to CCWD with specific concerns

USFS - what type of Veg clearing methods?
- In FS lands Historically mannual - no herbicide
  - Chainsaw/hand crews

CSERC - Rodenticides?
- Historically, No

* NCPA has a PUP around New Spicer

CSERC - Southern long-toed Salamander - Potential Project impacts
- Disscused under Aquatics

Vertucci, Charles

Subject:	Calaveras County Water District, North Fork Stanislaus River Hydroelectric Project, P-2409: Study Plan Development Meeting
Location:	No location added
Start:	Fri 04/24/2026 10:00 AM
End:	Fri 04/24/2026 12:00 PM
Show As:	Busy
Meeting Status:	Accepted
Organizer:	Faer, Samantha
Required Attendees:	Faer, Samantha; Jessalynn@bvtribe.com; Jesus@bvtribe.gov; mike@bvtribe.gov; jasleen@bvtribe.gov; calaverasmiwukpreservation@gmail.com; Adam2191983@gmail.com; calaverasband.miwukindians@gmail.com; office@cvmt-nsn.gov; jmathiesen@crtribal.com; mfox@crtribal.com; ssuess@crtribal.com; Creyes@crtribal.com; jportillo@crtribal.com; Consultation@ionemiwok.net; jereme@ionemiwok.net; Adalton@jacksoncasino.com; Valdezcome@comcast.net; sdinsmore@strawberryvalleymaidu.org; ahart@sir-nsn.gov; serrell.smokey@washoetribe.us; executive.assistant@washoetribe.us; thpo@washoetribe.us; William.enos@washoetribe.us; sarina.shaw@washoetribe.us; neil.peyron@tulerivertribe-nsn.gov; kyle@mewuk.com; mcalbert@mewuk.com; aroyce@mewuk.com; kday@mewuk.com; Risse, Danielle; Vertucci, Charles; Andrew Renshaw; allison.stevenot@usda.gov; kathy.strain@usda.gov
Optional Attendees:	Scott Dinsmore; Joanna Portillo-Hsu; Alex Ramirez; Michael Minkler; Maudesty Merino

Hello All,

This invitation is being sent on behalf of the Calaveras County Water District to coordinate on study plan development for a Cultural Resources Study and a Tribal Resources Study as part of the relicensing efforts related to the North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409. Thank you to those of you who filled out the Doodle Poll for selecting a time and date that works for you.

Based on the input received, the virtual meeting will be held on **Friday, April 24, 2026 from 10:00 AM – 12:00 PM.**

We have pulled together study descriptions for each proposed study ahead of this meeting and plan to review and discuss these descriptions during the meeting. Please see the attached Cultural Resources Study Description and the Tribal Resources Study Description provided for your review ahead of the meeting.

Meeting Update: This meeting event is being updated to provide a general agenda planned for tomorrow:

- **Introductions**
- **P-2409 Overview – brief description of the North Fork Stanislaus River Hydroelectric Project**
- **FERC Relicensing Process – comprehensive presentation covering the conditions, timeline, purpose, and agencies involved in FERC Relicensing**
- **Review of Study Plan Descriptions – detailed review and discussion of Study Plan Descriptions**
- **Questions**

Should you have any questions about this proposed meeting or the Project, please contact:

Danielle Risse
Senior Cultural Resources Specialist, HDR
D: 916-679-8796
danielle.risse@hdrinc.com

If you would like to request an individual meeting with the CCWD, we can also coordinate an individual meeting.

Thank you,

Samantha Faer, BA
Cultural Resources Specialist 1

HDR

1 Capitol Mall, Suite 500
Sacramento, CA 95814
D 916-679-8795 **M** 480-213-1522
samantha.faer@hdrinc.com

Microsoft Teams meeting

Join: https://teams.microsoft.com/meet/260551884549693?p=IKywjSh6EBa0bh7DOV

Meeting ID: 260 551 884 549 693

Passcode: tA6kP35h

Need help? | System reference

Dial in by phone

+1 402-513-9026,,645503059# United States, Omaha

(833) 255-2803,,645503059# United States (Toll-free)

Find a local number

Phone conference ID: 645 503 059#

For organizers: Meeting options | Reset dial-in PIN



NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT
FERC NO. 2409

APRIL 24, 2026
STUDY PLAN DEVELOPMENT MEETING – CULTURAL AND TRIBAL STUDIES

NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT

FERC P-2409

WELCOME & INTRODUCTIONS

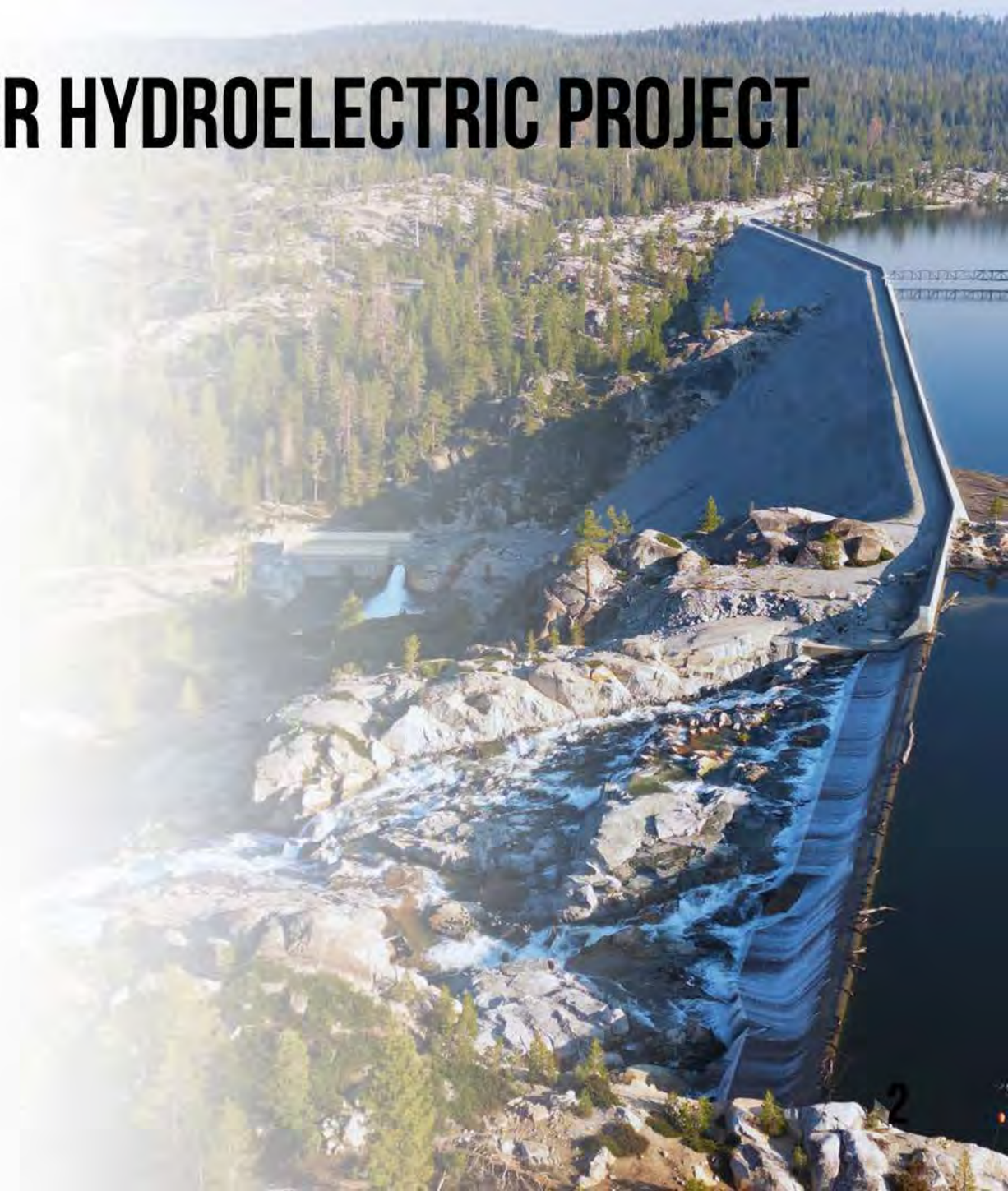
MICHAEL MINKLER - GENERAL MANAGER, CCWD

ANDREW RENSHAW - WATER RESOURCES MANAGER, CCWD

CHUCK VERTUCCI - PROJECT MANAGER, HDR

DANIELLE RISSE - CULTURAL RESOURCES LEAD, HDR

SAMANTHA FAER – CULTURAL RESOURCES SPECIALIST, HDR



AGENDA

1. INTRODUCTIONS
2. P-2409 OVERVIEW
3. FERC RELICENSING PROCESS
4. REVIEW OF STUDY PLAN DESCRIPTIONS
5. QUESTIONS



P-2409 PROJECT OVERVIEW



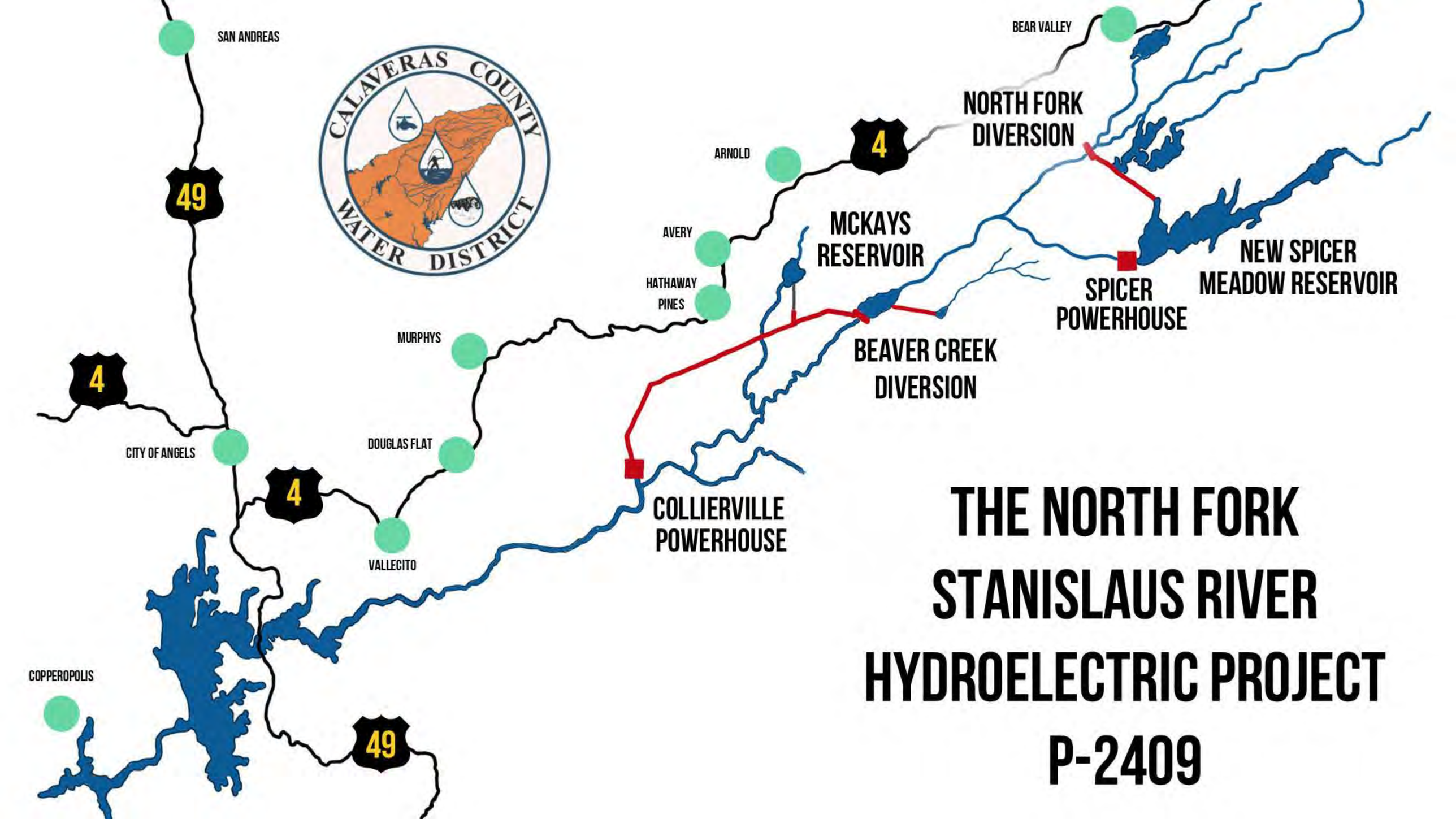
LOCATED IN CENTRAL CALIFORNIA

ALPINE COUNTY

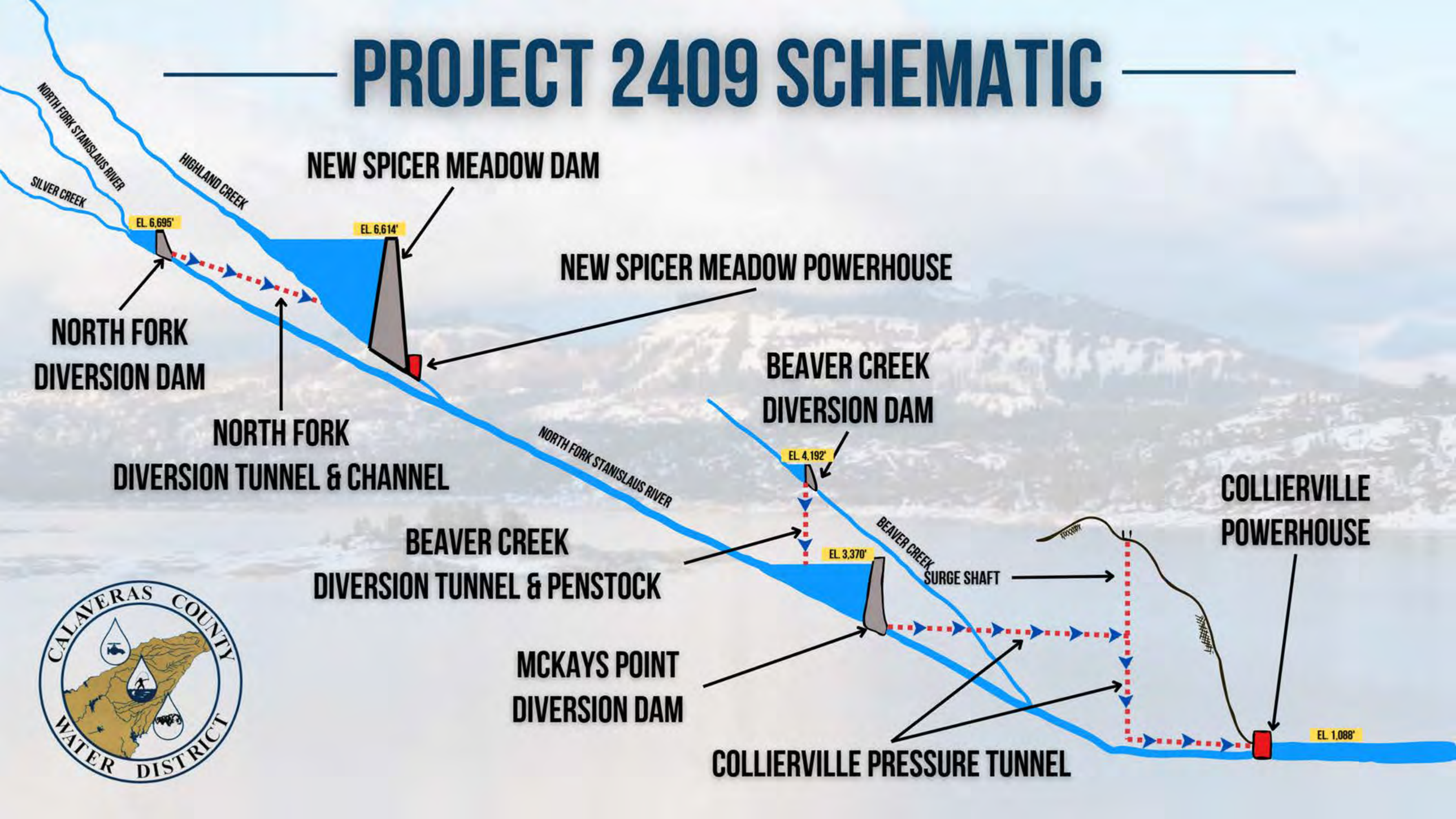
CALAVERAS COUNTY

TUOLUMNE COUNTY

P-2409 SPANS 3 COUNTIES


SAN ANDREAS
CALAVERAS COUNTY WATER DISTRICT
49
4
ARNOLD
AVERY
HATHAWAY PINES
MURPHYS
CITY OF ANGELS
DOUGLAS FLAT
VALLECITO
COPPEROPOLIS
BEAR VALLEY
NORTH FORK DIVERSION
MCKAYS RESERVOIR
SPICER POWERHOUSE
NEW SPICER MEADOW RESERVOIR
BEAVER CREEK DIVERSION
COLLIERVILLE POWERHOUSE
THE NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT
P-2409

PROJECT 2409 SCHEMATIC



FERC RELICENSING OVERVIEW



WHAT IS FERC'S LICENSING JURISDICTION?

- Pursuant to section 23(b)(1) of the FPA, a non-federal hydroelectric project must be licensed if it falls under at least one of the following mandatory jurisdictional criteria:

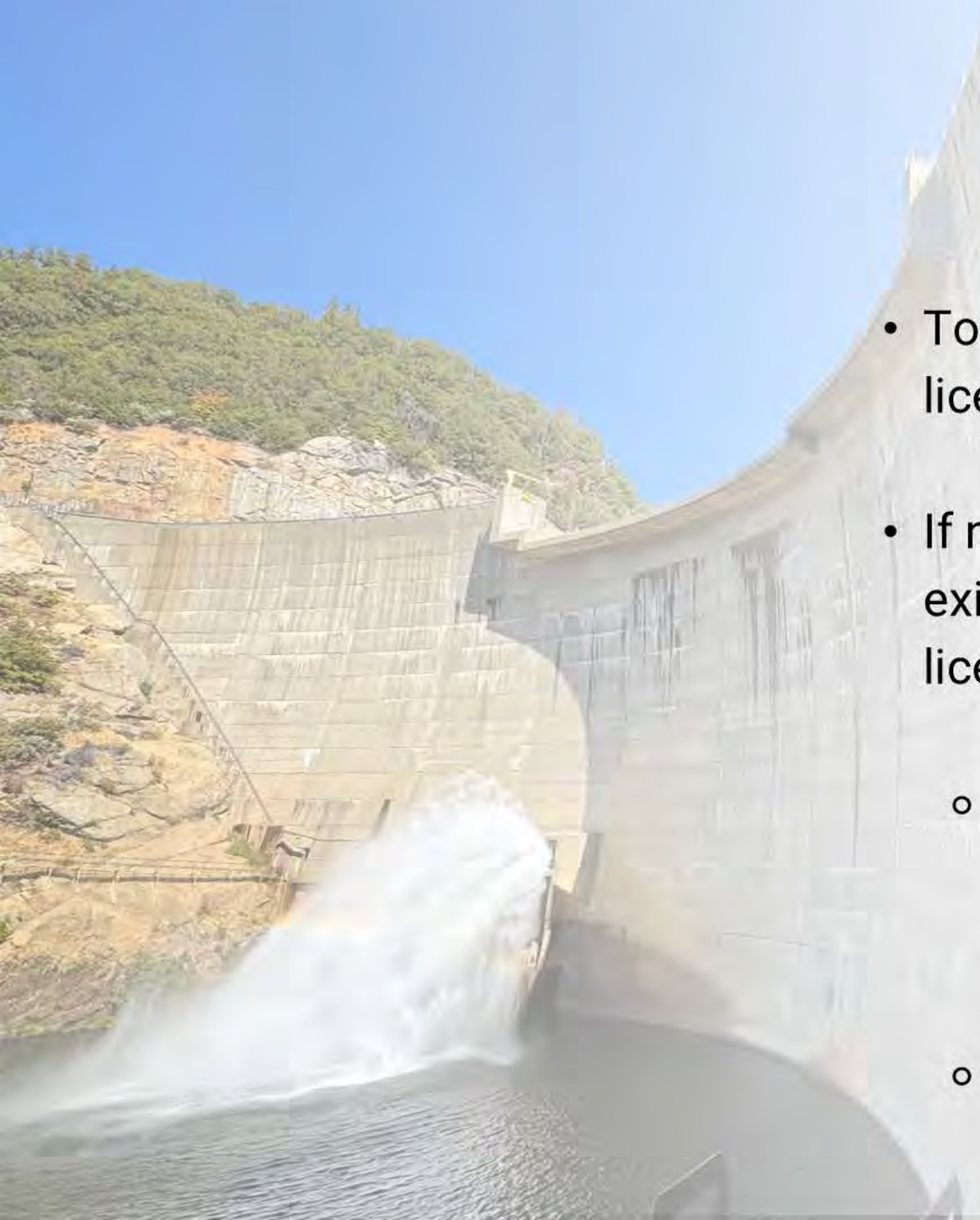
  - Located on a navigable water of the United States;
  - Occupies lands or reservations of the United States;
  - Utilizes surplus water or waterpower from a government dam; or
  - Located on a stream over which Congress has Commerce Clause jurisdiction, is constructed or modified on or after August 26, 1935, and affects the interests of interstate or foreign commerce.



WHAT IS RELICENSING?

- Process by which an applicant obtains a new/subsequent license from FERC.
- Transparent regulatory proceeding through which FERC “re-balances” the power and non-power benefits of the project.
- Term of new license is normally 40 years, but FERC can adjust down to 30 years or up to 50 years.
- Defined through:
  - Federal Power Act and Title 18 of Code of Federal Regulations;
  - Years of legal precedents and FERC Orders/decisions;
  - Various federal statutes and regulations;
  - Evolving regulatory and policy landscape; and
  - Relevant court cases.





WHY RELICENSE?

- To continue operating the project after the existing license term expires.
- If new/subsequent license is not issued by the time existing license term expires, FERC issues annual licenses until new license is issued.
    - Annual licenses are issued as an administrative process and have the same terms and conditions as the existing license.
    - No limit to how many annual licenses can be issued.

HOW LONG DOES RELICENSING TAKE?

- Formal Start: Applicant files with FERC a Notice of Intent to file an application for a new or subsequent license (NOI) and a Pre-Application Document (PAD) 5.5 to 5 years before existing license expires.

- License Application: Applicant must file a final license application at least 2 years before existing license expires.

- Formal End: FERC issues a new license or otherwise resolves the proceeding.



WHO CAN PARTICIPATE IN RELICENSING?

- Federal, state, & local agencies
- Non-governmental organizations (NGO's)
- Local special interest groups & groups from far away
- Landowners (public and private)
- Federally & non-federally recognized Indian tribes & non-tribal Native Americans
- Business interests including farmers & ranchers
- Industries
- **Anybody!!!**



WHAT RESOURCES ARE ASSESSED?



GEOLOGY, TOPOGRAPHY & SOILS



RECREATION & LAND USE



WATER QUALITY & QUANTITY



RARE, THREATENED & ENDANGERED SPECIES



FISH & AQUATIC



AESTHETICS & VISUAL



WILDLIFE & BOTANICAL



CULTURAL & TRIBAL



FLOODPLAINS, WETLANDS & RIPARIAN



SOCIOECONOMICS

MAJOR DOCUMENTS PREPARED BY APPLICANT DURING RELICENSING

- **Notice of Intent:** Required information, formal intent to relicense.

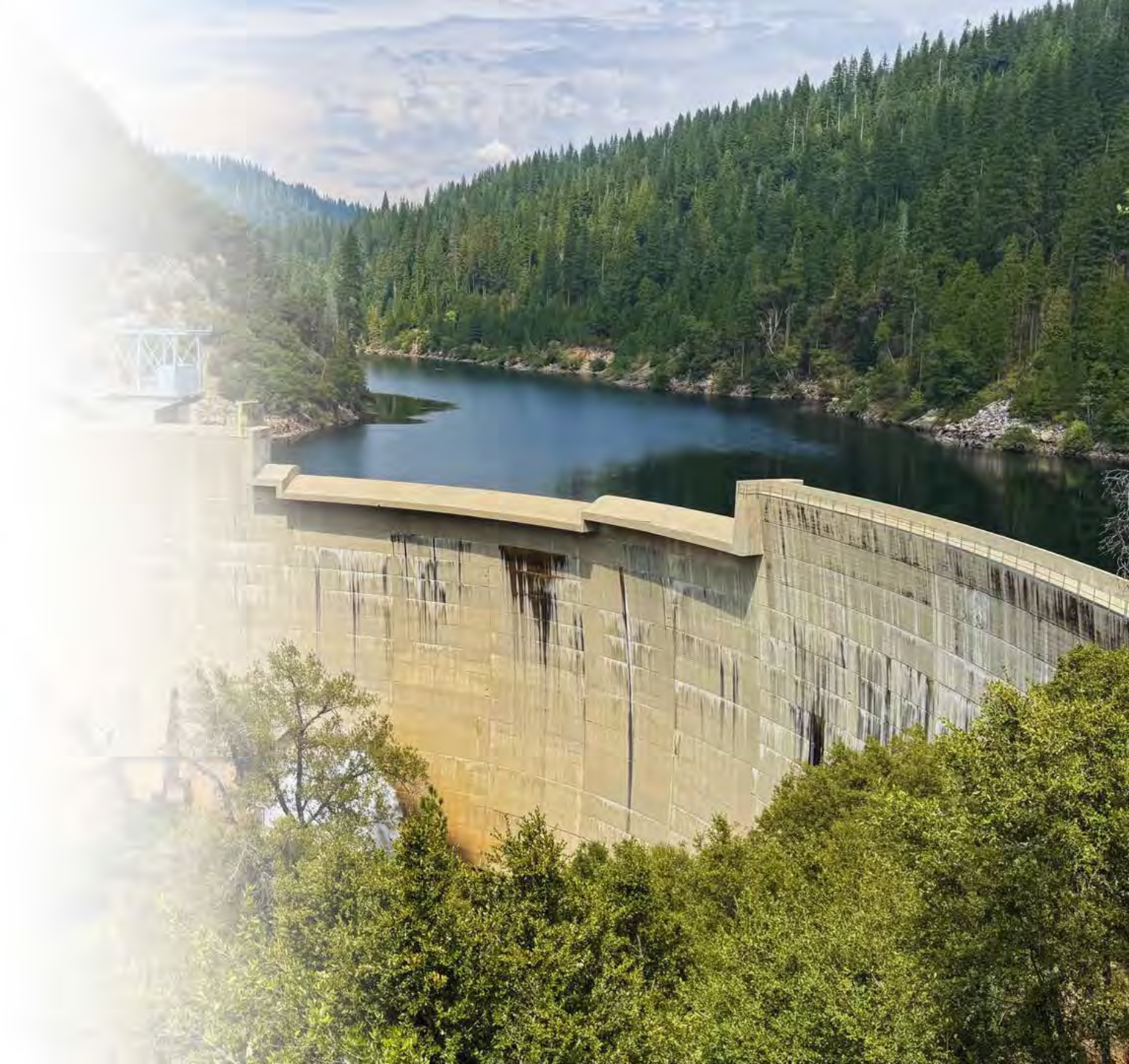
- **Pre-Application Document:** Summary of existing, relevant, and reasonably available information, and issues to be addressed in relicensing. Identifies data gaps and Applicant's proposed studies to close data gaps.

- **Draft License Application:** Draft of License Application including environmental impacts and Applicant's proposed protection, mitigation, and enhancement (PM&E) conditions.

- **Final License Application:** Final License Application including updates from DLA comments.

- Others, as appropriate.

P-2409 MAJOR MILESTONES & NEXT STEPS



KEY RELICENSING MILESTONES

- **July 31, 2026.** Earliest date CCWD can file the NOI and PAD (5.5 years before existing license expires).
- **January 31, 2027.** Latest date CCWD can file the NOI and PAD (5 years before existing license expires).
- **2027/2028.** Assumed study years and develop PM&E conditions.
- **~ Fall 2029.** Provide Draft License Application to agencies and tribes for 90-day review and comment period.
- **January 31, 2030.** Latest date CCWD can file the Final License Application (2 years before existing license expires).
- **January 31, 2032.** Existing P-2409 licenses expires.



CCWD's Pre-PAD Study Development Goals

- Reach agreement with as many relicensing participants as possible on as many Study Descriptions as possible by July 2026, and include those Study Descriptions in the PAD

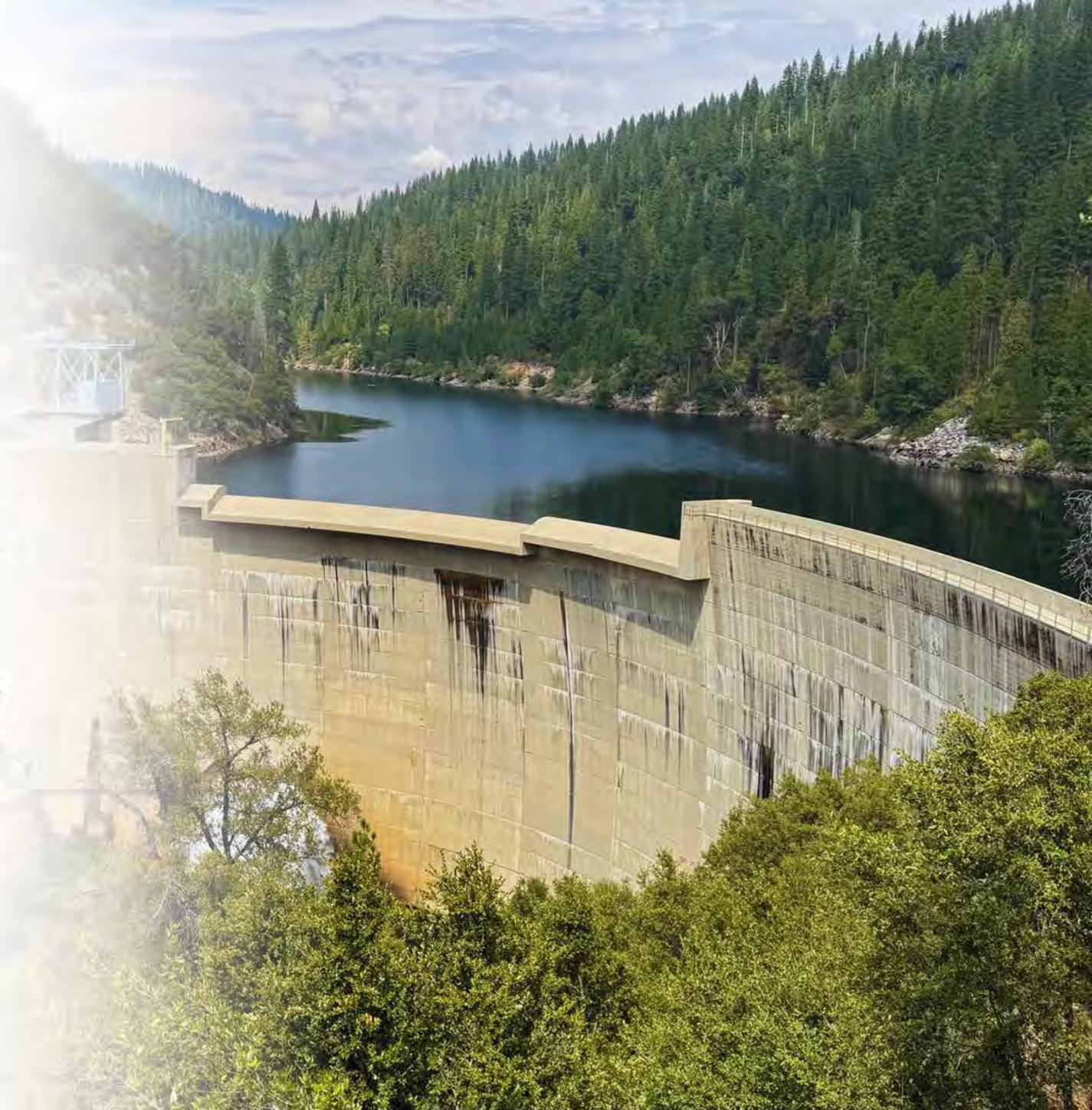


CCWD'S PRE-PAD STUDY DEVELOPMENT PROCESS

- Purpose of today's study development coordination meeting:
  - ➢ Discuss comments/edits on Cultural and Tribal Resources Study Descriptions from relicensing participants or proposes changes with the goal to try to reach agreement.
- After the meeting, CCWD will provide updated Study Descriptions to relicensing participants.
- If there are items with some studies where agreement is close, CCWD may schedule additional discussions to attempt to resolve differences.
- Final versions of agreed upon Study Descriptions will be included in the PAD.



REVIEW OF CULTURAL AND TRIBAL RESOURCES STUDY DESCRIPTIONS



SECTION 106 AND FERC RELICENSING

- **The Cultural Resources Study and the Tribal Resources Study will largely be conducted to assist FERC with its Section 106 compliance requirements.**
- **CCWD will request FERC to designate CCWD as the non-federal representative for Section 106 of the National Historic Preservation Act (NHPA) consultation in the NOI for purposes of the relicensing process.**
- **Accordingly, CCWD will initiate informal Section 106 consultation with Tribes and agencies after FERC designates CCWD as the non-federal representative for Section 106 consultation.**
- **FERC of course remains the lead federal agency responsible for Section 106 compliance; and will conduct government to government consultation with Native American Tribes.**



REVIEW OF STUDY DESCRIPTIONS

The Study Descriptions will be shared on screen



EMAIL:

P2409Relicense@ccwd.org

Website

WWW.CCWD.ORG/P-2409-RELICENSE



QUESTIONS

Meeting Attendees

1. Mike DeSpain, Buena Vista Rancheria of Me-Wuk Indians
2. Jesus “Jesse” Galvan, Buena Vista Rancheria of Me-Wuk Indians
3. Adam Lewis, Calaveras Band of Mi-Wuk Indians
4. Debra Grimes, Calaveras Band of Mi-Wuk Indians
5. Alex Ramiez, California Valley Miwok Tribe
6. Pete Ramirez, California Valley Miwok Tribe
7. Briana Sanchez, California Valley Miwok Tribe
8. Billy Hawk (William Enos), Washoe Tribe of NV & CA
9. Kathy Strain, Stanislaus USFS
10. Allison Stevenot, Stanislaus USFS
11. Michael Minkler, CCWD
12. Andrew Renshaw, CCWD
13. Danielle Risse, HDR
14. Chuck Vertucci, HDR
15. Samantha Faer, HDR

P2409 Relicense

Subject:	P-2409 Relicensing Meeting #4 - Land Use and Recreation Resources Study Discussion
Location:	Calaveras County Water District
Start:	Mon 05/11/2026 1:00 PM
End:	Mon 05/11/2026 4:00 PM
Show As:	Busy
Meeting Status:	Organizer
Organizer:	P2409 Relicense
Required Attendees:	Michael Minkler; Kelly Gerkensmeyer; Andrew Renshaw; jim.lynch@hdrinc.com; rbowersox@gftinc.com; snicotero@tridamproject.com; Jake Eymann; Benjamin Guy; frankf@uticawater.com; jself@upudwater.org; monica.gutierrez@noaa.gov; Triplett, Noah R; Shawn.Puzen@meadhunt.com; Beth.Lawson@wildlife.ca.gov; Maher, Michael@Wildlife; keiko@friendsoftheriver.org; rstork@friendsoftheriver.org; Jann Dorman; blancapaloma@msn.com; tomh@cserc.org; chelsea@cserc.org; Stan Dodson; John Buckley; Matt McKechnie; Benjamin.Onanian@hdrinc.com; stevefelte@gmail.com; Sophia.Weinmann@Wildlife.ca.gov; Steve Williams; jereme@ionemiwok.net; Hassan, Rajaa@Waterboards; Truc.Le@Waterboards.ca.gov; jose.l.hernandez@usda.gov; Raymond.Cablayan@usda.gov; Aguirre orozco, Victor - FS, CA; allison.stevenot@usda.gov; scott@aorafting.com; rmasuda@calwaterlaw.com; Newburger, Todd - FS, CA; jpolk@calwaterlaw.com; Adam Lewis; Vertucci, Charles
Optional Attendees:	jonathan.ambrose@noaa.gov; Ewing, Ben@Wildlife; ewoodruff@calsport.org; Estenson, Lauren; tylerw@oars.com; Montalvo, Angie@Wildlife; CCWD Boardroom

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
LAND USE AND RECREATION RESOURCES STUDY DISCUSSION

This meeting will review comments received on CCWD's proposed studies related to land use and recreation resources including:

LU-1	Primary Project roads and trails assessment
RR-1	Recreation user assessment and demand at New Spicer Meadow Reservoir recreation facilities
RR-2	Assess effects on Big Trees whitewater boating run (Sourgrass to Big Trees State Park)
RR-3	Assess effects on fishing, swimming, and wading at Big Trees State Park
RR-4	Assess visual and aesthetic resources related to Project facilities

CCWD will make drafts of each study description available to meeting attendees approximately two weeks prior to the meeting and ask that comments be returned to CCWD approximately one week prior to the meeting. CCWD will review comments received prior to the meeting and be prepared to discuss them.

Microsoft Teams meeting

Join: https://teams.microsoft.com/meet/23955264323829?p=8HVMYdRS6EAqoBHZok

Meeting ID: 239 552 643 238 29

Passcode: wt7Ux22J

North Fork Stanislaus River Hydroelectric Project (P-2409)

5th Relicensing Stakeholders Meeting

- Recreation, Visual, and Land Use Study Descriptions -

May 11, 2026

Agenda

- Welcome & Introductions
- Terrestrial & Cultural Update
- Meeting Goal & Process
- Discuss & Attempt to Finalize Recreation, Visual, & Land Use Study Descriptions
- Review Schedule for Upcoming Meetings
- Review Action Items
- Adjourn

Welcome and Introductions

- CCWD and Consultant Staff
  - **Michael Minkler** (CCWD) General Manager
  - **Kelly Gerkensmeyer** (CCWD) External Affairs Manager
  - **Andrew Renshaw** (CCWD) Water Resources Manager
  - **Chuck Vertucci** (HDR) Project Manager
  - **Jim Lynch** (HDR) Senior FERC Regulatory Specialist
  - **Ben Onanian** (HDR) FERC Regulatory Specialist
  - **Randy Bowersox** (GFT) Senior Hydropower Operations Specialist
- Participating Agencies, Native American Tribes, NGOs, and Others

Terrestrial

- During 4/18 meeting, we reviewed 3 Terrestrial Study Descriptions:

  - ✓ TR-1 – USFWS and USFWS provided comments prior to meeting: CCWD has addressed these and will target distribute by COB 5/12 a revised draft for review and discussion at a virtual meeting to be scheduled.

  - ✓ TR-2 – No comments prior to meeting, and USFS said it looked good and had no comments.

  - ✓ TR-3 – No comments prior to meeting, and USFS and CSERC said, if they had comments, they would provide them within a week. No comments have been received.

Cultural

- On 4/9, CCWD distributed draft cultural (CR-1) and tribal (CR-2) study descriptions and requested comments by COB 5/22.
- On 4/24, CCWD met with Native American Tribes and USFS.
- Additional meetings will be scheduled as needed.

Meeting Goal and Process

- Goal: Develop the best possible study descriptions through meaningful engagement with interested parties
- Process:
  - Review and discuss comments received by CCWD prior to the meeting on each study description distributed by CCWD on April 20, 2026
  - Discuss any other comments on each study description
  - Assess whether there is agreement on each study description and, if not identify remaining differences

- Concepts and Practices Applicable to All Relicensing Studies
  - Open Word version of 4/20/26 draft (revision to 4/13 draft based on comments during 4/13 meeting)

- Project Recreation Use and Visitor Surveys
  - Open Word version of 4/20/26 draft

- North Fork Stanislaus River Sourgrass Run Whitewater Boating Use Evaluation
  - Open Word version of 4/20/26 draft with CSERC's comments

Study Description RR-3

- Fishing, Swimming and Wading Use Evaluation at Calaveras Big Trees State Park
  - Open Word version of 4/20/26 draft

- Visual Resource Evaluation at Project Facilities
  - Open Word version of 4/20/26 draft with CSERC's comments

- Project Roads and Trails Condition Assessment
  - Open Word version of 4/20/26 draft

Schedule for Upcoming Meetings

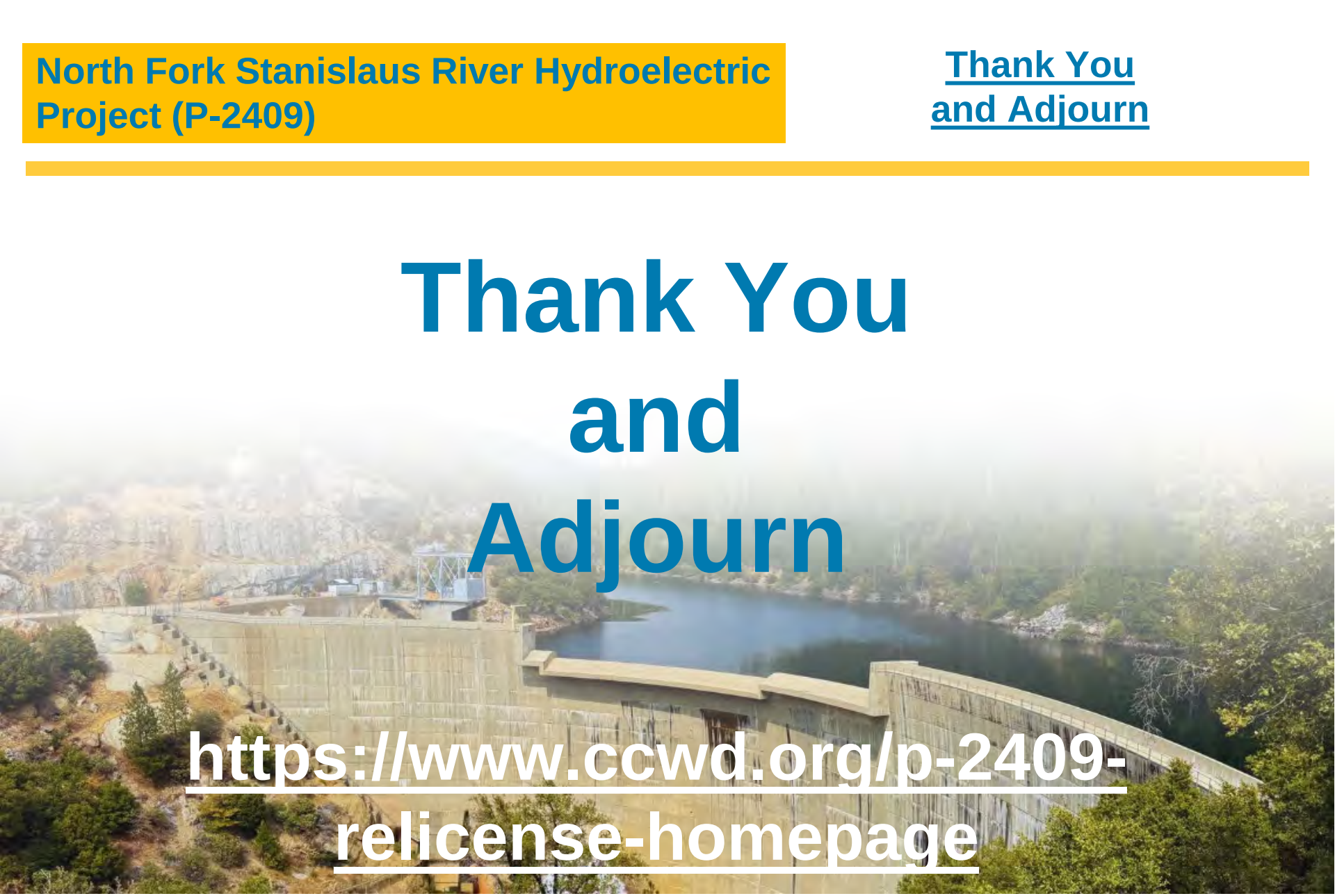
- Upcoming Study Description Meetings
  - June 2, 2026 (noon) - Water and Aquatic Resources
    - ✓ CCWD would like to break this meeting into two given the number of study descriptions
      - ✓ June 2 Meeting would include AR-1, AR-2, AR-3, AR-4, and WR-2
        - ✓ CCWD is targeting 5/12 for those Study Descriptions to be available
      - ✓ NEW meeting would include AR-5, AR-6, AR-7, and WR-1
        - ✓ Proposed Dates (Can we schedule the meeting now?):
          - ✓ July 9: 9-12 or 1-4
          - ✓ July 10: 9-12 or 1-4
    - ✓ Schedule a virtual meeting to discuss TR-1. (Can we schedule the meeting now?)

Schedule for Upcoming Meetings

- Process:
  - CCWD will distribute applicable draft study descriptions 3 weeks prior to each meeting
  - Interested parties will target providing CCWD red-lined study descriptions 1 week prior to the meeting
  - At each meeting, we will follow the same process we followed for today's meeting

- Review Action Items

Thank You and Adjourn



https://www.ccwd.org/p-2409-relicense-homepage

Pg. 1 5/11/2026

Land Use and Rec

RR-1

USFS (Todd N.)
- Additional undeveloped Shoreline access
- include dispersed camping - including outside FERC Boundary (PARs)
- Transportation Management Plan (standard USFS conditions)
- USFS to provide comments after meeting
  - Designated Wilderness shoreline assessment

CSERC
- #11 signage should be included in table (included in #17)

RR-2
- Use STF for FS
- Not expecting additional comments

Pg. 2

RR-3

- CSERC to distribute to State Parks
- not expecting additional comments

VR-1

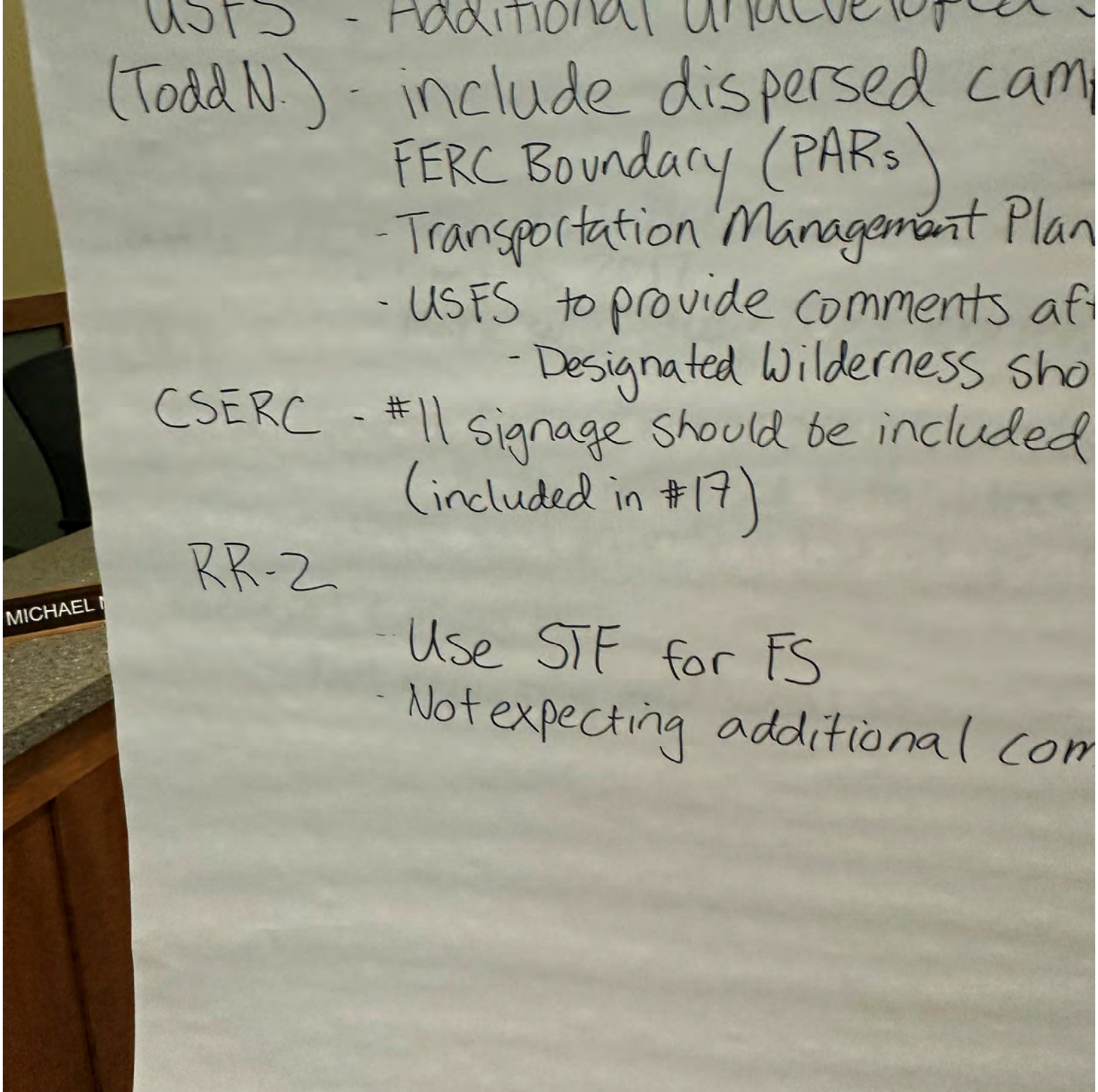
USFS - Ammendments to Plans
- latest is 2017
- Make sure study uses current version of Plan

LU-1

USFS - Scope doesn't cover enough roads
- Bridge attached to Facilities
- USFS will provide a list of specific roads at a later point

General Concepts

- Not expecting additional comments


USFS - Additional undeveloped
(Todd N.) - include dispersed cam
FERC Boundary (PARs)
- Transportation Management Plan
- USFS to provide comments af
- Designated Wilderness sho
CSERC - #11 signage should be included
(included in #17)
RR-2
- Use STF for FS
- Not expecting additional com
MICHAEL

Aquatics

AR-1 Fish Sampling New Spicer
AR-2 Fish Sampling Project Affected Reaches
AR-3 BMI Project Affected Reaches
AR-4 Fish Entrainment (Desktop)
AR-5 Instream Flow (Highland, NFSR, McCays)
AR-6 eDNA
AR-7 ESA (SNYLF - FYLF) VES

July 10th - USFWS staff may be off
- 3rd date
- CSERC requests no Fridays

P-2409 Calaveras County Water District – Land Use/Rec Resources Study Discussion Sign-in Sheet

Name & Title	Representing	Email
Randy Bowersox	GFT / CCWD	rbowersox@gft.inc.com
Stan Dodson	CSERC	
Ben Guy	NCPA	benjamin.guy@ncpa.com
Kelly Gerkensmeyer	CCWD	kelly g@ccwd.ORG
Michael Minkler, GM	CCWW	
ANDREW RENSHAW	CCWD	
Scott Armstrong	ALL-OUTDOORS	Scott@aorafting.com
Jim Lynch	HDR	
Chuck Vertucci	HDR	
Ben Onanian	HDR	

Name & Title	Representing	Email & Phone
Shawn Pozen	NCPA / M:H	Virtual (Teams)
Josef Polk	UWPA	
Todd Newburger	USFS	
Noah Triplett	BLM	
Lauren Estenson	USFWS	
Ben Ewing	CDFW	
Mike Maher	CDFW	
Eric Woodruff	CSPA	
Victor Orozco	USFS	
Truc Le	SWRCB	
Jose Hernandez	USFS	
Angie Montalvo	CDFW	

P2409 Relicense

Subject:	P-2409 Relicensing Meeting #5 - Water and Aquatic Resources Study Discussion
Location:	Calaveras County Water District
Start:	Tue 06/02/2026 12:00 PM
End:	Tue 06/02/2026 4:00 PM
Show As:	Busy
Meeting Status:	Organizer
Organizer:	P2409 Relicense
Required Attendees:	Michael Minkler; Kelly Gerkensmeyer; Andrew Renshaw; jim.lynch@hdrinc.com; rbowersox@gftinc.com; Vertucci, Charles; snicotero@tridamproject.com; Jake Eymann; Benjamin Guy; frankf@uticawater.com; Ewing, Ben@Wildlife; jself@upudwater.org; monica.gutierrez@noaa.gov; Triplett, Noah R; Shawn.Puzen@meadhunt.com; Beth.Lawson@wildlife.ca.gov; Maher, Michael@Wildlife; keiko@friendsoftheriver.org; rstork@friendsoftheriver.org; Jann Dorman; blancapaloma@msn.com; tomh@cserc.org; chelsea@cserc.org; Stan Dodson; John Buckley; Matt McKechnie; Benjamin.Onanian@hdrinc.com; stevefelte@gmail.com; Sophia.Weinmann@Wildlife.ca.gov; Steve Williams; jereme@ionemiwok.net; Hassan, Rajaa@Waterboards; Truc.Le@Waterboards.ca.gov; jose.l.hernandez@usda.gov; Raymond.Cablayan@usda.gov; Aguirre orozco, Victor - FS, CA; allison.stevenot@usda.gov; scott@aorafting.com; rmasuda@calwaterlaw.com; Newburger, Todd - FS, CA; jpolk@calwaterlaw.com; Adam Lewis; Montalvo, Angie@Wildlife
Optional Attendees:	ewoodruff@calsport.org; Estenson, Lauren; gm@uticawater.com; admin@uticawater.com; brandis@uticawater.com; compliance@uticawater.com; kyler@uticawater.com; reception@uticawater.com; CCWD Boardroom

Updated to reflect that only AR-1, AR-2, AR-3, and AR-4 will be discussed. The remaining study descriptions will be discussed at a future meeting

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
WATER AND AQUATIC RESOURCES STUDY DISCUSSION

This meeting will review comments received on CCWD's proposed studies related to water and aquatic resources including:

AR-1	Fish sampling in New Spicer Meadow Reservoir
AR-2	Fish sampling in Project-affected reaches
AR-3	Benthic macroinvertebrate sampling in Project-affected reaches
AR-4	Assessment of potential for fish entrainment at New Spicer Meadow and McKays intakes (desktop)

CCWD will make drafts of each study description available to meeting attendees approximately two weeks prior to the meeting and ask that comments be returned to CCWD approximately one week prior to the meeting. CCWD will review comments received prior to the meeting and be prepared to discuss them.

Microsoft Teams meeting

Join: https://teams.microsoft.com/meet/23349113329621?p=MMGkS8jDsIBTruuDJz

Meeting ID: 233 491 133 296 21

Passcode: vj6ZE9bf

Need help? | System reference

For organizers: Meeting options

North Fork Stanislaus River Hydroelectric Project (P-2409)

6th Relicensing Stakeholders Meeting

- Water and Aquatic Resources Study Descriptions -

June 2, 2026

Agenda

- Welcome & Introductions
- Terrestrial, Cultural, & Recreation Updates
- Meeting Goal & Process
- Discuss & Attempt to Finalize 4 Water and Aquatic Resources Study Descriptions
- Review Schedule for Upcoming Meetings
- Review Action Items
- Adjourn

Welcome and Introductions

- CCWD and Consultant Staff
  - **Michael Minkler** (CCWD) General Manager
  - **Kelly Gerkensmeyer** (CCWD) External Affairs Manager
  - **Andrew Renshaw** (CCWD) Water Resources Manager
  - **Chuck Vertucci** (HDR) Project Manager
  - **Jim Lynch** (HDR) Senior FERC Regulatory Specialist
  - **Ben Onanian** (HDR) FERC Regulatory Specialist
  - **Randy Bowersox** (GFT) Senior Hydropower Operations Specialist
- Participating Agencies, Native American Tribes, NGOs, and Others

Terrestrial

- During 4/18 meeting, we reviewed 3 Terrestrial draft study descriptions. USFWS and USFWS provided comments on TR-1 prior to meeting:
  - ✓ TR-1 – Additional comments at meeting. CCWD has addressed comments and on 5/14 CCWD distributed a revised draft for review and discussion at a virtual meeting scheduled for 6/9.
  - ✓ TR-2 – No comments at meeting.
  - ✓ TR-3 – Minor comments at meeting, and at the 5/11 meeting, USFS, USFWS, and CSERC said no additional comments.

Cultural/Tribal Update

Cultural

- On 4/9, CCWD distributed 1 Cultural (CR-1) study description and 1 Tribal (CR-2) study description. Comments were received on CR-2 from Calaveras Band of Mi-Wuk Indians on 4/14.
- On 4/24, CCWD met with Native American Tribes and USFS to review descriptions and request comments by 5/22.
- On 6/4, CCWD to meet with Calaveras Band of Mi-Wuk Indians to review comments on CR-2. CCWD anticipates revising and reissuing CR-2 after 6/4 meeting.

Recreation/Land Use/Visual Update

Recreation/Land Use/Visual

- During 5/11 meeting, we reviewed 3 Recreation, 1 Visual, and 1 Land Use study descriptions. CSERC provided comments on RR-2 and VR-1 prior to meeting:

  - ✓ RR-1 – At meeting, USFS said it would provide additional comments on Wilderness assessment and dispersed recreation locations (no comments received yet). CCWD to redistribute revised plan for review and comment.

  - ✓ RR-2 – Minor additional comments at meeting.

  - ✓ RR-3 – Minor additional comments at meeting (use STF throughout relicensing).

  - ✓ VR-1 – Minor additional comments at meeting (use current version of STF Land and Resource Plan).

  - ✓ LU-1 – At meeting, USFS said it would provide list of additional road segments to be included in plan and suggested bridge across New Spicer Dam spillway be included in Project (no list received yet). CCWD to redistribute revised plan for review and comment.

Meeting Goal and Process

- Goal: Develop the best possible study descriptions through meaningful engagement with interested parties.
- Process:
  - Review and discuss comments received by CCWD prior to the meeting on each study description distributed by CCWD on 5/12/26.
  - Discuss any other comments on each study description.
  - Assess whether there is agreement on each study description and, if not identify remaining differences.

- Fish Sampling in Spicer Meadows Reservoir
  - Open Word version of 5/12 draft with CDFW's 5/19 comments.

- Fish Sampling in Project-affected Reaches
  - Open Word version of 5/12 draft. No comments received prior to meeting.

- Benthic Macroinvertebrate Sampling in Project-affected Reaches
  - Open Word version of 5/12 draft with CDFW's 5/20 comments.

- Concepts and Practices Applicable to All Relicensing Studies
  - Open Word version of 5/12/26 draft (CCWD revision to address some of CDFW's 5/20 comments on BMI Study Description).

- Assessment of Potential for Fish Entrainment at New Spicer Meadow and McKays Intakes
  - Open Word version of 5/12 draft with CDFW's 5/19 comments and 5/22 email comment.

Schedule for Upcoming Meetings

Upcoming Study Description Meetings

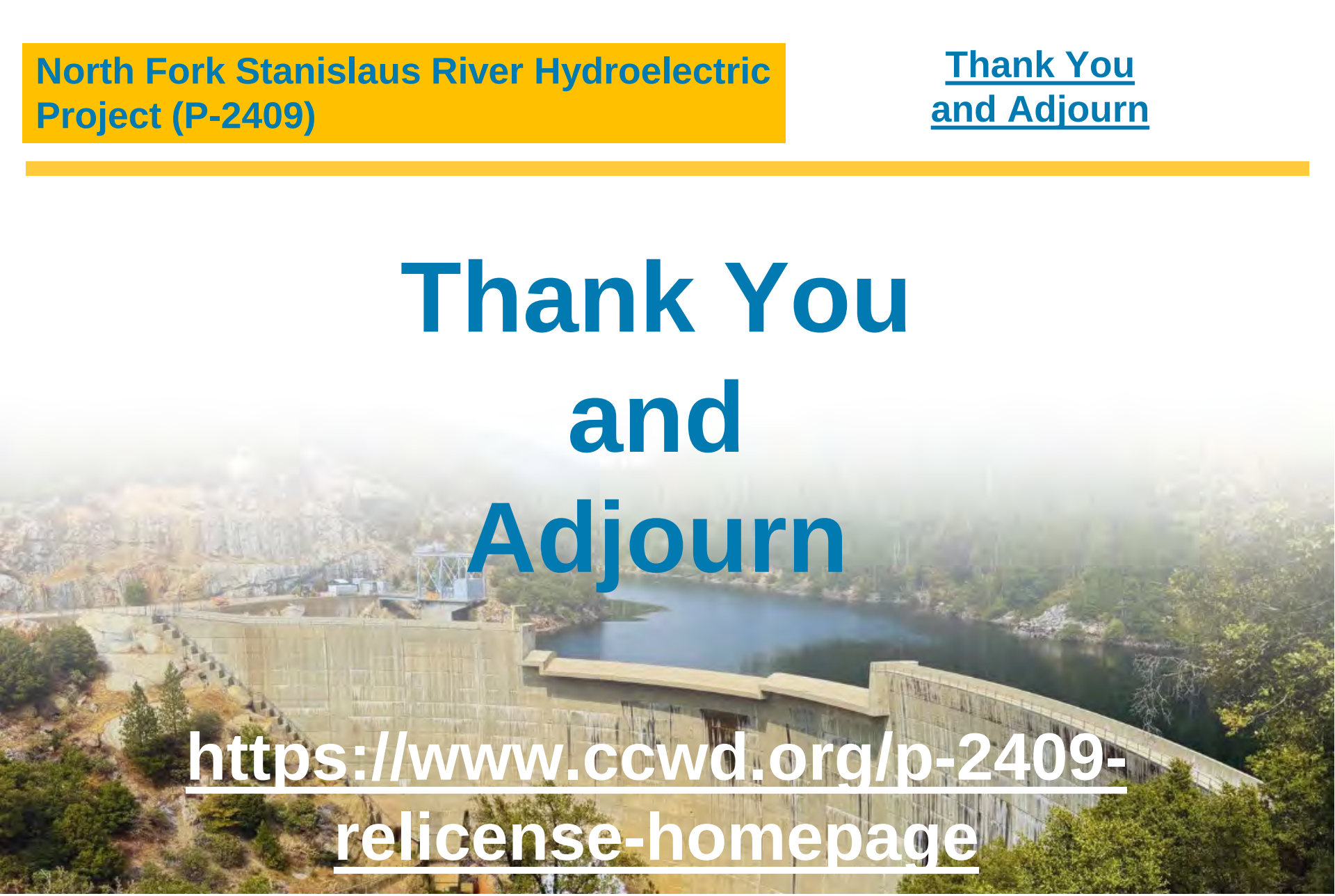
- 6/4 - Meeting with Calaveras Band of Mi-Wuk Indians to review comments on CR-2.
- 6/9 (3:00 PM PDT) - Virtual meeting to discuss Revised Study Description TR-1.
- Proposed 7/16 (1:00 PM PDT) – 5 Water and Aquatic Resources Study Descriptions (WR-1, WR-2, AR-5, AR-6, & AR-7).
- TBD - Virtual meeting to discuss Revised Study Descriptions RR-1 and LU-1.

Schedule for Upcoming Meetings

- Process:
  - CCWD will distribute applicable draft study descriptions 3 weeks prior to each meeting.
  - Interested parties will target providing CCWD red-lined study descriptions 1 week prior to the meeting.
  - At each meeting, we will follow the same process we followed for today's meeting.

- Review Action Items

Thank You and Adjourn



https://www.ccwd.org/p-2409-relicense-homepage

6/2/26

Aquatic Resources

* USFS to provide comments for Rec Studies this week and Land Use AR-1

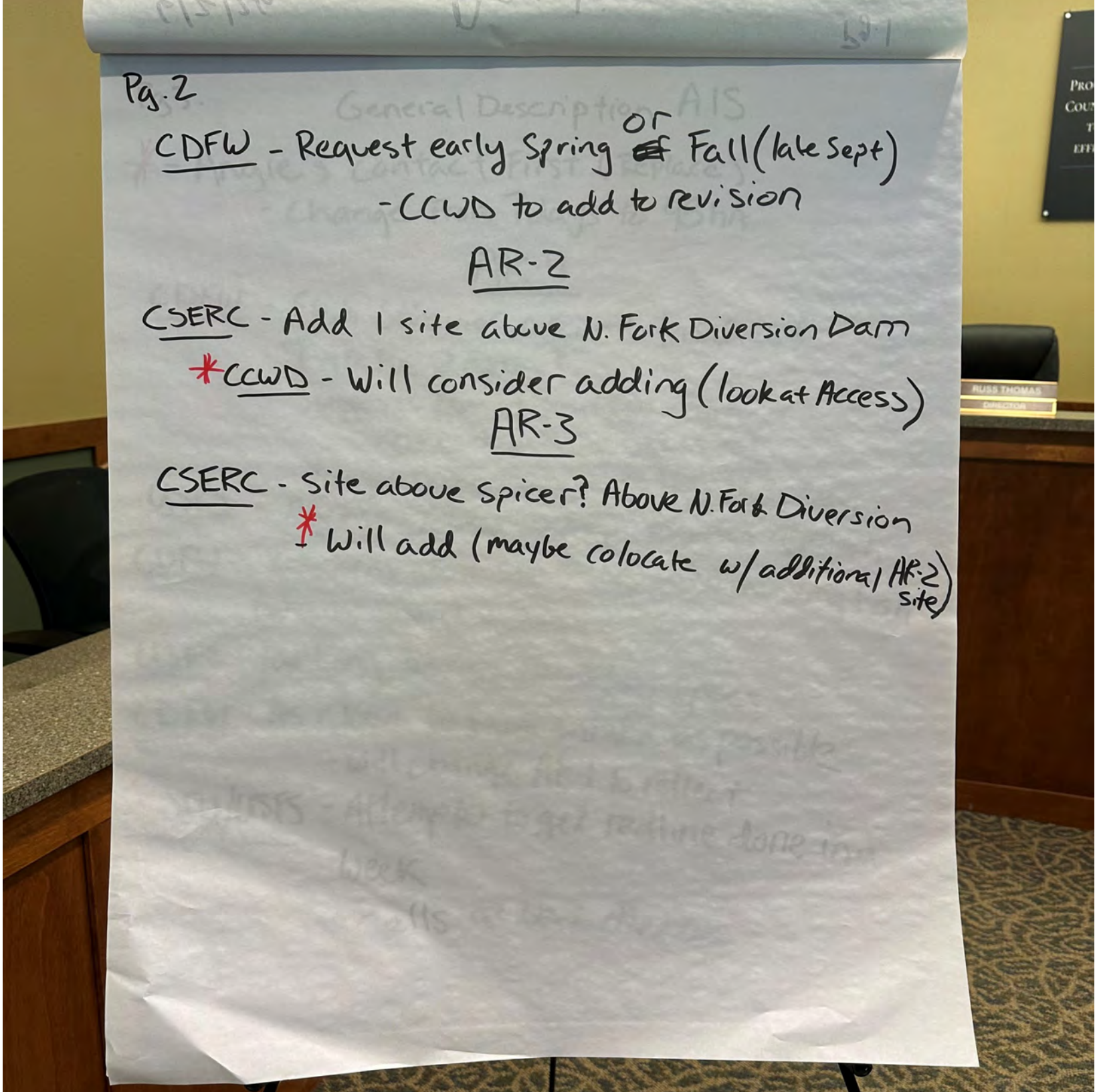
CDFW - Length of 4 sites?
* 1-2 hrs. of pure darkness
Prefer 6 smaller vs. 4 larger sites

CSERC - Why 150 ft?

CCWD/HDR - 6 sites - 150 ft

USFS - Concern about Missing Wilderness boundary
- Way around non-motorized Zone
- Dependent on USFS approval
- USFS request work description

*CCWD - Will revise and redistribute
By 6/12
- Variance -
- CDFW request 6 + 3 in Non-motorized


Pg. 2
CDFW - Request early Spring or Fall (late Sept)
- CCWD to add to revision
AR-2
CSERC - Add 1 site above N. Fork Diversion Dam
*CCWD - Will consider adding (look at Access)
AR-3
CSERC - Site above Spicer? Above N. Fork Diversion
* Will add (maybe colocate w/ additional AR-2 site)

Pg3. General Description AIS

*- Angie's contact First (Replace)
- Change From 7days to 48hrs.

AR-4

CDFW - Fish behavior around intakes?
Intake depths?
Suggests Phased Study Description
-CDFW to provide additional language/comments/redline Study Plan

USFS - Agrees w/CDFW -desktop + physical approach

CDFW - Concerns about Step 3 w/o understanding Fish behavior around intakes

USFS - lacking turbine/modeling specs

CDFW - As close to ~~Dam~~ Intake as possible
- Will change AR-1 to reflect

*CDFW/USFS - Attempto to get redline done in a week

* Follow up calls at Next Meeting

June 2, 2026

2/2

P-2409 Calaveras County Water District – Aquatic Resources Study Discussion #1 Sign-in Sheet

Name & Title	Representing	Email
Beth Lawson	CDFW	via teams
Ben Guy	NCPA	in-person
John Buckley	CSERC	in-person
Andrew Renshaw	CCWD	
Kelly GerKansmeyer	CCWD	
Chuck Vertucci	HDR	
Jim Lynch	HDR	
Ben Onanian	HDR	
Randy Bowersox	GFT	
Chris Shutes	CSPA	via teams

June 2, 2026

1/2

P-2409 Calaveras County Water District – Aquatic Resources Study Discussion #1 Sign-in Sheet

Name & Title	Representing	Email
Victor Aguirre Orozco	USFS	via teams
Eric Woodruff	CSPA	
Lauren Estenson	USFWS	
Ben Ewing	CDFW	
Truc Le	SWRCB	
Michael Maher	CDFW	
Angie Montalvo	CDFW	
Todd Newburger	USFS	
Shawn Puzen	M+H	
Ray Cablayan	USFS	

6/2/2026

P2409 Relicense

Subject:	P-2409 Relicensing Meeting #6 - TR-1 Follow-Up Discussion
Location:	No location added
Start:	Tue 06/09/2026 3:00 PM
End:	Tue 06/09/2026 5:00 PM
Show As:	Busy
Meeting Status:	Organizer
Organizer:	P2409 Relicense
Required Attendees:	Michael Minkler; Kelly Gerkensmeyer; Andrew Renshaw; jim.lynch@hdrinc.com; rbowersox@gftinc.com; Vertucci, Charles; snicotero@tridamproject.com; Jake Eymann; Benjamin Guy; frankf@uticawater.com; Ewing, Ben@Wildlife; jself@upudwater.org; monica.gutierrez@noaa.gov; Triplett, Noah R; Shawn.Puzen@meadhunt.com; Beth.Lawson@wildlife.ca.gov; Maher, Michael@Wildlife; keiko@friendsoftheriver.org; rstork@friendsoftheriver.org; Jann Dorman; blancapaloma@msn.com; tomh@cserc.org; chelsea@cserc.org; Stan Dodson; John Buckley; Matt McKechnie; Benjamin.Onanian@hdrinc.com; stevefelte@gmail.com; Sophia.Weinmann@Wildlife.ca.gov; Steve Williams; jereme@ionemiwok.net; Hassan, Rajaa@Waterboards; Truc.Le@Waterboards.ca.gov; jose.l.hernandez@usda.gov; Raymond.Cablayan@usda.gov; Aguirre orozco, Victor - FS, CA; allison.stevenot@usda.gov; scott@aorafting.com; rmasuda@calwaterlaw.com; Newburger, Todd - FS, CA; jpolk@calwaterlaw.com; Adam Lewis; Montalvo, Angie@Wildlife; ewoodruff@calsport.org; Estenson, Lauren; robin.kent@hdrinc.com; Cain, Ian; anna.bonnette@usda.gov
Optional Attendees:	gm@uticawater.com; admin@uticawater.com; brandis@uticawater.com; compliance@uticawater.com; kyler@uticawater.com; reception@uticawater.com

All – After discussions at the April 13 meeting and comments received by agencies and others, CCWD has revised Study TR-1 (Botanical Resources). The revised plan is available on CCWD's website at P-2409 Relicensing Documents - Calaveras County Water District **>> Study Plans**.

The purpose of this **virtual only** meeting is to review CCWD's proposed changes and attempt to reach agreement on TR-1.

Microsoft Teams meeting

Join: https://teams.microsoft.com/meet/235739270971314?p=AkYLpHzHOG5vJHAhxX

Meeting ID: 235 739 270 971 314

Passcode: n2tR6He7

Need help? | System reference

For organizers: Meeting options

North Fork Stanislaus River Hydroelectric Project (P-2409)

7th Relicensing Stakeholders Meeting

- TR-1 Follow-Up Discussion-

June 9, 2026

Agenda

- Welcome & Introductions
- Discuss & Finalize Study Description TR-1
- Review Upcoming Schedule
- Review Action Items
- Adjourn

Welcome and Introductions

- CCWD and Consultant Staff
- Participating Agencies, Native American Tribes, NGOs, and Others

- Botanical Surveys
  - Open Word version of 5/14 draft with CCWD's proposed revisions.

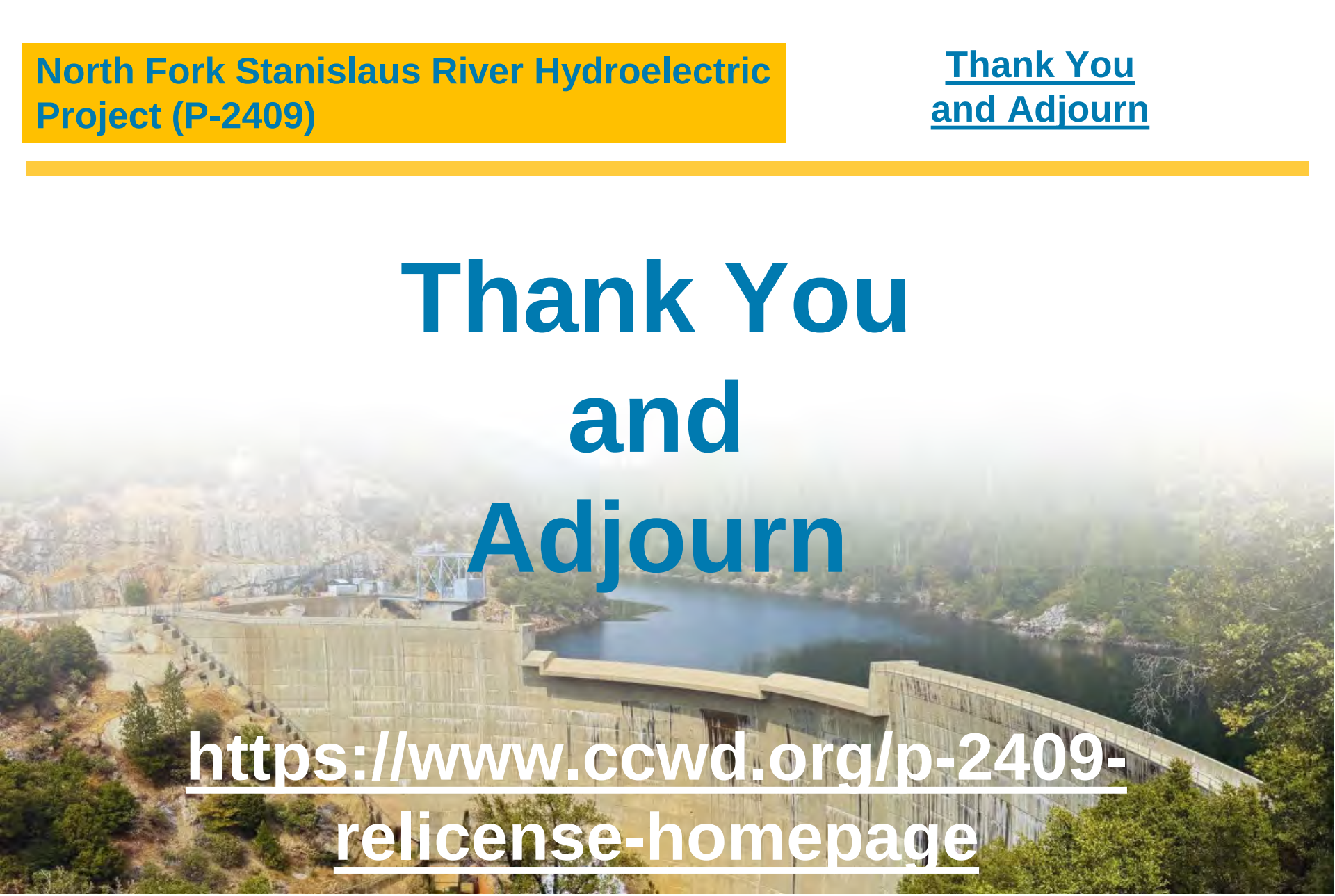
Schedule for Upcoming Meetings

Upcoming Study Description Meetings

- 7/16 (1:00 PM PDT) – 5 Water and Aquatic Resources Study Descriptions (WR-1, WR-2, AR-5, AR-6, & AR-7).
  - CCWD will post drafts NLT 6/25
- TBD - Virtual meeting to discuss revised Study Descriptions RR-1 and LU-1 (comments from USFS received on 6/5/26).
- TBD - Virtual meeting to discuss revised Aquatics and Water Resources Study Descriptions

- Review Action Items

Thank You and Adjourn



https://www.ccwd.org/p-2409-relicense-homepage

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P2409 Relicense

Subject:	P-2409 Relicensing Meeting #8 - Water and Aquatic Resources Study Discussion
Location:	No location added
Start:	Thu 07/16/2026 1:00 PM
End:	Thu 07/16/2026 4:00 PM
Show As:	Busy
Meeting Status:	Organizer
Organizer:	P2409 Relicense
Required Attendees:	Michael Minkler; Kelly Gerkensmeyer; Andrew Renshaw; jim.lynch@hdrinc.com; rbowersox@gftinc.com; Vertucci, Charles; snicotero@tridamproject.com; Jake Eymann; Benjamin Guy; frankf@uticawater.com; Ewing, Ben@Wildlife; jself@upudwater.org; monica.gutierrez@noaa.gov; Triplett, Noah R; Shawn.Puzen@meadhunt.com; Beth.Lawson@wildlife.ca.gov; Maher, Michael@Wildlife; keiko@friendsoftheriver.org; rstork@friendsoftheriver.org; Jann Dorman; blancapaloma@msn.com; tomh@cserc.org; chelsea@cserc.org; Stan Dodson; John Buckley; Matt McKechnie; Benjamin.Onanian@hdrinc.com; stevefelte@gmail.com; Sophia.Weinmann@Wildlife.ca.gov; Steve Williams; jereme@ionemiwok.net; Hassan, Rajaa@Waterboards; Truc.Le@Waterboards.ca.gov; jose.l.hernandez@usda.gov; Raymond.Cablayan@usda.gov; Aguirre orozco, Victor - FS, CA; allison.stevenot@usda.gov; scott@aorafting.com; rmasuda@calwaterlaw.com; Newburger, Todd - FS, CA; ewoodruff@calsport.org; Estenson, Lauren; gm@uticawater.com; admin@uticawater.com; brandis@uticawater.com; compliance@uticawater.com; kyler@uticawater.com; reception@uticawater.com; CCWD Boardroom; jpolk@calwaterlaw.com; Adam Lewis; Montalvo, Angie@Wildlife
Optional Attendees:	burger@stillwatersci.com; Moore, David; Peter.Drobny@hdrinc.com; Darrin M. Johnson

CALAVERAS COUNTY WATER DISTRICT
NORTH FORK STANISLAUS RIVER HYDROELECTRIC PROJECT, FERC PROJECT NO. 2409
WATER AND AQUATIC RESOURCES STUDY DISCUSSION #2

This meeting will review comments received on CCWD's proposed studies related to water and aquatic resources including:

WR-1	Water quality sampling in the Project-affected reaches, in New Spicer Meadow and McKays reservoirs, and near Project recreation facilities
WR-2	Water temperature model of Project-affected reaches and in New Spicer Meadow Reservoir
WR-5	Instream flows
WR-6	Special-status amphibians and aquatic reptiles eDNA sampling
WR-7	ESA-listed amphibians and aquatic reptile visual encounter surveys

CCWD will make drafts of each study description available to meeting attendees approximately three weeks prior to the meeting and ask that comments be returned to CCWD approximately one week prior to the meeting. CCWD will review comments received prior to the meeting and be prepared to discuss them.

Microsoft Teams meeting

Join: https://teams.microsoft.com/meet/295057348407587?p=icc5YPfjtZeJPyQabl

Meeting ID: 295 057 348 407 587

Passcode: 2Xc2pT7o

Need help? | System reference

For organizers: Meeting options

North Fork Stanislaus River Hydroelectric Project (P-2409)

8th Relicensing Stakeholders Meeting

- Water and Aquatic Resources Study Descriptions -

July 16, 2026

Agenda

- Welcome & Introductions
- Terrestrial, Cultural, & Recreation Updates
- Meeting Goal & Process
- Discuss & Attempt to Finalize 2 Water Quality and 2 Aquatic Resources Study Descriptions
- Review Schedule for Upcoming Meetings
- Review Action Items
- Adjourn

Welcome and Introductions

- CCWD and Consultant Staff
  - **Michael Minkler** (CCWD) General Manager
  - **Kelly Gerkensmeyer** (CCWD) External Affairs Manager
  - **Andrew Renshaw** (CCWD) Water Resources Manager
  - **Jim Lynch** (HDR) Senior FERC Regulatory Specialist
  - **Peter Drobny** (HDR) FERC Regulatory Specialist
  - **Dave Moore** (HDR) Senior FERC Regulatory Specialist
  - **Randy Bowersox** (GFT) Senior Hydropower Operations Specialist
  - **Holly Burger** (Stillwater Sci.) Senior Wildlife Biologist
  - **Matt McKechnie** (Stillwater Sci.) Project Manager
- Participating Agencies, Native American Tribes, NGOs, and Others

- **Concepts and Practices Applicable to All Relicensing Studies**
  - Discussed and revised during a few meetings:
    - ✓ CCWD understands there are no additional comments.

Terrestrial

- During 4/18 meeting, we reviewed 3 Terrestrial draft study descriptions. USFS and USFWS provided comments on TR-1 prior to meeting:

  ✓ TR-1 – Additional comments at meeting. CCWD addressed comments, distributed a revised draft on 5/14, and CCWD, USFS and USFWS agreed to changes on 6/9. CCWD understands there are no additional comments.

  ✓ TR-2 – No comments at meeting and CCWD understands there are no additional comments.

  ✓ TR-3 – Minor comments at meeting, and at the 5/11 meeting, USFS, USFWS, and CSERC said no additional comments.

Cultural/Tribal

- On 4/9, CCWD distributed 1 Cultural (CR-1) study description and 1 Tribal (CR-2) study description. On 4/24, CCWD met with Native American Tribes and USFS to review descriptions and request comments by 5/22.

  ✓ CR-1 – CCWD understands there are no comments.

  ✓ CR-2 – Comments received from Calaveras Band of Mi-Wuk Indians on 4/14. CCWD and Calaveras Band of Mi-Wuk Indians met on 6/4 and CCWD understands there are no additional comments.

Recreation/Land Use/Visual Update

Recreation/Land Use/Visual

- During 5/11 meeting, CCWD reviewed 3 Recreation, 1 Visual, and 1 Land Use study descriptions. CSERC provided comments on RR-2 and VR-1 prior to meeting:

  - ✓ RR-1 – USFS provided comments on 6/18. CCWD is addressing comments, will issue a revised draft, and has scheduled a 7/29 virtual meeting to resolve any remaining issues.

  - ✓ RR-2 – Minor additional comments at meeting and CCWD understands there are no additional comments.

  - ✓ RR-3 – Minor additional comments at meeting and CCWD understands there are no additional comments.

  - ✓ VR-1 – Minor additional comments at meeting and CCWD understands there are no additional comments.

  - ✓ LU-1 – USFS provided comments on 6/5. CCWD is addressing comments, will issue a revised draft, and has scheduled a 7/29 virtual meeting to resolve any remaining issues.

Water/Aquatic

- During 6/2 meeting, we reviewed 4 Aquatic Resources study descriptions. Prior to the meeting, we received comments from CDFW on AR-1, AR-3, and AR-4.

  ✓ AR-1 – CDFW and USFS provided redlines. CCWD posted revised description for review on 6/29.

  ✓ AR-2 – No comments at meeting and CCWD understands there are no additional comments.

  ✓ AR-3 – Minor comments at meeting, which were addressed, and CCWD understands there are no additional comments.

  ✓ AR-4 – CDFW and USFS provided redlines on 6/9. CCWD to redistribute revised description for review and comment, and schedule call to resolve any remaining issues.

Meeting Goal and Process

- Goal: Develop the best possible study descriptions through meaningful engagement with interested parties.
- Process:
  - Review and discuss comments received by CCWD prior to the meeting on each study description distributed by CCWD on 6/29/26.
  - Discuss any other comments on each study description.
  - Assess whether there is agreement on each study description and, if not identify remaining differences.

- Water Quality Study
  - Open Word version of 6/29 draft.

- Water Temperature Model of Project-Affected Reaches and in New Spicer Meadow Reservoir
  - Open Word version of 6/29 draft.

- Special-status Amphibian and Aquatic Reptile eDNA Sampling
  - Open Word version of 6/29 draft.

- ESA-Listed Amphibian and Aquatic Reptile Visual Encounter Surveys
  - Open Word version of 6/29 draft.

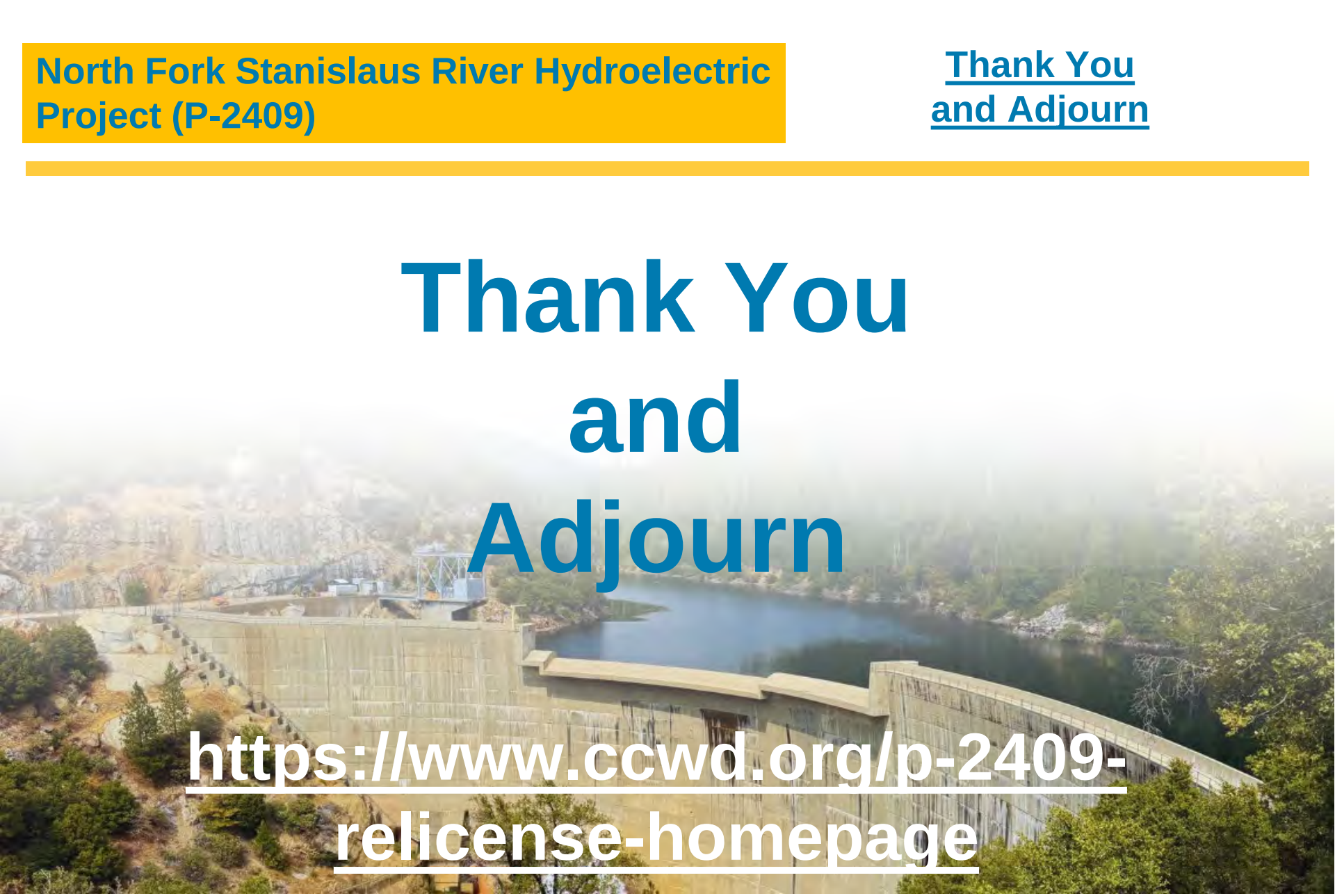
Schedule for Upcoming Meetings

Upcoming Study Description Meetings

- 7/29 (3 PM) - Virtual meeting to discuss Revised Study Descriptions RR-1 and LU-1.
- TBD - Virtual meeting to discuss Revised Study Descriptions AR-4. [Can we handle AR-1 via e-mail?]
- TBD – CCWD issued an initial draft AR-5, Instream Flows Study Description on 7/14. Need to schedule time to discuss after adequate time for review.

- Review Action Items

Thank You and Adjourn



https://www.ccwd.org/p-2409-relicense-homepage

Sustainable Earth
By Staples™

-AR-2 comeback to Highlands Cr.
Site Selection. Possible additional site closer to confluence w/ NF Skin
—Consider adding Efish/snorkel site on Highland Creek lower (closer to conf)
-consider access

- less fish observed at dam relative to further Ds. in Highland Cr.
- interested in spatial differences in density.

WR-1 - WQ - confirm if NCPA aren't +s cloud seeding/ silver iodide
Will include results of that discussion in study description.

WR-2 - Add addition sentences to describe temp calibration sites location & collection frequency, into study description.
hourly ✓

- Add description of why ^ instead of Ce-qual in study description for Beth (CDFW) (stratification) Y SQ
  - Megan call Beth directly.

—Clarify Model output daily vs hourly in study Description.
  - preference is hourly

- input into model - hourly vs daily?
  - confirm which is used
- collection is hourly

AR-6- eDNA / AR-7

-Southern Long toed Salamander

Stillwater will clarify whether to include it or not and make appropriate change in study description.

-Continue to collect eDNA ~~beyond~~ ~~initial 4~~ just one 3rd VES survey. Stillwater to clarify this in Study Description - Clarify when eDNA will occur

~~-CCWD~~ Stillwater/HDR/CCWD to consider whether additional eDNA sampling is an option to include pre-study as written.

-Stillwater to clarify whether sampling will occur in 3 separate years, for YT.

-update text to clarify in study description.

-previous FS sampling may help inform beyond licencing study.

and possibly other species (SNYLF)

FS to provide previous relavent sampling or point to it.

-Stillwater needs to clean up study description text so SNFYLF Surveys dont have WY type requirement.

- CRLF - consider night surveys in study description.

— July 24 - get back w/ comments for ~~Instream Flow (AR-5)~~ AR-1.

— AR-5 instream flow does not include below Highland Cr & upstream of Mckays on NF Stan. Need to Clarify in study description. Stillwater

—Scheduling info coming for AR-4 & AR-5.

P-2409 Calaveras County Water District – Relicensing Meeting #8 – Water and Aquatics Discussion Sign-in Sheet

Name & Title	Representing	Email
Peter Drobny FERC Specialist/ Fish bio	HDR	Peter.drobny@hdrinc.com
Randy Bowersox - Hydro Market Executive	GFT	rbowersox@gftinc.com
John Buckley - CSERC Executive Director	CSERC	johnb@cserc.org
Stan Dodson Program director	CSERC	Stan@cserc.org
Kelly Gerkensmeyer	CCWD	kellyg@ccwd.org
Adam Lewis	Calaveras Miwok	
Aguirre orozco, Victor	Forest Service	
Chris shutes		
Darrin M. Johnson		
Eric Woodruff	CSPA	

1 Virtual Attendance

Virtual Attendees

Name & Title	Representing	Email & Phone
Estenson, Lauren		
Ben Ewing	CDFW	
Holly Burger		
Josef Polk-Griffith, Masuda		
Kelly Gerkensmeyer		
Beth Lawson	CDFW	
Le, Truc	Water Board	
Maher, Michael	CDFW	
Matt Mckechnie		
Michael Hodson		

Virtual Attendees

Name & Title	Representing	Email & Phone
Michael Minkler		
Angie Montalvo	CDFW	
David. Moore	HDR	
Todd Newburger	FS	
Tom Hofstra	CSERC	
Sophia Weinmann	CDFW	
Jim Lynch	HDR	

P2409 Relicense

Subject:	P-2409 Relicensing Meeting #9 - Aquatic Resources Study Discussion (virtual)
Location:	No location added
Start:	Tue 08/18/2026 9:00 AM
End:	Tue 08/18/2026 11:00 AM
Show As:	Busy
Meeting Status:	Organizer
Organizer:	P2409 Relicense
Required Attendees:	Michael Minkler; Kelly Gerkensmeyer; Andrew Renshaw; jim.lynch@hdrinc.com; rbowersox@gftinc.com; Vertucci, Charles; snicotero@tridamproject.com; Jake Eymann; Benjamin Guy; frankf@uticawater.com; Ewing, Ben@Wildlife; jself@upudwater.org; monica.gutierrez@noaa.gov; Triplett, Noah R; Shawn.Puzen@meadhunt.com; Beth.Lawson@wildlife.ca.gov; Maher, Michael@Wildlife; keiko@friendsoftheriver.org; rstork@friendsoftheriver.org; Jann Dorman; blancapaloma@msn.com; tomh@cserc.org; chelsea@cserc.org; Stan Dodson; John Buckley; Matt McKechnie; stevefelte@gmail.com; Sophia.Weinmann@Wildlife.ca.gov; Steve Williams; jereme@ionemiwok.net; Hassan, Rajaa@Waterboards; Truc.Le@Waterboards.ca.gov; jose.l.hernandez@usda.gov; Raymond.Cablayan@usda.gov; Aguirre orozco, Victor - FS, CA; allison.stevenot@usda.gov; scott@aorafting.com; rmasuda@calwaterlaw.com; Newburger, Todd - FS, CA; ewoodruff@calsport.org; Estenson, Lauren; gm@uticawater.com; admin@uticawater.com; brandis@uticawater.com; compliance@uticawater.com; kyler@uticawater.com; reception@uticawater.com; jpolk@calwaterlaw.com; Adam Lewis; Montalvo, Angie@Wildlife; Benjamin.Onanian@hdrinc.com; burger@stillwatersci.com
Optional Attendees:	Marissa Montjoy; Michael Hodson; Russ Liebig

All - based on the responses received to date, we selected the most popular date for an initial discussion of study description AR-5 (instream flow) and follow up discussion on AR-6 and AR-7 (amphibians).

AR-5 was posted on 7/15/26 and CCWD will post revised versions of AR 6 and AR-7 by COB 8/7/26 at P-2409 Relicensing Documents - Calaveras County Water District **>> Study Plans**

This will be a virtual only meeting.

Microsoft Teams meeting

Join: https://teams.microsoft.com/meet/216589257274105?p=nXtfbt1uvrqacvrRyL

Meeting ID: 216 589 257 274 105

Passcode: Bk9Yo26s

Need help? | System reference

For organizers: Meeting options

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North Fork Stanislaus River Hydroelectric Project (P-2409)

9th Relicensing Stakeholders Meeting

- Aquatic Resources Study Descriptions -

August 18, 2026

Agenda

- Welcome & Introductions
- Overview of Study Description Status
- Meeting Goal & Process
- Discuss & Attempt to Finalize Study Descriptions AR-5, AR-6, and AR-7
- Review Schedule for Upcoming Meetings
- Review Action Items
- Adjourn

Welcome and Introductions

- CCWD and Consultant Staff
  - **Michael Minkler** (CCWD) General Manager
  - **Kelly Gerkensmeyer** (CCWD) External Affairs Manager
  - **Andrew Renshaw** (CCWD) Water Resources Manager
  - **Jim Lynch** (HDR) Senior FERC Regulatory Specialist
  - **Ben Onanian** (HDR) FERC Regulatory Specialist
  - **Randy Bowersox** (GFT) Senior Hydropower Operations Specialist
  - **Matt McKechnie** (Stillwater Sci.) Project Manager
  - **Marrisa Montjoy** (Stillwater Sci.) Senior Wildlife Biologist
  - **Ken Jarrett** (Stillwater Sci.) Fisheries Biologist
  - **Russ Liebig** (Stillwater Sci.) Senior Fisheries Biologist
- Participating Agencies, Native American Tribes, NGOs, and Others

North Fork Stanislaus River Hydroelectric Project (P-2409)

Study Descriptions Status (1 of 4)

Study Description	No Additional Comments	Remaining Comments to Be Discussed & Process for Resolution
WR-1, Water Quality Sampling in Project-Affected Reaches, in New Spicer Meadow and Mckays Reservoirs, and Near Project Recreation Facilities	X	--
WR-2, Water Temperature Model of Project-Affected Reaches and New Spicer Meadow Reservoir	X	--
AR-1, Fish Sampling in New Spicer Meadow Reservoir	X	--
AR-2, Fish Sampling in Project-Affected Reaches	X	--

North Fork Stanislaus River Hydroelectric Project (P-2409)

Study Descriptions Status (2 of 4)

Study Description	No Additional Comments	Remaining Comments to Be Discussed & Process for Resolution
AR-3, Benthic Macroinvertebrate Sampling in Project-Affected Reaches	X	--
AR-4, Assessment of Potential for Fish Entrainment		CDFW and USFS provided an extensive redline of CCWD's study description that was primarily a desktop analysis. Redlines focused primarily on: 1) diversions to be studied; 2) and adding fish behavior studies. CCWD is reviewing CDFW and USFS's redline, will issue a revised study description addressing comments, and schedule a virtual meeting to resolve differences.
AR-5, Instream Flows		To be discussed at today's virtual meeting.
AR-6, Special-Status Amphibians and Aquatic Reptiles eDNA Sampling		To be discussed at today's virtual meeting.

North Fork Stanislaus River Hydroelectric Project (P-2409)

Study Descriptions Status (3 of 4)

Study Description	No Additional Comments	Remaining Comments to Be Discussed & Process for Resolution
AR-7, ESA-Listed Amphibians and Aquatic Reptile Visual Encounter Surveys		To be discussed at today's virtual meeting.
TR-1, Botanical Resources Study Including Vegetation Mapping and Protocol Surveys for Special-Status Species and Non-Native Invasive Plants	X	--
TR-2, Bald Eagle Surveys at New Spicer Meadow Reservoir	X	--
TR-3, ESA-Listed and Special Status Wildlife Habitat Assessment in Areas Disturbed by the Project	X	--
LU-1, Primary Project Roads and Trails Assessment		Remaining comment is: 1) USFS requested adding additional roads to list of Primary Project Roads to be included in study. Discuss at meeting to be scheduled.

North Fork Stanislaus River Hydroelectric Project (P-2409)

Study Descriptions Status (4 of 4)

Study Description	No Additional Comments	Remaining Comments to Be Discussed & Process for Resolution
RR-1, Project Recreation Use and Visitor Surveys		Remaining comment is: 1) USFS requested adding additional sites at which visitor surveys would be conducted. CCWD issued a revised study description on 8/10. Discuss at meeting to be scheduled.
RR-2, NFSR Sourgrass Run Whitewater Boating Use Evaluation	X	--
RR-3, Fishing, Swimming and Wading Use Evaluation at Calaveras Big Trees State Park	X	--
VR-1, Visual Resources Evaluation at Project Facilities	X	--
CR-1, Archeological and Historic Sites Inventory to Support Section 106	X	--
CR-2, Traditional Cultural Sites and Tribal Consultation to Support Section 106	X	--
Subtotal	*13*	*6*
Total	**19**	

Meeting Goal and Process

- Goal: Develop the best possible study descriptions through meaningful engagement with interested parties.
- Process:
  - Review and discuss comments received by CCWD prior to the meeting on AR-5 and revised AR-6 and AR-7.
  - Discuss any other comments on each study description.
  - Assess whether there is agreement on each study description and, if not identify remaining differences.

- Instream Flows
  - CCWD distributed initial study description on 7/15. No comments received prior to 8/18 meeting.
  - Open Word version of 7/15 draft.

- Special-status Amphibian and Aquatic Reptile eDNA Sampling
  - CCWD distributed initial study description on 6/29, received comments during meeting on 7/16, addressed comments, and issued a revised AR-6 on 8/4. No additional comments received prior to 8/18 meeting.
  - Open revised Word version of 8/4 draft.

Study Description AR-7

- ESA-Listed Amphibian and Aquatic Reptile Visual Encounter Surveys
  - CCWD distributed initial study description on 6/29, received comments during meeting on 7/16, addressed comments, and issued a revised AR-7 on 8/4. No additional comments received prior to 8/18 meeting.
  - Open revised Word version of 8/4 draft.

Schedule for Upcoming Meetings

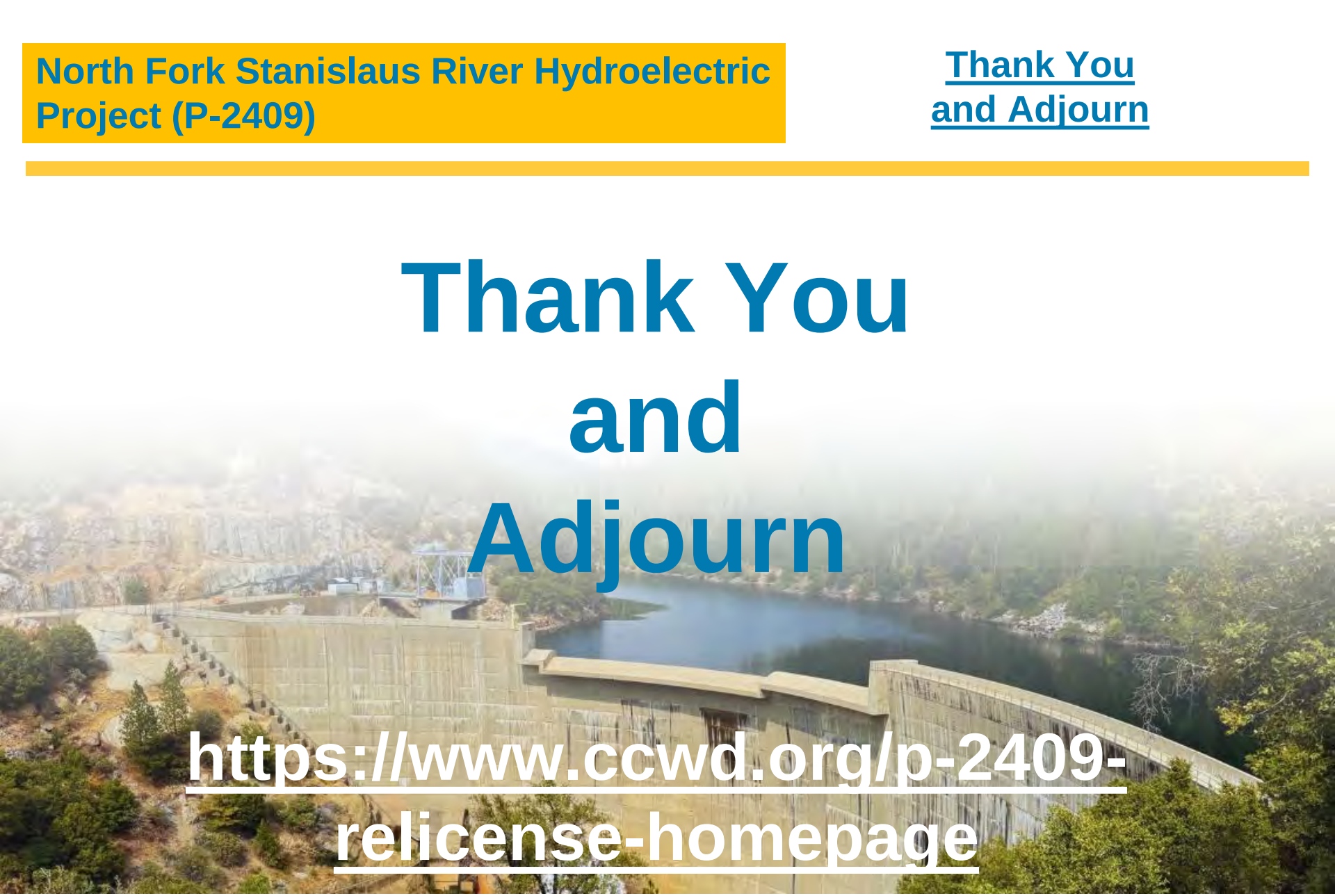
Upcoming Study Description Meetings

- TBD – CCWD addressed comments and issued a revised RR-1 study description on 8/10. CCWD addressing comments and will issue a revised LU-1 study description. CCWD to schedule virtual meeting, after stakeholders have had time to review and comment.

- TBD – For AR-4, CCWD address comments, issue revised study description, and schedule a virtual meeting, after stakeholders have had time to review and comment.

- Review Action Items

Thank You and Adjourn



https://www.ccwd.org/p-2409-relicense-homepage

P- 2409 Aquatics Meeting #9 (AR-5, AR-6, AR-7) – 8/18/2026

Attendance

Victor Aguirre-Orozco (USFS)
Lauren Estenson (USFWS)
Beth Lawson (CDFW)
Ben Ewing (CDFW)
Truc Le (SWRCB)
Stan Dodson (CSERC)
Eric Woodruff (CSPA)
Josef Polk (Utica)
Michael Minkler (CCWD)
Kelly Gerkensmeyer (CCWD)
Andrew Renshaw (CCWD)
Randy Bowersox (GFT)
Jim Lynch (HDR)
Ben Onanian (HDR)
Marissa Montjoy (Stillwater)
Matt McKechnie (Stillwater)
Russ Liebig (Stillwater)
Ken Jarrett (Stillwater)

AR-5 Instream Flows

Beth Lawson (CDFW) – Need additional study site below confluence of Highland Creek and N. Fork Stan, above McKays Point Reservoir (within this reach – exact location not yet determined)

- Only CDFW comment
- Supports developing unimpaired flows

Stan D. (CSERC) – No discussion of unimpaired flows. Would like to see for NFS, Silver Creek, Beaver Creek (all major inputs to system) – developed (modeled) for different WYTs
-to help determine MIF

AR-6 Special-Status Amphibian and Reptile eDNA

No additional comments
Will be cleaned up, changes accepted and posted

AR-7 ESA-Listed Amphibian and Aquatic Reptile VES

Beth Lawson (CDFW) – More than one set of Yosemite Toad survey per year to avoid false negative possibilities

-Potentially using SCE Lee Vining Project as an example for frequency

-Sophia needed for specific discussion on timing of additional survey

Would like incidental observations of bullfrogs reported online

-CDFW to provide link

If comments resolved via email with Sophia – cc Michael Maher and Beth Lawson and USFWS and USFS

-No additional meeting at the moment

USFWS and USFS – No additional comments

<u>Action Items</u>

2 Additional virtual meetings to be scheduled by CCWD/HDR

CDFW to provide link to report incidental observations

Accept track changes and clean up AR-6

Discussion with CDFW staff (Sophia) about additional survey timing

P2409 Relicense

Subject:	P-2409 Relicensing Meeting #10 - Land Use and Recreation Study Discussion (virtual)
Location:	No location added
Start:	Tue 09/08/2026 2:00 PM
End:	Tue 09/08/2026 4:00 PM
Show As:	Busy
Meeting Status:	Organizer
Organizer:	P2409 Relicense
Required Attendees:	Michael Minkler; Kelly Gerkensmeyer; Andrew Renshaw; jim.lynch@hdrinc.com; rbowersox@gftinc.com; Vertucci, Charles; snicotero@tridamproject.com; Jake Eymann; Benjamin Guy; frankf@uticawater.com; Ewing, Ben@Wildlife; jself@upudwater.org; monica.gutierrez@noaa.gov; Triplett, Noah R; Shawn.Puzen@meadhunt.com; Beth.Lawson@wildlife.ca.gov; Maher, Michael@Wildlife; keiko@friendsoftheriver.org; rstork@friendsoftheriver.org; Jann Dorman; blancapaloma@msn.com; tomh@cserc.org; chelsea@cserc.org; Stan Dodson; John Buckley; Matt McKechnie; stevefelte@gmail.com; Sophia.Weinmann@Wildlife.ca.gov; Steve Williams; jereme@ionemiwok.net; Hassan, Rajaa@Waterboards; Truc.Le@Waterboards.ca.gov; jose.l.hernandez@usda.gov; Raymond.Cablayan@usda.gov; Aguirre orozco, Victor - FS, CA; allison.stevenot@usda.gov; scott@aorafting.com; rmasuda@calwaterlaw.com; Newburger, Todd - FS, CA; ewoodruff@calsport.org; Estenson, Lauren; gm@uticawater.com; admin@uticawater.com; brandis@uticawater.com; compliance@uticawater.com; kyler@uticawater.com; reception@uticawater.com; jpolk@calwaterlaw.com; Adam Lewis; Montalvo, Angie@Wildlife; Benjamin.Onanian@hdrinc.com; burger@stillwatersci.com
Optional Attendees:	matthew.paquette@hdrinc.com; Moore, David

All - This virtual meeting is meant to discuss edits to CCWD's LU-1 (Roads) and RR-1 (Recreation) studies. Revised study descriptions and supporting documents are posted at P-2409 Relicensing Documents - Calaveras County Water District **>> Study Plans**

This will be a virtual only meeting.

Microsoft Teams meeting

Join: https://teams.microsoft.com/meet/222908702496743?p=nTuE3M7PQ01BANEzgK

Meeting ID: 222 908 702 496 743

Passcode: FX9k5A8p

Need help? | System reference

For organizers: Meeting options

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North Fork Stanislaus River Hydroelectric Project (P-2409)

10th Relicensing Stakeholders Meeting

- LU-1 and RR-1 Study Descriptions -

September 8, 2026

Agenda

- Welcome & Introductions
- Meeting Goal & Process
- Discuss & Attempt to Finalize LU-1 and RR-1 Study Descriptions
- Review Action Items
- Adjourn

Welcome and Introductions

- CCWD and Consultant Staff
  - **Michael Minkler** (CCWD) General Manager
  - **Kelly Gerkensmeyer** (CCWD) External Affairs Manager
  - **Andrew Renshaw** (CCWD) Water Resources Manager
  - **Chuck Vertucci** (HDR) Project Manager
  - **Jim Lynch** (HDR) Senior FERC Regulatory Specialist
  - **Matt Paquette** (HDR) Senior Environmental Planner
  - **Randy Bowersox** (GFT) Senior Hydropower Operations Specialist
- Participating Agencies, Native American Tribes, NGOs, and Others

Meeting Goal and Process

- Goal: Develop the best possible study descriptions through meaningful engagement with interested parties.
- Process:
  - Review and discuss USFS comments received by CCWD.
  - Try to reach agreement on all comments and, if not identify remaining differences.

Project Roads and Trails Conditions Assessment

- On 4/20, CCWD issued an initial draft that listed 10 road segments.
- On 6/18, USFS commented that the study description should include more roads and USFS included a table and map of 21 road segments, of which:
  - ✓ 10 were the same road segments CCWD proposed.
  - ✓ 6 were identified in USFS's table as "Shared-Use Road".
  - ✓ 5 were identified in USFS's table as "Project Road-FS Proposed".

Study Description LU-1 (2 of 3)

- CCWD assumes agreement on the 10 road segments both CCWD and Forest Service proposed.
- CCWD assumes the 6 “Shared-Use Roads” will be addressed outside of relicensing with all parties that use the road segment.
- CCWD agrees to add the “Access to Spicer Dam Powerhouse” (0.10 mile) to the study description as a Project Road.
- CCWD believes the remaining 4 road segments should not be included in the study description for the reasons described on the next slide.

Study Description LU-1 (3 of 3)

- "McKays Point Road" (1.36 miles) – This is the road that leads to the now abandoned PG&E Diversion Dam for Upper Utica Flume. This is a Shared Use Road that pre-dates the Project and provides access to Avery Gage and non-Project STF recreation.
- "Road Across Spicer Dam Bridge" (0.06 mile) – This is the road that crosses Highland Creek below the dam. This is a Shared Use Road that provides access to the dam's left abutment and the non-Project STF's Wheats Meadow Trail.
- "Unknown, Needs Clarification" (0.34 mile) - This is the road along the left side of the North Fork Diversion Tunnel Tailrace. This provided access during initial Project construction and is not used for routine Project operation or maintenance.
- "Road to Gaging Station Below Spicer Dam, Included in 1989 Plan" (0.23 mile) – This is the road that connects to a granite trail to the Highland Creek Gage. This provided access during initial Project construction and is anticipated to be needed for routine Project operation or maintenance.

Project Recreation Use and Visitor Surveys

- On 4/20, CCWD issued an initial draft.
- On 6/18, USFS commented that the study description should include additional sites and included a table that listed:
  - ✓ 6 specific sites, of which 1 ("Spicer Picnic Area just north of dam; Day Use Picnicking") was included as a proposed site in CCWD's study description.
  - ✓ 8 road segments.
  - ✓ 3 trails.

Study Description RR-1 (2 of 5)

- CCWD assumes agreement on the:
  - 1 site each proposed.
  - "Spicer Rd from Hwy4 Spicer" but only ~0.5 mile from group campground to the dam: not rest of road for reasons described on slide 12.
- CCWD agrees to add four additional sites/road, including:
  - "Beaver Creek Diversion Dam"
  - "North Fork Diversion Dam & Impoundment"
  - "7N17B"
  - "Road 7N29Y" but only ~0.1 mile in the immediate vicinity of the North Fork Diversion Tunnel Outlet Channel: not rest of 7N29Y for reasons described on slide 10.
- CCWD believes the remaining sites, roads, and trails should not be included in RR-1 for the reasons described on next 3 slides.

Study Description RR-1 (3 of 5)

- "7N29Y" – Shared-Use Road. Provides access to Project's outlet channel and then to non-Project STF areas including Summit Lake, Utica and Union reservoirs, and Elephant Rock Trailhead.
- "7N55Y" – Not used to access Project facilities or for Project routine maintenance or operations.
- "7N017 – TH to Wheats Mdw" - Not used to access Project facilities or for Project routine maintenance or operations.
- "Below Spicer Dam (End of 7N01)" – Not used to access Project facilities or for Project routine maintenance or operations. Provides access to non-Project areas.
- "18E05 - TH also connector at Spicer Rd" - Not used to access Project facilities or for Project routine maintenance or operations.

Study Description RR-1 (4 of 5)

- "6N29Y" – Not used to access Project facilities or for Project routine maintenance or operations.
- "18EV295" – CCWD was unable to locate this road segment.
- "7N17" – Shared-Use Road. Provides access to Project's NFDD area and then to non-Project Utica and Union reservoirs, and STF Slick Rock OHV Trail/Trailhead.
- "Spicer Rd – 7N77" – Not used to access Project facilities or for Project routine maintenance or operations.
- "Spicer RD - Bloods Creek" - Not used to access Project facilities or for Project routine maintenance or operations.
- "Stanislaus River Campground/Crossing" – Not a Project recreation facility: constructed, maintained and operated by STF.

Study Description RR-1 (5 of 5)

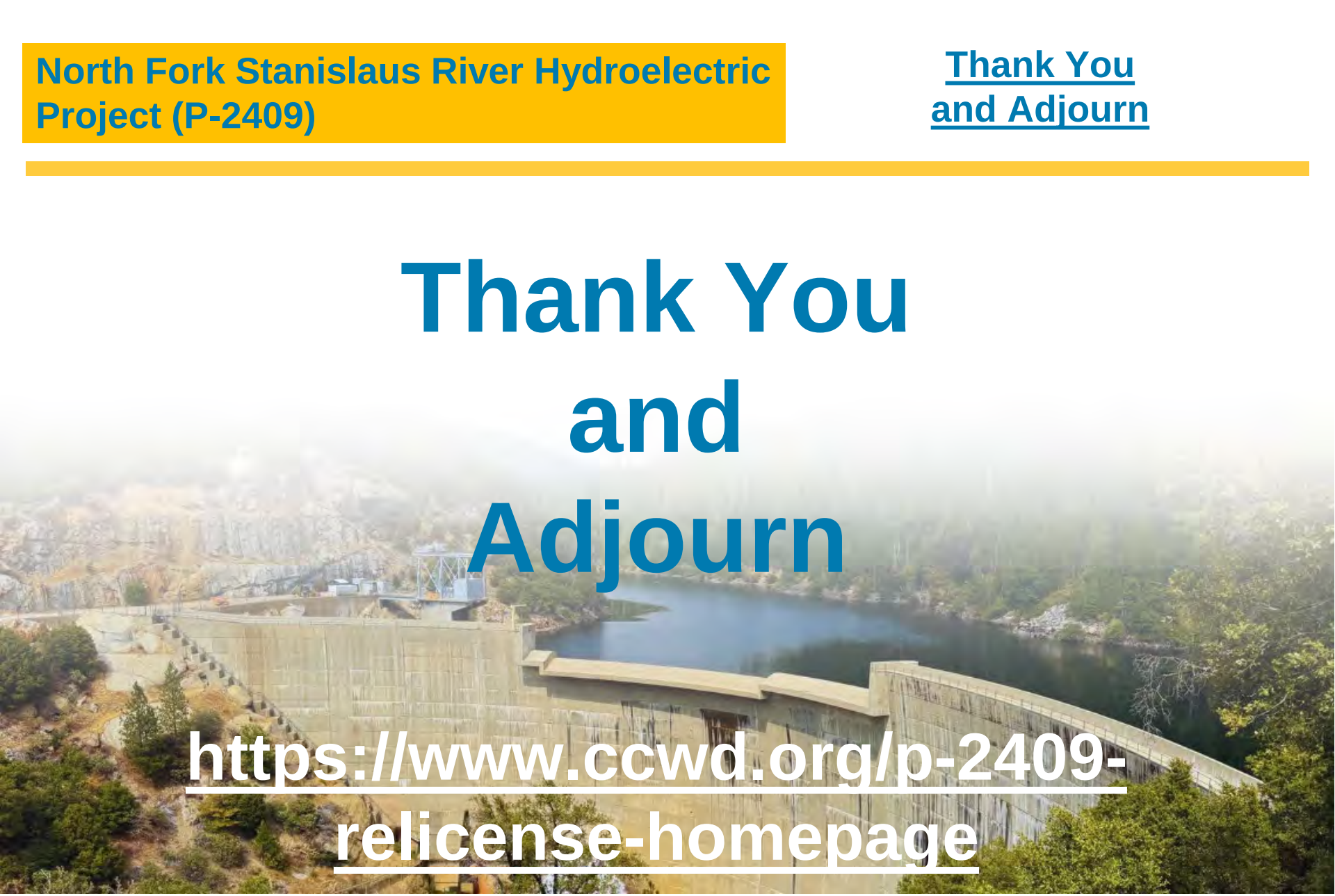
- "Spicer Rd at Hwy 4 Recreation" (SnoPark) – Not a Project recreation facility: constructed, maintained, and operated by STF.
- "Spicer Rd from Hwy 4 Spicer" – Shared-Use Road. Provides access to Spicer and non-Project Utica and Union reservoirs and STF.
- "7N49Y/7N38" - Not used to access Project facilities or for Project routine maintenance or operations.

Next Steps

- Outstanding Study Descriptions
  - AR-4 (Entrainment) – CCWD plans to issue a revised version for review.
  - AR-5 (Instream Flow) – CCWD posted a revised version on 9/8 and requested additional comments by 9/22.
  - AR-7 (Amphibian VES) – CCWD and CDFW to meet to resolve YOTO survey timing.
- Filing of NOI, PAD, and TLP Request
  - CCWD is targeting filing for 9/29/26. CCWD will send an e-mail advising stakeholders of the filing and making the documents available.

- Review Action Items

Thank You and Adjourn



https://www.ccwd.org/p-2409-relicense-homepage

Virtual Meeting Attendees

Attendee	Affiliation
Chuck Vertucci	HDR - consultant to CCWD
Victor Aquirre orozco	USFS
Andrew Renshaw	CCWD
Kathryn Baker	USFS
Debra Grimes	California Band of Mi-Wuk Indians
Eric Woodruff	CSPA
Lauren Estenson	USFWS
Ben Ewing	CDFW
Jose Hernandez	USFS
John Buckley	CSERC
Josef Polk	Griffith, Masuda & Hobbs
Kelly Gerkensmeyer	CCWD
Jim Lynch	HDR - consultant to CCWD
Angie Montalvo	CDFW
Dave Moore	HDR - consultant to CCWD
Todd Newburger	USFS
Matt Paquette	HDR - consultant to CCWD
Randy Bowersox	GFT - consultant to CCWD
Ron Stork	Friends of the River
Stan Dodson	CSERC
Summer Nicotero	Tri-Dam
Theresa Lorejo-Simsiman	American Whitewater
Noah Triplett	BLM

SECTION 2.0

EXISTING AND PROPOSED PROJECT

This section consists of two subsections. Section 2.1 describes the existing Project, including facilities and features; FERC Project Boundary; safety; operations; current license, including exhibits; compliance history; and CCWD's current net investment in the Project. Section 2.2 describes changes CCWD proposes at this time to the existing Project facilities.

2.1 Existing Project

2.1.1 Facilities and Features

Refer to Attachment 2A, Preliminary Draft Exhibit A, *Existing Project Facilities and Features*, of this PAD for a detailed description of existing Project facilities and features.

2.1.2 FERC Project Boundary

The FERC Project Boundary is intended to consist of all lands necessary for the routine operations and maintenance of the Project and other purposes, such as recreation, shoreline control, and protection of environmental resources. The existing FERC Project Boundary encompasses 2,301.4 acres on federal lands based on the most recent FERC lands invoice.

The FERC Project Boundary on existing Exhibit J and K Project Maps is described using surveyed metes and bounds descriptions that are tied into the Public Land Survey System coordinates. These drawings were hand drawn or created in a computer-aided design system. The existing FERC Project Boundary does not exist in a digital or geo-referenced format. During relicensing, CCWD made a good faith effort to develop a Geographic Information System (GIS) version of the FERC Project Boundary. As part of this process, CCWD converted the surveyed metes and bounds description of the FERC Project Boundary on the existing Exhibit J and K drawings into the GIS-georeferenced description using the coordinate geometry tools available in Esri's™ ArcMap software. Based on CCWD's GIS data and current land ownership information, the existing FERC Project Boundary encompasses 2,376.9 acres, of which 2,307.8 acres are federal lands including 2,289.3 acres managed by the Forest Service as part of STF, 8.6 acres administered by BLM as part of the Sierra Resource Management Area, and 9.9 acres administered by BOR as part of the New Melones Reservoir Area. The remaining 69.1 acres are located on private lands. The small difference in the amount of federal lands (i.e., 6.4 acres) between the existing FERC Project Boundary and CCWD's calculated existing FERC Project Boundary is due to increased accuracy of GIS data compared to the FERC-approved Exhibit J and K maps.

Further discussion of the existing FERC Project Boundary, including parcels on federal lands, is provided in Attachment 2A, Preliminary Draft Exhibit A, *Existing Project Facilities and Features*, of this PAD.

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2.1.3 Safety

CCWD is not aware of any ongoing, unresolved safety issues related to the Project. The Project began commercial operation in 1991 and, during this time, FERC staff has conducted operational inspections focusing on the continued safety of the Project structures, identification of unauthorized modifications, efficiency and safety of operations, compliance with the terms of the license, and proper routine maintenance. In addition, the Project has been inspected and evaluated every 5 years by an independent consultant and consultant's safety reports have been submitted for FERC's review.

2.1.4 Project Operations

Refer to Attachment 2B, Preliminary Draft Exhibit B, *Project Operations and Resource Utilization*, of this PAD for a detailed description of existing Project operations, including hydrology and water availability, operations model, monthly flow duration curves, regulatory and contractual operating constraints, license requirements, generation, and dependable capacity.

2.1.5 Current License

2.1.5.1 Conditions in Current License

Refer to Section B.5.1.1 in Attachment 2B, Preliminary Draft Exhibit B, *Project Operations and Resource Utilization*, of this PAD for the terms and conditions in the current license.

2.1.5.2 Exhibits in Current License

The current license includes six exhibits, each of which is described below.

Exhibits J and K, Maps

Table 2.1-1 lists Project maps included in the current FERC license that show the area within the existing FERC Project Boundary. The current Exhibits J and K maps are included in Attachment 2C, *Exhibits J and K, Project Maps*, of this PAD.

Table 2.1-1. List of Project maps in existing license for the North Fork Stanislaus River Hydroelectric Project.

Exhibit Map Number in Existing License	FERC-Assigned Drawing Number	Project Map Name
J-1	2409-173	Project Plan
K-1	2409-164	North Fork Diversion Dam and Tunnel, New Spicer Meadow Dam
K-2	2409-174	McKays Point Diversion Dam, Beaver Creek Diversion Dam
K-3	2409-166	Collierville Project Tunnel, Power Plant

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Exhibit L, Design Drawings

Table 2.1-2 lists design drawings included in the current FERC license. These drawings provide plan, elevation, profiles and sections, and depict the as-built principal Project works. For ease of reference, the design drawings are listed by their current exhibit number.

Table 2.1-2. List of design drawings in existing license for the North Fork Stanislaus Hydroelectric Project.

Exhibit L Design Drawing Number in Existing License	FERC-Assigned Drawing Number	Design Drawing Name
L-1	--	Drawing list and submittal contents
L-2	2409-167	General map and project plan
L-3	2409-168	Upper project, vicinity plan, and profile
L-4	2409-135	North Fork Diversion Dam, general plan
L-5	2409-136	North Fork Diversion Dam, sections
L-6	2409-137	North Fork Diversion Dam, intake structure, and tunnel sections
L-7	2409-138	North Fork Diversion Dam, tunnel outlet structure- and channel details
L-8	2409-139	New Spicer Meadow Dam, general plan, and area capacity curve
L-9	2409-140	New Spicer Meadow Dam, section, and details
L-10	2409-141	New Spicer Meadow Dam, upstream elevation, and plinth details
L-11	2409-142	New Spicer Meadow Dam, Spillway plan, and sections
L-12	2409-143	New Spicer Meadow Dam, power-tunnel, and penstock
L-13	2409-144	New Spicer Meadow Dam, powerhouse plan
L-14	2409-145	New Spicer Meadow Dam, powerhouse sections
L-15	2409-146	Collierville power tunnel. Plan, profile and sections
L-16	2409-147	Collierville tunnel, d/s portal and first stage tailrace excavation
L-17	2409-169	Collierville powerhouse, general plan
L-18	2409-149	Collierville powerhouse, sections
L-19	2409-150	Collierville powerhouse, single line diagram
L-20	2409-151	Beaver Creek Diversion Dam, general plan, and sections
L-21	2409-152	Beaver Creek Diversion Dam, intake structure
L-22	2409-153	Beaver Creek Diversion Dam, diversion tunnel, plan, and sections
L-23	2409-154	McKays Point Diversion Dam, general plan, and details
L-24	2409-155	McKays Point Diversion Dam, dam geometry, intake, and outlet sections
L-25	2409-156	Beaver Creek Diversion Dam, diversion, penstock, and valve house
L-26	2409-157	Collierville tunnel, mill creek tap, general plan, and sections
L-27	2409-175	McKays Point Dam Microturbine, general arrangement
L-28	2409-176	McKays Point Dam Microturbine, penstock, valves, and details

In accordance with Sections 5.30 and 4.32(k) of FERC's regulations, and in light of national security concerns, design drawings are treated by FERC as Critical Energy Infrastructure Information (CEII) under Section 388.112 of FERC's regulations and each drawing is marked as "Contains CEII – DO NOT RELEASE". Procedures for the Interested Parties to obtain access to CEII from FERC may be found at 18 C.F.R. Section 388.113. Requests for access should be made to FERC's CEII Coordinator.

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Exhibit M, General Description of Mechanical, Electrical, and Transmission Equipment

A revised Exhibit M was filed by CCWD on January 31, 1995, and approved by FERC in its October 7, 1997, Order Amending License, Approving As-Built Exhibits, and Revising Annual Charges. Refer to Attachment 2A, Preliminary Draft Exhibit A, *Existing Project Facilities and Features*, of this PAD for a detailed description of mechanical, electrical, and transmission equipment in the existing Project.

Exhibit R, Recreation

Exhibit R was approved by FERC on May 2, 1990. Refer to Attachment 2A, Preliminary Draft Exhibit A, *Existing Project Facilities and Features*, of this PAD for a detailed description of recreational facilities included in the existing Project.

Exhibit S, Wildlife

A revised Exhibit S, which included a New Spicer Meadow Reservoir Fish Stocking Plan, was filed by CCWD on February 3, 1988. On June 16, 1989, FERC approved the Revised Exhibit S, including the fish stocking plan.

2.1.6 Compliance History

CCWD is in compliance with terms and conditions of the existing license. Various remedial actions have been recommended based on the results of annual FERC Project inspections and the 5-year public safety, environmental, and recreation inspections. CCWD initiates actions and proposes plans and schedules for more significant actions to correct any issues of safety, compliance, or other issues as recommended from the inspections and provides written confirmation of the actions taken.

CCWD has had no re-occurring situations of non-compliance with the existing license's terms and conditions. In the event of a deviation from a term or condition in the existing license, such as deviation from a flow requirement, CCWD notifies FERC, initiates an investigation, and provides a written report, including proposed corrective actions if appropriate, to FERC regarding the deviation. FERC conducts its own analysis and determines if the deviation is considered a formal non-compliance event. There has been one instance in the last 5 years where FERC determined an event was a formal violation of license requirements; a July 22, 2022, flow deviation event at Beaver Creek Diversion Dam.[1]

[1] FERC's determination is available on the eLibrary at Accession Number 20240220-3011.

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2.2 CCWD Proposed Changes to Project Facilities and Operations

At this time, CCWD proposes no changes to existing Project facilities or features, or existing Project operations. CCWD will continue to evaluate upgrades to the Project and reserves its right to propose changes as the relicensing proceeds.

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Pre-Application Document

Attachment 2A

Exhibit A
Project Description

North Fork Stanislaus River Hydroelectric Project
FERC Project No. 2409

Prepared by:
Calaveras County Water District

September 2026

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EXHIBIT A

Project Description

A.1 Introduction

Calaveras County Water District (CCWD) prepared this Exhibit A, Project Description, as part of its application for a new license from the Federal Energy Regulatory Commission (FERC or Commission) for the North Fork Stanislaus River Hydroelectric Project (Project), FERC Project Number (No.) 2409. This exhibit conforms with Title 18 of the Code of Federal Regulations (C.F.R.), Subchapter B (Regulations under the Federal Power Act), Part 4 (Licenses, Permits, Exemptions, and Determination of Project Costs), Subpart F (Application for Major Project–Existing Dam), and as applicable, Part 16 (traditional process). This exhibit provides the information required in 18 C.F.R. Section 4.51(b), which describes the contents of Exhibit A. As a reference, 18 C.F.R. Section 4.51(b) states:

> Exhibit A is a description of the Project. This exhibit need not include information on project works maintained and operated by the U.S. Army Corps of Engineers, the Bureau of Reclamation, or any other department or agency of the United States, except for any project works that are proposed to be altered or modified. If the project includes more than one dam with associated facilities, each dam and the associated component parts must be described together as a discrete development. The description for each development must contain:
>
> (1) The physical composition, dimensions, and general configuration of any dams, spillways, penstocks, powerhouses, tailraces, or other structures, whether existing or proposed, to be included as part of the project;
>
> (2) The normal maximum surface area and normal maximum surface elevation (mean sea level), gross storage capacity, and usable storage capacity of any impoundments to be included as part of the project;
>
> (3) The number, type, and rated capacity of any turbines or generators, whether existing or proposed, to be included as part of the project;
>
> (4) The number, length, voltage, and interconnections of any primary transmission lines, whether existing or proposed, to be included as part of the project (see 16 U.S.C. 796(11));
>
> (5) The specifications of any additional mechanical, electrical, and transmission equipment appurtenant to the project; and
>
> (6) All lands of the United States that are enclosed within the project boundary described under paragraph (h) of this section (Exhibit G), identified and tabulated by legal subdivisions of a public land survey of the affected area or, in the absence of a public land survey, by the best available legal description. The tabulation must show the total acreage of the lands of the United States within the project boundary.

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In addition to this introduction, Exhibit A includes four sections: a description of the Project's location (Section A.2); a description of the Project works and boundary in the existing Project license (Section A.3); a description of CCWD's proposed changes to Project works and the FERC Project Boundary in the existing license (Section A.4); and references cited in this exhibit (Section A.5).

The information required in 18 C.F.R Section 4.51(b)(1), (2), (3), (5), and (6) is provided in Sections A.3 and A.4 of this Exhibit A. The information required in 18 C.F.R Section 4.51(b)(4) is not applicable to this Application for New License because the Project does not include any primary transmission lines.

To maintain consistency with the existing FERC exhibit documents, all elevation data in this exhibit are in National Geodetic Vertical Datum of 1929 datum unless otherwise stated.

A.2 Project Location

The Project is located on the west slope of the Sierra Nevada in the North Fork Stanislaus River (NFSR) and mainstem Stanislaus River basins in Calaveras, Tuolumne, and Alpine counties, California, with portions on lands of the United States managed by the United States Department of Agriculture, Forest Service (Forest Service), as part of the Stanislaus National Forest (STF), the United States Department of the Interior (USDOI), Bureau of Land Management (BLM), as part of the Sierra Resource Management Area, and the USDOI, Bureau of Reclamation (BOR), as part of the New Melones Reservoir Area. The NFSR joins the mainstem Stanislaus River at its confluence with the Middle Fork Stanislaus River (MFSR), and the river flows southwest through the agricultural San Joaquin Valley to join the San Joaquin River south of Manteca, California. The San Joaquin River flows into the Sacramento-San Joaquin Delta, which eventually empties into San Francisco Bay and the Pacific Ocean. Figure A.2-1 shows the general regional location of the Project. Figure A.2-2 illustrates the existing Project facilities, FERC Project Boundary, and land ownership.

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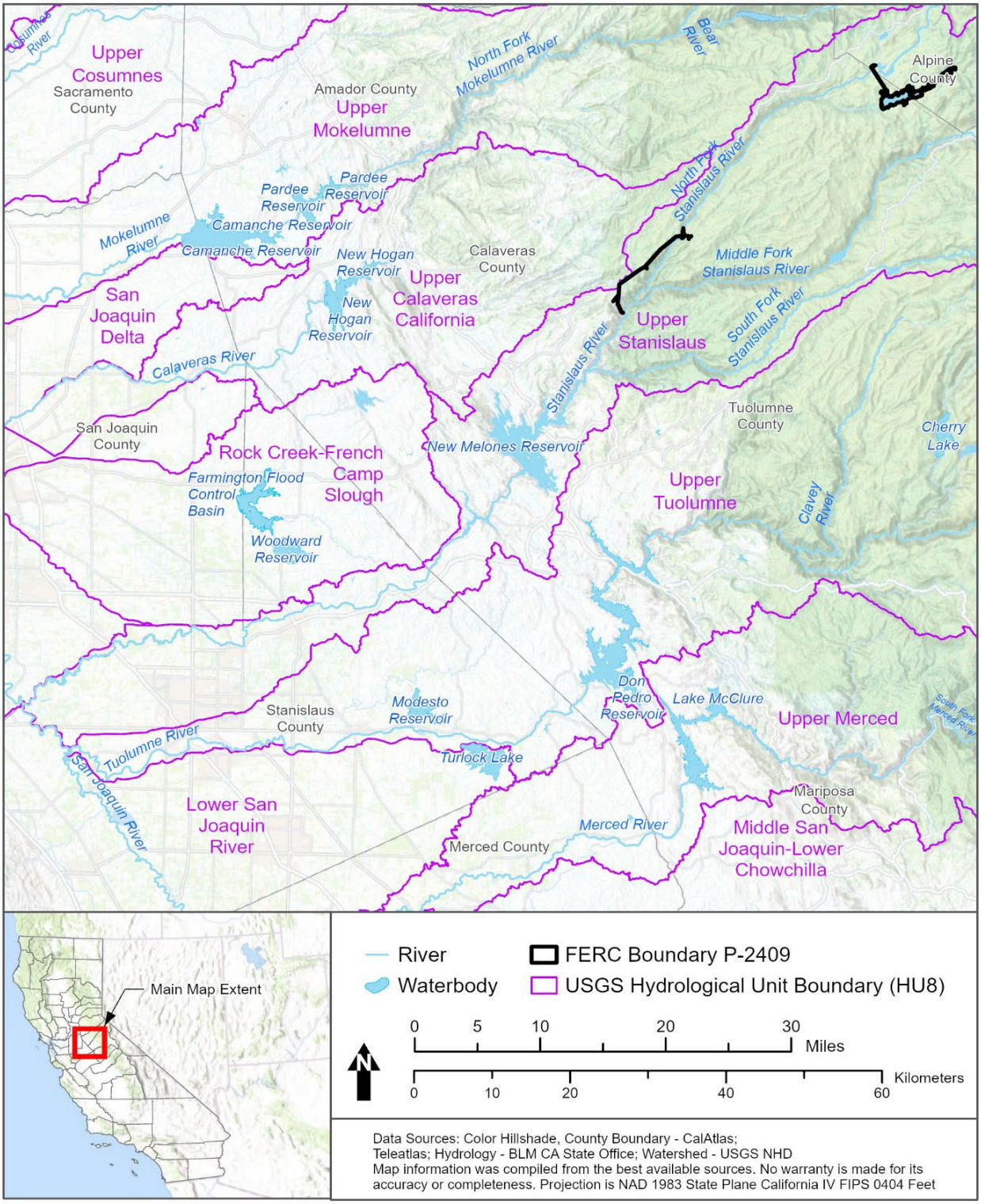


Figure A.2-1. North Fork Stanislaus River Hydroelectric Project and Stanislaus River watershed in relation to the San Joaquin River and other tributaries.

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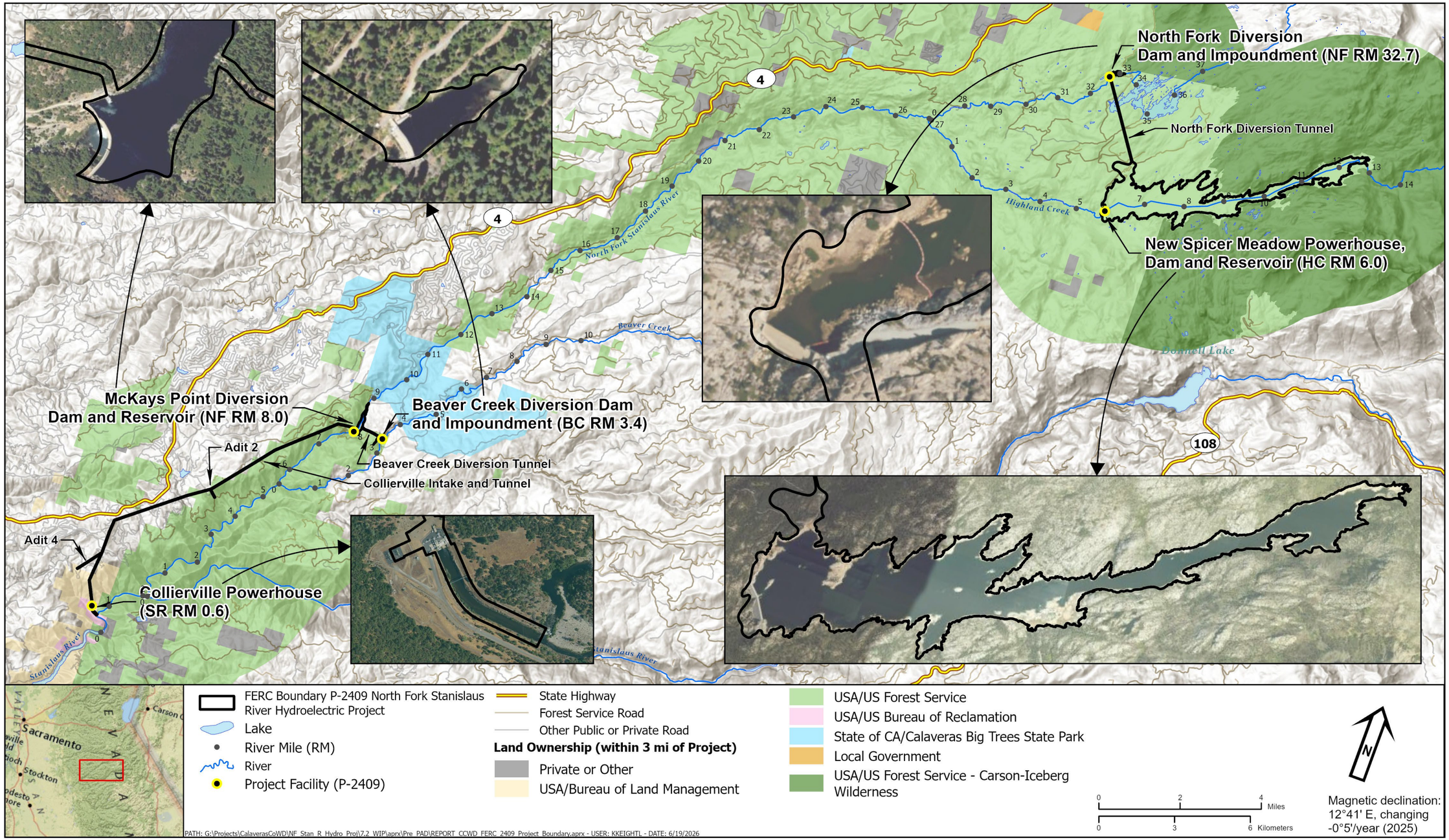


Figure A.2-2. North Fork Stanislaus River Hydroelectric Project Overview Map.

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A.3 Existing Project Works and Boundary

A.3.1 Project Works

The Project, with a FERC-authorized installed capacity of 258.726[1] megawatts (MW), consists of two developments – New Spicer Meadow and Collierville – that, in total, include: four dams, two powerhouses with associated switchyards, one microturbine, recreation facilities, and appurtenant facilities and structures. The Project does not include open water conduits other than the North Fork Diversion Tunnel Outlet Channel that is described below, transmission or distribution lines, or active spoil disposal or borrow areas. Project works in each development are described below.

A.3.1.1 New Spicer Meadow Development

The New Spicer Meadow Development is located on the main stem of the NFSR and Highland Creek, a tributary to the NFSR. Primary works include one diversion dam (North Fork), one diversion tunnel (North Fork), one dam and associated storage reservoir (New Spicer Meadow), one powerhouse and related switchyard (New Spicer Meadow), and recreation facilities along the northwest shore of New Spicer Meadow Reservoir. Project works are described below from upstream to downstream and shown in Figures A.3-1 through A.3-6. Power from the New Spicer Powerhouse is transmitted to the grid via the Spicer Meadow Transmission Line, which is part of Northern California Power Agency's (NCPA) Collierville and Spicer Meadow Transmission Line Project, FERC Project No. 11197 (P-11197). New Spicer Meadow Development works are accessible except from the first major snowfall, which typically occurs in the October through December timeframe, until roads are plowed, which usually occurs in the mid-April through late-May period, when access is available only via snowcat or helicopter.

- North Fork Diversion Dam is a 53-foot-high, 218-foot-long concrete gravity dam on the NFSR at River Mile (RM)[2] NFSR 32.7 immediately downstream of the confluence of Silver and Duck creeks. The dam crest elevation is 6,707 feet and the drainage area upstream of the dam is 28.2 square miles.

- North Fork Diversion Dam Spillway consists of an ungated, ogee type spillway section 115 feet wide and non-overflow sections with combined length of 103 feet. The spillway discharge capacity at the probable maximum flood (PMF) reservoir elevation of 6,706 is approximately 16,300 cubic feet per second (cfs).

[1] FERC's October 7, 1997, Order Amending License, Approving As-Built Exhibits, and Revising Annual Charges is available in FERC's eLibrary at accession number 19971009-0372.

[2] CCWD developed river miles (RM) designations for the NFSR, Stanislaus River, Highland Creek, and Beaver Creek based on CCWD's Relicensing Geographic Information System (GIS) measuring in 0.1-mile increments along the thalweg from the most downstream location in the river (e.g., the confluence of Beaver Creek with the NFSR is designated as RM 0.0). The stream for which the river mile is provided is indicated in the RM designation (e.g., BC RM 0.0, with BC indicating RM 0.0 on Beaver Creek).

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- North Fork Diversion Dam Sluiceway is controlled by a 3-foot-square slide gate downstream of which the height of the sluiceway increases to 6 feet to permit access for removal of potential rock and gravel accumulation. The discharge capacity of the sluiceway with the impoundment at spillway crest elevation of 6,695 feet is 200 cfs. The sluiceway discharges into the NFSR.

- North Fork Diversion Dam Low Flow Outlet has a design discharge capacity of 16.5 cfs for an impoundment elevation of 6,684 feet, which corresponds with the invert of the intake tunnel. The intake includes a trashrack and is unscreened. The outlet consists of an orifice plate with circular opening of 15.25 inches (i.e., total intake area of 182.73 square feet) in an 18-inch-diameter pipe section that is 3 feet long. The outlet discharges into the NFSR.

- North Fork Diversion Dam Impoundment is a man-made impoundment on the NFSR formed by North Fork Diversion Dam. At its normal maximum water surface elevation (NMWSE) of 6,695 feet, the impoundment has an estimated gross storage capacity of 350 acre-feet (ac-ft), an estimated usable storage capacity of 116 ac-ft, a surface area of approximately 13 acres, and a maximum depth of 35 feet.[3]

- North Fork Diversion Intake and Tunnel are an intake structure and an 11,382-foot-long, 12-foot-diameter tunnel that diverts up to approximately 1,000 cfs of water from the North Fork Diversion Dam to the North Fork Diversion Tunnel Outlet Channel. The intake is 11 feet high and 10 feet wide (i.e., total intake area of 110.0 square feet), unscreened, and includes a trashrack and a slide gate. The invert of the intake is at Elevation 6,684 feet, and water is only able to reach this elevation and enter the tunnel when flows entering the impoundment exceed the capacity of the fixed orifice plate, allowing the water level in the impoundment to rise at least 12 feet from the elevation of the orifice invert (6,672 feet). The tunnel terminates at the North Fork Diversion Tunnel Outlet where it empties into the North Fork Diversion Tunnel Outlet Channel.

- North Fork Diversion Tunnel Outlet Channel is an approximately 1,000-foot-long, rock lined trapezoidal open channel with 2-foot horizontal to 1-foot vertical (2.0H:1.0V) sloped sides. The channel provides water from the North Fork Diversion Dam Tunnel Outlet to New Spicer Meadow Reservoir. When constructed, the channel realigned a short section of Hobart Creek, a tributary to New Spicer Meadow Reservoir.

- New Spicer Meadow Dam is a 240-foot-high rock-filled dam with a concrete face on Highland Creek at HC RM 6.0. The dam extends to 1,250 feet at its crest elevation of 6,621 feet. The upstream concrete face consists of inclined slabs, each 50 feet wide and varying

[3] In this Application for New License, "gross storage capacity" is the volume of water in the impoundment when the pool is at the NMWSE and "usable storage capacity" is the amount of water in the impoundment between the invert of the lowest outlet in the dam and the NMWSE. Gross and usable storage should not be confused with "maximum operating level" and "minimum operating levels" that are determined by the operator for safe operations. Maximum and minimum operating levels are discussed in Appendix C to Draft Exhibit B. Nor should gross and usable storage capacity be confused with CCWD's State of California water rights to store water behind dams that are described in Appendix C to Draft Exhibit B, Table B.5-1. When used in the Application for New License, "storage" is used generically to mean the total amount of water impounded by the dam at a specific time.

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in thickness from 12 to 20 inches. The compacted rock fill is placed on a slope of 1.4H:1:0V. The drainage area upstream of the dam is 45.5 square miles.

- New Spicer Meadow Saddle Dam is a 126-foot high, 800-foot-long rock-filled dam with a concrete face with a crest elevation of 6,621 feet. The dam is located north of and contiguous to New Spicer Meadow Dam.

- New Spicer Meadow Spillway, on the left of the main dam, is a 370-foot-long, 30-foot-high ungated continuous concrete ogee with a crest elevation of 6,614 feet. The spillway discharges to an unlined chute. The chute consists of three sections from upstream to downstream: 1) an excavated channel of uniform slope; 2) a section stripped of boulders and overburden; and 3) an excavated channel leading to a discharge channel, which discharges to Highland Creek approximately 1,000 feet downstream of the New Spicer Meadow Powerhouse. The minimum slope of the spillway chute is approximately 10 percent. The chute is 370 feet wide at the ogee, approximately 200 feet wide at the narrowest section, and 300 feet wide at the discharge channel. The chute is approximately 1,250 feet long in total. The spillway discharge capacity at the PMF reservoir elevation of 6,621.2 is approximately 27,700 cfs.

- New Spicer Meadow Reservoir is a man-made reservoir on Highland Creek formed by New Spicer Meadow Dam. At its NMWSE of 6,614 feet, New Spicer Meadow Reservoir has an estimated gross storage capacity of 189,000 ac-ft, an estimated usable storage capacity of 159,000 ac-ft, a surface area of approximately 2,000 acres, a shoreline of about 21 miles, and a maximum depth of 194 feet.

- New Spicer Meadow Power Intake is a 234-foot-high, reinforced concrete structure with its lower 133 feet constructed as a concrete-lined shaft and the upper 101 feet as a tower extending to Elevation 6,622.0 feet. The rectangular reinforced concrete tower includes three intake openings at invert elevations of 6,571.50 (Intake Gate 3), 6,534.50 (Intake Gate 2), and 6,393.00 feet (Intake Gate 1 at the low-level intake structure), which are designed to be either fully open or fully closed by lowering or raising a stoplog for the gate. Each gate opening is 8 feet by 11 feet (i.e., total intake area of 88 square feet for each gate) and includes a trashrack. Exposed slots are provided for lowering a stoplog for Intake Gates 2 and 3. An access footbridge is provided to the tower, and an enclosure on the tower deck houses the gate hydraulic power unit that operates all three gates individually, and its control panel and a bridge crane to lower and raise the stoplogs for Intake Gates 2 and 3. The opening and closing rate for Gates 2 and 3 is set at approximately 2 feet per minute. For Intake Gate 1, a barge and crane are necessary to place and remove the stoplog at the entrance to the low-level intake structure. The excavated shaft section of the Power Intake is 22 feet by 30.5 feet. The Power Intake is designed to supply 600 cfs to the powerhouse under any head condition between Elevation 6,614 and 6,420 feet, or 2,330 cfs under emergency drawdown situations. Each opening is supplied with a hydraulically operated steel wheel gate, which normally operates with equal pressure on both sides; however, they are designed to close under their own weight under full differential head when oil pressure is relieved from the underside of the hoist cylinder.

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- New Spicer Meadow Power Tunnel is a 12-foot-diameter, horseshoe-shaped tunnel with a total length of 1,465 feet. The tunnel is located on the north bank of Highland Creek passing under the ridge between the New Spicer Meadow Dam and the saddle dam. The upstream end of the tunnel daylights into an approach channel leading to the reservoir about 280 feet upstream of the old PG&E Spicer Meadow Dam, which was inundated when New Spicer Meadow Dam was constructed. Near the downstream end, an embedded penstock section leads to the New Spicer Meadow Powerhouse manifold.

- New Spicer Meadow Penstock is 349 feet long with 265 feet embedded within the tunnel. The penstock diameter is 8 feet, reducing to 7 feet just outside of the tunnel downstream portal. A 5-foot-diameter pipe branches off from the penstock and serves as the emergency draw down discharge pipe controlled by a 54-inch-diameter emergency drawdown valve. Downstream of the branch to the emergency drawdown, the penstock further branches into a manifold configuration, transporting water to the three turbines, a 48-inch-diameter release valve, and a 12-inch-diameter low level outlet valve. The tunnel is designed for a maximum discharge capacity of 2,330 cfs, which would only occur during emergency drawdowns of the reservoir from full level. During normal power operation, the maximum discharge capacity through the generating units is approximately 417 cfs (full reservoir). With operation of the 48-inch and 12-inch valves, maximum discharge capacities between 600 and 800 cfs occur. A 16-inch-diameter steel pipe is embedded along the left side (looking downstream) of the tunnel downstream of the Power Intake and extends to the powerhouse tailrace. This pipe serves as the discharge pipe for low flows during dewatering of the tunnel downstream of the Power Intake.

- New Spicer Meadow Powerhouse is located at the outlet works of the dam and contains three horizontal shaft Francis turbines. Two of the turbines can pass approximately 190 cfs each and the third unit can pass approximately 37 cfs. Combined the three units have a maximum release of approximately 417 cfs and have a FERC-authorized installed capacity of 5.764 MW[4]. The facility is a reinforced concrete shell measuring 40 feet by 134 feet with a structural steel roof extending 17 feet above the concrete. Water is conveyed to the powerhouse by way of the 12-foot horseshoe-shaped diversion tunnel leading to the 8-foot-diameter, concrete-encased steel lining, which starts approximately 265 feet inside the tunnel. A manifold embedded in concrete behind the powerhouse provides for passage of water to the 54-inch-diameter emergency release valve, the 48-inch-diameter Howell Bunger Valve, the two 2.632 MW turbine generators, and the 0.5 MW turbine generator. The powerhouse is situated with turbine and generator centerline at Elevation 6,369.41 feet for Units 1 and 2, and Elevation 6,368.55 feet for Unit 3. The main powerhouse floor is at Elevation 6,365 feet. The bottom of the drainage sump and draft tube pit is situated at Elevation 6,351 feet. The entrance to the powerhouse is through the erection bay, a 22 foot by 24-foot work area at Elevation 6,378 feet.

[4] FERC's October 7, 1997, Order Amending License, Approving As-Built Exhibits, and Revising Annual Charges is available in FERC's eLibrary at accession number 19971009-0372.

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- New Spicer Meadow Switchyard, which is shared with NCPA, is a 40-foot-long by 68-foot-wide fenced enclosure immediately to the southwest of the powerhouse. Underground concrete encased duct banks provide for conduits that run between the powerhouse and the various pieces of equipment in the switchyard. Project switchyard equipment includes a 4.16 kV to 21-kilovolt (kV) transformer, circuit breaker, associated equipment, and telemetry infrastructure. The switchyard surface is covered with 6 inches of crushed rock to provide a free-draining surface. Within the switchyard, the demarcation between Project facilities and NCPA's Collierville and Spicer Meadow Transmission Line Project (P-11197) facilities is New Spicer Meadow 21 kV Circuit Breaker #22, which is part of P-11197.

- New Spicer Meadow Recreation Facilities include the New Spicer Meadow Reservoir Campground, New Spicer Meadow Reservoir Group Campground, and New Spicer Meadow Reservoir Boat Launch. The New Spicer Meadow Reservoir Campground has 60 campsites available for tent camping and for recreational vehicles (RV) up to 50 feet in length. The New Spicer Meadow Reservoir Group Campground is located on the west shore, 0.5 mile from the main campground and includes tables, a covered food preparation area, a campfire circle, and parking. The Group Campground can accommodate up to 60 people and a maximum RV size of 28 feet in length. The New Spicer Meadow Reservoir Boat Launch consists of a two-lane concrete launch ramp with floating courtesy dock; a picnic area with two sites (table only); and paved parking areas with 52 vehicle-with-trailer spaces and 20 single vehicle spaces; a fish cleaning station; and a vault restroom.



Figure A.3-1. North Fork Diversion Dam, Spillway, Low Level Outlet, Impoundment, and North Fork Diversion Intake.

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Figure A.3-2. North Fork Diversion Tunnel Outlet and Outlet Channel.

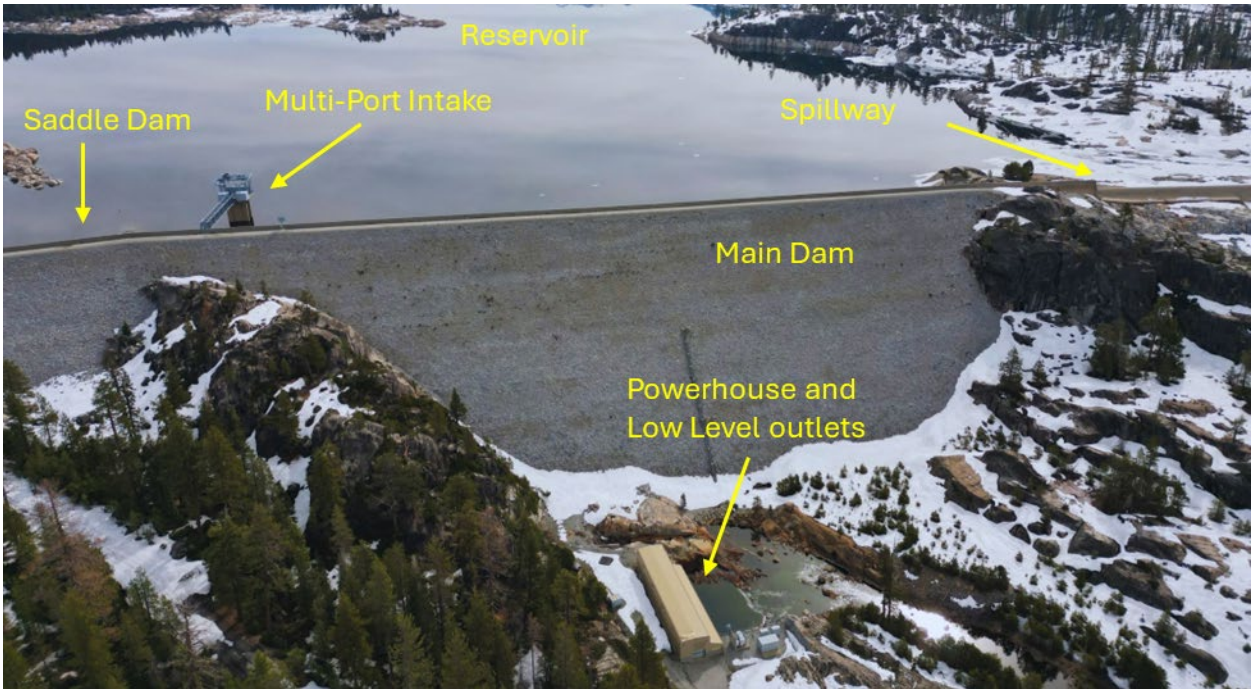


Figure A.3-3. New Spicer Meadow Dam, Spillway, Powerhouse, Outlets, and Reservoir.

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Figure A.3-4. Representative photographs of New Spicer Meadow Reservoir Campground.



Figure A.3-5. Representative photographs of New Spicer Meadow Reservoir Group Campground.

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Figure A.3-6. Representative photographs of New Spicer Meadow Reservoir Boat Launch.

A.3.1.2 Collierville Development

Collierville Development is located on the mainstem of the NFSR, Beaver Creek, a tributary to the NFSR, and the mainstem of the Stanislaus River. Primary works include one diversion dam (Beaver Creek), one reregulating dam and associated reservoir (McKays Point Diversion Dam), two diversion tunnels (Beaver Creek, with associated penstock, and Collierville), one microturbine (McKays), and one powerhouse and related switchyard (Collierville). Project works are described below from upstream to downstream and shown in Figures A.3-7 through A.3-9. The development does not include any recreation facilities. Power from Collierville Powerhouse is transmitted to the grid via NCPA's P-11197. Collierville Development works are typically accessible year-round, although following heavy winter storms with substantial snow accumulation in the 3,500-foot to 4,000-foot elevation band, access to McKays and Beaver Creek facilities is available only via snowcat or helicopter for days to weeks.

- Beaver Creek Diversion Dam is a 53-foot-high, 167-foot-long concrete gravity dam on Beaver Creek at BC RM 3.4 just downstream of Calaveras Big Trees State Park. The dam crest elevation is 4,204 feet and the drainage area upstream of the dam is 29.5 sq-mi.

- Beaver Creek Diversion Dam Spillway is an ungated, ogee-type spillway measuring 115 feet wide with a 100-foot-long non-overflow section at Elevation 4,191.5 feet. The spillway discharge capacity at the PMF reservoir Elevation 4,202.7 feet is approximately 16,300 cfs, which discharges directly into Beaver Creek.

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- Beaver Creek Diversion Dam Sluiceway is adjacent to the intake structure and is controlled by a 3-foot by 3-foot slide gate. The 3-foot by 3-foot opening for the sluiceway increases in height to 5 feet, 9 inches downstream to permit access for removal of potential rock and gravel accumulation. The sluiceway discharge capacity with reservoir at spillway crest level is 200 cfs.

- Beaver Creek Diversion Dam Fish Screen Intake and Low Flow Outlet provide water to the bypass tunnel and downstream releases to Beaver Creek, respectively. The fish screen is located on the right bank of Beaver Creek, upstream of the dam, and screens the Beaver Creek Diversion Intake. The fish screen structure consists of two chambers, an outer chamber admitting water from the reservoir and an inner chamber conveying the flow to the tunnel. The downstream bypass flows are controlled by an overflow weir, outside of the fish screen, set at Elevation 4,186 feet located at the upstream end of the fish screen facility. The low flow outlet includes a trashrack and is a 36-inch-diameter pipe (i.e., total intake area of 7.0 square feet) through the dam, with a butterfly valve mid-span and an orifice plate on the discharge opening.

- Beaver Creek Diversion Dam Impoundment is a man-made impoundment on Beaver Creek formed by Beaver Creek Diversion Dam. At its NMWSE of 4,195 feet, the impoundment has an estimated storage capacity of 20 ac-ft, and a surface area of approximately 2 acres.

  Beaver Creek Diversion Intake, Tunnel, and Penstock include a 2,200-foot-long diversion tunnel and 2,100-foot-long penstock that diverts up to 400 cfs of water from the Beaver Creek Diversion Dam to McKays Point Reservoir. The tunnel intake is located approximately 50 feet upstream of the Beaver Creek Diversion Dam and is screened, as described above. The intake structure is 25 feet in length and 34.5 feet in height. A 6-foot by 8-foot gate is installed inside of the intake. Beaver Creek Tunnel is a 12-foot-wide horseshoe tunnel that slopes at approximately 1.2 percent. The tunnel is plugged approximately 375 feet from its end where the bypass flows transition to a 50-inch-diameter penstock. The penstock terminates at a valve structure located approximately 1,000 feet upstream of the McKays Point Diversion Dam. Flows within the penstock are controlled by a 28-inch-diameter Howell Bunger valve at the downstream end.

- McKays Point Diversion Dam is a 246-foot-high, double curvature, thin arch, concrete dam on the NFSR at RM NF 8.0. The dam extends 800 feet at its crest elevation of 3,387. The non-spillway portion of the dam includes a parapet wall with an elevation of 3,391 feet. The drainage area upstream of the dam is 166.1 sq-mi.

- McKays Point Diversion Dam Spillway is a dual level ungated overflow spillway 160 feet in length with a crest elevation of 3,370 feet and two abutment portions with a total length of 104 feet with a crest elevation of 3,374.5 feet. The discharge capacity of the spillway with a reservoir water surface elevation of 3,389.95 feet is 82,790 cfs.

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- McKays Point Reservoir is a man-made impoundment on the NFSR formed by McKays Point Diversion Dam. At its NMWSE of 3,370 feet, McKays Point Reservoir has an estimated gross storage capacity of 2,088 ac-ft, an estimated usable storage capacity of 1,000 ac-ft, a surface area of 35 acres. The impoundment is closed to public access due to safety concerns.

- McKays Point Diversion Dam Sluiceway is 4.5 feet wide by 6.5 feet high through the arch dam with an upstream invert elevation of 3,215. The sluiceway conduit is protected by a trashrack at the upstream end to prevent entrance of large, submerged objects. Flow control is provided at the conduit exit by a 4.5-foot by 6.5-foot Tainter gate operated by a hydraulic cylinder mounted above the sluiceway in a chamber at Elevation 3,231 feet. A slide gate is located upstream of the Tainter gate. A 24-inch-diameter pipe with its inlet at Elevation 3,250 feet is provided upstream of the slide gate to wash away accumulated sediment at the entrance of the sluiceway via siphon action.

- McKays Point Diversion Bypass Flow Outlet is a 24-inch-diameter steel pipe embedded in the dam adjacent to the sluiceway conduit. This outlet provides constant minimum environmental flows below the dam. Flow control is provided by a 12-inch-diameter Howell-Bunger valve at the outlet. A 24-inch-diameter manually operated butterfly guard valve is upstream of the Howell-Bunger valve and has a maximum capacity of 35 cfs.

- McKays Microturbine is a 200-kilowatt (kW) microturbine installed on the outlet. The microturbine is connected to a 17 kV underground distribution circuit, which is also the primary source of power for the McKays and Beaver Creek facilities. The 17 kV circuit interconnects with the local PG&E 17 kV distribution grid.

- Collierville Power Intake is a single 150-foot-high concrete intake structure with a single intake port located on the right bank of the NFSR approximately 100 feet upstream of McKays Point Diversion Dam. The structure is a rectangular reinforced concrete tower measuring 11.5-foot by 16.5-foot (i.e., intake total area of 190 square feet) at an invert elevation of 3,250 feet. A remote operation chamber is provided to house the auxiliary gate and operation equipment approximately 100 feet away from the tower. The top deck of the tower is at Elevation 3,396 feet. A 40-foot-long access bridge connects the tower to the right reservoir bank. The outside dimensions of the tower above Elevation 3,350 feet are 29 feet by 28.5 feet. A 15.5-foot-diameter well is located within the tower contains tracks for lowering and raising of the slide gate. Trashracks and stoplogs are lowered or raised on vertical tracks installed on the wall extensions of the tower, and a 27-ton-capacity overhead traveling crane is provided on the deck for lowering or raising the slide gate, trashrack, and stoplog. For turbine releases, the maximum discharge capacity of 1,398 cfs must be passed through the gate section with a reservoir elevation of 3,350 feet. A primary 17.3 kV power source is supplied to the transformer, located adjacent to the Control House at the Intake, which is stepped down to 480 V. There is a standby diesel electric generator provided as an alternate source of power supply for emergency use.

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- Collierville Power Tunnel, Mill Creek Tap, Surge Shaft, and Penstock include an upper power tunnel, Mill Creek Tap, a vertical surge shaft, and a lower power tunnel that can pass 1,600 cfs of water from McKays Point Impoundment to Collierville Powerhouse. The upper power tunnel includes a 14-foot-diameter, 190-foot-deep unlined shaft connecting to the Collierville Power Intake, which then transitions into the 18-foot-diameter, 38,137-foot-long upper power tunnel running from the shaft at a slope of one percent down to a surge shaft. The Mill Creek Tunnel Tap is located approximately 24,368 feet from the Collierville Intake and consists of a 36-inch-diameter steel pipe embedded within a 4-foot 9-inch raise vertical bored shaft that leads from the Collierville Power Tunnel to a surface structure. The surface structure includes a 36-inch-diameter pipe that reduces to 30 inches and a 30-inch-diameter butterfly shut-off valve.[5] The Collierville Power Tunnel continues downstream of the Mill Creek Tap until it intersects the surge shaft. A rock trap is located in the Power Tunnel immediately upstream of shaft. The surge shaft is a 14-foot-diameter, 12-foot-diameter concrete lined vertical shaft with a total depth of 2,215 feet. A 60-foot-diameter above-ground, open-to-atmosphere, reinforced concrete surge tank is at the top of the surge shaft. The lowest part of the surge shaft connects with a 14-foot-diameter excavated lower power tunnel with a one percent downstream slope, partially concrete lined and partially steel lined with a total length of 7,044 feet. The lower power tunnel connects to a 170-foot long, cut-and-cover penstock and bifurcation section, embedded in concrete, leading to the turbine shut-off valves inside the Collierville Powerhouse structure.

- Adit 2 is a 15-foot-wide horseshoe tunnel with a length of approximately 1,100 feet that provided surface access to the Collierville Power Tunnel during original construction. The adit includes a concrete plug at the Power Tunnel, and the surface opening is fenced and gated.

- Adit 4 is an 18-foot-wide horseshoe tunnel with a length of approximately 4,012 feet that provided surface access to Collierville Tunnel and Surge Shaft during original construction. The adit includes a concrete plug at the Power Tunnel and the surface opening is fenced and gated.

- Collierville Powerhouse is located about 1,500 feet from the right bank of the Stanislaus River. Collierville Powerhouse holds two equally sized Pelton turbine-generator units with a combined FERC-authorized installed capacity of 253 MW.[6] The powerhouse has a tailwater depression system (TDS) to permit operation during periods of high river flows. The overall dimensions of the powerhouse are 155 feet long and 56.25 feet wide with a deck elevation of 1,133 feet, generator floor elevation of 1,117 feet, turbine floor elevation of 1,105 feet, and the bottom of the wheel pit at Elevation 1,080 feet.

[5] Two non-Project structures are connected to the Collierville Power Tunnel. From upstream to downstream, the first is a 20-inch-diameter pipe with a 20-inch-diameter gate valve that branches off the Power Tunnel upstream of the butterfly valve (the valve is Part of the Project). The non-Project 20-inch pipe provides water supply to CCWD's Hunters Water Treatment Plant. The second non-Project structures connect to the downstream face of butterfly valve and provide water to Utica Water and Power Authority's (UWPA) Utica Hydroelectric Project, FERC Project No. 2019 (P-2019).

[6] FERC's October 7, 1997, Order Amending License, Approving As-Built Exhibits, and Revising Annual Charges is available in FERC's eLibrary at accession number 19971009-0372.

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- Collierville Switchyard, which is shared with NCPA, is located approximately 300 feet west of Collierville Powerhouse. Power from Collierville Powerhouse is transmitted at 230kV via overhead conductors from the high side of the two transformers located adjacent to the powerhouse, and up to the switchyard. The switchyard is a 126-foot by 164-foot fenced area containing structural towers, disconnect switches, four SF-6 gas circuit breakers, a bus-tie which allows power from either or both Collierville generating units to be transmitted on either or both 230kV generator tie lines, and telemetry and associated protection equipment. The switchyard surface is covered with a layer of crushed rock. Within the switchyard, the demarcation between Project facilities and P-11197 facilities is at Collierville Circuit Breakers 1432 and 1442, which are part of P-11197.

- Collierville Powerhouse Tailrace runs from the downstream face of Collierville Powerhouse to the Stanislaus River. It is approximately 1,450 feet long with a bed width of 92 feet. The invert level of the tailrace channel just downstream of the wheel pit is at Elevation 1,083.50 feet. A pedestrian foot bridge crosses the tailrace. The tailrace discharges into the Stanislaus River at SR RM 0.6 upstream of BOR's New Melones Reservoir and approximately 0.4 mile upstream of the PG&E's Stanislaus Powerhouse, which is part of PG&E's Spring Gap/Stanislaus Hydroelectric Project, FERC Project No. 2130.

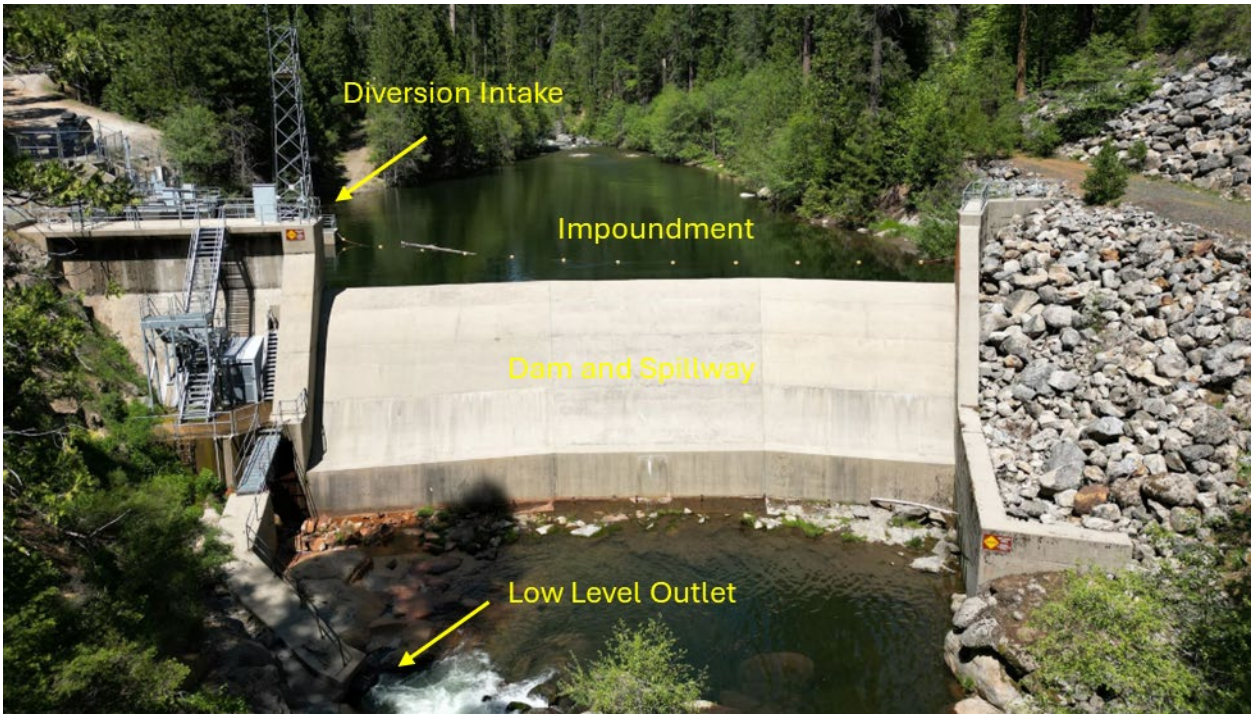


Figure A.3-7. Beaver Creek Diversion Dam, Spillway, Low Level Outlet, and Impoundment.

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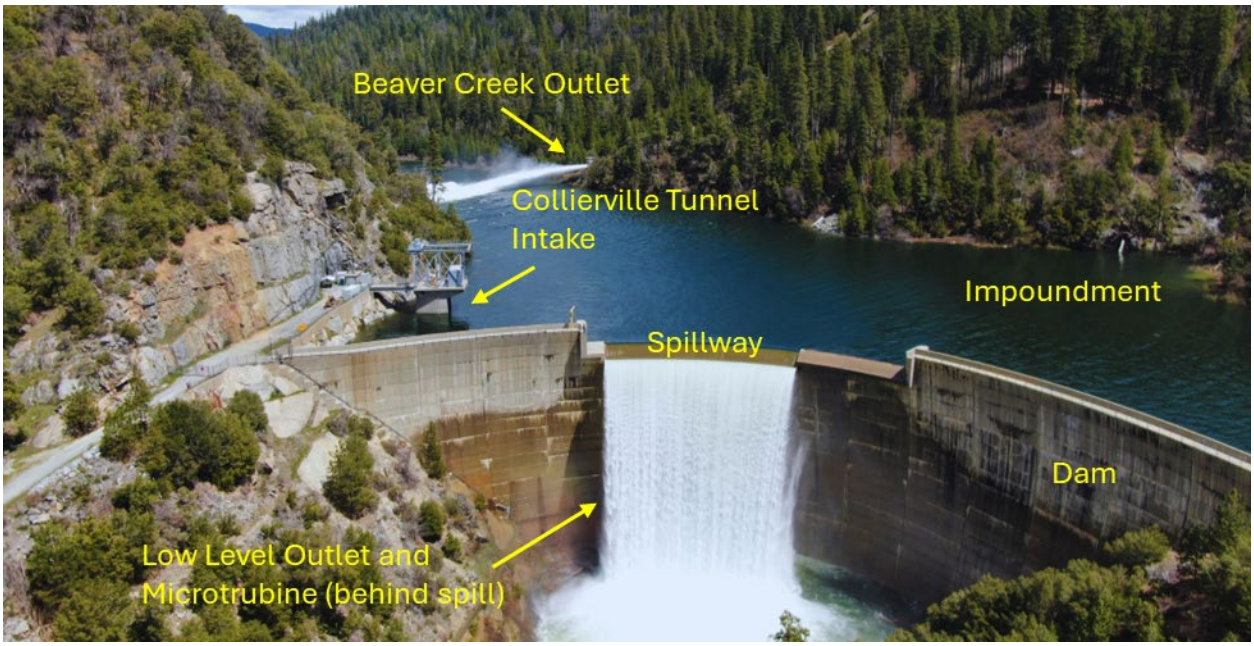


Figure A.3-8. McKays Point Diversion Dam, Spillway, Low Level Outlet, McKays Microturbine, Collierville Intake, and Reservoir.

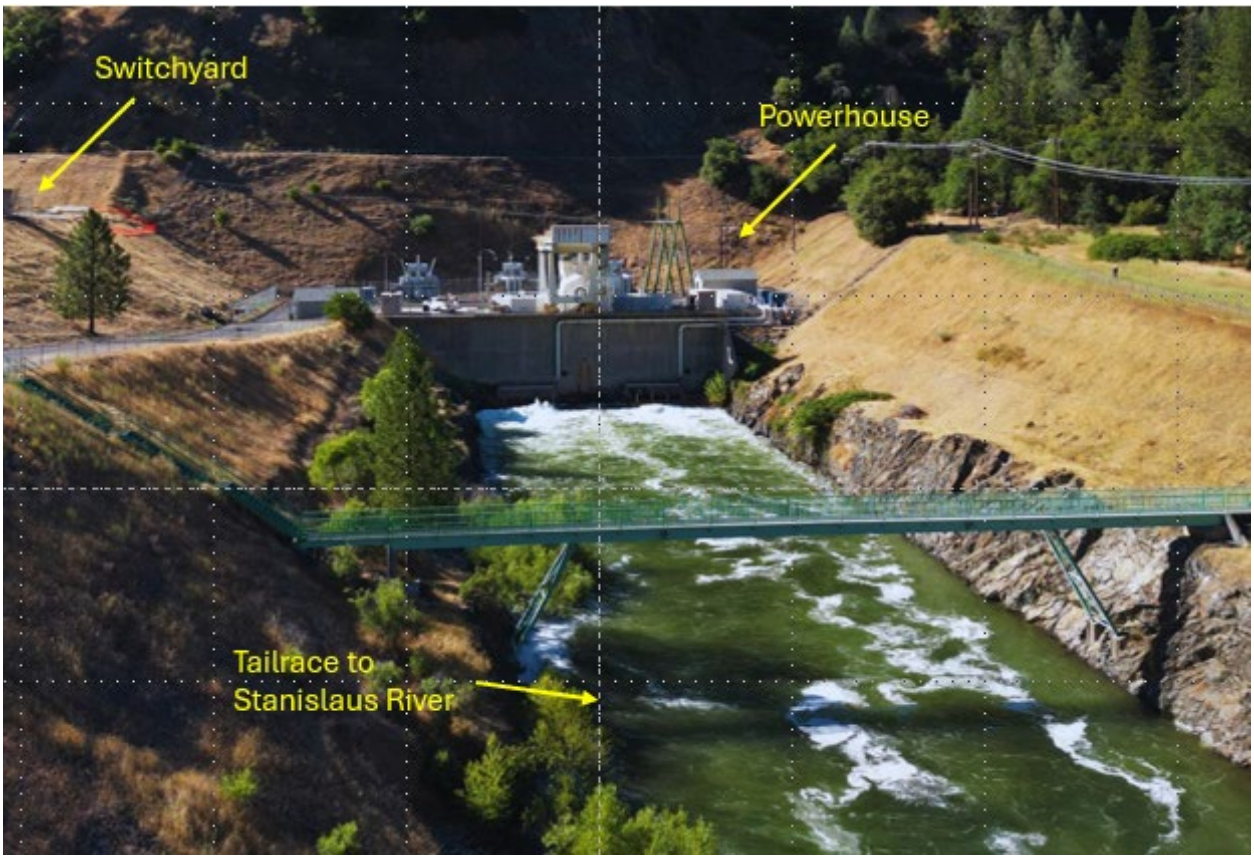


Figure A.3-9. Collierville Powerhouse, Switchyard, and Tailrace.

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A.3.1.3 Project Gages

Thirteen gages are maintained in compliance with Articles 8 and 37 of the existing license. The articles, in general, pertain to gaging of flows and storage at Project facilities and gaging of flows on streams where the license establishes a flow requirement. Table A.3-1 lists the gages and provides the United States Geological Survey (USGS) gage number and the corresponding CCWD/NCPA gage number and California Data Exchange Center (CDEC) gage name, if the latter is current and relevant (i.e., not all USGS gage data are reported on CDEC). USGS reports data once each year after the end of the water year with flows reported as average daily flows and reservoir and impoundment data reported as storage at midnight in ac-ft. CDEC data are available online in real-time with flow data reported every 15 minutes in cfs and reservoir and impoundment data reported as elevation in feet every 15 minutes. USGS data are considered "final" (i.e., reported after USGS's quality assurance/quality control review of data) and CDEC data are considered "provisional" (i.e., reported data do not undergo a quality assurance/quality control review and are never made "final"). For the purpose of CCWD's Application for New License, all gage data are referred to using USGS's gage number.

Table A.3-1. North Fork Stanislaus River Hydroelectric Project related gages from upstream to downstream.

Measurement Purpose	USGS No.	CDEC Name[1]	CCWD/ NCPA No.
Storage/Elevation of North Fork Diversion Dam Impoundment	11293590	NDV	G-05
Flow through North Fork Diversion Tunnel	11293580	NDV	G-04
Flow in NFSR Downstream of North Fork Diversion Dam	11293600	NSD	G-06
Storage/Elevation of New Spicer Meadow Reservoir	11293770	SPM	G-09
Flow through New Spicer Meadow Powerhouse	11293760	--	G-08
Flow in NFSR near Avery	11294500	AVY	G-12
Flow in Highland Creek Downstream of New Spicer Meadow Dam, Spillway, and Powerhouse (i.e., Full Flow)	11294000	SPM	G-10
Storage of Beaver Creek Diversion Dam Impoundment	11295220	--	G-14
Flow through Beaver Creek Diversion Tunnel & Penstock	11295210	--	G-13
Flow in Beaver Creek Downstream of Beaver Creek Diversion Dam	11295230	--	G-15
Storage of McKays Point Reservoir	11295260	--	G-18
Flow in NFSR Downstream of McKay's Point Dam	11295270	--	G-19
Flow through Collierville Powerhouse	11295250	--	G-17
Total = 13			

[1] CDEC's NDV reports both elevation in North Fork Diversion Dam Impoundment and flow through North Fork Diversion Tunnel.

[2] CDEC SPM reports both elevation in New Spicer Meadow Reservoir and flow in Highland Creek downstream of New Spicer Meadow Dam, Spillway, and Powerhouse.

A.3.2 FERC Project Boundary

The FERC Project Boundary is intended to consist of all lands necessary for the routine operations and maintenance of the Project and other purposes, such as recreation, shoreline control, and protection of environmental resources. The existing FERC Project Boundary encompasses 2,301.4 acres on federal lands based on FERC's 2025 Statement of Annual Charges.

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The FERC Project Boundary on existing Exhibit J and K Project Maps is described using surveyed metes and bounds descriptions that are tied into the Public Land Survey System coordinates. These drawings were hand drawn or created in a computer-aided design system. The existing FERC Project Boundary does not exist in a digital or geo-referenced format. During relicensing, CCWD made a good faith effort to develop a Geographic Information System (GIS) version of the FERC Project Boundary. As part of this process, CCWD converted the surveyed metes and bounds description of the FERC Project Boundary on the existing Exhibit J and K drawings into the GIS-georeferenced description using the coordinate geometry tools available in Esri's ArcMap software. Based on CCWD's GIS data and current land ownership information, the existing FERC Project Boundary encompasses 2,376.9 acres, of which 2,307.8 acres are federal lands including 2,289.3 acres managed by the United States Department of Agriculture, Forest Service, (Forest Service) as part of STF, 9.9 acres administered by the United States Department of the Interior (USDOI), Bureau of Reclamation (BOR) as part of the New Melones Reservoir Area, and 8.6 acres administered by the USDOI, Bureau of Land Management (BLM) as part of the Sierra Resource Management Area. The remaining 69.1 acres are located on private lands. The small difference in amount of federal lands (i.e., 6.4 acres) between the existing FERC Project Boundary and CCWD's calculated existing FERC Project Boundary is due to increased accuracy of GIS data compared to the FERC-approved Exhibit J and K maps.

Table A.3-2, organized by Public Land Survey System, identifies each section within the existing FERC Project Boundary as shown in CCWD's GIS version of the FERC Project Boundary, which are lands of the United States.

Table A.3-2. Lands of the United States within the existing FERC Project Boundary by managing federal agency based on CCWD's GIS version of the existing FERC Project Boundary.

Administered by	Township	Range	Section	Acres
Bureau of Land Management	3N	14E	1	3.89
	4N	14E	36	4.71
			Subtotal	**8.6**
Bureau of Reclamation	3N	14E	1	8.82
		15E	6	1.08
			Subtotal	**9.9**
Forest Service	3N	15E	6	0.01
	4N	15E	1	3.22
			2	28.95
			3	15.81
			4	1.39
			9	11.53
			16	0.99
			17	14.03
	5N	15E	35	13.27

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Table A.3-2. (Continued).

Administered by	Township	Range	Section	Acres
Forest Service (Cont')	6N	18E	1	198.13
			2	446.44
			3	443.90
			4	300.51
			9	16.75
			9	113.20
			10	33.07
			11	1.88
	7N	18E	20	13.60
			28	10.14
			29	4.31
			33	15.43
			34	1.72
			35	60.36
			36	51.12
		19E	20	1.81
			21	29.37
			28	28.02
			29	248.20
			30	25.71
			31	156.43
			Subtotal	**2,289.3**
			Total	**2,307.8**

A.4 Proposed Changes to Existing Project Works and Boundary

At this time, CCWD does not propose any modifications to existing Project works or changes to the existing FERC Project Boundary.

A.5 References Cited

None.

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Pre-Application Document

Attachment 2B

Exhibit B
Project Operations and Resource Utilization

North Fork Stanislaus River Hydroelectric Project
FERC Project No. 2409

Prepared by:
Calaveras County Water District

September 2026

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EXHIBIT B

Project Operations and Resource Utilization

B.1 Introduction

Calaveras County Water District (CCWD) prepared this Exhibit B, Project Operations and Resource Utilization, as part of its application for a new license from the Federal Energy Regulatory Commission (FERC or Commission) for the North Fork Stanislaus River Hydroelectric Project (Project), FERC Project Number (No.) 2409. This exhibit conforms with Title 18 of the Code of Federal Regulations (C.F.R.), Subchapter B (Regulations under the Federal Power Act [FPA]), Part 4 (Licenses, Permits, Exemptions, and Determination of Project Costs), Subpart F (Application for Major Project–Existing Dam), and as applicable, Part 16 (traditional process). This exhibit provides the information required in 18 C.F.R. Section 4.51(c), which describes the contents of Exhibit B. As a reference, 18 C.F.R. Section 4.51(c) states:

> Exhibit B is a statement of project operation and resource utilization. If the project includes more than one dam with associated facilities, the information must be provided separately for each such discrete development. The exhibit must contain:
>
> (1) A statement whether operation of the powerplant will be manual or automatic, an estimate of the annual plant factor, and a statement of how the project will be operated during adverse, mean, and high water years,
>
> (2) An estimate of the dependable capacity and average annual energy production in kilowatt-hours (or a mechanical equivalent), supported by the following data:
>
> (i) The minimum, mean, and maximum recorded flows in cubic feet per second of the stream or other body of water at the powerplant intake or point of diversion, with a specification of any adjustments made for evaporation, leakage, minimum flow releases (including duration of releases), or other reductions in available flow, monthly flow duration curves indicating the period of record and the gauging stations used in deriving the curves, and a specification of the period of critical stream flow used to determine the dependable capacity,
>
> (ii) An area-capacity curve showing the gross storage capacity and usable storage capacity of the impoundment, with a rule curve showing the proposed operation of the impoundment and how the usable storage capacity is to be utilized;
>
> (iii) The estimated hydraulic capacity of the powerplant (minimum and maximum flow through the powerplant) in cubic feet per second;
>
> (iv) A tailwater rating curve; and
>
> (v) A curve showing powerplant capability versus head and specifying maximum, normal, and minimum heads.

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(3) A statement, with load curves and tabular data, if necessary, of the manner in which the power generated at the project is to be utilized, including the amount of power to be used on-site, if any, the amount of power to be sold, and the identity of any proposed purchasers; and

(4) A statement of the applicant's plans, if any, for future development of the project or of any other existing or proposed water power project on the stream or other body of water, indicating the approximate location and estimated installed capacity of the proposed developments.

In addition to this introduction, Exhibit B includes eight sections: 1) Section B.2 provides a brief description of the Project and its location; 2) Section B.3 describes CCWD's operations model; 3) Section B.4 describes hydrology; 4) Section B.5 describes existing Project operations; 5) Section B.6 describes use of Power; 6) Section B.7 describes any changes proposed by CCWD, 7) Section B.8 describes any plans by CCWD to add development to the Project; and 8) Section B.9 includes references cited.

The information required in 18 C.F.R. Section 4.51(c)(1), (2), and (3) is provided in Sections B.3, B.4 and B.5 of this Exhibit B. The information required in 18 C.F.R. Section 4.51(c)(4) is not applicable to this Application for New License because CCWD does not propose a future development of the Project, or other existing or proposed water power projects on the Stanislaus River basin.

To maintain consistency with the existing FERC exhibit documents, all elevation data in this exhibit are in National Geodetic Vertical Datum of 1929 datum unless otherwise stated.

B.2 Brief Description of the Project and its Location

The Project is located on the west slope of the Sierra Nevada in the North Fork Stanislaus River (NFSR) Basin in Calaveras, Tuolumne, and Alpine counties, California with portions on lands of the United States managed by the United States Department of Agriculture, Forest Service (Forest Service), as part of the Stanislaus National Forest (STF), the United States Department of Interior (USDOI), Bureau of Land Management (BLM) as part of the Sierra Resource Management Area, and the USDOI, Bureau of Reclamation as part of the New Melones Reservoir Area. The NFSR joins the mainstem Stanislaus River at its confluence with the Middle Fork Stanislaus River (MFSR), and the river flows southwest through the agricultural San Joaquin Valley to join the San Joaquin River south of Manteca, California. The San Joaquin River flows into the Sacramento-San Joaquin Delta, which eventually empties into San Francisco Bay and the Pacific Ocean.

The Project, with a FERC-authorized installed capacity of 258.726 megawatts (MW), consists of two developments – New Spicer Meadow and Collierville – that, in total, includes: four dams, two powerhouses with associated switchyards, one microturbine, and appurtenant facilities and structures. The existing FERC Project Boundary is 2,376.9 acres, including 2,307.8 acres of federal lands managed by the Forest Service as part of STF (2,289.3 acres), BLM (8.6 acres), and BOR (9.9 acres). The remaining 69.1 acres are located on private lands. Additional details of the Project Works and FERC Project Boundary are provided in draft Exhibit A (Attachment 2A of this PAD).

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B.3 Use of CCWD's Water Balance/Operations Model

The Project began commercial operation in 1991 and since then, Project operations have changed. Therefore, in some cases historical information regarding streamflows, reservoir elevations, and power generation may not provide the best picture of existing conditions. Therefore, to better describe existing conditions over a range of hydrologic conditions, CCWD developed a North Fork Stanislaus Hydroelectric Project Water Balance/Operations Model (Ops Model). Appendix B1 to this Draft Exhibit B includes a description of the model including a Calibration and Validation Report. Stakeholders interested in a copy of the model in the base case configuration (i.e., simulating current operations) to be used for relicensing purposes should send an email to P2409Relicense@ccwd.org. Unless otherwise stated, all flow, reservoir elevation, and Project generation data provided in this Draft Exhibit B are output from the Ops Model.

The Ops Model is built on the OASIS modeling platform. OASIS with OCL™ is a generalized program for modeling the operations of water resources systems. OASIS simulates the routing of water through a system represented by nodes and arcs. The Ops Model routing may account for both human control and physical constraints on the system.

The Ops Model was developed to simulate current operations of the Project on an hourly timestep for water years 2014 through 2025. Model development included coordination with Northern California Power Agency (NCPA) staff to determine the period of record in which adequate historical data were available to develop hourly input hydrology data to the model. Because the Ops Model uses an hourly timestep, time travel calculations using the Muskingum routing methodology were needed for the reach from New Spicer Meadow Dam to Avery. The Ops Model does not attempt to simulate operations of NCPA's Upper Utica or Utica Water and Power Authority's Angels Projects or water power project operations on the Middle Fork Stanislaus River. Instead, the Upper Utica Project is represented by a time series of historic inflows to the North Fork Diversion Dam. Angels Project operations were replaced with a demand node representing the water needed to be diverted from the NFSR to satisfy a contractual diversion schedule given historical Mill Creek flows at Hunter Reservoir and deliveries to CCWD customers. The hourly time step model was prepared to handle key items such as whitewater boating flows, New Spicer Meadow powerhouse weekly operations, Collierville Powerhouse sub-daily peaking operations, and McKays Point Reservoir operations. Development of the Ops Model did not require CCWD to simulate unimpaired hydrology for the NFSR and Stanislaus River from upstream of the Project to New Melones Reservoir.

Unless otherwise stated, all hydrology data in this Exhibit B are data from the Ops Model in the base case configuration.

B.4 Hydrology

The Stanislaus River flows southwest from the Sierra Nevada Mountains and is tributary to the San Joaquin River near Vernalis, CA. The Stanislaus River provides approximately 8 percent of the San Joaquin River's watershed area.

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Hydrology was developed for water years 2014 through 2025 to match the study period used in the Operations Model. The NFSR was split into multiple localized hydrologic sub-basins for input to the operations model. Watersheds were designed to correspond with inflow points to reservoirs, diversions, and major stream gages (Table B.4-1.)

Table B.4-1. Watersheds used in hourly hydrology development.

Sub-Basin	Description
1	Highland Creek above New Spicer Meadow Reservoir
2	North Fork Stanislaus River above North Fork Diversion Dam
3	Beaver Creek above Beaver Creek Diversion Dam
4	North Fork Stanislaus River from North Fork Diversion Dam to McKays Point Reservoir
5	North Fork Stanislaus River from McKays Point Reservoir to the confluence with the Middle Fork Stanislaus River
6	Middle Fork Stanislaus and Stanislaus Powerhouse

A mass balance approach utilizing historical gage data was used to develop inflows to reservoirs represented in Table B.4-1 as sub-basins 1, 2, and 3. Reach accretion flow, represented as sub-basins 4 and 5 in Table B.4-1, were calculated using a mix of different approaches, including mass balance with reach routing and watershed area proration of a nearby reference watershed flow. A detailed description of hourly hydrology development is included in Appendix B1 to this Draft Exhibit B. The hydrology and model output data are provided in Appendix B2.

B.5 Existing Project Operations

B.5.1 Operating Constraints

Besides the physical constraints of the Project described in Exhibit A of this Application for New License, Project operations are constrained by the existing FERC license, water rights, and agreements and contracts, which are summarized below.

B.5.1.1 Existing FERC License

Refer to Appendix B3 to this Draft Exhibit B for a description of the terms and conditions in the Project's existing FERC license.

B.5.1.2 Water Rights

Water rights related to the Project are described in Table B.5-1.

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Table B.5-1. Water rights held by CCWD for power purposes at the Project.

Application Number	Priority Date	Permit Number	Point of Diversion	Direct Diversion		Diversion to Storage[1]	
				cfs	Season	AF	Season
A012911	1/25/1949	015016	Highland Creek at New Spicer Meadow	--	--	76,300	11/1 – 7/1
			NF Stanislaus at McKays Point	400	1/1 – 12/31	2,200	11/1 – 7/1
A013092	5/13/1949	15019	Highland Creek at New Spicer Meadow	--	--	63,000	11/1 – 7/1
A013093	5/13/1949	15020	Highland Creek at New Spicer Meadow	--	--	49,700	11/1 – 7/1
			NF Stanislaus at NF Diversion Dam	--	--	350	11/1 – 7/1
A018727	5/20/1959	15021	Beaver Creek at Beaver Creek Diversion Dam	60	1/1 – 12/31	25	11/1 – 7/1
			NF Stanislaus at McKays Point	640	1/1 – 12/31	--	--
A019148	12/23/1959	15023	NF Stanislaus at NF Diversion Dam	600	1/1 – 12/31	52,000	11/1 – 7/1
			Highland Creek	--	--	52,000	11/1 – 7/1
			Beaver Creek at Beaver Creek Diversion Dam	340	1/1 – 12/31	--	--

[1] CCWD's State of California water rights to store water behind dams shown in Table B.5-1 should not be confused with "gross storage capacity", which is the volume of water in the impoundment when the pool is at the normal maximum water surface elevation (NMWSE) or "usable storage capacity", which is the is the amount of water in the impoundment between the invert of the lowest outlet in the dam and the NMWSE - both of which are described in Exhibit A. Further gross, usable, and water right storage should not be confused with "maximum operating level" and "minimum operating levels" that are determined by the operator for safe operations. When used in the Application for New License, "storage" is used generically to mean the total amount of water impounded by the dam at a specific time.

B.5.1.3 Other Operating Constraints

The March 1, 1985, revised Power Purchase Contract Between CCWD and NCPA for the North Fork Stanislaus River Hydroelectric Development reserved up to a maximum of 5,000 acre-feet (ac-ft) annually (increasing to a maximum of 8,000 ac-ft annually, 20 years following the date of commercial operation of the Collierville Powerhouse) for CCWD to divert for consumptive purposes. Water under this provision has historically been taken from the Collierville Power Tunnel through the 20-inch diameter pipe at Mill Creek Tap, as further described in Exhibit A.

B.5.2 Automatic and Semi-Automatic Operations

Several project features were designed for passive operation, including:

- All dam spillways. None of the dam spillways have spillway gates.
- North Fork Diversion Tunnel Intake. As discussed in Exhibit A, the invert of the intake is at elevation 6,684 feet, and water can only reach this elevation and enter the tunnel when flows entering the reservoir exceed the capacity of the North Fork Diversion Dam Low Flow Outlet fixed orifice plate, allowing the water level in the reservoir to rise at least 12 feet from the elevation of the orifice invert (6,672 feet).

Automatic and/or semi-Automatic Operations can be enabled at several project locations for a variety of purposes, including:

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- Water-level and/or water-diversion based control:
    - At New Spicer Meadow powerhouse, a PLC controller can modulate the 12-inch diameter and the 48-inch-diameter valves, and split flows between the three generating units to regulate downstream flows and ramp rates.
    - At Beaver Creek Diversion Dam, a PLC controller can modulate the 28-inch-diameter Howell Bunger valve at the downstream end of the Beaver Creek penstock to regulate water elevations and/or downstream flows in Beaver Creek.
    - At McKays Diversion Dam, a PLC can modulate the 12-inch-diameter Howell-Bunger valve to regulate downstream flows.
    - The Collierville tailwater suppression blowers automatically turn on when tailwater levels rise above predetermined values.
- Equipment Protection:
    - At both New Spicer Meadow and Collierville powerhouses, automatic unit shutdowns and in some cases gate opening and/or closing are triggered by relay and monitoring schemes typical of hydroelectric powerhouses, including abnormal conditions such as voltage or frequency abnormalities, overspeed, abnormal oil levels, low penstock pressure, high temperatures, vibration, and high tailwater levels.
- Routine Operations Actions:
    - No generating units are started using automatic operations; however, after an operator issues a manual unit start or stop command, the sequencing of the start and stop actions can be configured to be automatic or semi-automatic.
    - The governors at Collierville Powerhouse can automatically or semi-automatically cycle the six needle valves of each unit to transition between 1-needle, 2-needle, 3-needle, 4-needle, and 6-needle modes at various flow set points.

B.5.3 Typical Operations in Adverse, Mean, and High Water Years

Project operations rely on precipitation in the watershed upstream of Project reservoirs and diversion impoundments. Precipitation occurs primarily in the form of snow between December and March. Spring, summer, and fall cumulus activity also contributes slight amounts of precipitation. Most of the snowpack melts during April through July and its runoff creates high flows. Periods of low flow in the NFSR occur after the spring runoff in summer through fall.

Representative years were selected to illustrate typical operations by ranking DWR Bulletin 120 May 1 forecasts of annual runoff volume for the Stanislaus River below Goodwin Reservoir for WY 2014 through WY 2025, the modeling period of record, as shown in Figure B.5-1. The adverse year (driest water year in the assessment period) was 2015. The mean water year was 2018. The wettest (high) water year was 2017. The following sections present simulated mean daily operations during the representative dry (i.e., adverse), mean, and wet (high) water years for locations throughout the Project watershed under current operating conditions.

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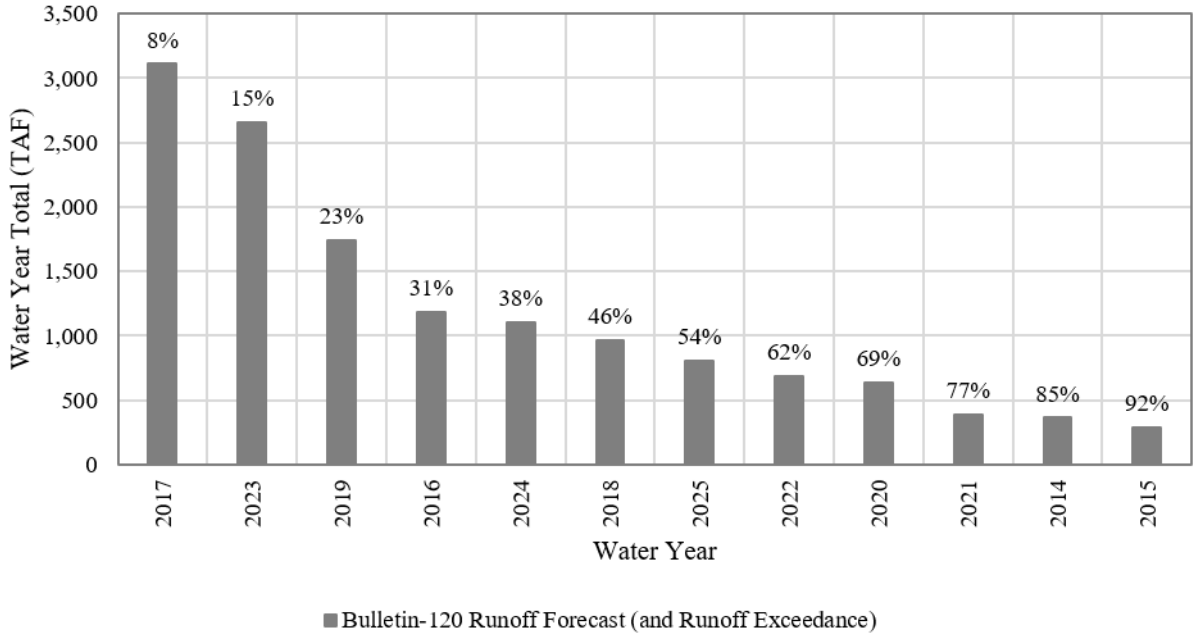


Figure B.5-1. Bulletin 120 water year forecast for the Stanislaus River below Goodwin Reservoir, ranked runoff exceedance for water year 2014 through water year 2025. Source: DWR (2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025).

B.5.3.1 North Fork Diversion Dam Impoundment

Inflow to the North Fork Diversion Dam Impoundment is either released to the NFSR or diverted to New Spicer Meadow Reservoir through the North Fork Diversion Tunnel. Simulated mean daily impoundment releases during the representative dry (i.e., adverse), mean, and wet (high) water years under current operating conditions is shown in Figure B.5-2 and Figure B.5-3.

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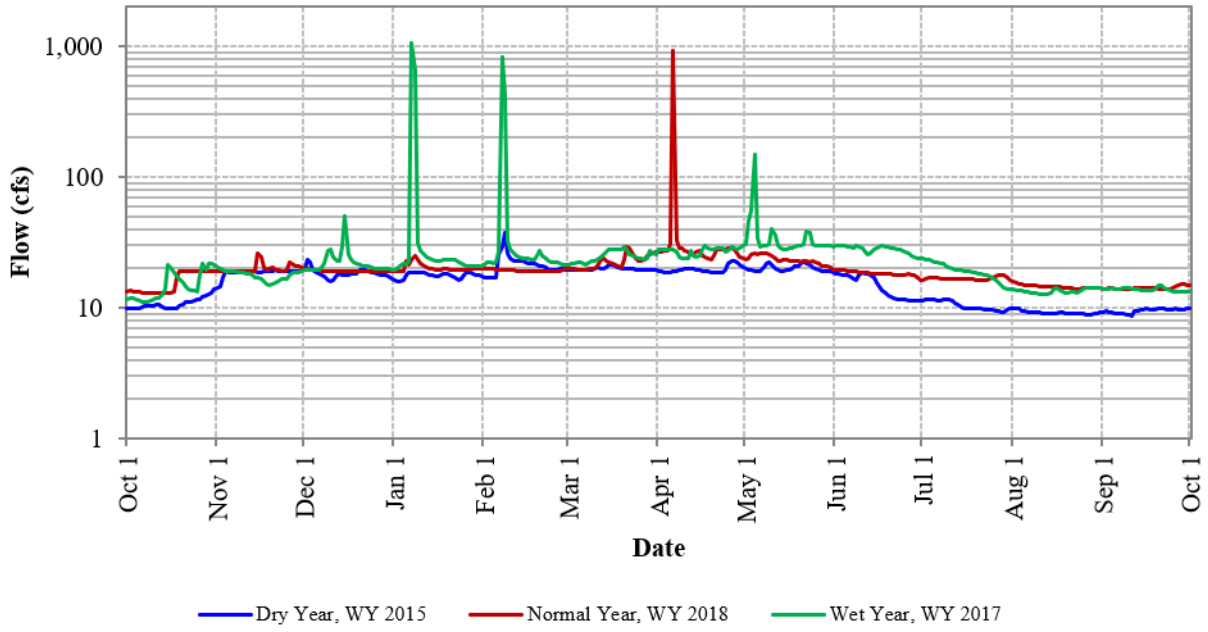


Figure B.5-2. North Fork Diversion Dam Impoundment simulated releases to the North Fork Stanislaus River in representative dry (adverse), mean, and wet (high) water years. Source: Ops Model output.

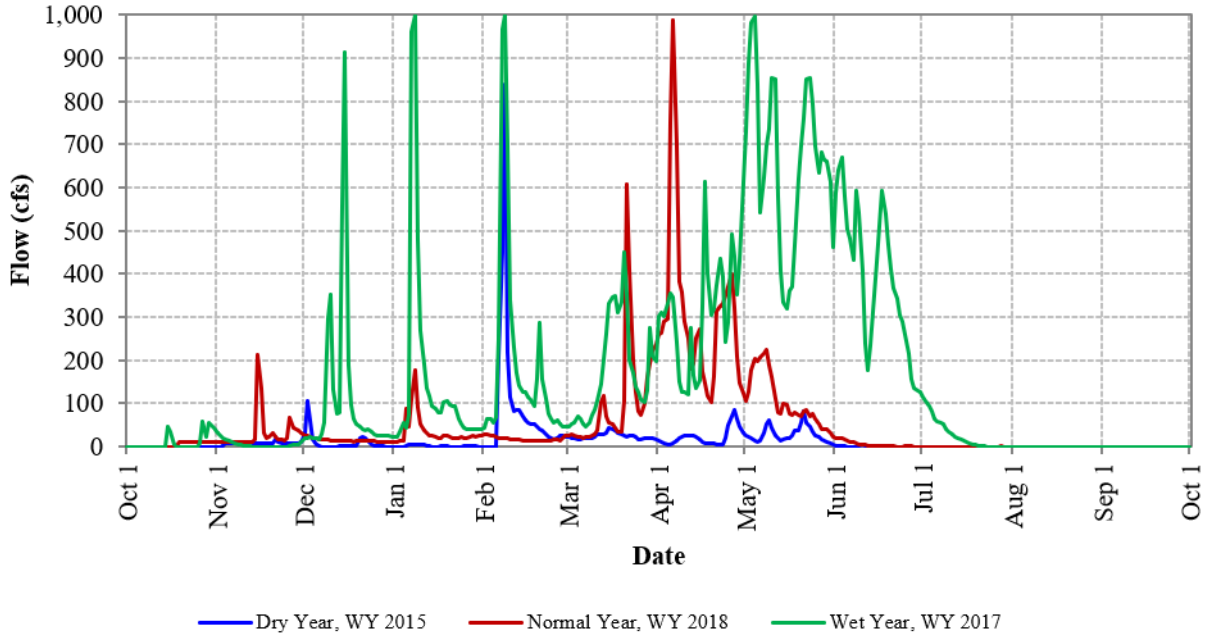


Figure B.5-3. North Fork Diversion Dam Impoundment simulated diversions into the North Fork Diversion Tunnel in representative dry (adverse), mean, and wet (high) water years. Source: Ops Model output.

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B.5.3.2 New Spicer Meadow Reservoir

Inflow to New Spicer Meadow Reservoir is either stored or released to Highland Creek, which includes releases to the New Spicer Meadow Powerhouse. Simulated mean daily reservoir storage and releases during the representative dry (i.e., adverse), mean, and wet (high) water years under current operating conditions is shown in Figure B.5-4 through Figure B.5-6.

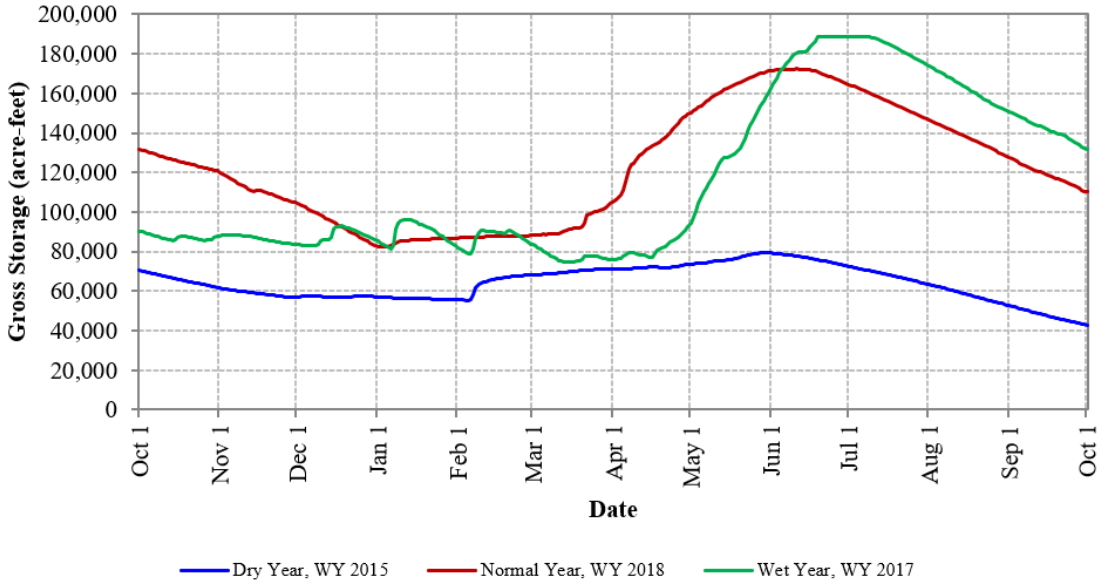


Figure B.5-4. New Spicer Meadow Reservoir simulated storage in representative dry (adverse), mean, and wet (high) water years. Source: Ops Model output.

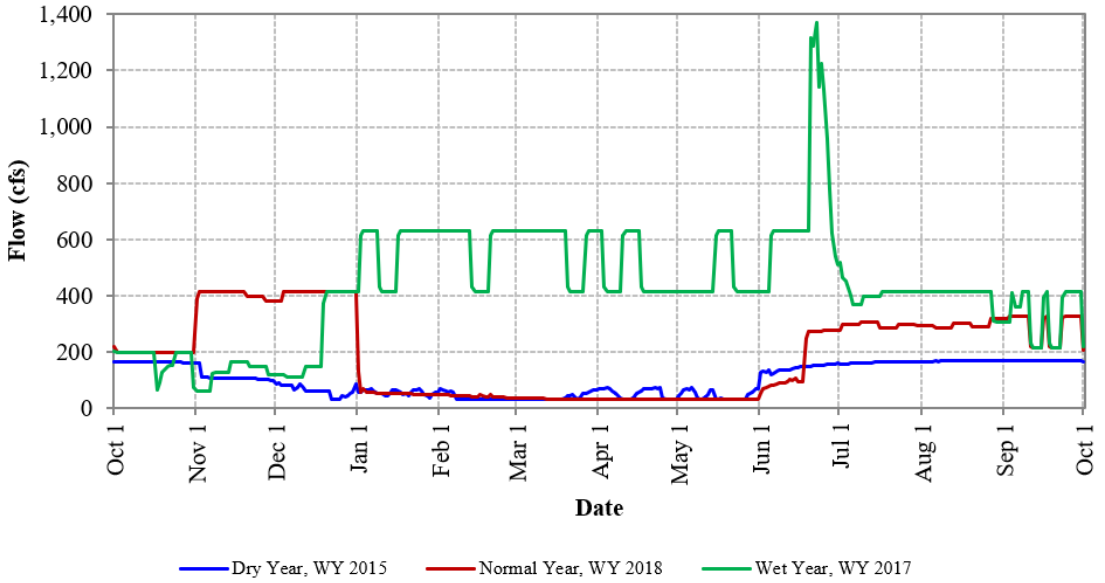


Figure B.5-5. New Spicer Meadow Reservoir simulated total releases to Highland Creek in representative dry (adverse), mean, and wet (high) water years. Source: Ops Model output.

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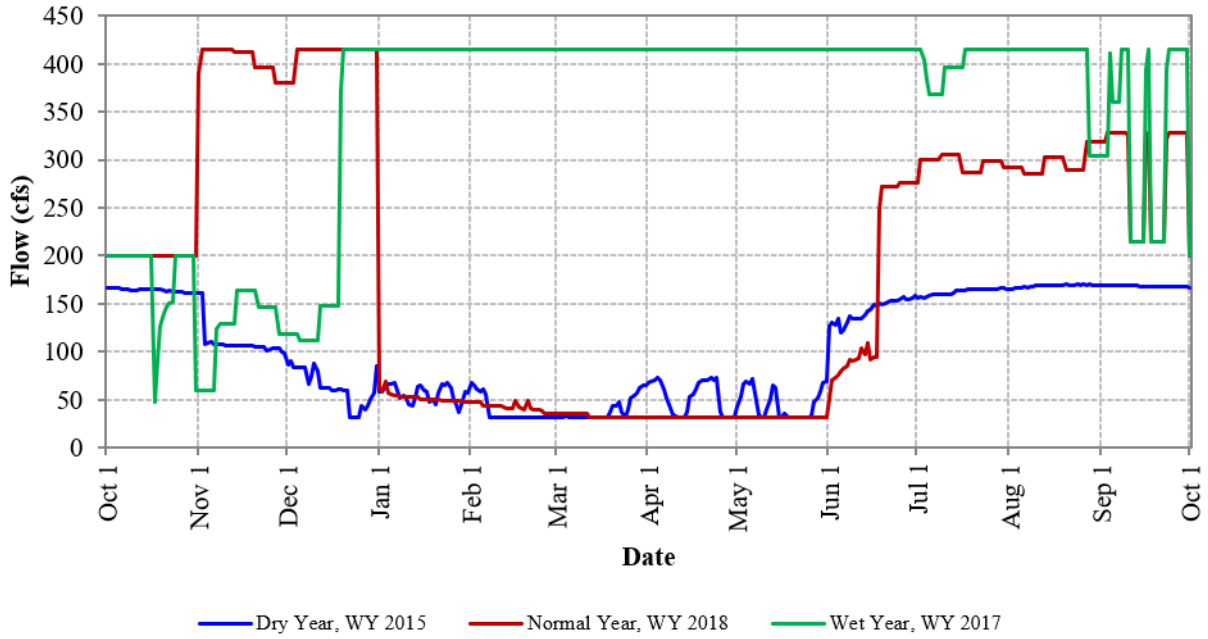


Figure B.5-6. New Spicer Meadow Reservoir simulated releases into New Spicer Meadow Powerhouse in representative dry (adverse), mean, and wet (high) water years. Source: Ops Model output.

B.5.3.3 Beaver Creek Diversion Dam Impoundment

Inflow to the Beaver Creek Diversion Dam Impoundment is either released to Beaver Creek or diverted to McKays Point Diversion Impoundment through the Beaver Creek Diversion Tunnel. Simulated mean daily impoundment releases during the representative dry (i.e., adverse), mean, and wet (high) water years under current operating conditions is shown in Figure B.5-7 and Figure B.5-8.

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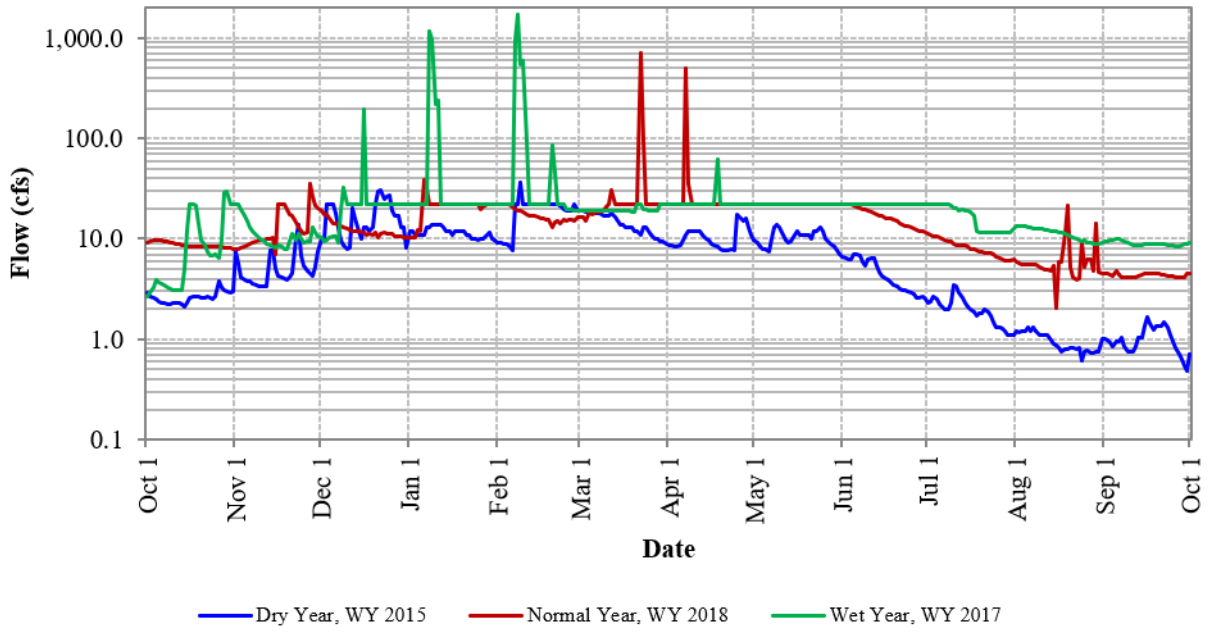


Figure B.5-7. Beaver Creek Diversion Dam simulated releases to Beaver Creek in representative dry (adverse), mean, and wet (high) water years. Source: Ops Model output.

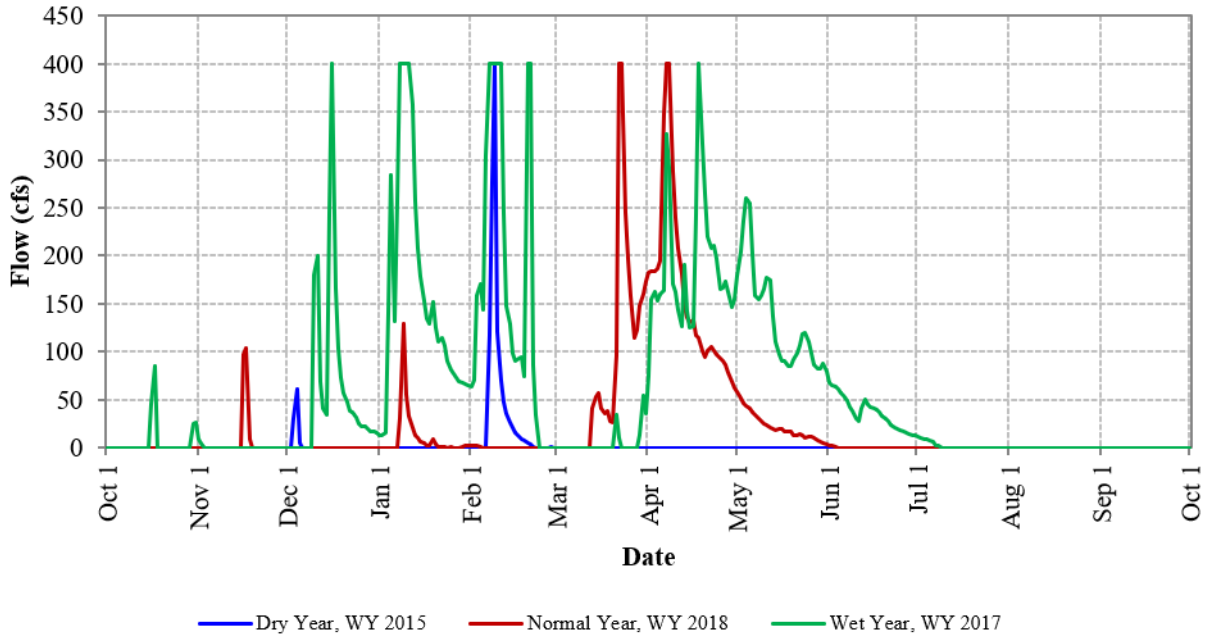


Figure B.5-8. Beaver Creek Diversion Dam simulated diversions into the Beaver Creek Diversion Tunnel in representative dry (adverse), mean, and wet (high) water years. Source: Ops Model output.

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B.5.3.4 McKays Point Diversion Dam Impoundment

Inflow to the McKays Point Diversion Dam Impoundment is either released to the NFSR or diverted through the Collierville Diversion Tunnel. Simulated mean daily impoundment releases during the representative dry (i.e., adverse), mean, and wet (high) water years under current operating conditions is shown in Figure B.5-9 and Figure B.5-10.

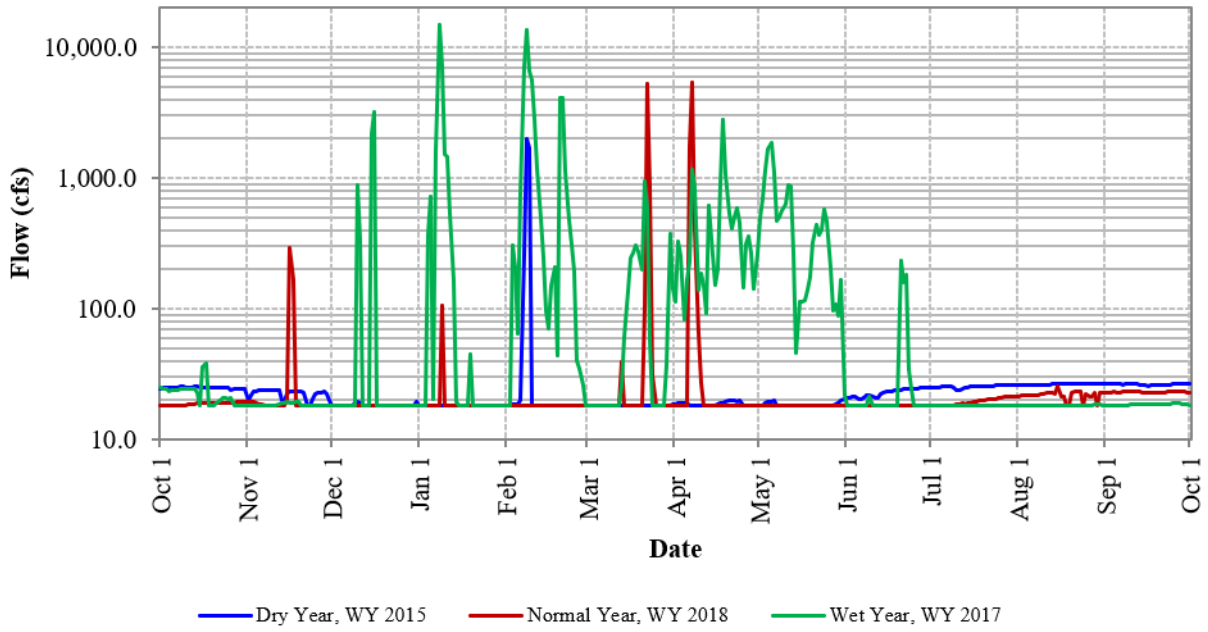


Figure B.5-9. McKays Point Diversion Dam Impoundment simulated releases to the North Fork Stanislaus River in representative dry (adverse), mean, and wet (high) water years. Source: Ops Model output.

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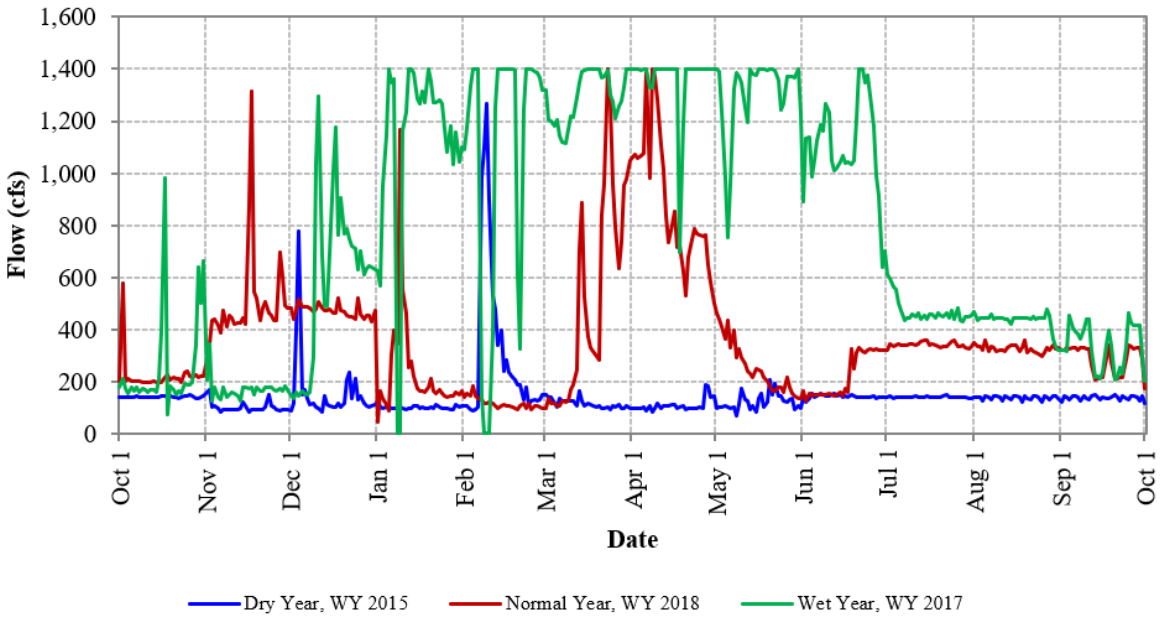


Figure B.5-10. McKays Point Diversion Dam Impoundment simulated diversions into the Collierville Tunnel in representative dry (adverse), mean, and wet (high) water years. Source: Ops Model output.

B.5.3.5 Collierville Powerhouse

Simulated mean daily powerhouse flow during the representative dry (i.e., adverse), mean, and wet (high) water years under current operating conditions is shown in Figure B.5-11.

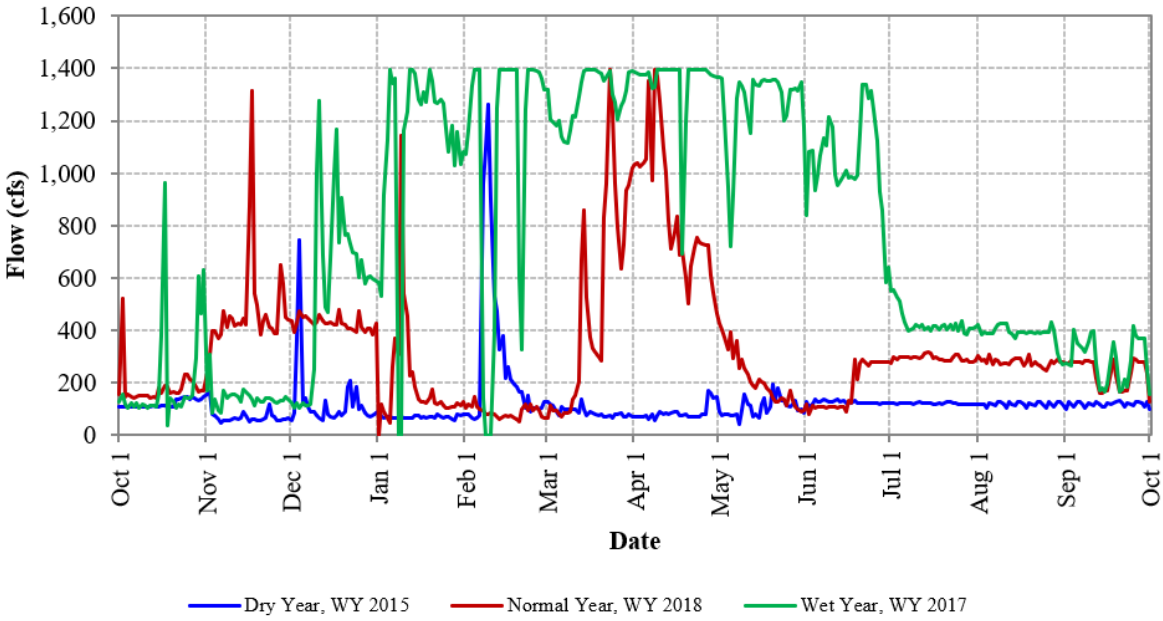


Figure B.5-11. Mean daily Collierville Powerhouse simulated flow in representative dry (adverse), mean, and wet (high) water years. Source: Ops Model output.

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B.5.4 Facility Specific Operations

B.5.4.1 North Fork Diversion Dam Impoundment Operations

The North Fork Diversion Dam Impoundment, formed by the North Fork Diversion Dam, is the Project's most upstream Project facility on the NFSR. This section describes simulated inflows, storage, and releases for the impoundment under current operating conditions.

B.5.4.1.1 Inflow

The North Fork Diversion Dam Impoundment receives inflow from the NFSR, Silver Creek, and Duck Creek. Upstream of North Fork Diversion Dam, the NFSR is impounded by the FERC 11563 Union and Utica Dams. Downstream of Utica Dam, Duck Creek flows into the NFSR, which then flows into North Fork Diversion Dam. Upstream of North Fork Diversion Dam, Silver Creek is impounded by the FERC 11563 Lake Alpine Dam. Silver Creek flows into North Fork Diversion Dam, where it joins the NFSR. Figure B.5-12 shows monthly exceedance curves for simulated mean daily total inflow from all sources into North Fork Diversion Dam Impoundment for WY 2014 through WY 2025.

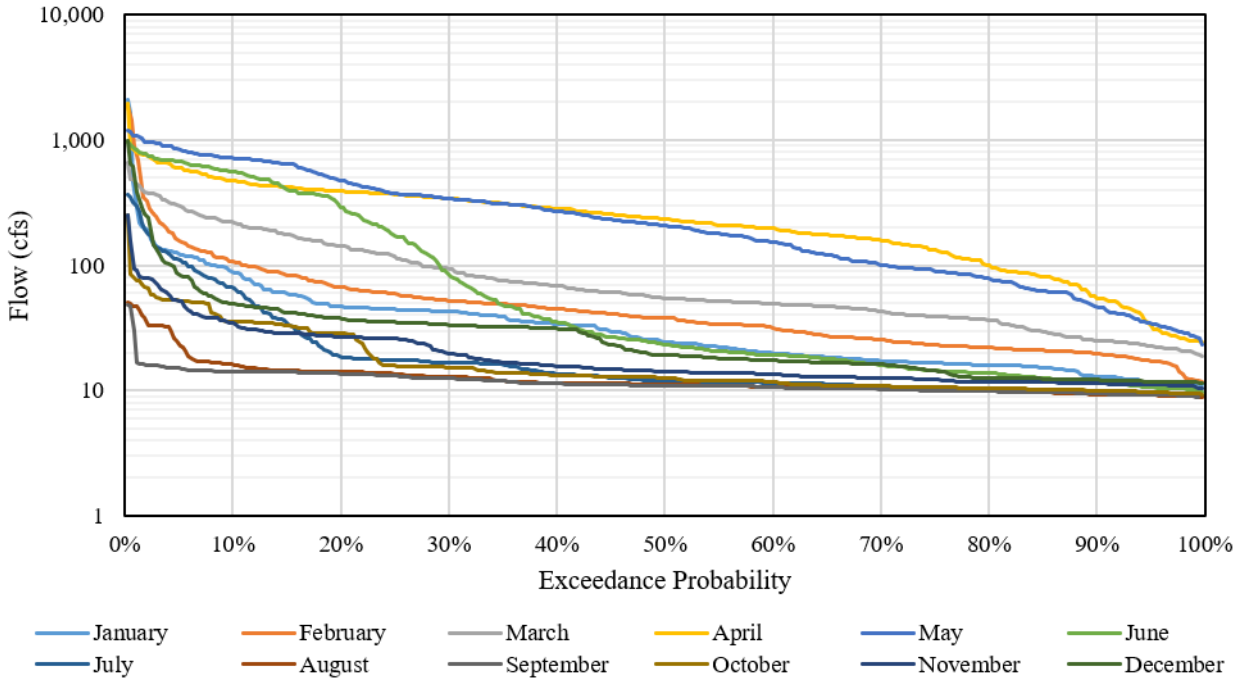


Figure B.5-12. Monthly flow exceedance curves for simulated average daily flows into North Fork Diversion Dam Impoundment from NFSR and Silver Creek, WY 2014 to WY2025. Source: Ops Model output.

Table B.5-2 provides the minimum, maximum, and average daily inflow to North Fork Diversion Dam Impoundment from WY 2014 through WY 2025.

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Table B.5-2. Simulated minimum, maximum, and average daily inflow to North Fork Diversion Dam Impoundment, WY 2014 to WY 2025. Source: Ops Model output.

Source	Minimum Daily Flow (cfs)	Maximum Daily Flow (cfs)	Average Daily Flow (cfs)
Total Inflow	8.7 (September 11, 2015)	2,078 (January 7, 2017)	86.3

B.5.4.1.2 Storage

At its normal maximum water surface elevation (NMWSE) of 6,695 feet (ft), North Fork Diversion Dam Impoundment has an estimated gross storage capacity of 350 ac-ft and an estimated usable storage capacity of 116 ac-ft. The area-capacity curve showing gross and usable storage capacities of North Fork Diversion Dam Impoundment is provided in Figure B.5-13.

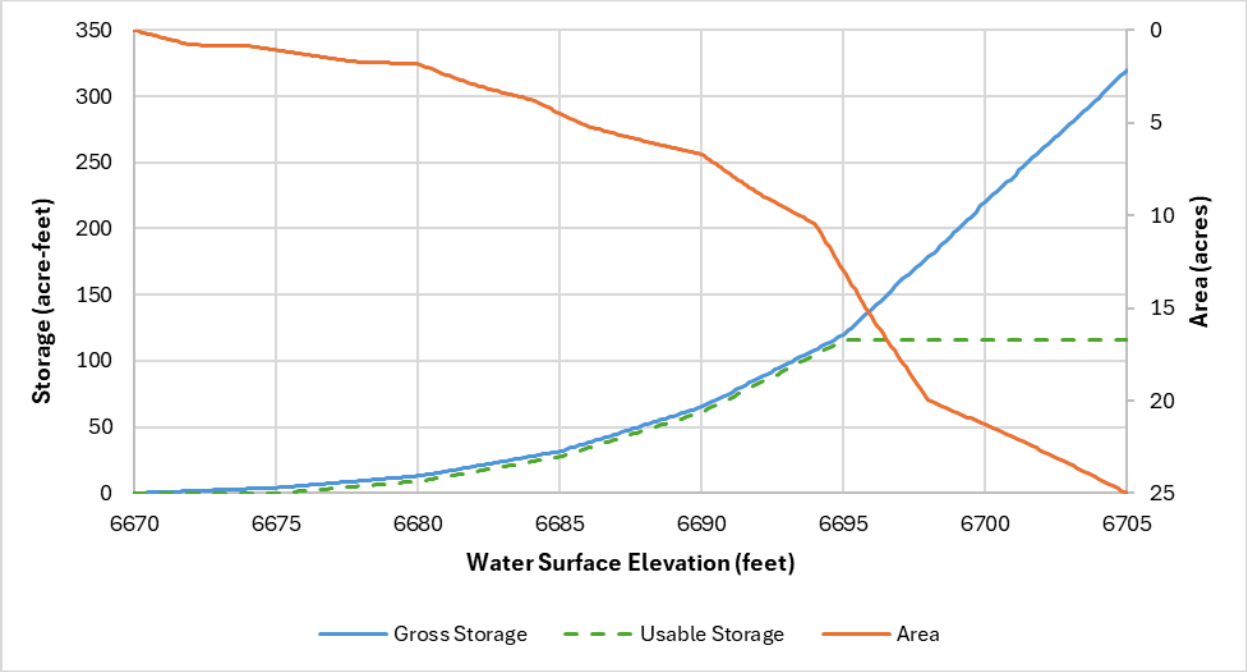


Figure B.5-13. North Fork Diversion Dam Impoundment area-capacity curve.

Figure B.4-14 shows simulated daily storage in North Fork Diversion Dam Impoundment, as well as the maximum daily storage and minimum daily storage from WY 2014 through WY 2025, and various percent exceedance levels of daily storage.

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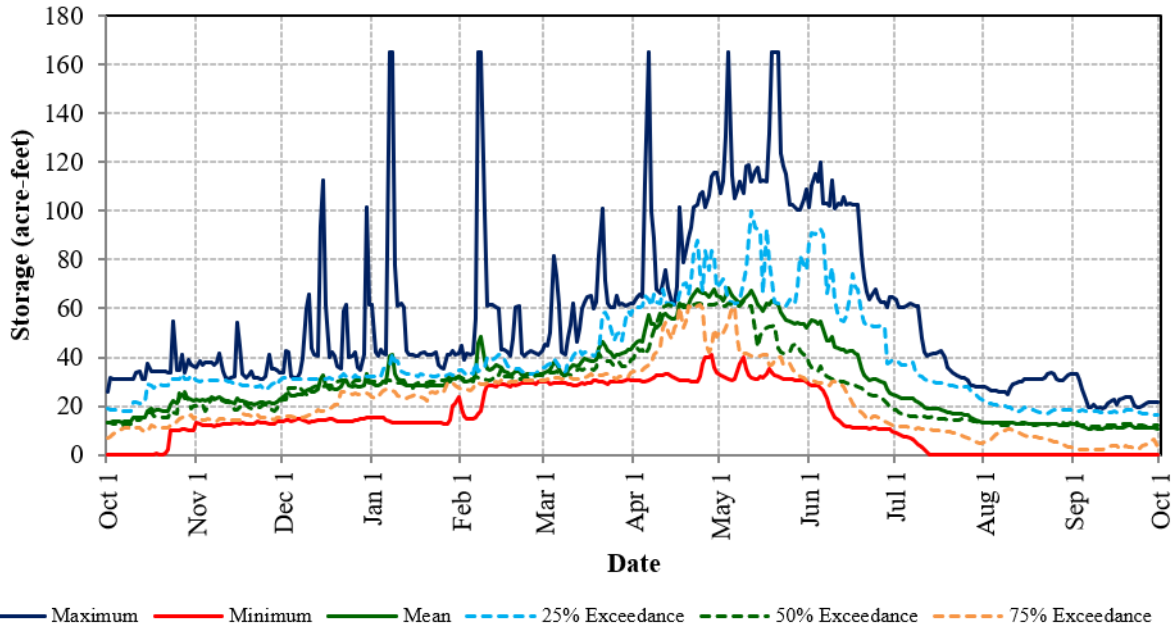


Figure B.5-14. Simulated daily storage in North Fork Diversion Dam Impoundment for various percent exceedances, WY 2014 through WY 2025. Source: Ops Model output.

B.5.4.1.3 Releases from North Fork Diversion Dam Impoundment

Releases from the North Fork Diversion Dam Impoundment into the NFSR occur three ways: 1) over the spillway, 2) through the sluiceway, and 3) through low flow outlet. The spillway is ungated and has a maximum capacity of 16,300 cfs at the probable maximum flood reservoir elevation of 6,706 feet (Figure B.5-15). The sluiceway has a control gate and a maximum capacity of 200 cfs. The low-level outlet is designed to maintain a minimum downstream flow of 16.5 cfs.

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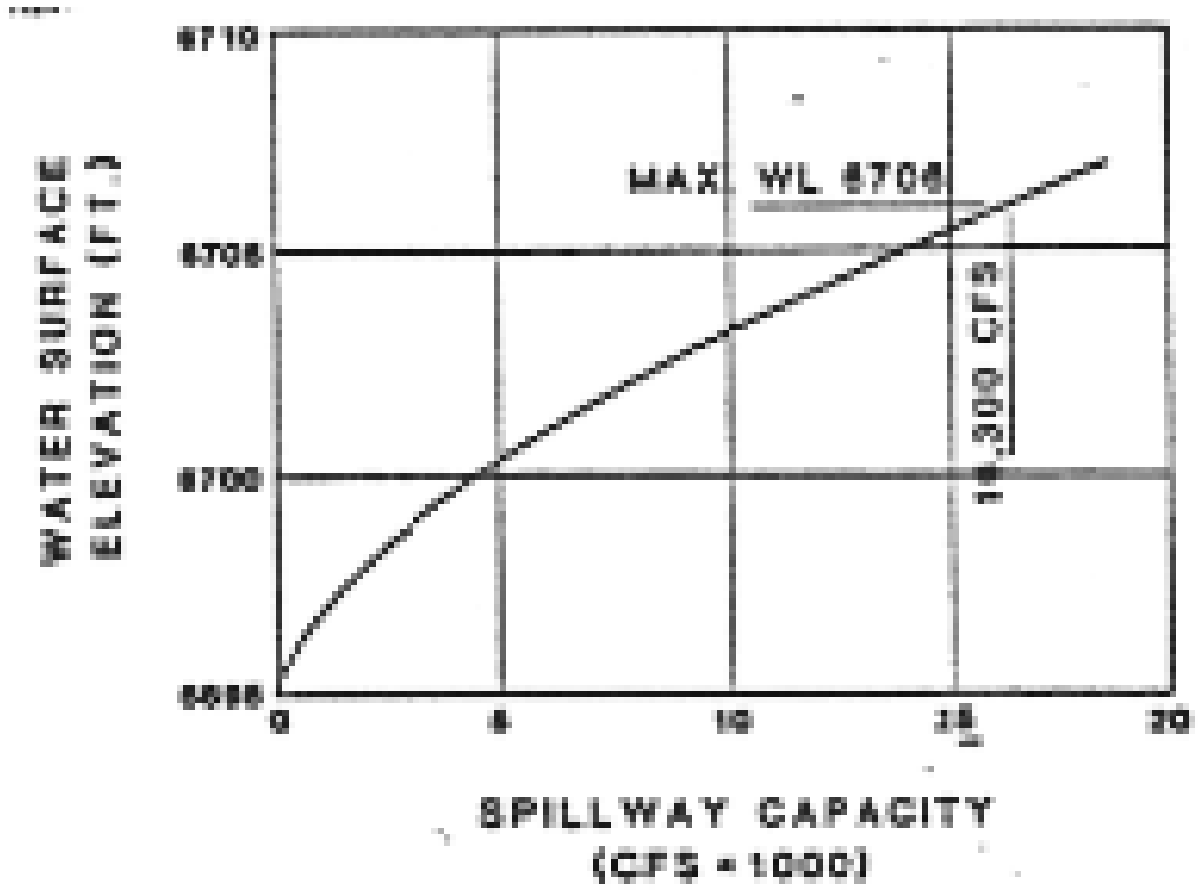


Figure B.5-15. North Fork Diversion Dam spillway rating curve. Source: CCWD (1991).

Figure B.5-16 provides monthly flow duration curves for simulated mean daily releases from North Fork Diversion Dam Impoundment into the NFSR under current operations. Table B.5-3 provides the minimum, maximum, and average daily inflow to North Fork Diversion Dam Impoundment from WY 2014 through WY 2025.

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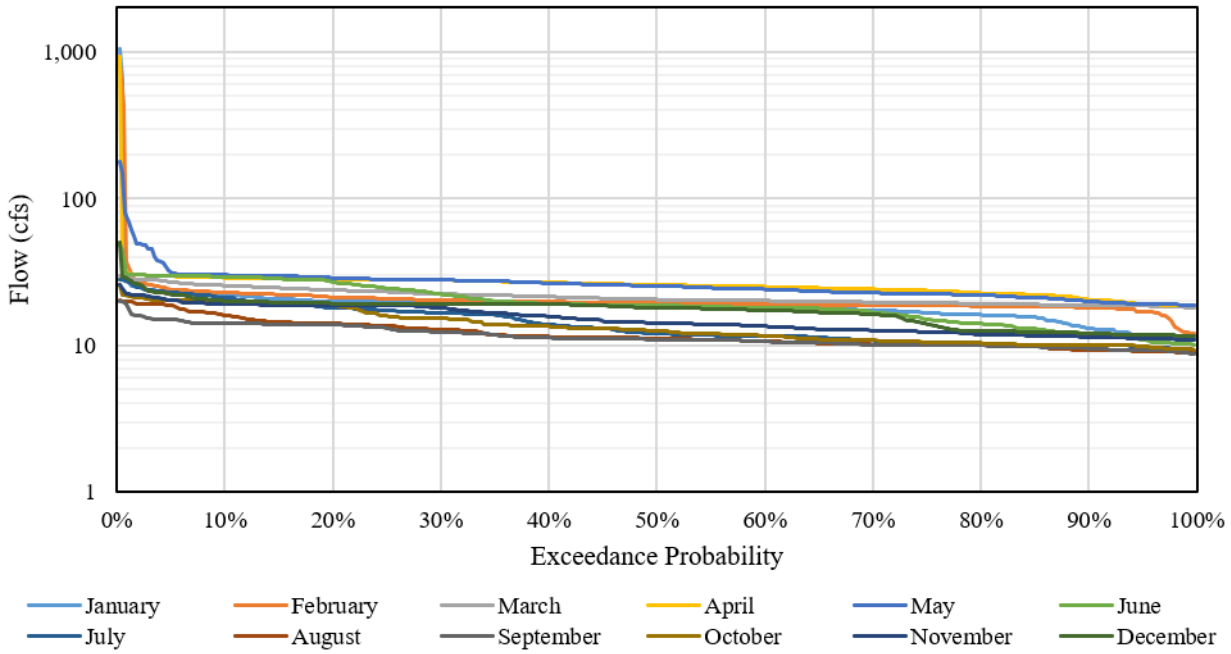


Figure B.5-16. Monthly flow exceedance curves for simulated average daily releases from North Fork Diversion Dam into the NFSR from WY 2014 through WY 2025. Source: Ops Model output.

Table B.5-3. Simulated minimum, maximum, and average daily release from the North Fork Diversion Dam to the North Fork Stanislaus River, WY 2014 to WY 2025. Source: Ops Model output.

Release	Minimum Daily Flow (cfs)	Maximum Daily Flow (cfs)	Average Daily Flow (cfs)
North Fork Diversion Dam to the NFSR	8.7 (September 11, 2015)	1,054 (January 7, 2017)	18.8

B.5.4.1.4 Operating Rule Curve

North Fork Diversion Dam Impoundment does not follow a rule curve for operations.

B.5.4.2 New Spicer Meadow Reservoir Operations

New Spicer Meadow Reservoir, formed by the New Spicer Meadow Dam, is located on Highland Creek approximately six miles from the confluence with the NFSR. This section describes simulated inflows, storage, and releases for the reservoir under current operating conditions.

B.5.4.2.1 Inflow

New Spicer Meadow Reservoir receives inflow from the Highland Creek, Bull Run Creek, Wilderness Creek, and Hobart Creek. Hobart Creek also receives releases from the North Fork Diversion Tunnel.

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Figures B.5-17, B.5-18, and B.5-19 show monthly exceedance curves for simulated mean daily flows into New Spicer meadow Reservoir from WY 2014 to WY 2025 for Highland Creek, North Fork Diversion Tunnel, and a combination of the inflows, respectively.

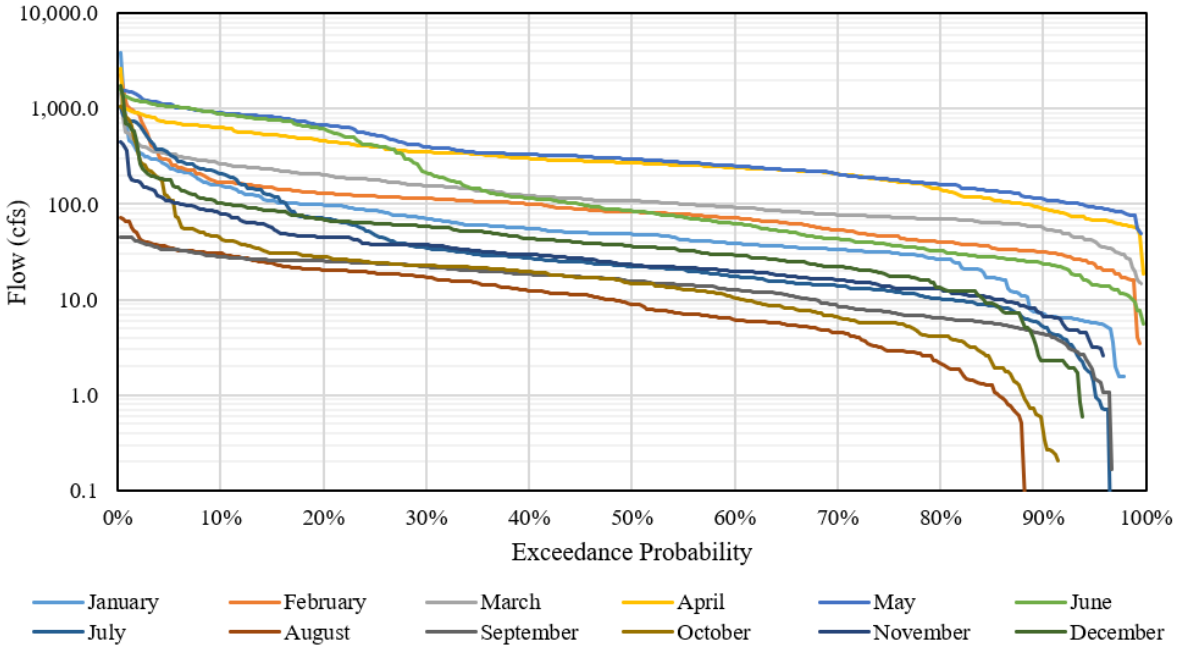


Figure B.5-17. Monthly flow exceedance curves for simulated average daily flows into New Spicer Meadow Reservoir from Highland Creek, WY 2014 to WY 2025. Source: Ops Model output.

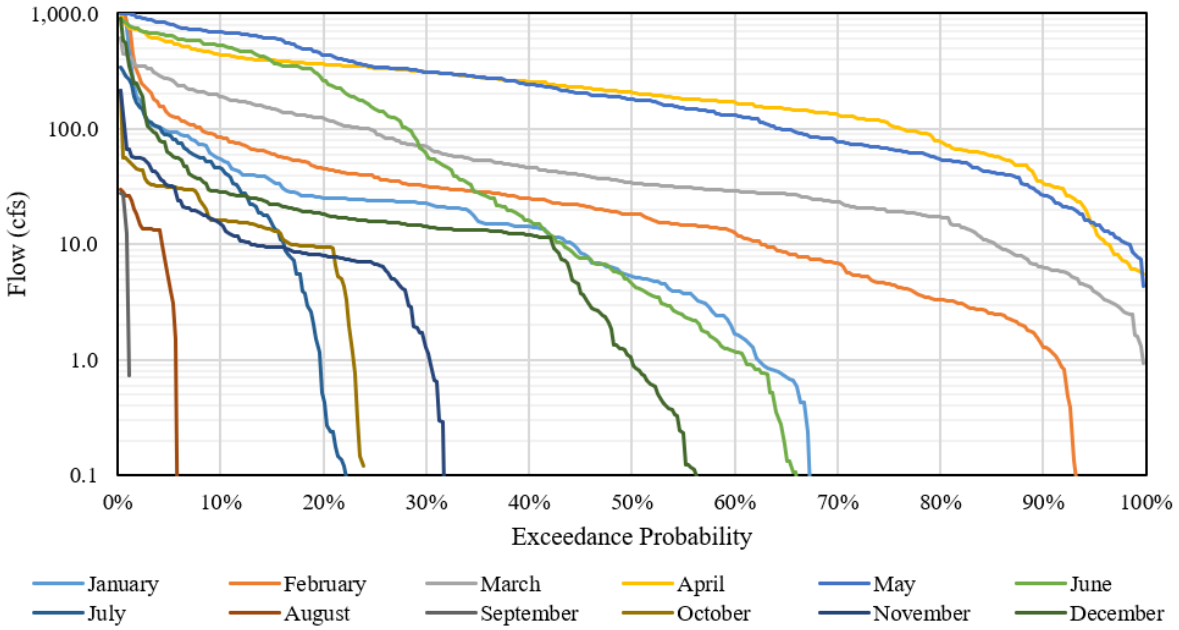


Figure B.5-18. Monthly flow exceedance curves for simulated average daily flows into New Spicer Meadow Reservoir from North Fork Diversion Tunnel (Hobart Creek), WY 2014 to WY 2025. Source: Ops Model output.

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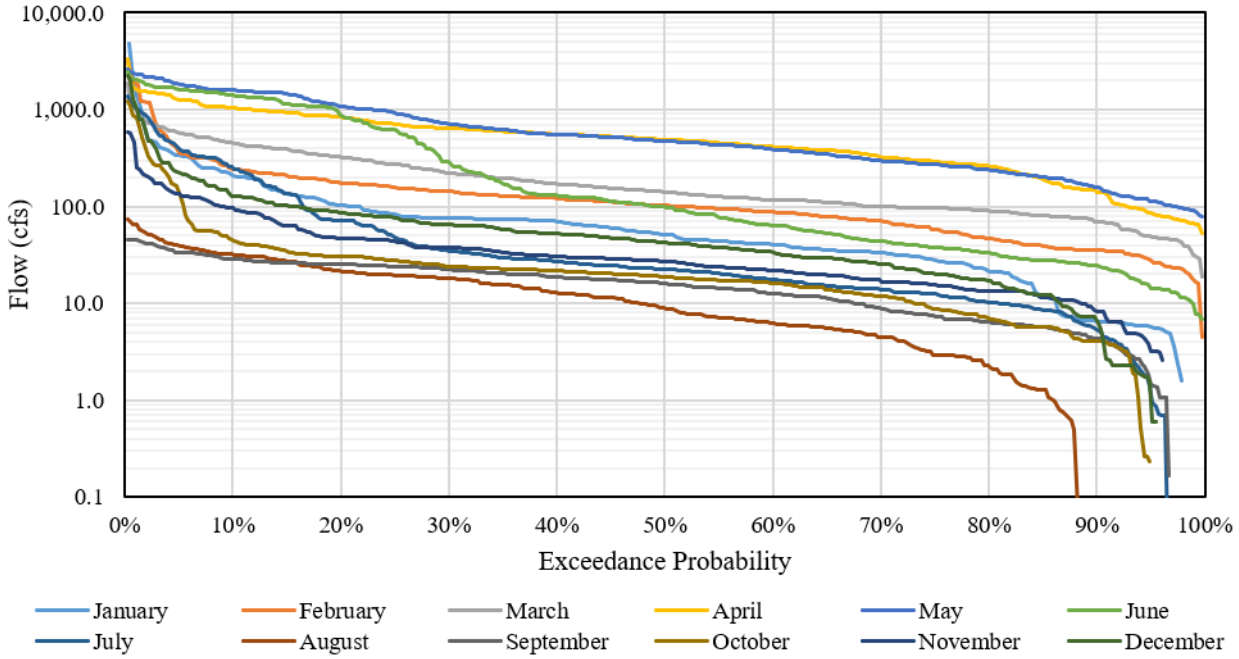


Figure B.5-19. Monthly flow exceedance curves for simulated average daily flows into New Spicer Meadow Reservoir from all inflow sources, WY 2014 to WY 2025. Source: Ops Model output.

Table B.5-4 provides the simulated minimum, maximum, and average daily inflow to New Spicer Meadow Reservoir from WY 2014 through WY 2025.

Table B.5-4. Simulated minimum, maximum, and average daily inflow to New Spicer Meadow Reservoir, WY 2014 to WY 2025. Source: Ops Model output.

Source	Minimum Daily Flow (cfs)	Maximum Daily Flow (cfs)	Average Daily Flow (cfs)
Highland Creek, Bull Run Creek, Wilderness Creek, and Hobart Creek	-47.3[3]	3,823	131
North Fork Diversion Tunnel	0	1,000	67.4
Total Inflow[1]	**-47.3 (October 19, 2021)**	**4,823 (January 8, 2017)**	**198**

[1] Inflow is negative because it is based on a mass balance calculation which considers reservoir change in storage, total reservoir outflow, North Fork Diversion Tunnel Inflow, and reservoir evaporation. See Appendix A to this Exhibit B for more detail.

B.5.4.2.2 Storage

At its NMWSE of 6,614 feet, New Spicer Meadow Reservoir has an estimated gross storage capacity of 189,000 ac-ft and an estimated usable storage capacity of 159,000 ac-ft. The area-capacity curve showing the gross storage capacity of New Spicer Meadow Reservoir is provided in Figure B.5-20.

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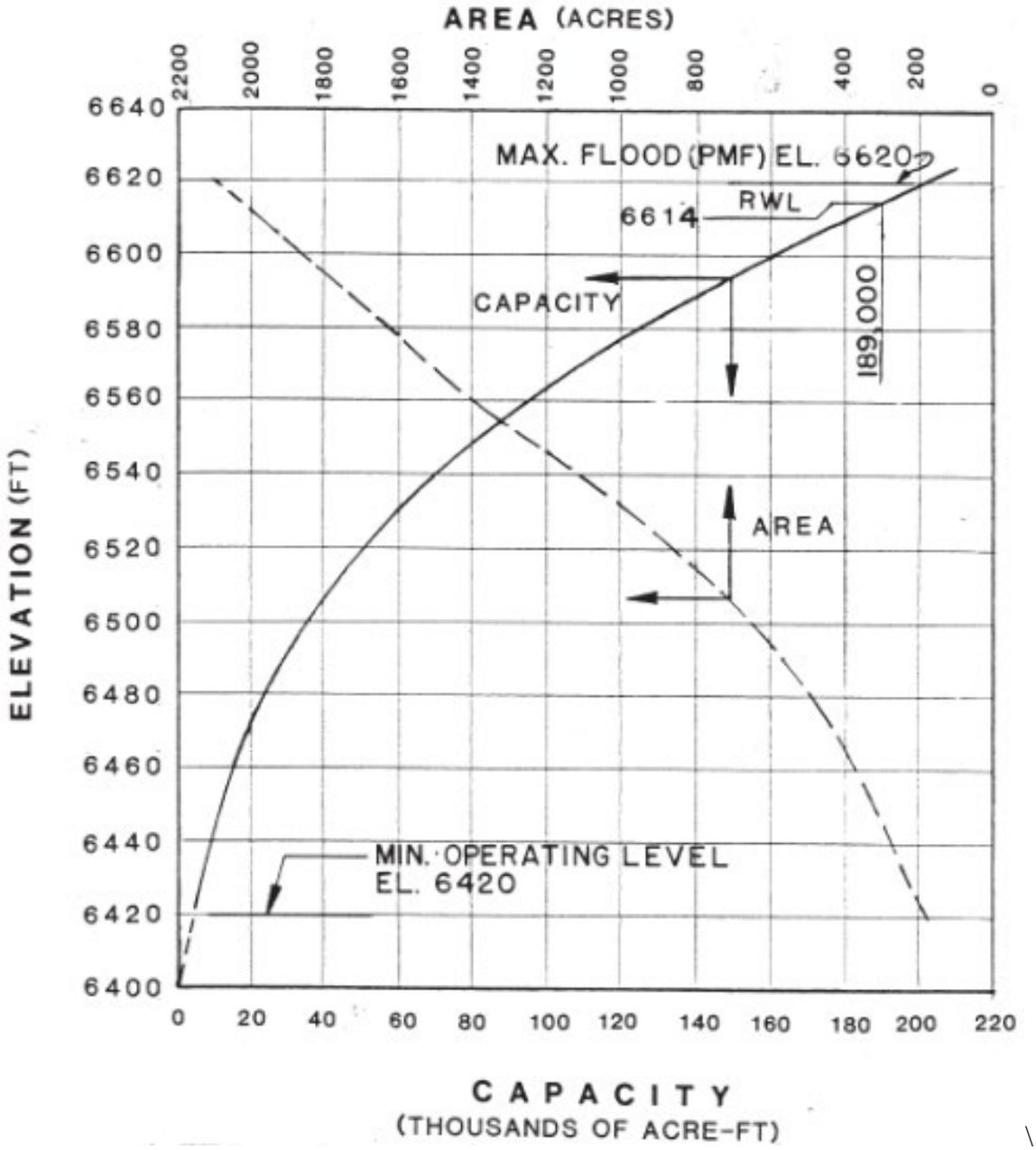


Figure B.5-20. New Spicer Meadow Reservoir area-capacity curve. Source: CCWD (1991).

Figure B.5-21 shows simulated daily storage in New Spicer Meadow Reservoir under existing operations, as well as the simulated maximum daily storage and minimum daily storage from WY 2014 through WY 2025, and various percent exceedance levels of daily storage.

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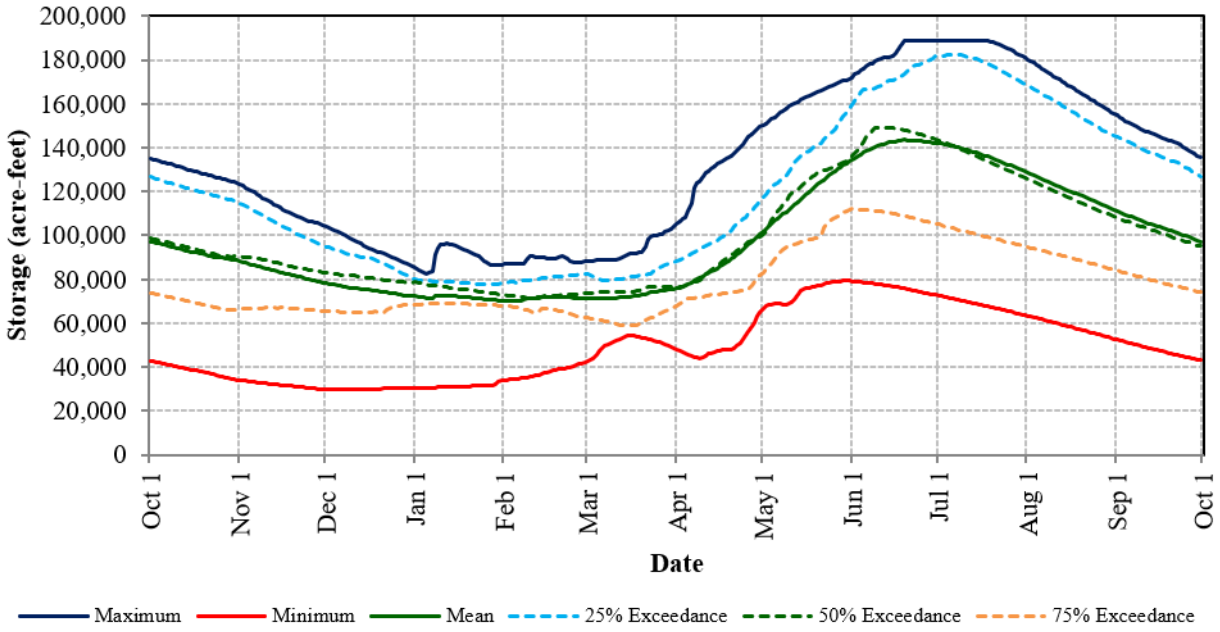


Figure B.5-21. Simulated daily storage in New Spicer Meadow Reservoir for various percent exceedances, WY 2014 through WY 2025. Source: Ops Model output.

B.5.4.2.3 Releases from New Spicer Meadow Reservoir

Releases from New Spicer Meadow Reservoir into the Highland Creek occur three ways: 1) over the spillway, 2) through New Spicer Meadow Powerhouse, and 3) through the low level outlets. The spillway is ungated and has a maximum capacity of 27,700 cfs at the probable maximum flood reservoir elevation 6,621.2 (Figure B.5-22). The maximum discharge from the powerhouse is approximately 417 cfs. With combined operations of the 48-inch and 12-inch bypass valves, maximum discharges between 600 and 800 cfs occur. Under emergency drawdown conditions, and with the use of the 54-inch emergency drawdown valve, up to 2,330 cfs can be released.

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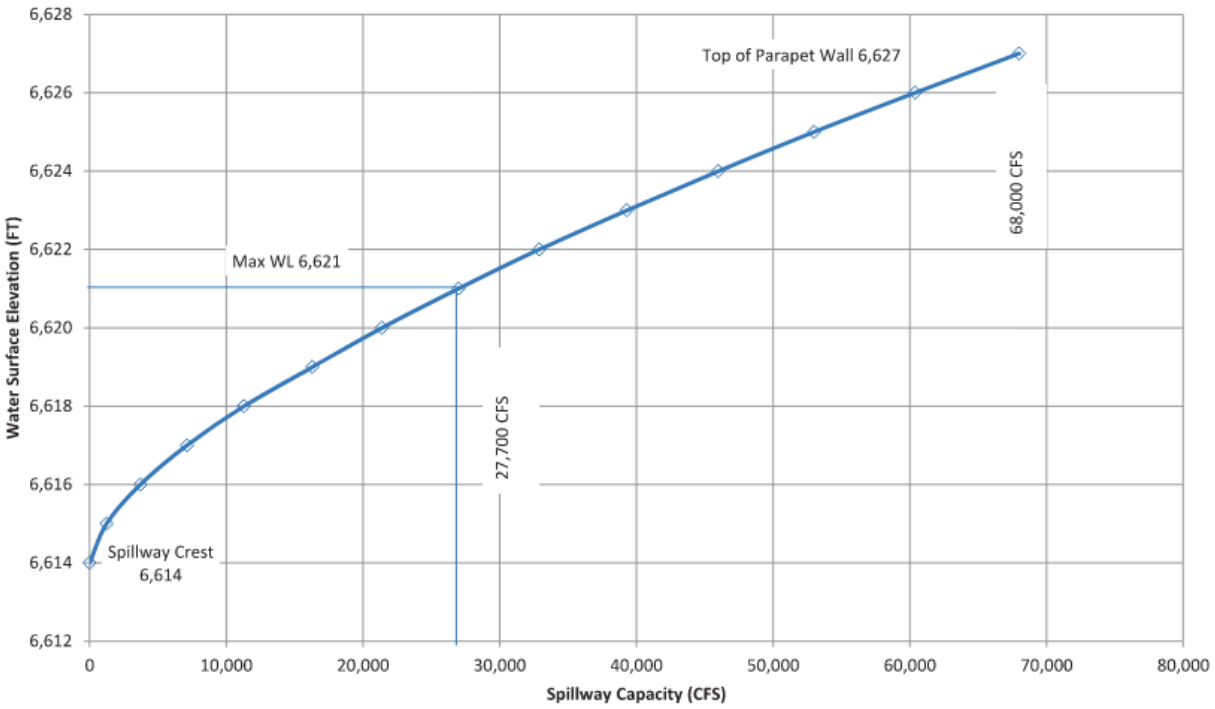


Figure B.5-22. New Spicer Meadow Dam spillway rating curve. Source: NCPA (2023b).

Figure B.5-23 provides simulated monthly flow duration curves for the releases from New Spicer Meadow Dam into Highland Creek from WY 2014 through WY 2025 under current operations. Table B.5-5 provides the simulated minimum, maximum, and average daily releases to Highland Creek from WY 2014 through WY 2025.

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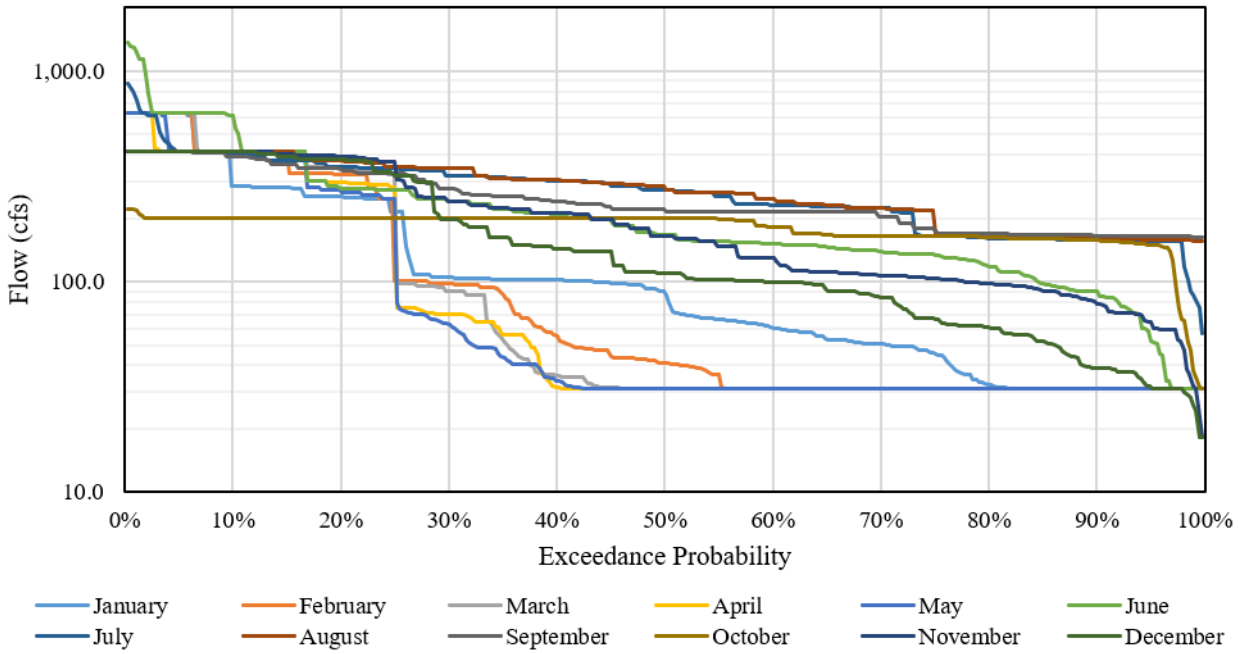


Figure B.5-23. Monthly flow exceedance curves for average daily releases from New Spicer Meadow Dam into Highland Creek from WY 2014 through WY 2025. Source: Ops Model output.

Table B.5-5. Simulated minimum, maximum, and average daily release from the North Fork Diversion Dam to the North Fork Stanislaus River, WY 2014 to WY 2025. Source: Ops Model output.

Release	Minimum Daily Flow (cfs)	Maximum Daily Flow (cfs)	Average Daily Flow (cfs)
New Spicer Meadow Dam to the Highland Creek	18.1 (November 30, 2015)	1,369 (June 22, 2017)	191

B.5.4.2.4 Operating Rule Curve

New Spicer Meadow Reservoir does not follow a rule curve for operations.

B.5.4.3 New Spicer Meadow Powerhouse Operations

The New Spicer Meadow Powerhouse is typically block-loaded at a constant generation value for multiple days to weeks at a time, generating incidental power with the water being released to maintain mandatory downstream flow requirements and to meet the generation schedule of the downstream Collierville powerhouse. Figures B.5-24 and B.5-25 show simulated typical recent weekly operation during the spring and summer periods for generation. The figures start at midnight on Monday morning and end at midnight on Sunday night.

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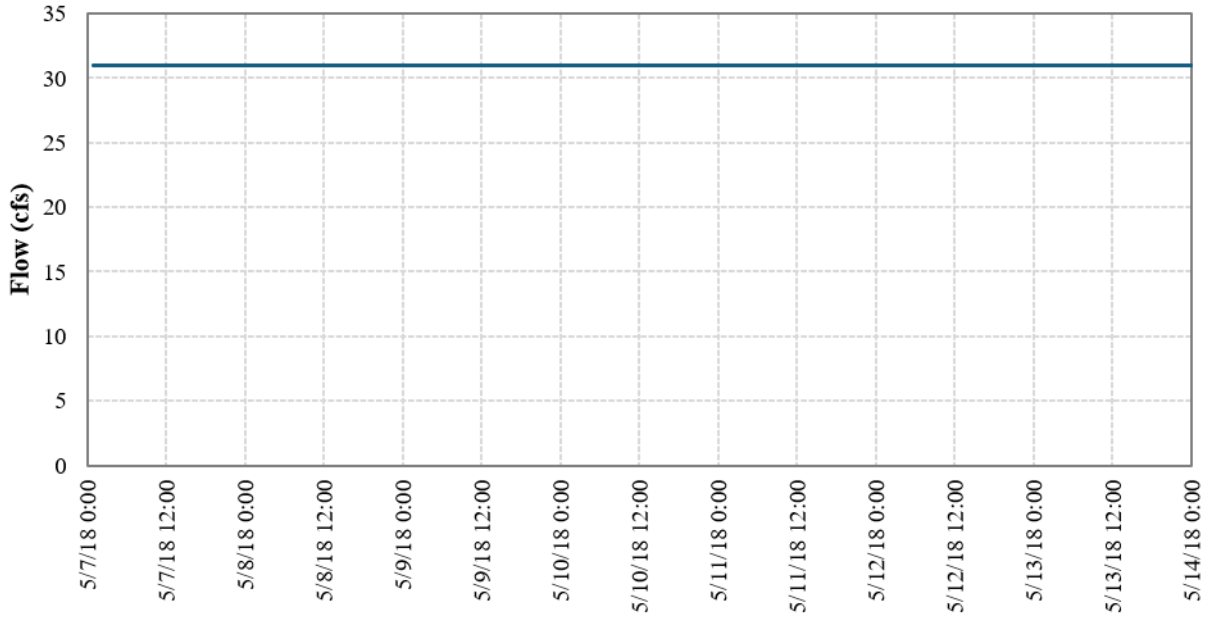


Figure B.5-24. Simulated typical weekly hourly operations of New Spicer Meadow Powerhouse during a spring week. Source: Ops Model output.

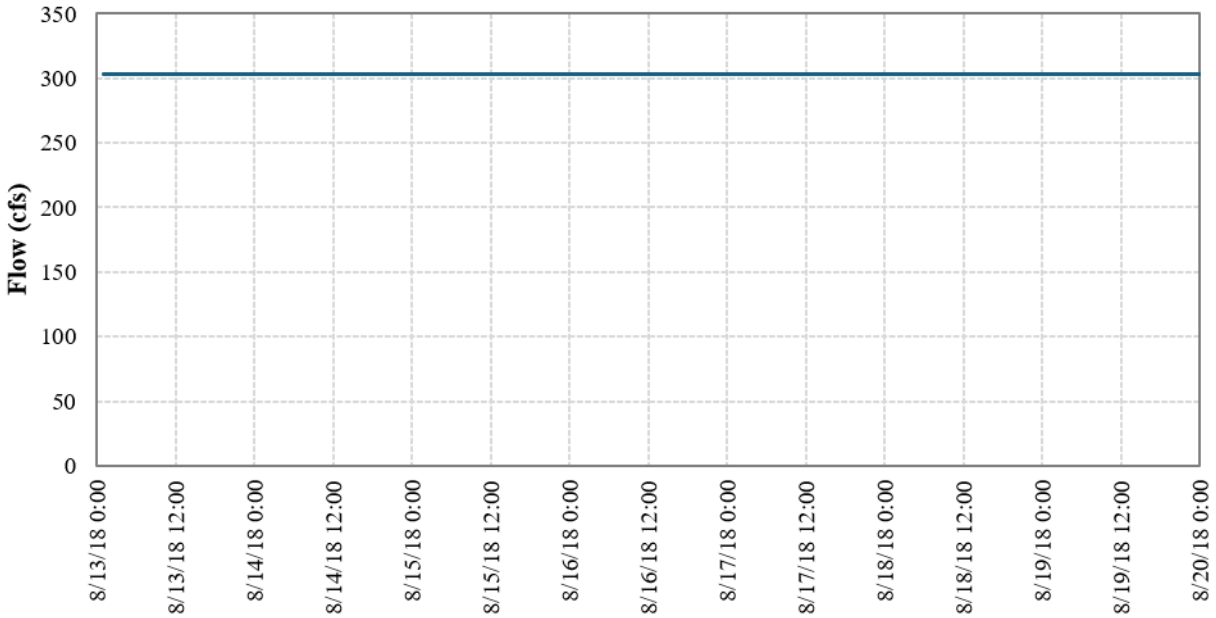


Figure B.5-25. Simulated typical weekly hourly operations of New Spicer Meadow Powerhouse during a summer week. Source: Ops Model output.

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B.5.4.3.1 Hydraulic Capacity

The New Spicer Meadow Powerhouse includes three horizontal shaft Francis turbines. Two of the turbines can pass approximately 190 cfs each and the third unit can pass approximately 37 cfs. Combined the three units have a maximum release of approximately 417 cfs and have a FERC-authorized installed capacity of 5.764 MW.[1]

B.5.4.3.2 Releases

Figure B.5-26 provides monthly flow duration curves for the New Spicer Meadow Powerhouse average daily releases into Highland Creek, based on simulated data from WY 2014 through WY 2025 under current operations.

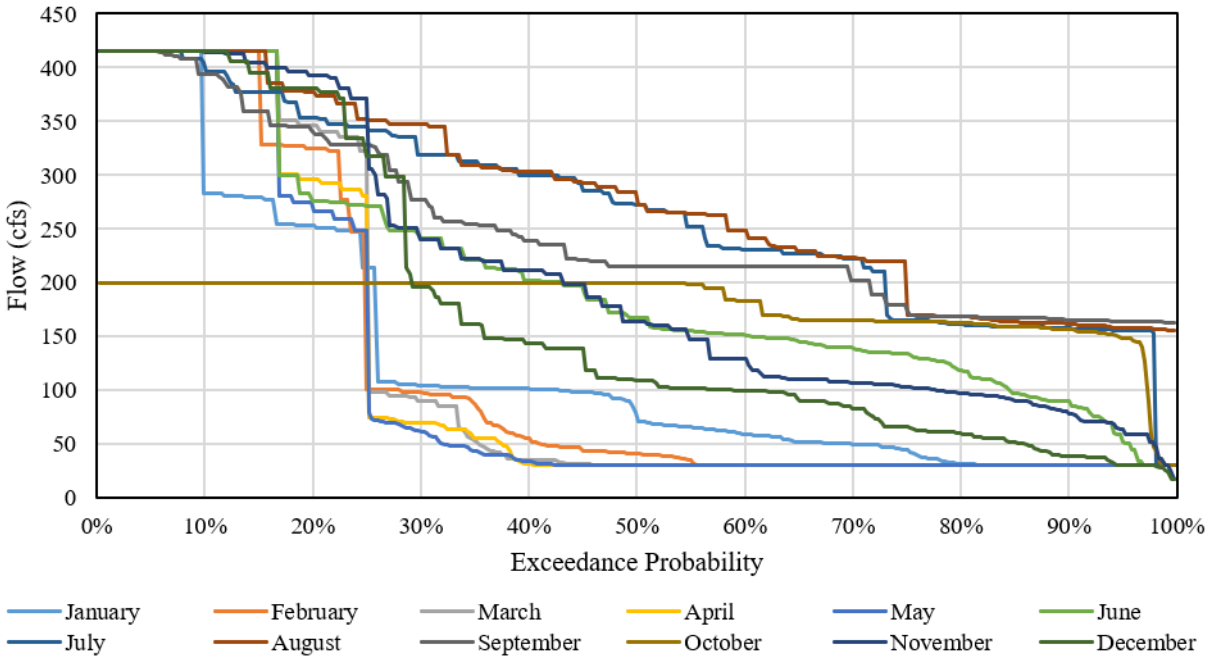


Figure B.5-26. Monthly flow exceedance curves for simulated average daily releases for New Spicer Meadow Powerhouse. Source: Ops Model output.

B.5.4.3.3 Powerhouse Capability versus Head

New Spicer Meadow Powerhouse capability versus head for the two large units is shown in Figure B.5-27. Minimum and maximum operating levels for the New Spicer Meadow Powerhouse are 118 ft and 243.7 ft, respectively.

[1] FERC's October 7, 1997, Order Amending License, Approving As-Built Exhibits, and Revising Annual Charges is available in FERC's ELibrary at accession number 19971009-0372.

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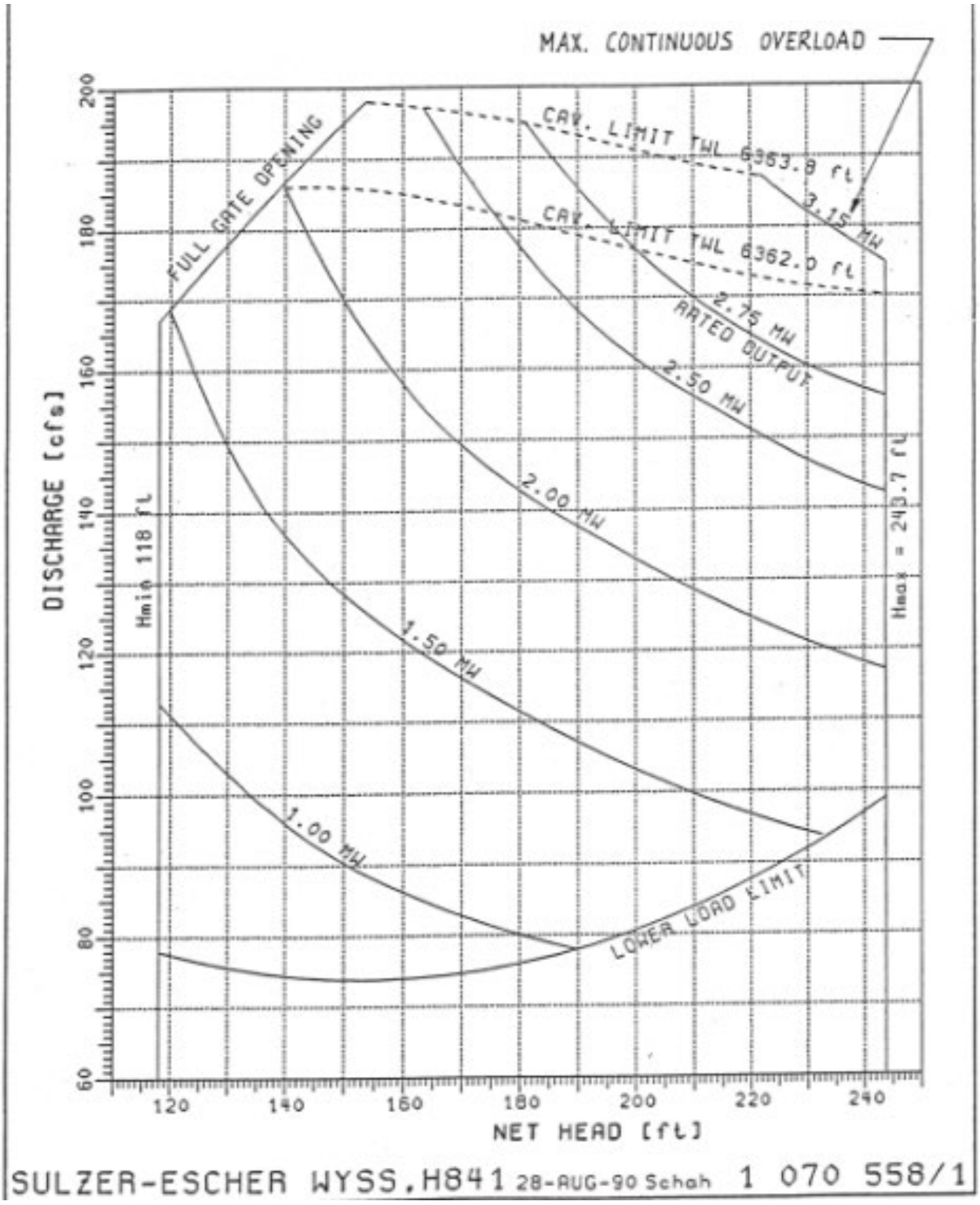


Figure B.5-27. New Spicer Meadow Powerhouse capability versus flow curve for the normal range of operating head. Source: NCPA (2023b).

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B.5.4.3.4 Tailwater Rating Curve

New Spicer Meadow Powerhouse does not have a tailwater rating curve.

B.5.4.3.5 Load Curves

New Spicer Meadow Powerhouse does not have a standard load curve.

B.5.4.4 Beaver Creek Diversion Dam Impoundment Operations

Beaver Creek Diversion Dam Impoundment, formed by the Beaver Creek Diversion Dam, is located on Beaver Creek approximately 3.4 miles upstream from the NFSR confluence. This section describes simulated inflows, storage, and releases for the impoundment.

B.5.4.4.1 Inflow

Beaver Creek Diversion Dam Impoundment receives inflow from Beaver Creek. Figure B.5-28 shows monthly exceedance curves for simulated mean daily flows into Beaver Creek Diversion Dam Impoundment from WY 2014 through WY 2025.

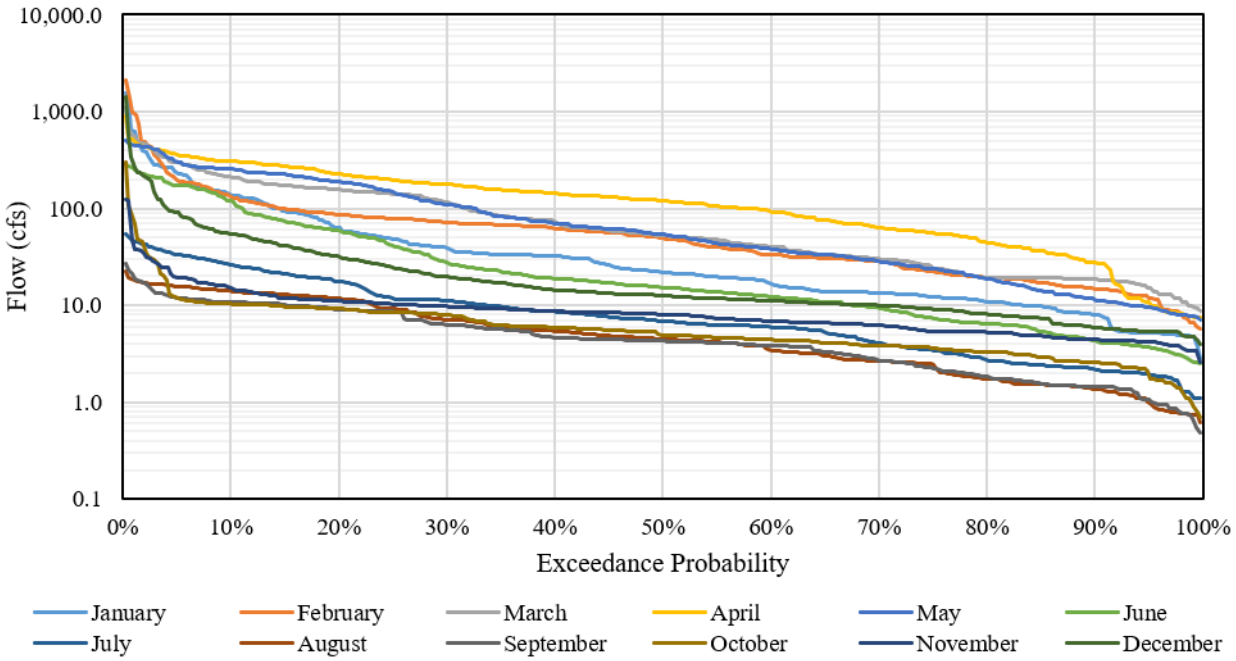


Figure B.5-28. Monthly flow exceedance curves for simulated average daily flows into Beaver Creek Diversion Dam Impoundment from Beaver Creek, WY 2014 to WY2025. Source: Ops Model output.

Table B.5-6 provides the simulated minimum, maximum, and average daily inflow to Beaver Creek Diversion Dam Impoundment from WY 2014 through WY 2025.

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Table B.5-6. Simulated minimum, maximum, and average daily inflow to Beaver Creek Diversion Dam Impoundment, WY 2014 to WY 2025. Source: Ops Model output.

Source	Minimum Daily Flow (cfs)	Maximum Daily Flow (cfs)	Average Daily Flow (cfs)
Total Inflow	0.48 (September 30, 2015)	2,110 (February 8, 2017)	48.7

B.5.4.4.2 Storage

At its NMWSE of 4,195 feet, the impoundment has an estimated gross storage capacity of 20 ac-ft (Figure B.5-29) and no usable storage capacity.

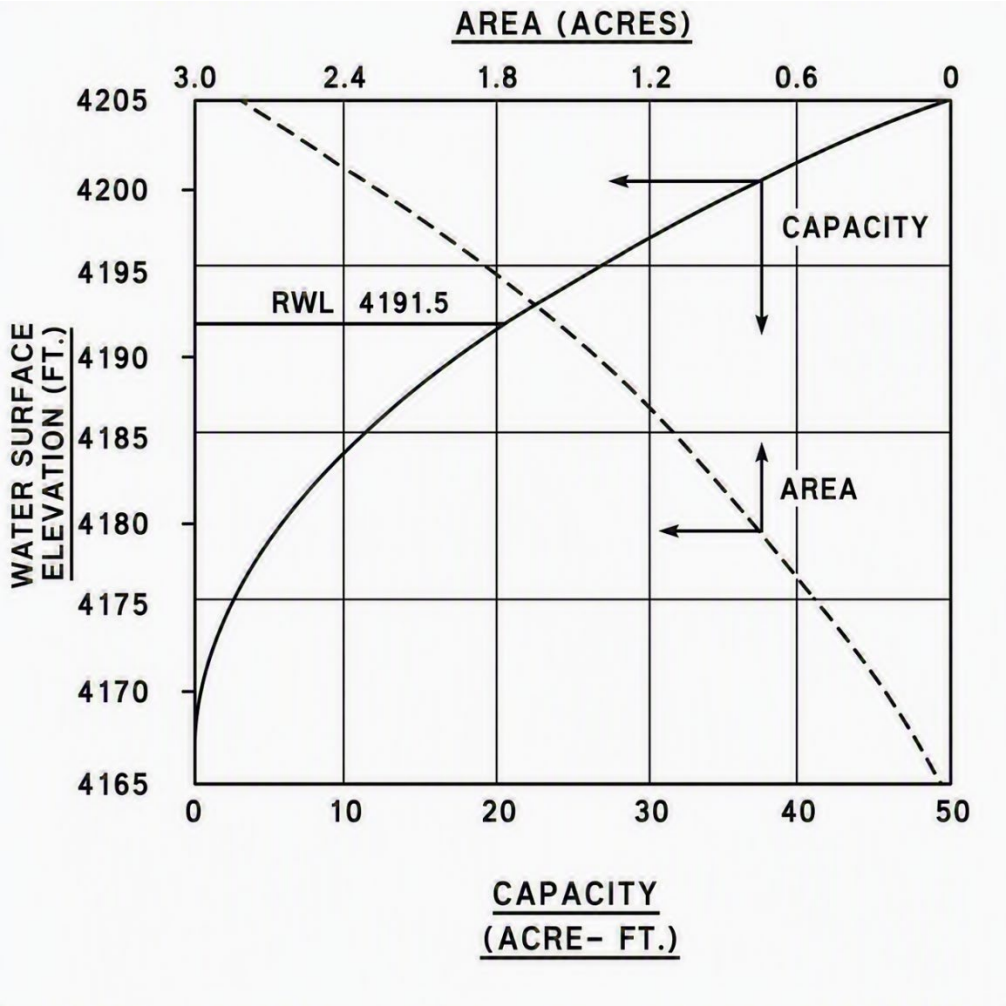


Figure B.5-29. Beaver Creek Diversion Dam Impoundment area-capacity curve. Source: CCWD (1991).

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Figure B.5-30 shows simulated daily storage in Beaver Creek Diversion Dam Impoundment, as well as the maximum daily storage and minimum daily storage from WY 2014 through WY 2025, and various percent exceedance levels of daily storage.

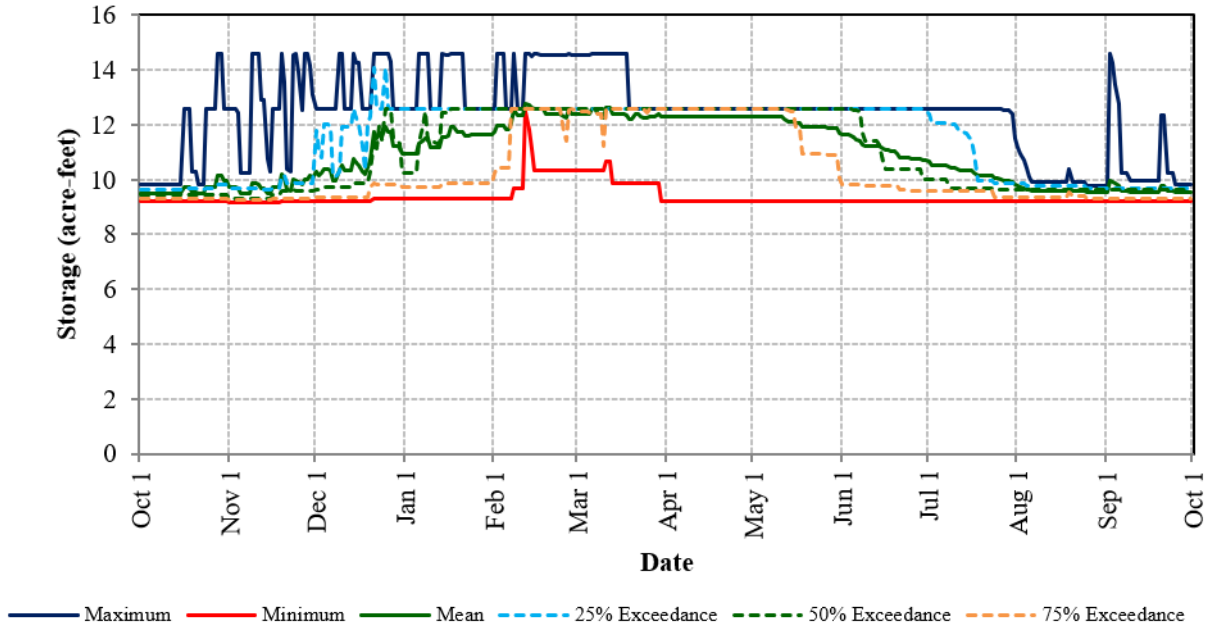


Figure B.5-30. Simulated Daily storage in Beaver Creek Diversion Dam Impoundment for various percent exceedances, WY 2014 through WY 2025. Source: Ops Model output.

B.5.4.4.3 Releases from Beaver Creek Diversion Dam Impoundment

Releases from Beaver Creek Diversion Dam Impoundment into Beaver Creek occur three ways: 1) over the spillway; 2) through sluiceway; and 3) through the low level outlet. The spillway is ungated and has a maximum capacity of 16,300 cfs at the probable maximum flood reservoir elevation of 4,202.7 feet (Figure B.5-31). The maximum discharge from the sluiceway is 200 cfs. The low-level outlet is designed to maintain a minimum downstream flow of 16.5 cfs.

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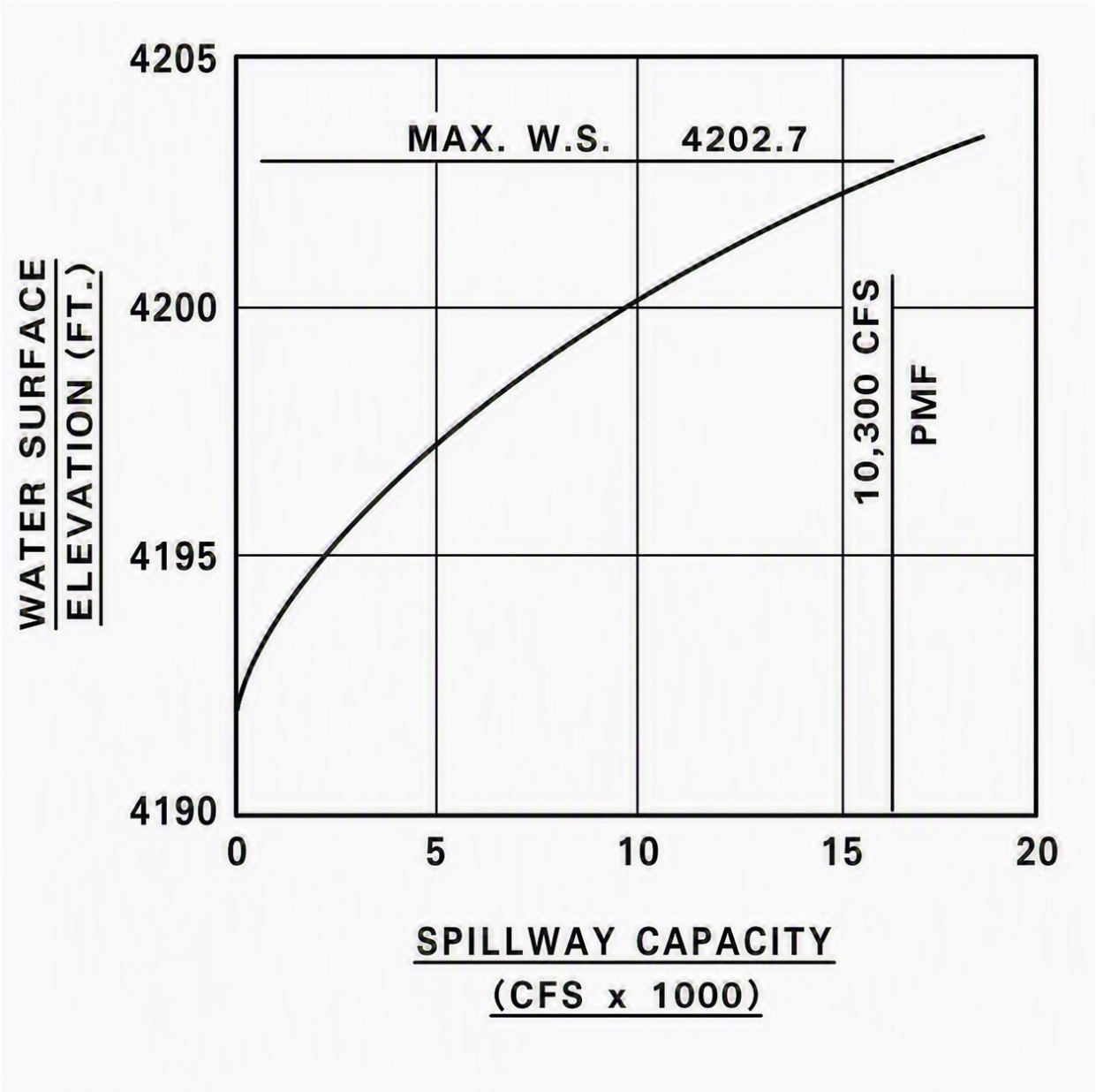


Figure B.5-31. Beaver Creek Diversion Dam spillway rating curve. Source: CCWD (1991).

Figure B.5-32 provides monthly flow duration curves for releases from Beaver Creek Diversion Dam into Beaver Creek, based on simulated data from WY 2014 through WY 2025 under current operations. Table B.5-7 provides the simulated minimum, maximum, and average daily releases to Beaver Creek from WY 2014 through WY 2025.

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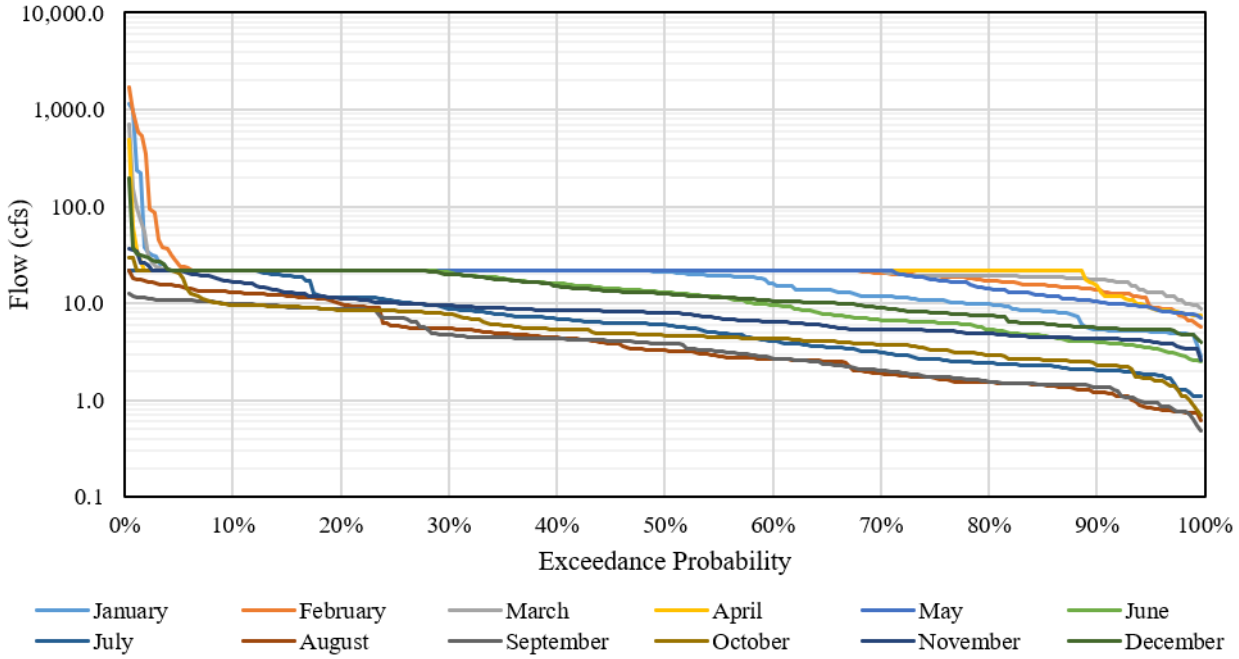


Figure B.5-32. Monthly flow exceedance curves for simulated average daily releases from Beaver Creek Diversion Dam into Beaver Creek from WY 2014 through WY 2025. Source: Ops Model output.

Table B.5-7. Simulated minimum, maximum, and average daily release from the Beaver Creek Diversion Dam to Beaver Creek, WY 2014 to WY 2025. Source: Ops Model output.

Release	Minimum Daily Flow (cfs)	Maximum Daily Flow (cfs)	Average Daily Flow (cfs)
Beaver Creek Diversion Dam to Beaver	0.5 (September 30, 2015)	1,710 (February 8, 2017)	16.1

B.5.4.4.4 Operating Rule Curve

Beaver Creek Diversion Dam Impoundment does not follow a rule curve for operations.

B.5.4.5 McKays Point Diversion Dam Impoundment

McKays Point Diversion Dam Impoundment, formed by the McKays Point Diversion Dam, is located on the NFSR at River Mile 8.0. This section describes simulated inflows, storage, and releases for the impoundment under existing conditions.

B.5.4.5.1 Inflow

McKays Point Diversion Dam Impoundment receives inflow from NFSR and the Beaver Creek Diversion Tunnel. Figures B.5-33, B.5-34, and B.5-35 show monthly exceedance curves for simulated mean daily flows into McKays Point Diversion Dam Impoundment from WY 2014 to WY 2025 for NFSR Creek, Beaver Creek Diversion Tunnel, and a combination of the inflows, respectively.

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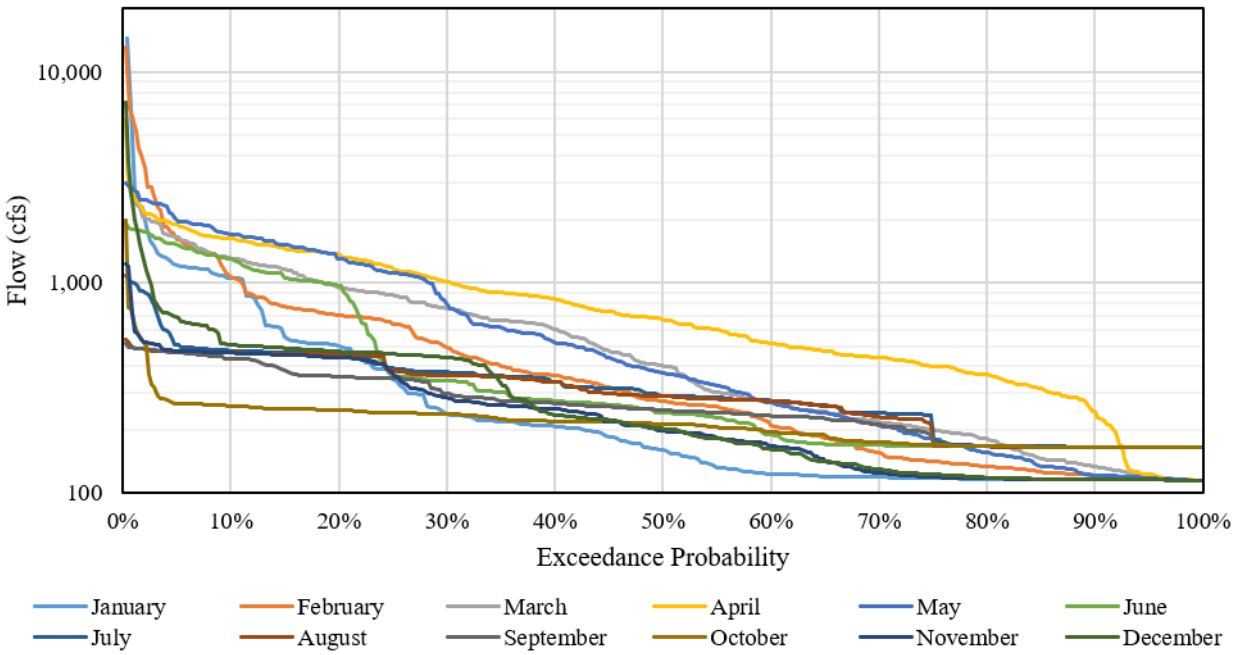


Figure B.5-33. Monthly flow exceedance curves for simulated average daily flows into McKays Point Diversion Dam Impoundment from NFSR, WY 2014 to WY 2025. Source: Ops Model output.

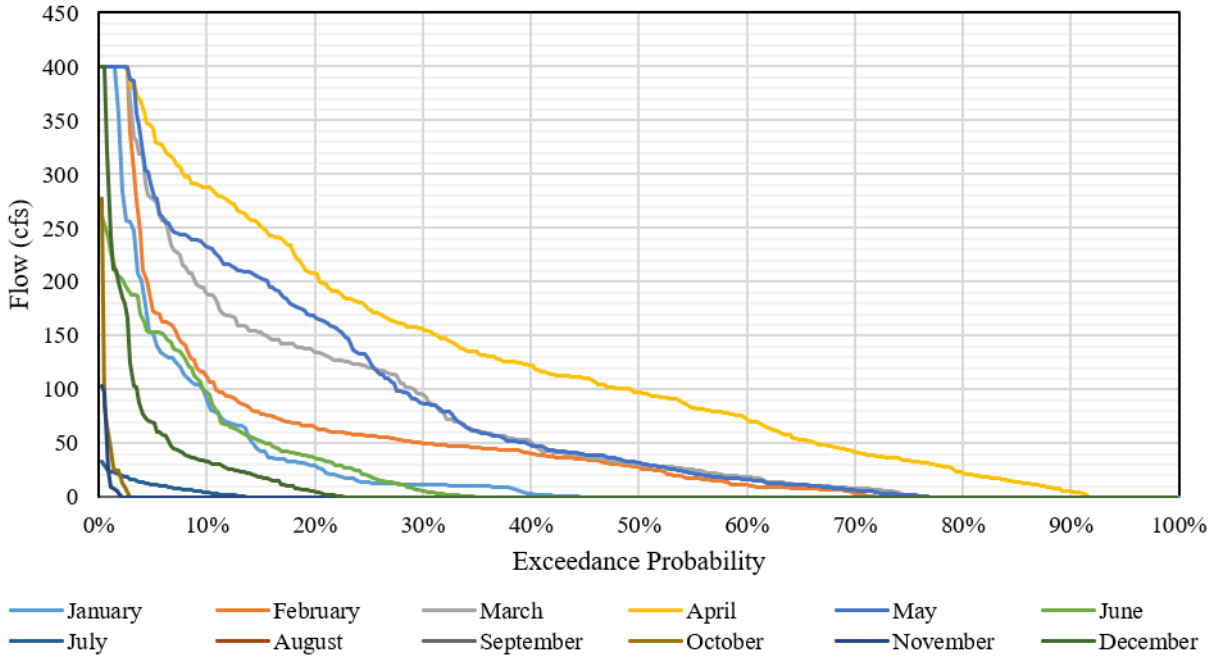


Figure B.5-34. Monthly flow exceedance curves for simulated average daily flows into McKays Point Diversion Dam Impoundment from Beaver Creek Diversion Tunnel, WY 2014 to WY 2025. Source: Ops Model output.

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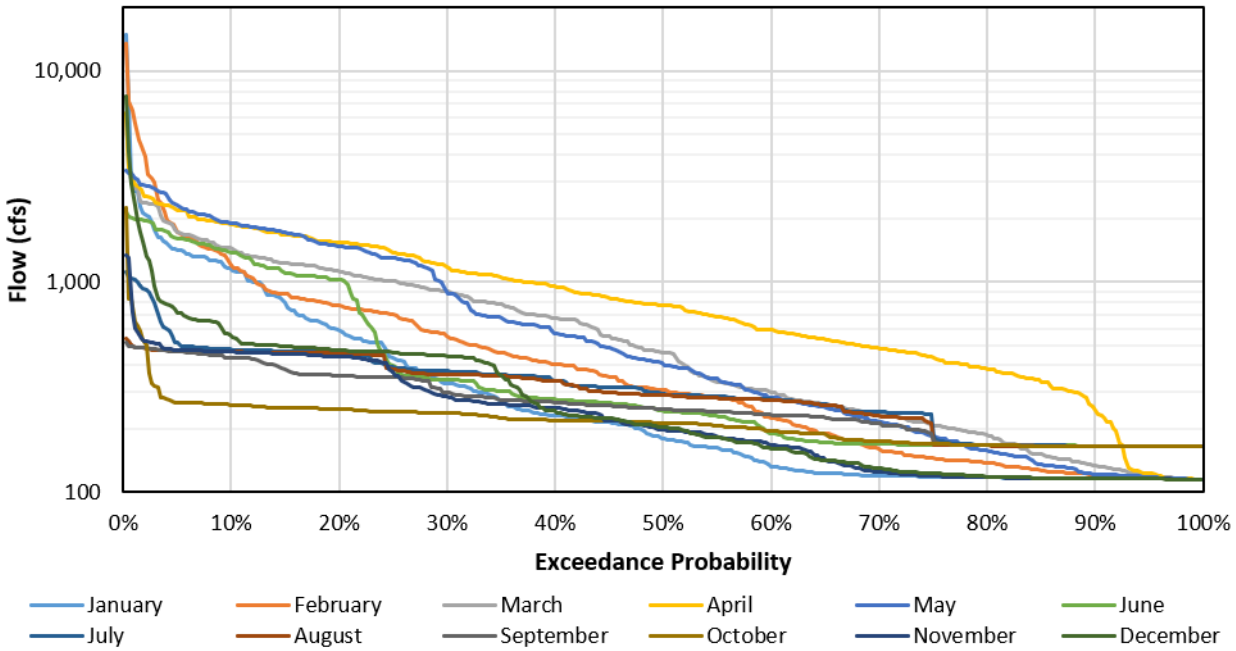


Figure B.5-35. Combined monthly flow exceedance curves for simulated average daily flows into McKays Point Diversion Dam Impoundment, WY 2014 to WY 2025. Source: Ops Model output.

Table B.5-8 provides the simulated minimum, maximum, and average daily inflow to McKays Point Diversion Dam Impoundment from WY 2014 through WY 2025.

Table B.5-8. Simulated minimum, maximum, and average daily inflow to McKays Diversion Dam Impoundment, WY 2014 to WY 2025. Source: Ops Model output.

Source	Minimum Daily Flow (cfs)	Maximum Daily Flow (cfs)	Average Daily Flow (cfs)
North Fork Stanislaus River	115	14,456	436
Beaver Creek Diversion Tunnel	0	400	32.5
Total Inflow	**115 (November 30, 2015)**	**14,856 (January 8, 2017)**	**468**

B.5.4.5.2 Storage

At its NMWSE of 3,370 feet, McKays Point Diversion Dam Impoundment has an estimated gross storage capacity of 2,088 ac-ft (Figure B.5-36) and an estimated usable storage capacity of approximately 1,000 ac-ft.

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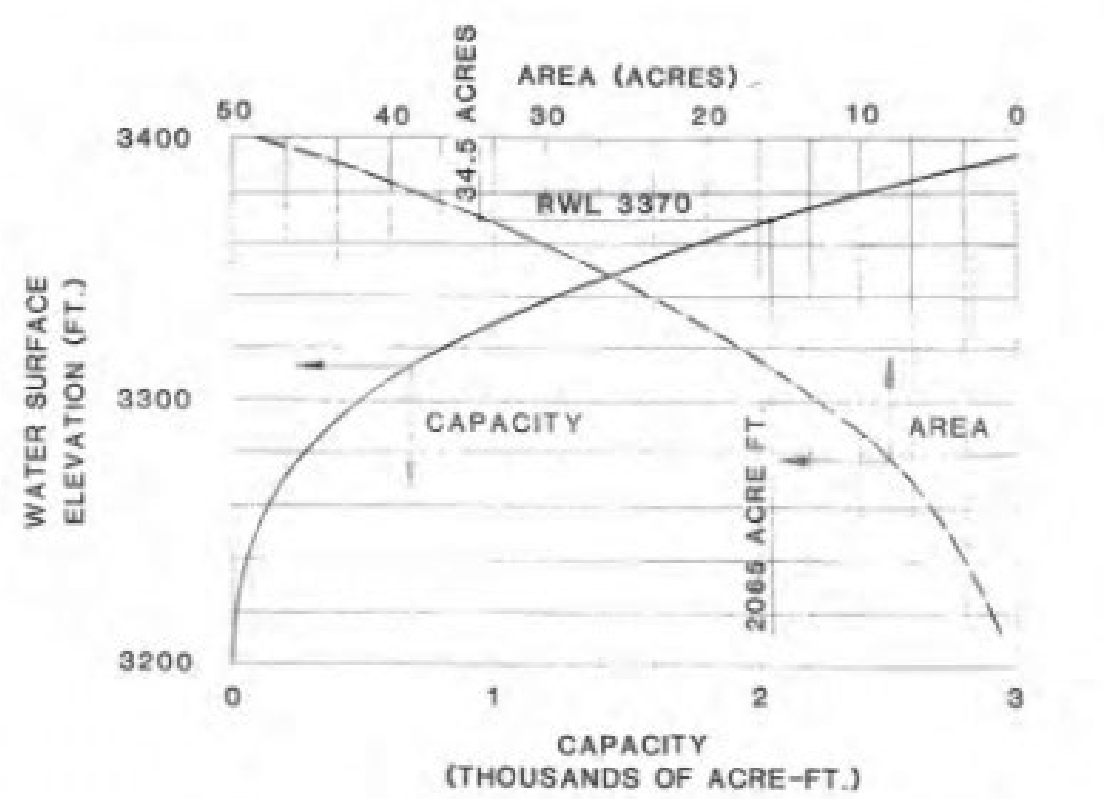


Figure B.5-36. McKays Point Diversion Dam Impoundment area-capacity curve. Source: NCPA (2023a).

Figure B.5-37 shows simulated daily storage in McKays Point Diversion Dam Impoundment, as well as the maximum daily storage and minimum daily storage from WY 2014 through WY 2025, and various percent exceedance levels of daily storage.

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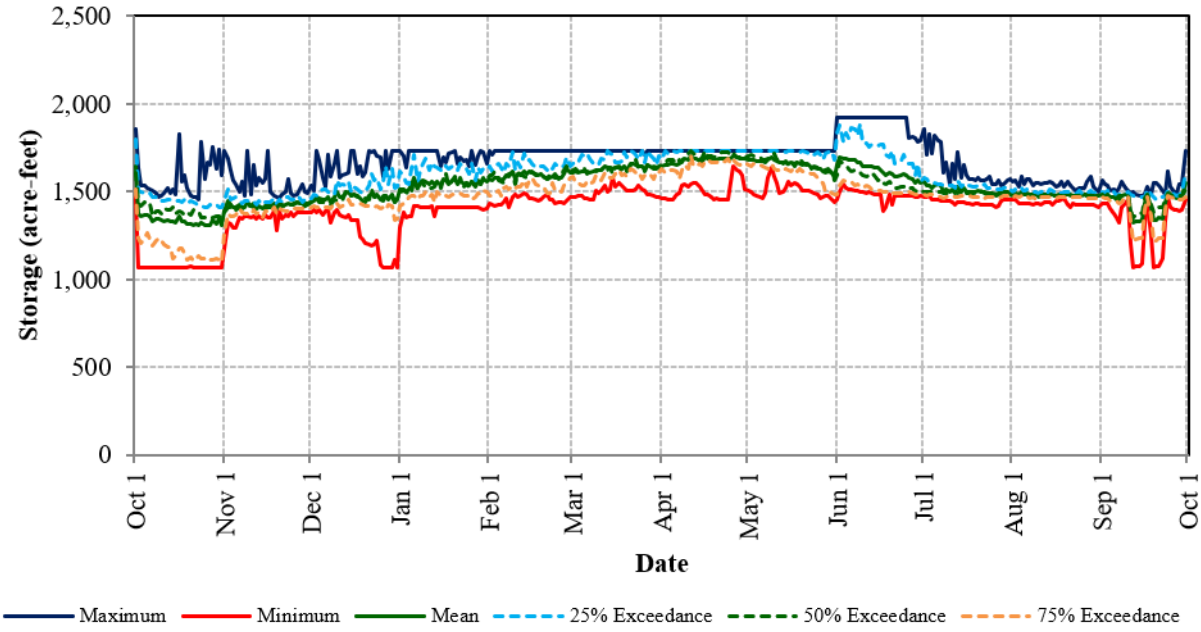


Figure B.5-37. Simulated daily storage in McKays Point Diversion Dam Impoundment for various percent exceedances, WY 2014 through WY 2025. Source: Ops Model output.

B.5.4.5.3 Releases from McKays Point Diversion Dam Impoundment

Releases from McKays Point Diversion Dam Impoundment into NFSR occur three ways: 1) over the spillway; 2) through the sluiceway; and 3) through the low level outlet. The spillway is ungated and has a capacity of 82,790 cfs at reservoir water surface elevation of 3,389.95 feet (Figure B.5-38). The maximum discharge from the sluiceway is 2,500 cfs and from the low-level outlet is 35 cfs.

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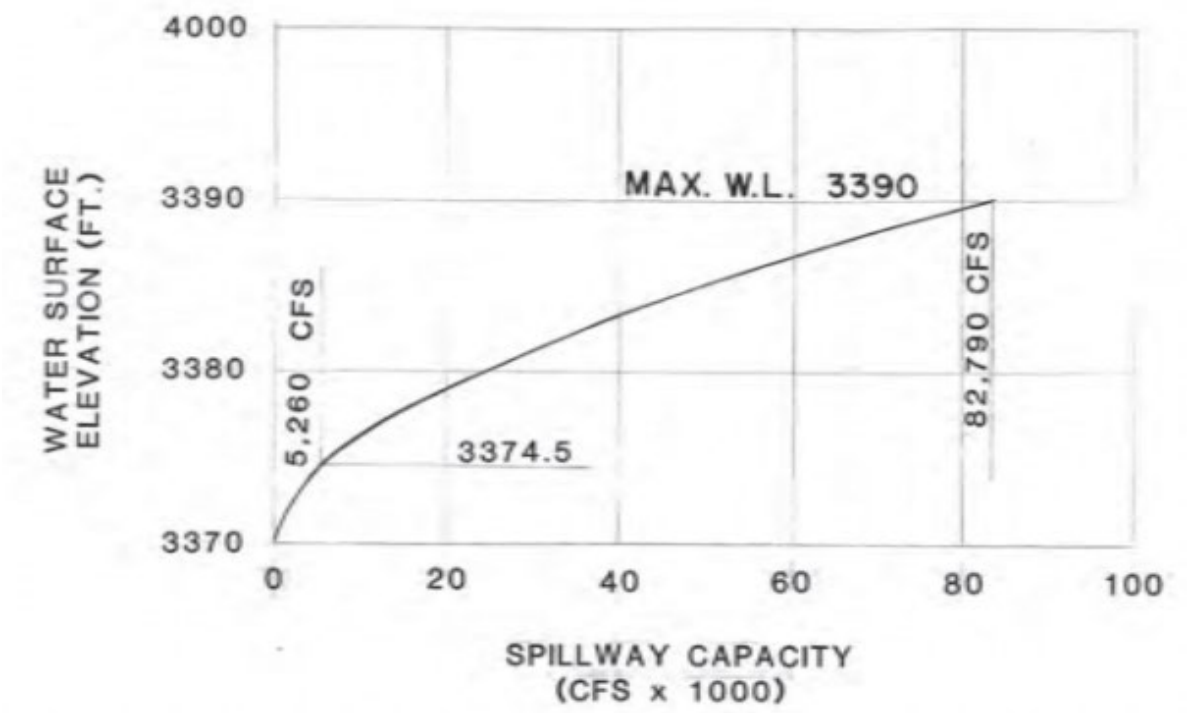


Figure B.5-38. McKays Point Diversion Dam spillway rating curve. Source: CCWD (1991).

Figure B.5-39 provides simulated monthly flow duration curves for the releases from McKays Point Diversion Dam into NFSR based on simulated data from WY 2014 through WY 2025 under current operations. Table B.5-9 provides the simulated minimum, maximum, and average daily releases to NFSR from WY 2014 through WY 2025.

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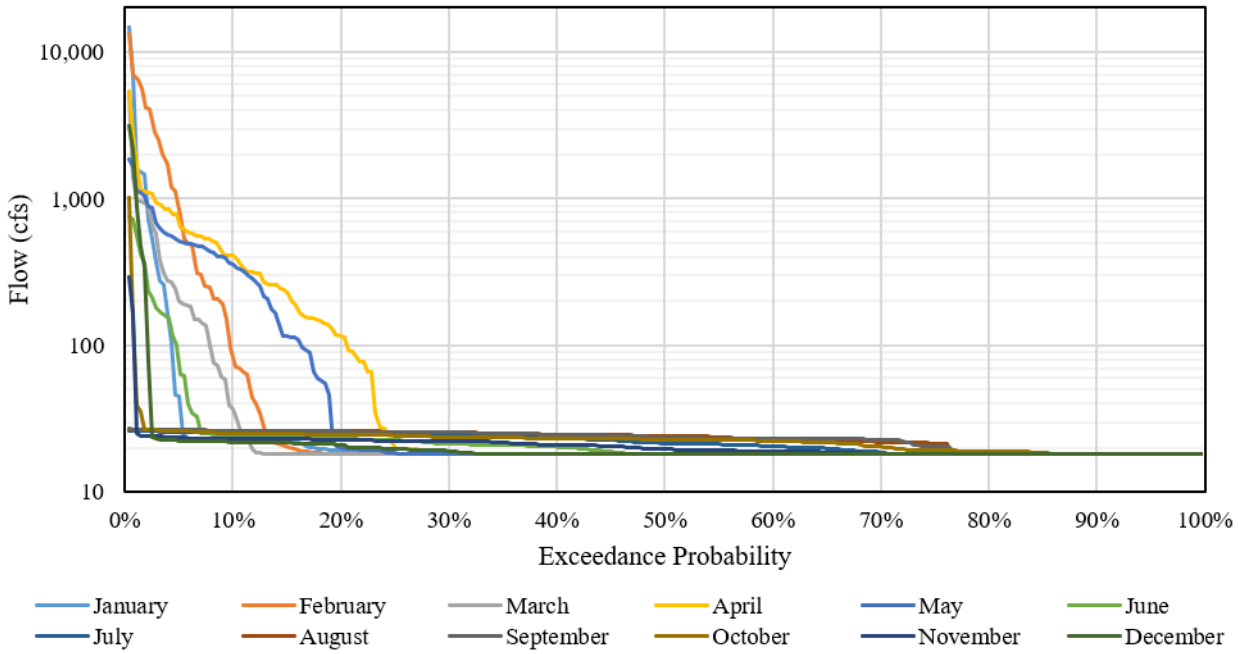


Figure B.5-39. Monthly flow exceedance curves for simulated average daily releases from McKays Point Diversion Dam into the North Fork Stanislaus River from WY 2014 through WY 2025. Source: Ops Model output.

Table B.5-9. Simulated minimum, maximum, and average daily release from McKays Point Diversion Dam to the North Fork Stanislaus River, WY 2014 to WY 2025. Source: Ops Model output.

Release	Minimum Daily Flow (cfs)	Maximum Daily Flow (cfs)	Average Daily Flow (cfs)
McKays Point Diversion Dam to NFSR	18.1 (January 30, 2014)	14,854 (January 8, 2017)	76.5

B.5.4.5.4 Operating Rule Curve

McKays Point Diversion Dam Impoundment does not follow a rule curve for operations.

B.5.4.6 Collierville Powerhouse

Generation from the Collierville Powerhouse is scheduled into the CAISO power market, with hourly generation schedules generally shaped by the available volume of water for the day. The powerhouse also provides load following and CAISO Automatic Generation Control (AGC) regulation, helping to balance grid generation and load in real-time. Figures B.5-40 and B.5-41 show simulated weekly flow operation during a typical spring and summer period for generation. The figures start at midnight on Monday morning and end at midnight on Sunday night.

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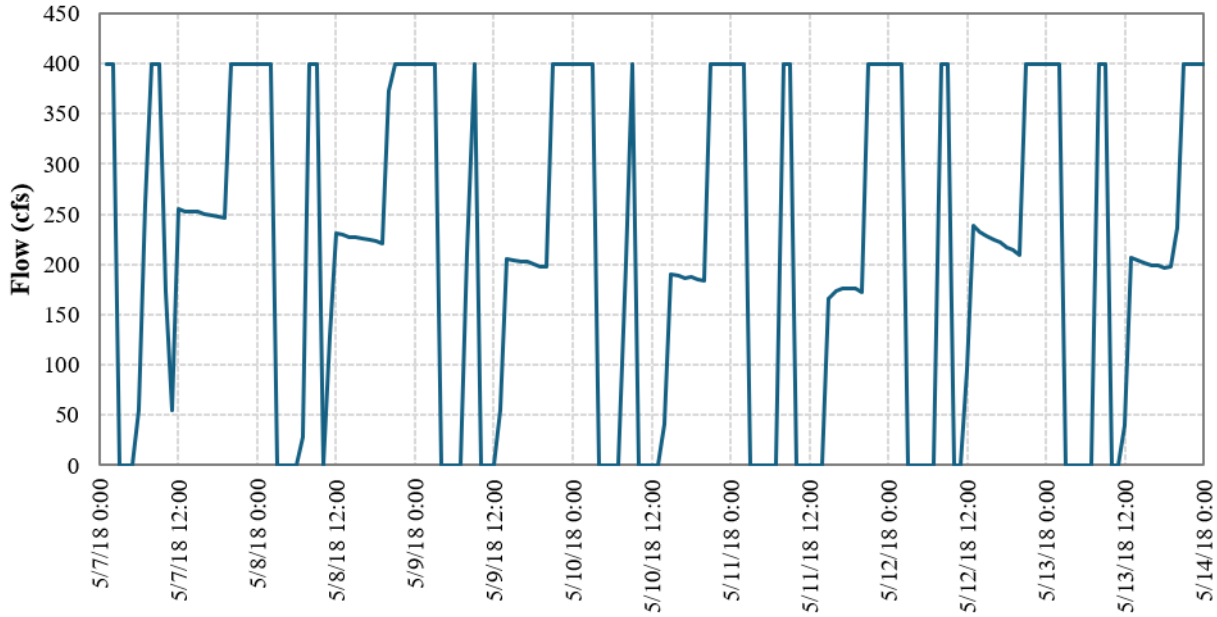


Figure B.5-40. Typical simulated weekly hourly operations of Collierville Powerhouse during a spring week. Source: Ops Model output.

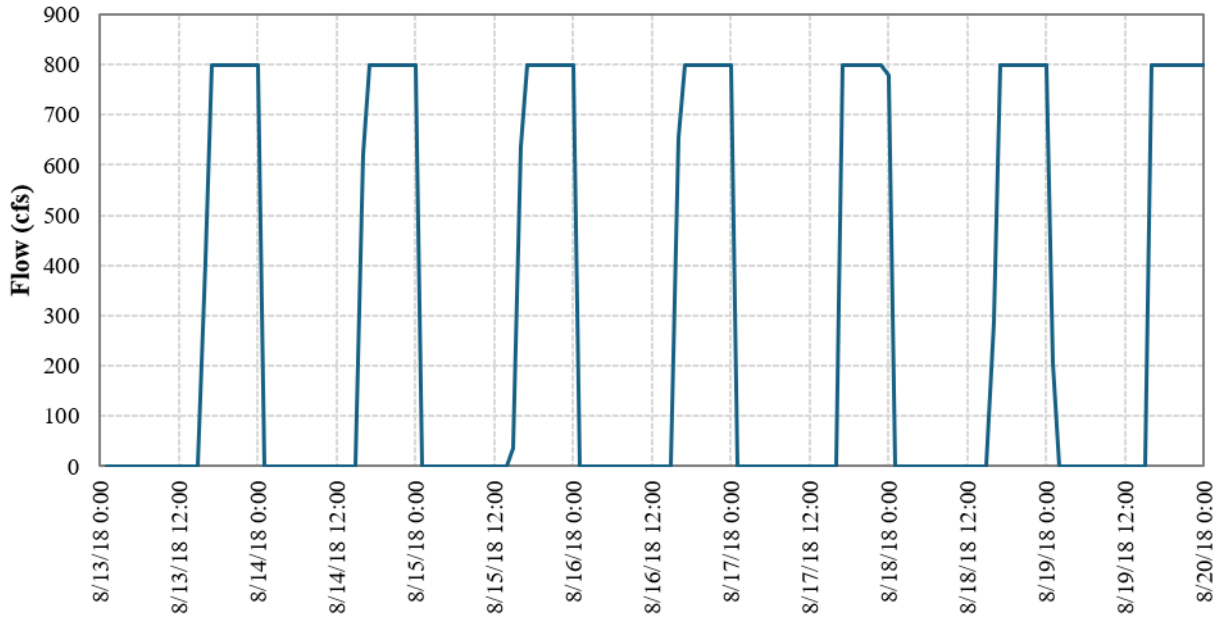


Figure B.5-41. Typical simulated weekly hourly operations of Collierville Powerhouse during a summer week. Source: Ops Model output.

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B.5.4.6.1 Hydraulic Capacity

The Collierville Powerhouse includes two vertical shaft impulse (Pelton) turbines and associate generating units. Each turbine can pass approximately 800 cfs each and, when both units are operating, the release is approximately 1,600 cfs. Combined, the units have a FERC-authorized installed capacity of 253 MW.[2]

B.5.4.6.2 Releases

Figure B.5-42 provides simulated monthly flow duration curves for mean daily Collierville Powerhouse releases into the Stanislaus River, based on simulated data from WY 2014 through WY 2025. The model assumes a maximum capacity of 1,398 cfs in consideration of historical operating patterns (especially given an hourly time step model) where capacity is often reserved for short-term load-following up and regulation.

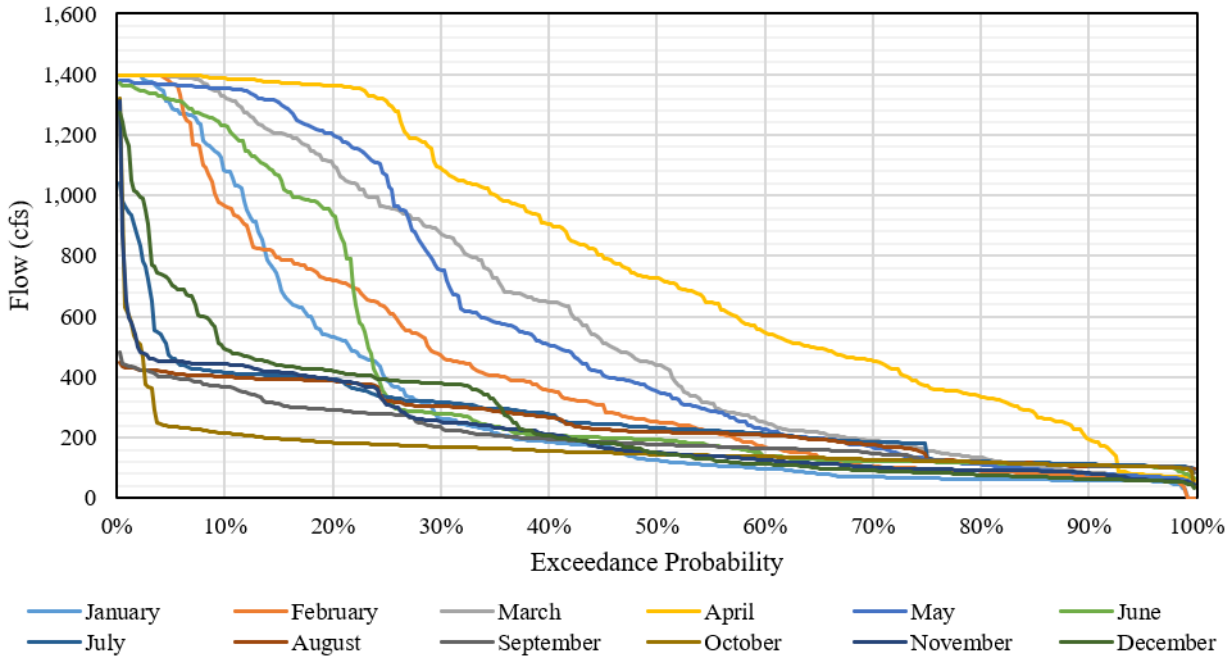


Figure B.5-42. Monthly flow exceedance curves for historic average daily releases of Collierville Powerhouse. Source: Ops Model output.

B.5.4.6.3 Powerhouse Capability versus Head

The high-head Pelton units of the Collierville Powerhouse are limited more by the operating constraints on McKays Reservoir rather than turbine capabilities. The invert to the Collierville Tunnel intake is at elevation 3,250 feet. The minimum McKays Point Reservoir surface elevation

[2] FERC's October 7, 1997, Order Amending License, Approving As-Built Exhibits, and Revising Annual Charges is available in FERC's ELibrary at accession number 19971009-0372.

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for Collierville Powerhouse operations is 3,280 feet, with normal operations typically maintaining the reservoir above approximately elevation 3,340 feet.

B.5.4.6.4 Tailwater Rating Curve

The Collierville Powerhouse does not have a Tailwater Rating Curve.

B.5.4.6.5 Load Curves

The Collierville Powerhouse does not have a standard Load Curve.

B.5.5 Average Annual Energy Production and Plant Factor

From Water Year 2014 through Calendar Year 2025, the Project's powerhouses generated an average of approximately 539,018 megawatt-hours (MWh) of electricity per year with an average annual plant factor of 0.24. The annual minimum gross generation was 174,988 MWh in Water Year 2015 and the annual maximum gross generation was 1,141,564 MWh in Water Year 2017 (Table B.5-10). The McKays Microturbine has not generated power since approximately 1997.

Table B.5-10. Generation and plant factors for the Project's powerhouses based on simulated annual data from Water Year 2014 through Water Year 2025.

Water Year	Annual Generation (MWh)			Plant Factor		
	New Spicer Meadow	Collierville	Combined	New Spicer Meadow	Collierville	Combined
2014	13,790	192,979	206,769	0.27	0.09	0.09
2015	10,002	164,986	174,988	0.20	0.07	0.08
2016	14,978	472,282	487,260	0.30	0.21	0.21
2017	44,660	1,096,904	1,141,564	0.88	0.50	0.50
2018	25,080	460,779	485,859	0.50	0.21	0.21
2019	34,140	942,082	976,222	0.68	0.43	0.43
2020	21,737	412,488	434,225	0.43	0.19	0.19
2021	12,329	174,102	186,431	0.24	0.08	0.08
2022	12,238	308,021	320,259	0.24	0.14	0.14
2023	38,348	974,293	1,012,641	0.76	0.44	0.45
2024	28,408	616,949	645,357	0.56	0.28	0.28
2025	19,491	377,145	396,636	0.39	0.17	0.18

[1] Based on post-processed Ops Model output.

B.5.6 Dependable Capacity

The dependable capacity of a generating facility is defined as *"the generating capacity that the plant can deliver under the most adverse water supply conditions to meet the needs of an electric power system with a given maximum demand"* (Elliott et al. 1997). The most adverse simulated monthly generation was in December of 2020, a dry water year, when the Project produced 7,858 MWh, during which New Spicer Meadow and Collierville powerhouses produced 1,013 MWh and 6,845 MWh, respectively.

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B.5.7 Routine Project Operations and Maintenance Activities

Routine Project operations and maintenance (O&M) activities are those that occur regularly at Project facilities and features, are of short duration, and create limited disturbance. Routine Project O&M activities could also occur occasionally, but without a regular schedule, and involve greater levels of disturbance, such as activities that occur over several days, include ground disturbance, or require use of heavy equipment. Typical routine Project O&M activities are further described below. Non-routine Project O&M activities typically require a formal project description and separate FERC approval and may include new construction projects.

B.5.7.1 Vegetation Management

Vegetation is routinely removed, as needed, around the dams, powerhouses, and project facilities in accordance with dam safety best practices and in consideration of wildfire risk management best practices. The dams are regularly inspected for rodent activity, and one reason for vegetation removal is to discourage rodent activity.

B.5.7.2 Project Trail Maintenance

Routine maintenance (including vegetation maintenance) is conducted on the access trails utilized for the collection of dam safety instrumentation data, especially at McKays Dam and Reservoir, including the areas being monitored on the left abutment, and trails associated with instrumentation of the Collierville Power Tunnel.

B.5.7.3 Recreational Facility Maintenance

The recreational facilities at New Spicer Meadow are maintained as-needed, including the operation of a seasonal water facility. Routine recreation maintenance includes pumping of vault toilets, vegetation management and removal of hazard trees within the campground, light grading and shaping of tent pads, asphalt maintenance, signage, and trash removal.

B.5.7.4 Routine Patrols and Inspections

Operations personnel routinely access the facilities, inspect the dams, monitor and measure water levels and flows, and collect dam safety and powerhouse performance data.

B.5.7.5 Internal Communications Maintenance

Maintenance of communication facilities and RTUs, including the lifecycle replacement of equipment, occurs as-needed.

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B.5.7.6 Woody Debris on Reservoirs, Log Booms and Intake Structures

Woody debris accumulation is routinely removed (typically at least annually) from all intake structures, including the Collierville intake. Some operations require the use of hard-hat diving. Woody debris that accumulates on reservoirs and / or log booms is removed as needed.

B.5.7.7 Sediment Management

Reservoir sluicing through the low-level sluiceways has historically occurred at Beaver Creek Diversion Dam and McKays Diversion Dam, and North Fork Diversion Dam is also designed for sluicing. Manual sediment removal has been required multiple times at Beaver Creek Reservoir and is needed at McKays Reservoir.

B.5.7.8 Boat Launch Maintenance

Routine maintenance of the boat launch facility at New Spicer Meadow includes seasonal installation / removal of a boat dock, adjusting the position of the dock as needed as reservoir levels change, and maintenance of the dock and concrete launch ramp.

B.6 Use of Power

CCWD plans to continue to generate and sell power into the CAISO power market or sell or exchange the power generated by the Project to others.

B.7 Proposed Changes to Existing Project Operations

At this time, CCWD does not propose any changes to existing Project operations.

B.8 Plans for Adding a Development to the Project and Future Development in the Watershed

At this time, CCWD has no plans for future development of the Project or of any other existing or proposed water power project in the NFSR, Highland Creek, Beaver Creek, Stanislaus River, or other water bodies in the vicinity of the Project.

B.9 References Cited

CCWD (Calaveras County Water District). 1991. North Fork Stanislaus River Hydroelectric Development Project, Revised Exhibit L Drawings.

DWR (California Department of Water Resources). 2014. Bulletin 120: Water supply forecast for California—Monthly forecasts (May 2014). Available at: https://water.ca.gov/Library.

_____. 2015. Bulletin 120: Water supply forecast for California—Monthly forecasts (May 2015). Available at: https://water.ca.gov/Library.

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_____. 2016. Bulletin 120: Water supply forecast for California—Monthly forecasts (May 2016). Available at: https://water.ca.gov/Library.

_____. 2017. Bulletin 120: Water supply forecast for California—Monthly forecasts (May 2017). Available at: https://water.ca.gov/Library.

_____. 2018. Bulletin 120: Water supply forecast for California—Monthly forecasts (May 2018). Available at: https://water.ca.gov/Library.

_____. 2019. Bulletin 120: Water supply forecast for California—Monthly forecasts (May 2019). Available at: https://water.ca.gov/Library..

_____. 2020. Bulletin 120: Water supply forecast for California—Monthly forecasts (May 2020). Available at: https://water.ca.gov/Library.

_____. 2021. Bulletin 120: Water supply forecast for California—Monthly forecasts (May 2021). Available at: https://water.ca.gov/Library.

_____. 2022. Bulletin 120: Water supply forecast for California—Monthly forecasts (May 2022). Available at: https://water.ca.gov/Library.

_____. 2023. Bulletin 120: Water supply forecast for California—Monthly forecasts (May 2023). Available at: https://water.ca.gov/Library.

_____. 2024. Bulletin 120: Water supply forecast for California—Monthly forecasts (May 2024). Available at: https://water.ca.gov/Library.

_____. 2025. Bulletin 20: Water supply forecast for California—Monthly forecasts (May 2025). Available at: https://water.ca.gov/Library.

Elliott, T.C., K. Chen, and R.C. Swanekamp. 1997. Standard handbook of powerplant engineering. Second Edition. McGraw-Hill. October 1, 1997.

NCPA (Northern California Power Agency). 2023a. McKays Point Diversion Dam Supporting Technical Information Document, Revision 6.

NCPA. 2023b. New Spicer Meadow Dam Supporting Technical Information Document, Revision 8.

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Pre-Application Document

Appendix B1

Model Documentation

North Fork Stanislaus River Hydroelectric Project
FERC Project No. 2409

Prepared by:
Calaveras County Water District

September 2026

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North Fork Stanislaus Project Operations Model

Model Description and Hydrology Methods

Prepared by:



September 2026

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1.0 Introduction

Western Hydrologics has prepared modeling tools for use in the North Fork (NF) Stanislaus Project (NFSP) FERC relicensing process. The NFSP model was prepared to support development of the Pre-Application Document (PAD), support negotiations, and other relicensing documents. The model will be used in simulating proposed operating scenarios to determine the effect on storage, flows, and hydropower production. The model results should be used comparatively to assess impacts relative to the existing conditions.

The NFSP model has been developed to simulate the operations of the NFSP on an hourly timestep. The schematic of the NFSP model is shown as Figure 7. To support the hourly operations model, an hourly input hydrology dataset was developed. Model development included coordination with Northern California Power Agency (NCPA) staff to determine the period of record in which there are available hourly gage data. Because the model uses an hourly timestep, time travel calculations using the Muskingum routing methodology were needed for the reach from New Spicer Meadow Dam to McKays Point Reservoir. The model does not attempt to model the operations of NCPA's Upper Utica Project or Utica Water and Power Authority's Angels Project. Instead, the Upper Utica Project is represented by a time series of historic inflows to the North Fork Diversion Dam. Angels Project operations were replaced with a demand node representing the water needed to be diverted from NF Stanislaus River to satisfy a contractual diversion schedule given historical Mill Creek flows at Hunter Reservoir and deliveries to Calaveras County Water District customers. The hourly time step model was prepared to handle key items such as whitewater boating flows, New Spicer Meadow powerhouse weekly operations, Collierville Powerhouse sub-daily peaking operations, and McKays Point Reservoir operations.

The development of the hourly hydrology and key modeling assumptions to represent existing conditions have been documented and included in this report.

2.0 Hydrology

This section describes the development of hourly unimpaired hydrology of the NF Stanislaus River and its major tributaries at several locations for use in a NFSP operations model. The Stanislaus River flows southwest from the Sierra Nevada Mountains and is tributary to the San Joaquin River near Vernalis, CA. The Stanislaus River provides approximately 8% of the San Joaquin River's watershed area and averages 22% of the total impaired flow in the San Joaquin River at Vernalis.

Hydrology for the NF Stanislaus River was developed for water years 2014 through 2025 to match the study period used in the operations model.

The NF Stanislaus River was split into multiple localized watersheds for input to the NFSP operations model. Watersheds were designed to correspond with inflow points to reservoirs, diversions, and major stream gages. The watersheds are described in Table 1. A map of the Stanislaus River basin watersheds is shown in Figure 1.

Table 1. Watersheds used in Hydrology Development.

Sub-Basin	Description
1	Highland Creek above New Spicer Meadow Reservoir
2	North Fork Stanislaus River above North Fork Diversion Dam
3	Beaver Creek above Beaver Creek Diversion Dam
4	North Fork Stanislaus River from North Fork Diversion Dam to McKays Point Reservoir
5	North Fork Stanislaus River from McKays Point Reservoir to the confluence with the Middle Fork Stanislaus River
6	Middle Fork Stanislaus and Stanislaus Powerhouse

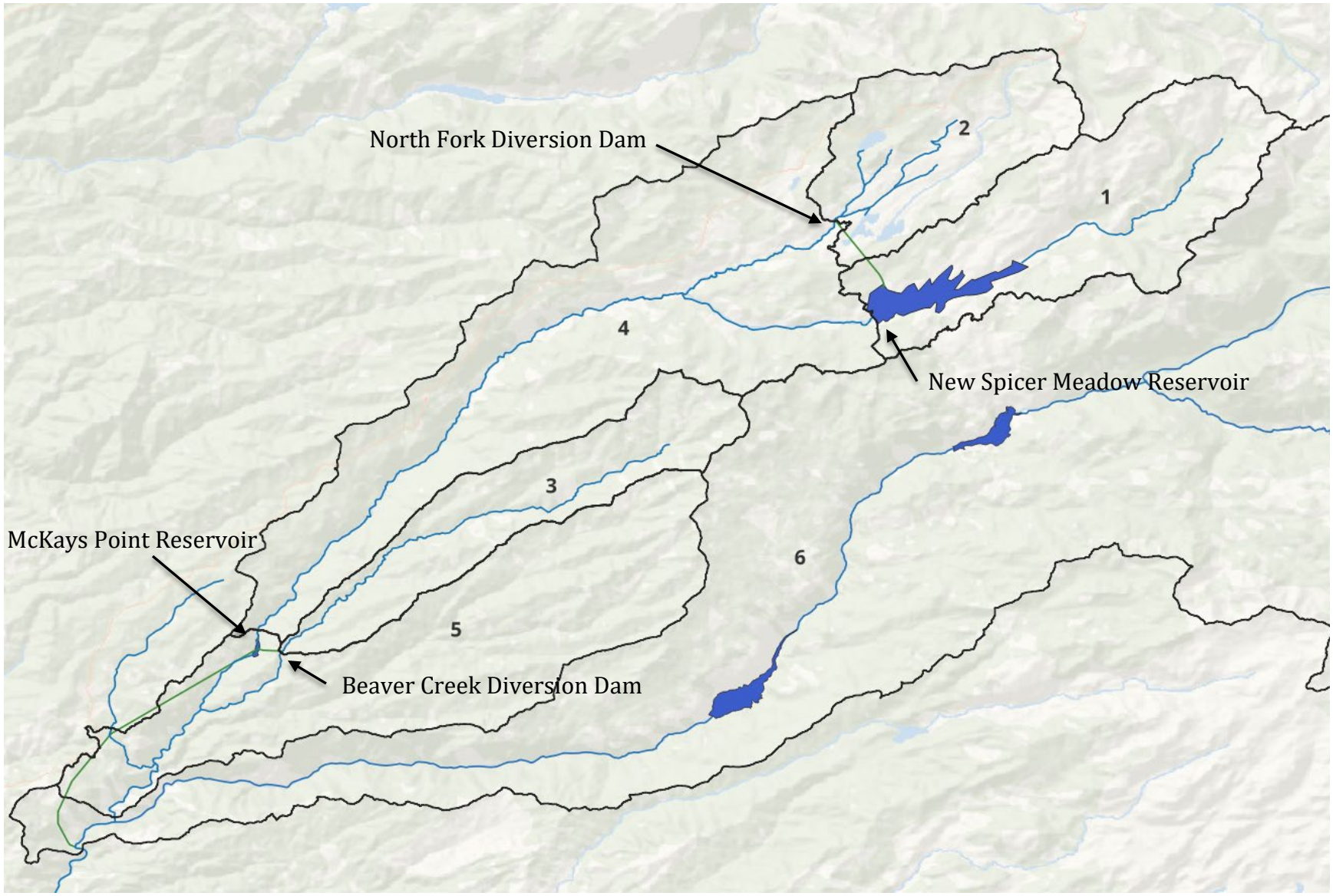


Figure 1. Model Watersheds included in input hydrology.

Model inflows are compared to USGS gage data in Figure 2. Model Inflows are the sum of inflow to NFDD, New Spicer Meadow Reservoir, and Beaver Creek Diversion Dam, plus accretions on the North Fork above McKays Point Reservoir, minus modeled evaporation. Modeled evaporation is inflow that is not expected to be present downstream. USGS gage data is the sum of the NF Stanislaus at Avery, Beaver Creek below the Beaver Creek Diversion Dam, and diversions from the Beaver Creek Diversion Dam. Note that in wetter years water is stored in New Spicer Meadow Reservoir, and in drier years water in excess of inflow is released from New Spicer Meadow Reservoir. Because of this it is expected that in wetter years inflow would be higher than gage data and in drier years inflows would be lower than gage data. When accounting for evaporation, average annual inflows are 0.2% higher than gage data.

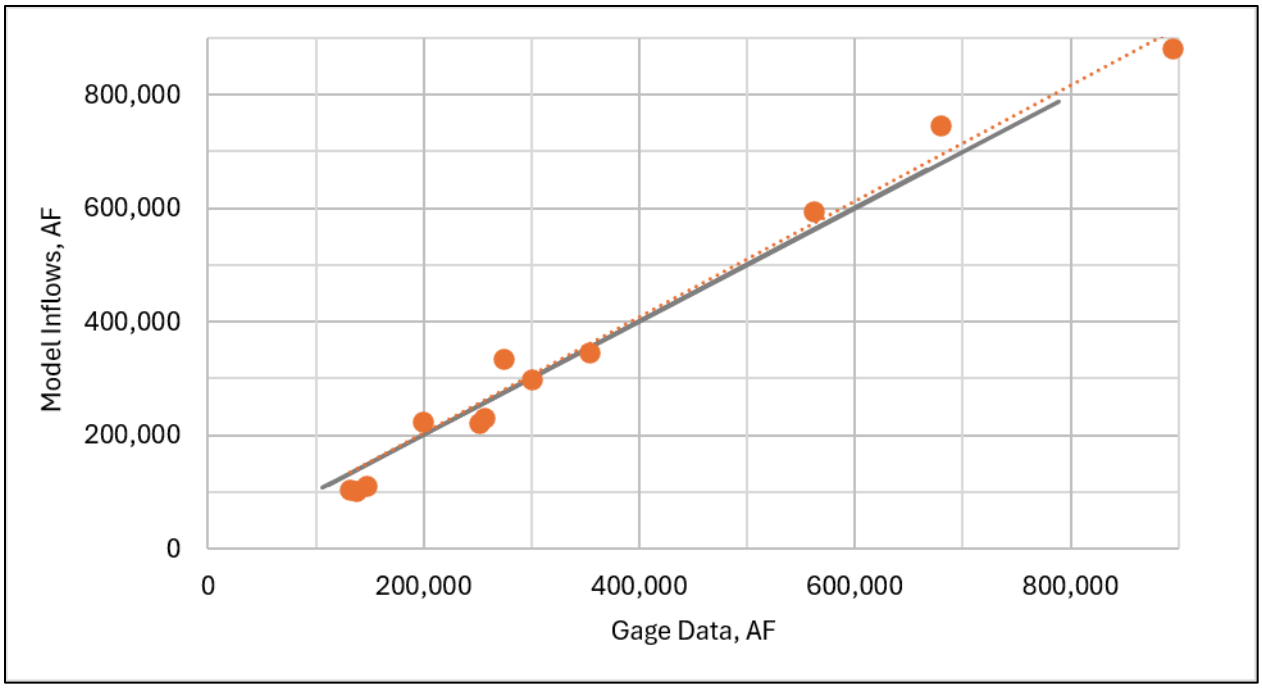


Figure 2. Annual model inflows compared to USGS gage data.

2.1 Data Sources

The hydrology development utilized two sources of gage data: United States Geological Survey (USGS) daily gage data and the Project's sub-daily gage data. The Project sub-daily gage data were in a 5-minute format and were averaged into hourly data for use in the hydrology and the model. The gages used are listed in Table 2 and shown geographically in Figure 3.

Table 2. Project Gages used for hydrology development.

Location	USGS ID	Project Gage ID
NF Stanislaus Diversion Tunnel	11293580	G4
NF Diversion Dam Storage	11293590	G5
NF Stanislaus below NF Diversion Dam	11293600	G6
New Spicer Meadow Powerhouse	11293760	G8

Table 2. (Continued).

Location	USGS ID	Project Gage ID
New Spicer Meadow Reservoir Storage	11293770	G9
Highland Creek below New Spicer Meadow	11294000	G10
NF Stanislaus at Avery	11294500	G12
Beaver Creek Diversion	11295210	G13
Beaver Creek Diversion Dam Storage	11295220	G14
Beaver Creek below Diversion Dam	11295230	G15
Collierville Powerhouse	11295250	G17
McKays Point Reservoir Storage	11295260	G18
NF Stanislaus below McKays Point Reservoir	11295270	G19
NF Stanislaus below Beaver Creek	11295300	G20

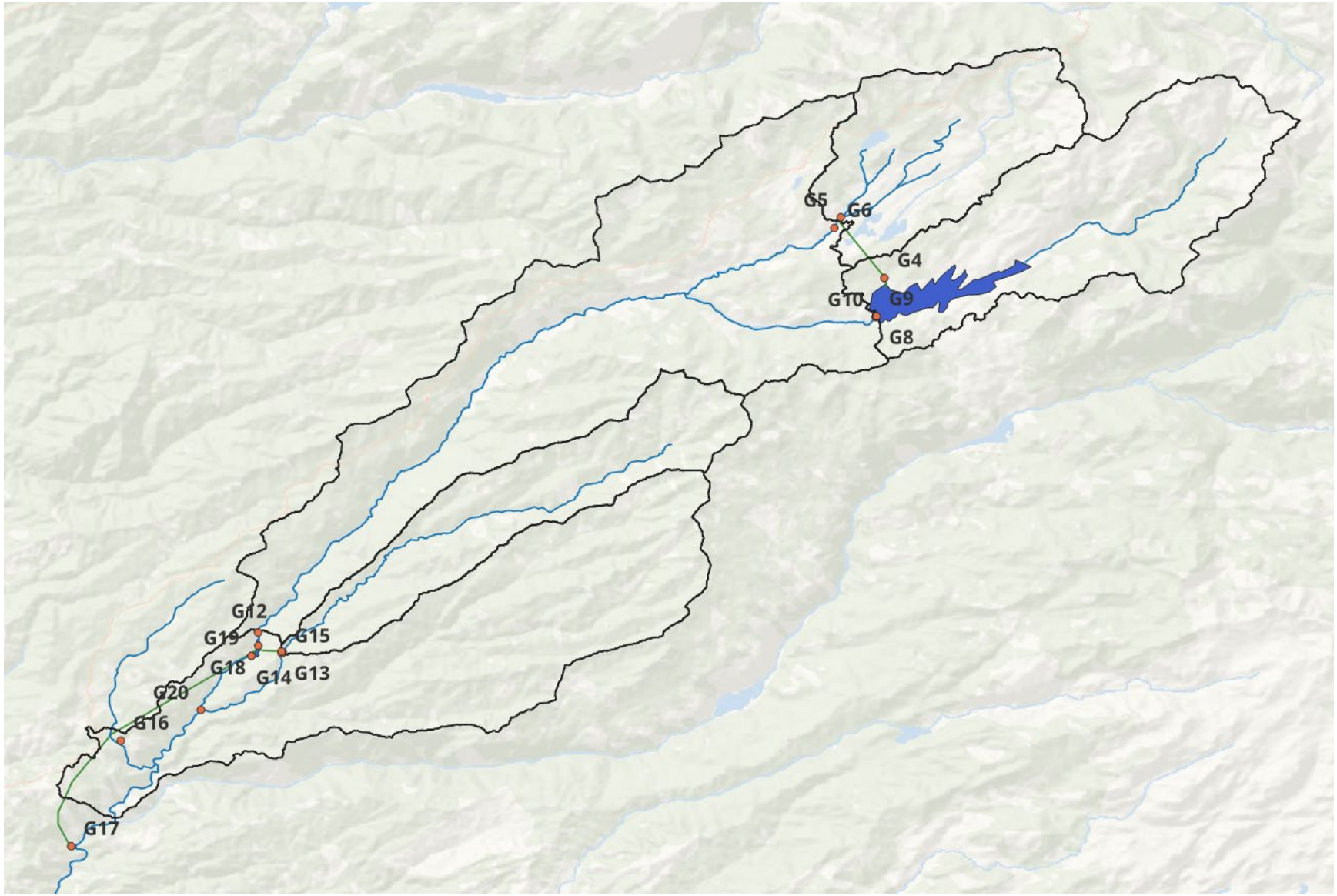


Figure 3. Project Gages used in the Hydrology Development.

2.2 Computational Approach

Mass balance calculations calculate inflow to a watershed by adding releases, losses, and storage gains within that watershed. Often, flows released from upstream facilities will then be subtracted from the downstream watershed's total inflow to calculate the local inflow to the downstream watershed. The flow originating within that watershed is often referred to as accretion flow or local inflow. The general equations for calculating inflow to a reservoir's watershed and local accretion using a mass balance are:

$$Inflow = \left(Storage_{Today} - Storage_{Yesterday}\right) + Evaporation + Outflow$$

and

$$Local\ Inflow = \left(Storage_{Today} - Storage_{Yesterday}\right) + Evaporation + Downstream\ Outflow - UpstreamInflow$$

2.3 Evaporation

There are no long-term historical evaporation measurement stations in the Upper Stanislaus River Basin, and there is one historical evaporation measurement station in the lower Stanislaus River, at Knights Ferry. There are higher-elevation historical evaporation measurement stations in adjacent river basins; Salt Springs in the Mokelumne River Basin, and Lake Eleanor in the Tuolumne River Basin. These historical evaporation records were analyzed, and the average monthly evaporation pattern for the Salt Springs and Lake Eleanor stations were very similar. The Salt Springs evaporation record was selected for use at reservoirs in the North Fork Stanislaus basin because it has the longest and most complete record of the higher elevation evaporation stations. Salt Springs is measured by a Class-A pan operated by the National Weather Service.

Period of record averages over each month were taken from CDWR's Bulletin 73-79 (CDWR 1979) and converted to reservoir evaporation rates using Elsinore Pan A Coefficients. Evaporation rates were further modified to account for elevation.

These monthly evaporation rates are used with storage-area relationships and historical daily storage at each reservoir to estimate evaporation for each day in mass balance calculations. Evaporation was assumed to be constant in each hour throughout the day. The evaporation rates used in hydrology development are listed in Table 3.

Table 3. Monthly Evaporation Rates.

Month	Monthly Evaporation, Inches	Daily Evaporation, Inches/Day
Oct	4.83	0.16
Nov	2.75	0.09
Dec	2.21	0.07
Jan	1.68	0.05
Feb	1.44	0.05

Table 3. (Continued).

Month	Monthly Evaporation, Inches	Daily Evaporation, Inches/Day
Mar	2.30	0.07
Apr	3.35	0.11
May	4.55	0.15
Jun	6.12	0.20
Jul	7.78	0.25
Aug	7.98	0.26
Sep	7.06	0.24
Total	**52.05**	**1.7**

2.4 Highland Creek Inflow to New Spicer Meadow Reservoir

New Spicer Meadow Reservoir is a reservoir on Highland Creek, a tributary to the NF Stanislaus River, which has a usable storage capacity of 189,000 acre-feet. New Spicer Meadow Reservoir receives diversions from the North Fork Diversion Tunnel. New Spicer Meadow Reservoir releases water to Highland Creek through three means: New Spicer Meadow Powerhouse turbines, the reservoir spillway, and a set of low-level outlets adjacent to the New Spicer Meadow Powerhouse. There is an Acoustic Velocity Meter measuring flow through the Powerhouse, and another synthetic gage estimating the total release to Highland Creek.

The NFSP Model utilizes unimpaired inflow to New Spicer Meadow Reservoir on Highland Creek (see watershed 1, Figure 1). Gages used in the calculation of unimpaired inflow are listed in Table 4. Unimpaired inflow is calculated on a daily timestep as the total release to Highland Creek plus the change in New Spicer Meadow storage plus evaporation minus the North Fork Tunnel inflow. 7-day averaging was applied in low-flow periods to smooth the resulting calculations. Resulting annual volumes and the annual averages are shown in Table 5.

Table 4. USGS gages used in the calculation of unimpaired inflow to New Spicer Meadow Reservoir.

Location	USGS ID
NF Stanislaus Diversion Tunnel	11293580
New Spicer Meadow Reservoir Storage	11293770
Highland Creek below New Spicer Meadow	11294000

Table 5. New Spicer Meadow annual mass balance flow volumes, acre-feet.

Water Year	Release to Highland Creek	Change in Storage	North Fork Tunnel diversions	Evaporation	Unimpaired Inflow
2014	82,967	-33,700	13,386	5,859	41,739
2015	68,065	-23,420	9,497	4,251	39,399

Table 5. (Continued).

Water Year	Release to Highland Creek	Change in Storage	North Fork Tunnel diversions	Evaporation	Unimpaired Inflow
2016	72,619	64,720	51,906	6,014	91,447
2017	354,013	-13,160	115,840	7,531	232,544
2018	114,985	-740	36,322	6,902	84,825
2019	186,227	23,700	77,570	7,190	139,547
2020	110,873	-29,000	28,422	6,695	60,146
2021	79,351	-31,600	12,534	5,154	40,371
2022	67,722	28,100	31,737	5,996	70,081
2023	219,139	56,167	90,129	7,029	192,205
2024	136,334	-5,604	50,464	7,660	87,925
2025	119,150	-24,832	32,101	7,072	69,290
Annual Average	134,287	886	45,826	6,446	95,793

2.5 Total Inflow to North Fork Diversion Dam

The North Fork Diversion Dam (NFDD) has an estimated usable storage capacity of 116 acre-feet. The North Fork Diversion Tunnel moves water from the NFDD to New Spicer Meadow Reservoir with a flow capacity of 1,000 cfs. There are three non-Project reservoirs that impound approximately 9,581 acre-feet upstream of the NFDD.

The NFSP Model does not use unimpaired inflow to the NFDD, rather it uses the total impaired inflow to the NFDD (see watershed 2, Figure 1). The main sources of inflow to the NFDD are the NF Stanislaus River and Silver Creek, which is tributary to the NF Stanislaus River approximately 700 feet upstream of the North Fork Diversion Dam. Gages used in the calculation of impaired inflow are listed in Table 6 Total inflow to the NFDD is calculated on a daily timestep as the release to the NF Stanislaus River plus the diversion to the North Fork Diversion Tunnel plus evaporation (based on rates in Table 3) plus the change in North Fork Diversion Dam storage. Resulting annual volumes and the annual averages are shown in

Table 6. USGS gages used in the mass balance calculation of total inflow to North Fork Diversion Dam.

Location	USGS ID
NF Stanislaus Diversion Tunnel	11293580
NF Stanislaus below NF Diversion Dam	11293600
NF Diversion Dam Storage	11293590

Table 7. North Fork Diversion Dam annual mass balance flow volumes, acre-feet.

Water Year	Release to NFSR	Diversions to New Spicer Meadow	Evaporation	Total Inflow
2014	11,542	13,386	11	24,937
2015	13,024	9,497	11	22,531
2016	13,719	51,906	13	65,640
2017	29,347	115,840	20	145,208
2018	17,358	36,322	13	53,699
2019	20,360	77,570	17	97,934
2020	12,879	28,422	11	41,312
2021	11,214	12,534	9	23,757
2022	13,742	31,737	11	45,490
2023	31,909	90,129	18	122,061
2024	12,999	50,464	13	63,471
2025	11,957	32,101	10	44,068
Annual Average	16,671	45,826	13	62,509

2.6 Inflow to Beaver Creek Diversion Dam

The Beaver Creek Diversion Dam is a 25-acre-foot diversion dam on Beaver Creek. The diversion dam has a 400 cfs tunnel outlet that conveys water to McKays Point Reservoir, and the diversion dam releases water to Beaver Creek.

The NFSP Model utilizes unimpaired inflow to Beaver Creek Diversion Dam on Beaver Creek (see watershed 3, Figure 1). Gages used in the calculation of unimpaired inflow are listed in Table 8. Unimpaired inflow is calculated on a daily timestep as the total release to Beaver Creek plus the flow in the Beaver Creek Diversion Tunnel plus the change in storage. Beaver Creek Diversion Dam pool forms a water surface area approximately one acre at full pool, and due to this size evaporation is not included in the calculations. Resulting annual mass balance volumes and the annual averages are shown in Table 9.

Table 8. USGS gages used in the mass balance calculation of unimpaired inflow to Beaver Creek Diversion Dam.

Location	USGS ID
Beaver Creek Diversion	11295210
Beaver Creek Diversion Dam Storage	11295220
Beaver Creek below Diversion Dam	11295230

Table 9. Beaver Creek Diversion Dam annual mass balance flow volumes, acre-feet.

Water Year	Release to Beaver Creek	Diversions to McKays Point Reservoir	Unimpaired Inflow
2014	5,996	2,790	8,832
2015	7,265	1,158	8,421
2016	10,907	20,516	31,432
2017	68,154	3,287	71,432
2018	17,510	12,547	30,067
2019	17,563	54,613	72,177
2020	10,802	12,207	23,006
2021	6,714	2,568	9,282
2022	10,604	9,377	19,982
2023	26,132	59,274	85,404
2024	12,025	27,345	39,370
2025	10,238	16,768	23,789
Annual Average	16,992	18,537	35,266

2.7 North Fork Stanislaus River Accretions above McKays Point Reservoir

The NFSP Model utilizes hourly accretion hydrology along the NF Stanislaus River between the North Fork Diversion Dam and McKays Point Reservoir and Highland Creek below New Spicer Meadow Reservoir (see watershed 4, Figure 1). The approximately 21-mile length of this accretion watershed necessitates accounting for travel time and attenuation in the reach, both in the model and in the hydrology development. Routing is accounted for in upstream releases (release from North Fork Diversion Dam, release from New Spicer Meadow) while accretions in the reach are considered uniformly added to the reach.

Routing is calculated using the Muskingum method. This method utilizes two parameters: travel time and attenuation factor. The Muskingum method is not based on actual measurements of the channel geometry but rather the two factors are determined using parameter calibration. The form of the Muskingum equation is:

$$Q_i = C_1 * I_i + C_2 * I_{i-1} + C_3 * Q_{i-1}$$

Where:

$$C_1 = \frac{\Delta T - 2 * K * X}{2 * K * (1 - X) * \Delta T}$$

$$C_2 = \frac{\Delta T + 2 * K * X}{2 * K * (1 - X) * \Delta T}$$

$$C_3 = \frac{2 * K * (1 - X) - \Delta T}{2 * K * (1 - X) + \Delta T}$$

$$K = Travel\ Time$$

$$X = Attenuation\ Factor$$

$$I = Flow\ at\ the\ top\ of\ the\ reach$$

$$Q = Flow\ at\ the\ bottom\ of\ the\ reach$$

$$\Delta T = Calculation\ Timestep$$

The hourly accretion calculation uses a variable flow-based travel time determined in a previous analysis of project data (Western Hydrologics, 2019), summarized in Figure 4. The attenuation factor can have a value between 0 (maximum attenuation) and 0.5 (little attenuation) and was chosen by analyzing a variety of possible values. The analysis of hourly gage data showed that even with long travel times there is little attenuation in the reach from changes in New Spicer Meadow Powerhouse flow. Examples of the routing and accompanying low levels of attenuation are shown in Figure 5 and Figure 6. An attenuation factor of 0.48 was chosen for accretion hydrology development in this reach.

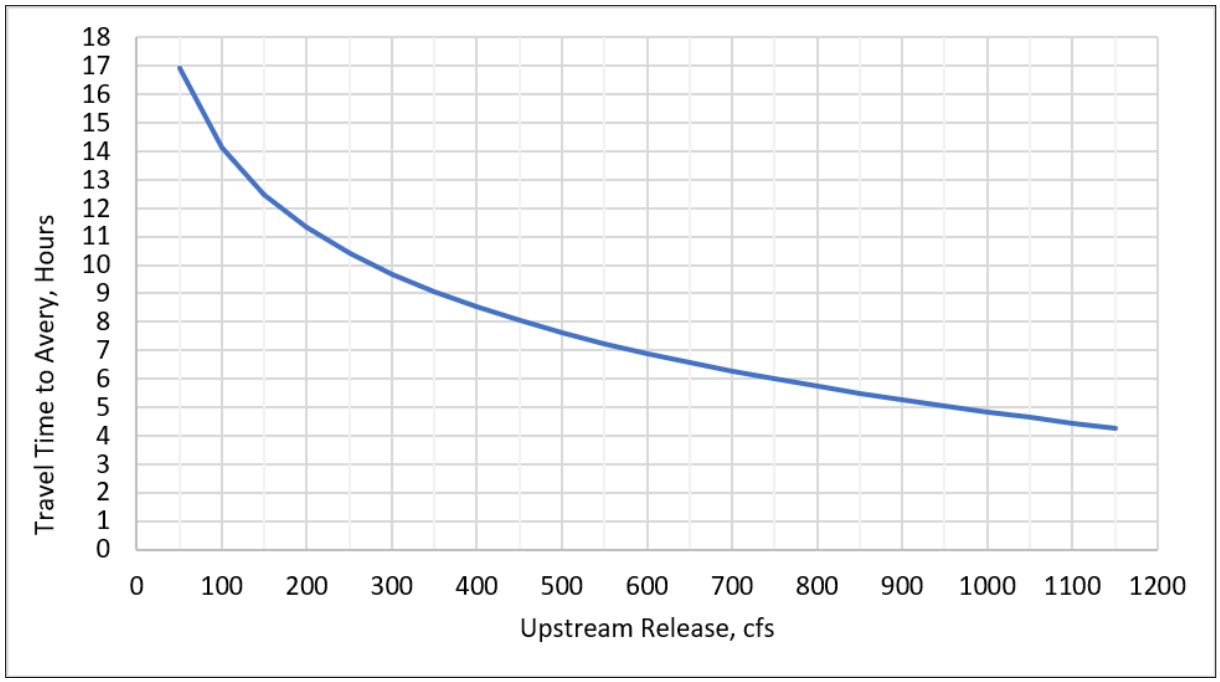


Figure 4. Avery Reach Flow-based Travel Time from New Spicer Meadow Reservoir.

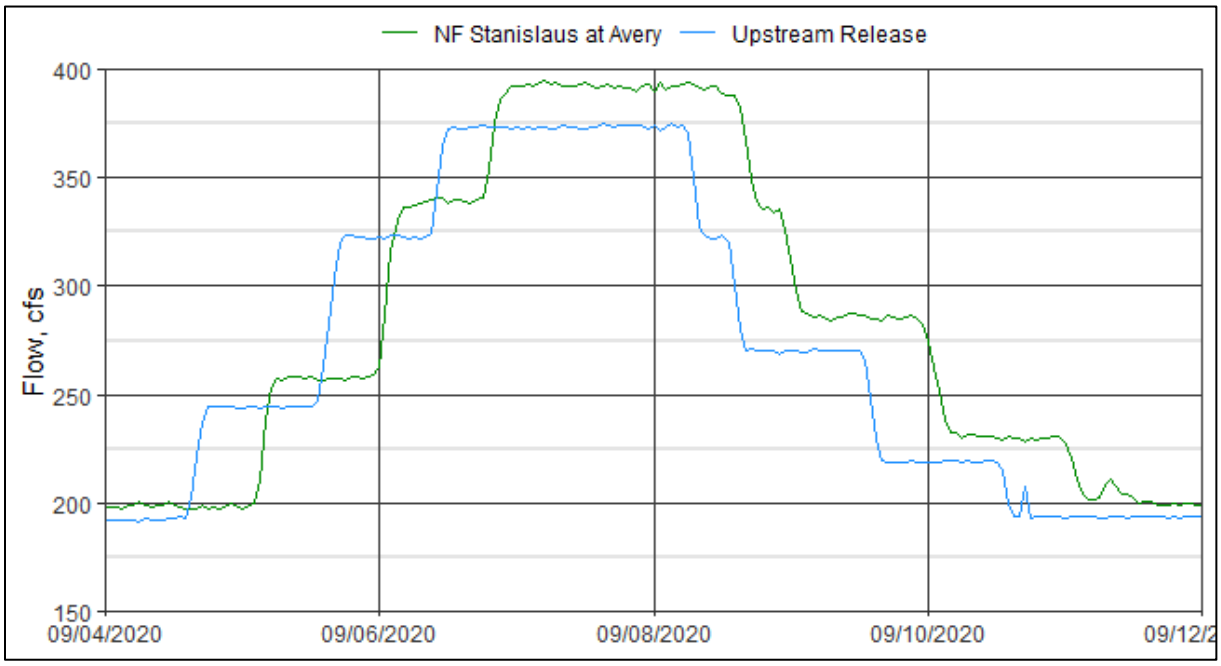


Figure 5. Observed routing in the Avery Reach, September 2020.

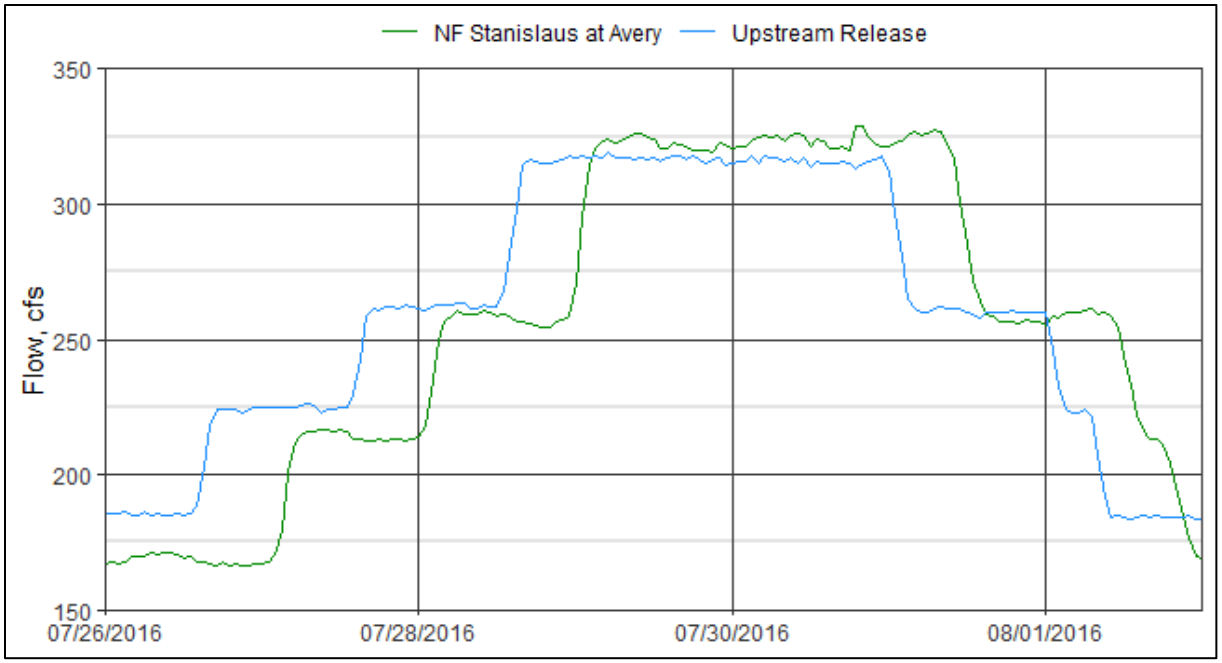


Figure 6. Observed routing in the Avery Reach, July 2016.

Accretions on the North Fork Stanislaus River above McKays Point Reservoir were then calculated as:

$$Accretion = Flow\ at\ Avery\ Streamgage - Routed(Outflow\ from\ NFDD + Outflow\ from\ New\ Spicer\ Meadow\ Dam)$$

Resulting hourly calculated accretions have the data noise inherent in stream gage data in addition to additional noise resulting from routing calculations. No smoothing was applied to account for the noise in the resulting calculations. Calculated annual accretion volumes are shown in Table 10.

Table 10. North Fork Stanislaus River Accretions, North Fork Diversion Dam to McKays Point Reservoir, acre-feet.

Water Year	Accretions, NFDD to McKays Point Reservoir
2014	42,622
2015	39,146
2016	151,792
2017	440,687
2018	136,787
2019	292,642
2020	104,252
2021	35,271
2022	96,032

Table 10. (Continued).

Water Year	Accretions, NFDD to McKays Point Reservoir
2023	354,219
2024	163,263
2025	101,362
Annual Average	163,173

2.8 North Fork Stanislaus River Accretions from McKays Point Reservoir to the confluence with the Middle Fork Stanislaus River

Watershed 5 represents the accretion flow along the North Fork Stanislaus River from McKays Point Reservoir to the confluence with the Middle Fork Stanislaus River, near the outlet of the Collierville Powerhouse. This watershed does not include Mill Creek above Hunters Reservoir as much of that water is diverted to Angels Creek. To estimate the accretions along the North Fork above the confluence, a paired-basin approach is used. The unimpaired flow in Beaver Creek is scaled by watershed area to estimate the accretions along the North Fork Stanislaus. Resulting annual flow volumes are shown in Table 11.

Table 11. Annual Accretion volumes from McKays Point Reservoir to NF Stanislaus above confluence with MF Stanislaus.

Water Year	Beaver Creek Unimpaired Flow	Accretions from McKays Point Reservoir to NF Stanislaus above confluence
2014	8,832	19,435
2015	8,421	18,530
2016	31,432	69,163
2017	71,432	157,178
2018	30,067	66,159
2019	72,177	158,818
2020	23,006	50,623
2021	9,282	20,423
2022	19,982	43,969
2023	85,404	187,923
2024	39,370	86,630
2025	23,789	52,346
Annual Average	35,266	77,600

2.9 Middle Fork Stanislaus River

Watershed 6 represents the impaired Middle Fork Stanislaus River and the Stanislaus Powerhouse which outlets into the North Fork Stanislaus River just below the confluence of the Middle Fork Stanislaus and the North Fork Stanislaus, slightly downstream of the Collierville Powerhouse tailrace. Gages used in the calculation of this inflow are listed in Table 12. The calculation of impaired inflow is the sum of the total flow below Beardsley Reservoir, the flow in the Philadelphia Canal, and accretions below Beardsley Reservoir. The total flow below Beardsley Reservoir is calculated by USGS, the flow in the Philadelphia Canal is gaged, and the accretions below Beardsley Reservoir are estimated using a paired basin approach with unimpaired flow at Beaver Creek Diversion Dam. Resulting annual volumes and the annual averages are shown in Table 13.

Table 12. USGS gages used in the calculation of impaired MF Stanislaus River and Stanislaus Powerhouse.

Location	USGS ID
MF Stanislaus River below Beardsley	11292901
Philadelphia Canal	11297000

Table 13. Middle Fork Stanislaus annual flow volumes, acre-feet.

Water Year	MF Stanislaus River below Beardsley	Philadelphia Canal	Accretions below Beardsley	Total Impaired Flow
2014	146,021	9,770	1,713	157,503
2015	154,921	16,640	1,761	173,322
2016	451,646	25,606	7,151	484,402
2017	1,140,729	20,536	39,043	1,200,309
2018	445,021	23,150	9,365	477,537
2019	698,793	25,137	13,017	736,946
2020	256,032	18,820	4,309	279,161
2021	156,445	10,150	12,456	179,051
2022	302,769	22,891	2,595	328,254
2023	922,456	23,626	14,989	961,072
2024	464,476	23,158	5,446	493,080
2025	324,409	6,271	16,974	347,654
Annual Average	455,310	18,813	10,735	484,858

3.0 North Fork Stanislaus Project Operations Model

NFSP Operations Model is built on the OASIS modeling platform. OASIS with OCL™ is a generalized program for modeling the operations of water resources systems. OASIS simulates the routing of water through a system represented by nodes and arcs. Model routing may account for both human control and physical constraints on the system.

OASIS is a generalized program and is completely data-driven. The user specifies the features and operating rules of the system through OASIS's input data, not by altering source code. Western Hydrologics has built the NFSP baseline model reflecting current operations. A baseline model validation report has been prepared that compares model operations to historical gage data (Western Hydrologics, 2026). Alternative operations can be simulated by changing the input data contained in the baseline.

3.1 OASIS Model Characteristics

3.1.1 The Objective Function

One of OASIS' most powerful, innovative features is that it simulates the routing of water by solving a linear program**.** The objective function is a linear combination of decision variables that the linear program (LP) solver optimizes. For OASIS, the LP solution maximizes the objective function. Every operating goal is represented by a term in the objective function. User defined weights are the coefficients on each of those terms. These weights determine the importance of each term in the objective function, influencing how the objective function is optimized. This means that terms with high weights will have a higher priority, while terms with low weights will have a lower priority. For water operations, this generally translates to minimum flow requirements having high weights, storage having low weights and meeting consumptive demand and power generation goals are somewhere in between.

3.1.2 Reservoir Rule Curves and Reservoir Weights

Oasis uses four reservoir levels at each reservoir: dead pool, full pool, a lower rule curve, and an upper rule curve. These four levels define four storage zones and Oasis can assign weights to each storage zone. Reservoir rule curves and the weights assigned to them are discussed in the facility discussion at each reservoir.

3.1.3 Arc Weights

Oasis has three weights available for each arc in the system, although not every arc in the model is weighted. The model uses an arc A-weight, which is a weight on meeting minimum instream flow requirements. The model uses an arc B-weight, which is a weight on flows in an arc above the minimum instream flow level. The model uses an arc total weight which is a weight on all flow in the arc.

3.1.4 Demand Weights

Oasis has weights at each demand node to determine the relative priority of meeting demands.

3.1.5 Model Solve Priority Levels

The model uses a concept called Solve Priority Levels. These are distinct from operational priorities, but rather a priority system of solving different parts of the model schematic in a specific order. The model's Solve Priority Levels cause the model to calculate elements in the following order:

- NFDD and New Spicer Meadow Reservoir
- NF Stanislaus River from NFDD to McKays Point Reservoir
- Beaver Creek Diversion Dam
- McKays Point Reservoir, consumptive deliveries, and Collierville Powerhouse

3.1.6 Evaporation

The model uses the same evaporation rate patterns described in section 2.3. The model uses end-of-timestep storage levels, the reservoir's Storage-Area-Elevation curve, and the evaporation rate pattern to calculate evaporation in each timestep.

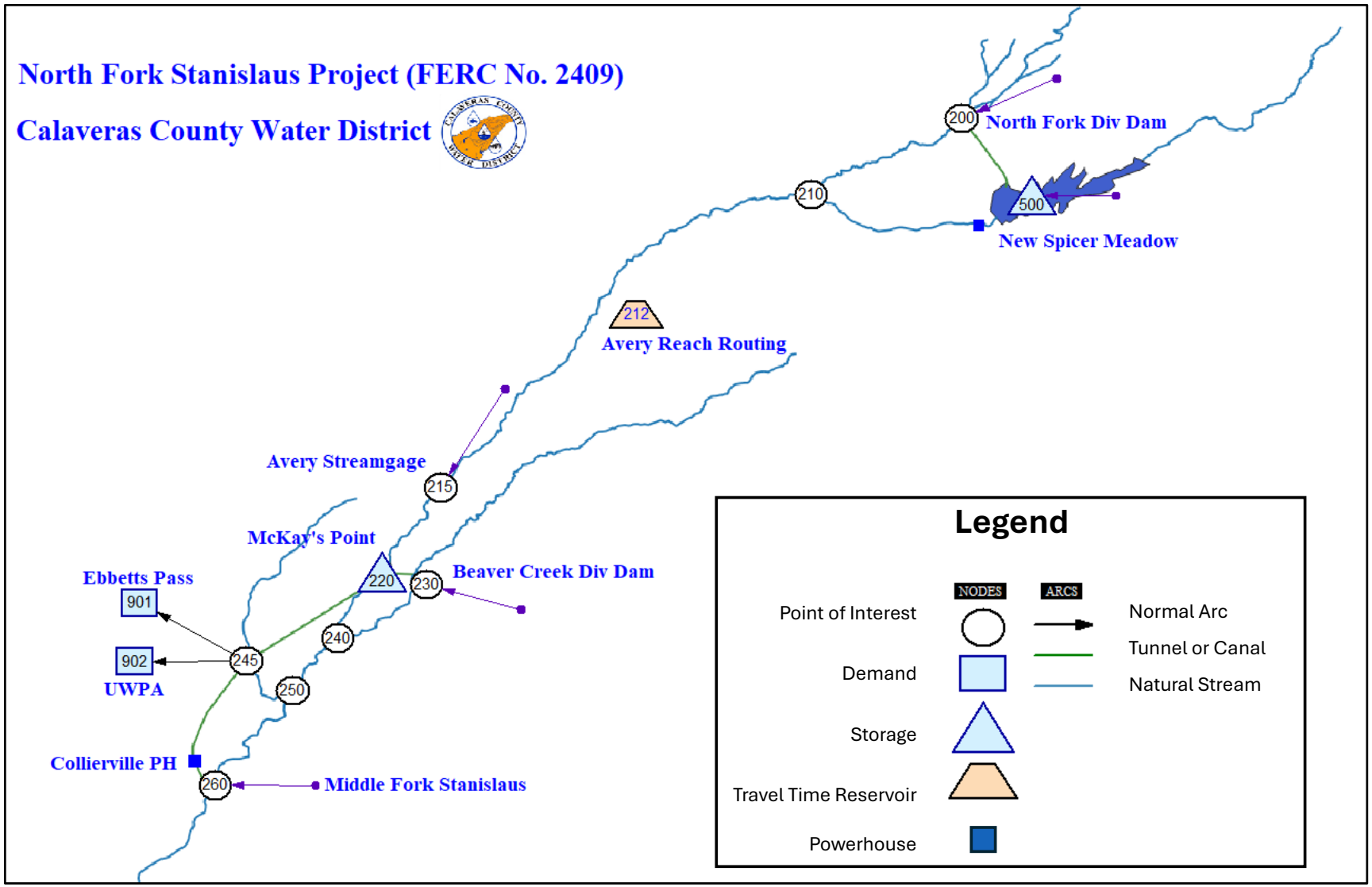


Figure 7. North Fork Stanislaus Project Operations Model Schematic.

3.2 North Fork Diversion Dam operations

The NFDD is modeled with 117.3 acre-feet of usable storage. The model allows an additional 45 acre-feet of storage for reservoir surcharge during times of high flow.

The NFDD has a minimum flow requirement below the dam of 16.5 cfs. The model implements a buffer release of 10% in addition to the minimum flow release below the dam.

The model uses a release rate based on the reservoir's water storage at the North Fork Diversion Dam. The release rating curve at the North Fork Diversion Dam used in the model is based on an analysis of historical hourly gage records. This rating curve is shown in Figure 8. When inflows are high, the reservoir surcharges and releases more than the minimum instream flow requirement to the river while the reservoir surcharges. When inflow recedes, storage in the reservoir draws down. When inflow is less than the minimum flow requirement, the reservoir maintains an equilibrium storage where inflow equals outflow.

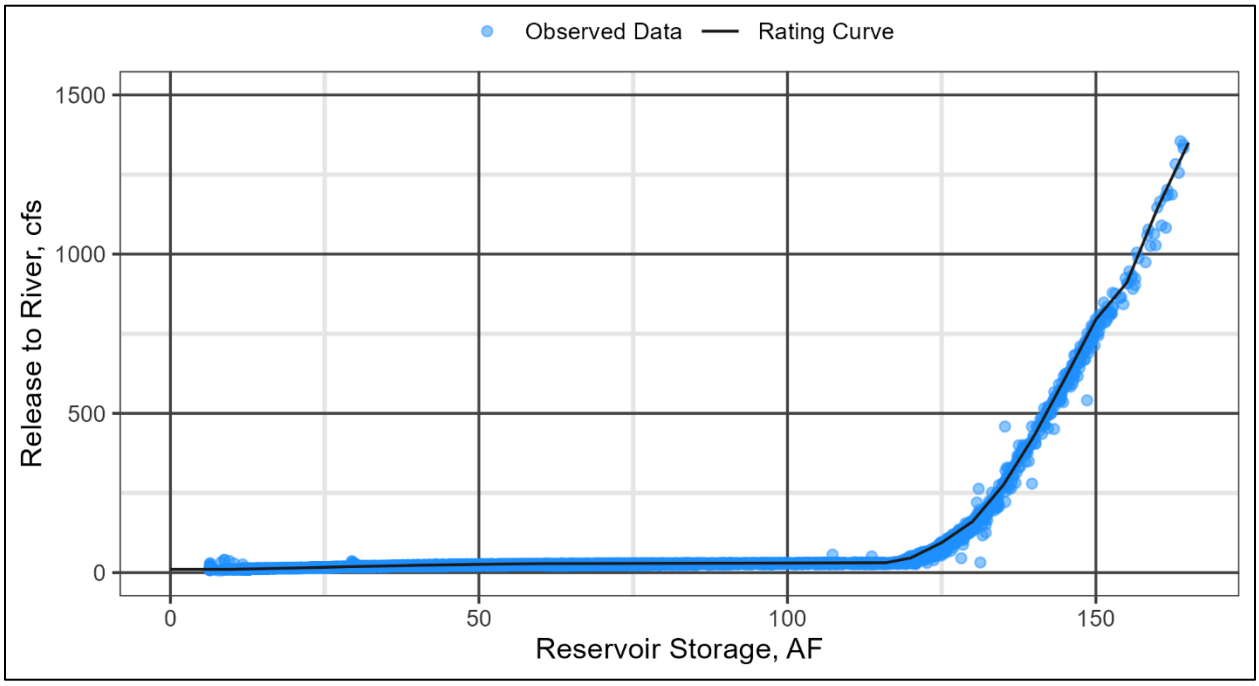


Figure 8. North Fork Diversion Dam rating curve for release to the NF Stanislaus River.

The model also uses diversion capacity based on the reservoir's water surface elevation. The diversion rating curve used in the model is based on an analysis of historical hourly gage records. The data shows that there are different storage-capacity relationships due to debris load accumulated on the trash rack or other factors. The fully open and clean setting was selected for the modeled rating curve. The diversion capacity rating curve is shown in Figure 9.

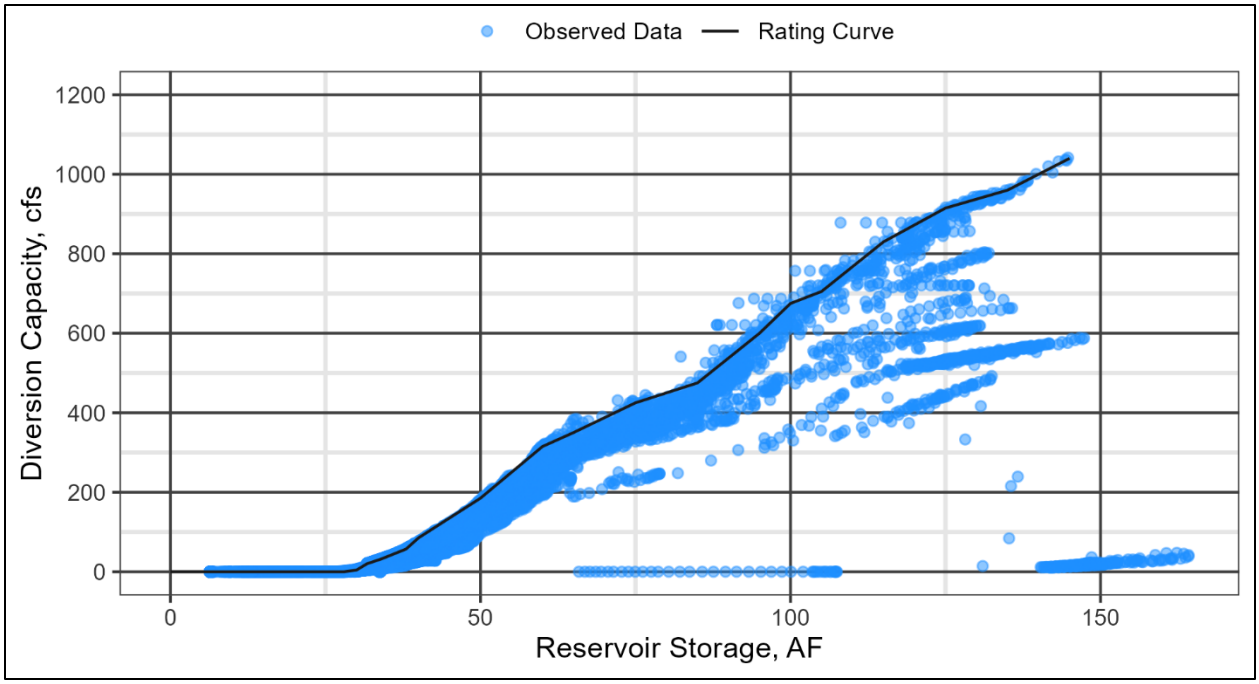


Figure 9. North Fork Diversion Tunnel capacity rating curve.

The model utilizes OASIS's iteration function to implement both rating curves at the North Fork Diversion Dam. The model starts with the reservoir storage from the previous timestep, determines the release and diversion capacity, calculates the current timestep, then uses the resulting reservoir storage to set an updated release and diversion capacity. The model will continue to iterate on the previous solves results until the storage changes by less than 0.1 acre-feet from the previous solve.

NFDD has a water rights limitation that does not allow more than 52,000 acre-feet per calendar year to be diverted to storage in New Spicer Meadow Reservoir. To implement this limitation, the model identifies diversions to New Spicer Meadow Reservoir as either direct diversions, in which the diversions are routed through New Spicer Meadow Powerhouse or spilled, and diversions to storage which are all diversions in excess of New Spicer Meadow releases. The model attempts to label NFDD diversions and direct diversions to the maximum amount possible and identifies North Fork Diversion Dam diversions to storage as the remaining diversions. The model tracks a running sum of the diversions to storage and will cease diversions when the annual limit is reached. The maximum diversion to storage in New Spicer Meadow in the baseline model is 48,450 acre-feet and the rule is included in the model to ensure no violations with future conditions.

3.3 New Spicer Meadow Reservoir operations

New Spicer Meadow Reservoir is modeled with a storage capacity of 189,000 acre-feet. Dead pool at the reservoir is set at 5,000 acre-feet. There is a regulatory minimum pool of 36,000 acre-feet in normal years and 30,000 acre-feet in dry years required by the current FERC license. For purposes of New Spicer Meadow minimum pools, dry years are defined as years when the April through July Full Natural Flow at New Melones Reservoir is less than 350,000 acre-feet. This

regulatory minimum pool is set as the lower rule curve in the model. The model has no functional upper rule curve for New Spicer Meadow Reservoir, as the upper rule is set to the maximum capacity of the reservoir.

The reservoir is modeled with three outlets: New Spicer Meadow Powerhouse, which includes 3 turbine units, a low-level outlet, and ungated spillway. The powerhouse is modeled with a combined 415 cfs flow capacity. The powerhouse is modeled with a maintenance outage which takes down one unit at a time. From September 5th through September 7th Unit 3 is taken down and the powerhouse has a 360 cfs capacity. From September 11th through September 15th Unit 2 is taken down and the powerhouse has a 215 cfs capacity. From September 18th through September 25th Unit 1 is taken down and the powerhouse has a 215 cfs capacity. Table 14 summarizes the maintenance schedule.

Table 14. New Spicer Meadow Powerhouse Maintenance Schedule.

Unit in Maintenance	Maintenance Outage Start Date	Maintenance Outage End Date	Powerhouse Flow Capacity
Full Capacity	--	--	415 cfs
Unit 3	Sep 5th	Sep 7th	360 cfs
Unit 2	Sep 11th	Sep 15th	215 cfs
Unit 1	Sep 18th	Sep 25th	215 cfs

The low-level outlet is modeled as a simplification of multiple dam release outlets and has a variable release capacity based on New Spicer Meadow Reservoir water surface elevation. The release rating curve used in the model is shown in Figure 10.

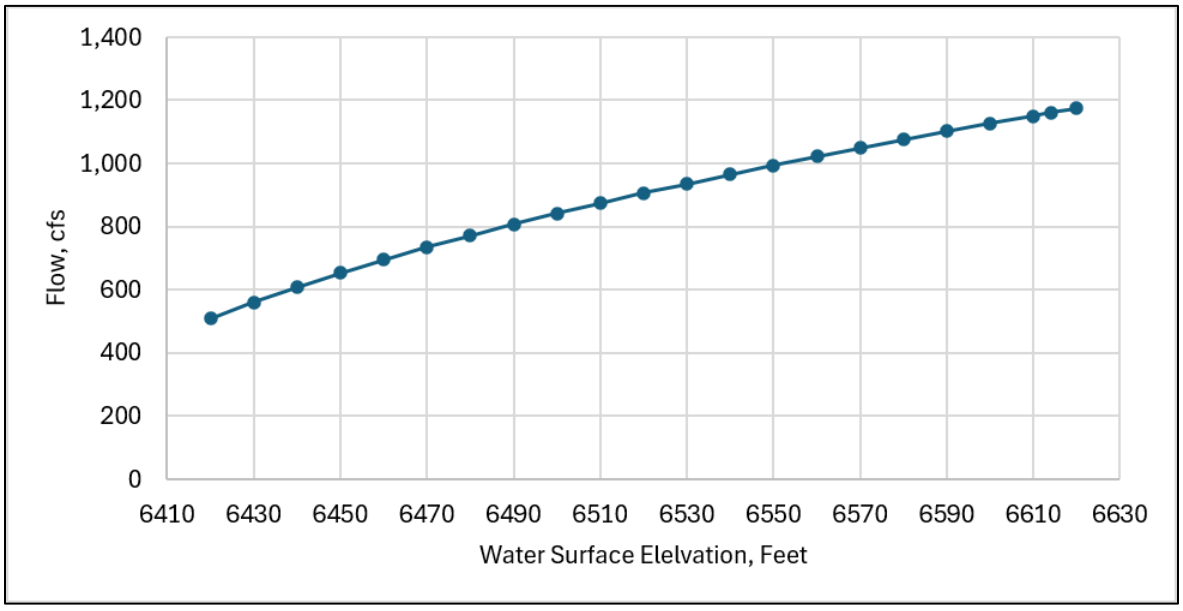


Figure 10. New Spicer Meadow Reservoir low-level outlet rating curve.

New Spicer Meadow Reservoir has a 16.5 cfs minimum flow below the dam and is modeled with an additional 10% buffer release. There is a minimum instream flow requirement at Big Trees

State Park approximately 22 miles downstream of New Spicer Meadow Reservoir with a requirement of 100 cfs November through May and 150 cfs June through October with an additional 10% buffer release. The minimum instream flow requirement at Big Trees State Park is met with storage releases from New Spicer Meadow Reservoir when natural flows are not sufficient to meet the requirement.

New Spicer Meadow Reservoir has a ramping limitation for flows below the dam. The requirement states that the stage below the dam cannot fluctuate more than three inches per hour or one foot in six hours (CDFG 1979). The reservoir is generally operated to not exceed 0.16 feet per hour (approximately 2 inches per hour) in order to not exceed the one foot in six hours requirement. The model uses the rating curve of the stream gage below the dam to convert this requirement into a maximum flow change requirement in each hour of the simulation. In the model, this requirement is placed on the combination of releases from the powerhouse and the low-level outlets. The requirement is not enforced on spill releases.

The model operates New Spicer Meadow Reservoir with distinct fill and release cycles. The model switches from the release cycle to the fill cycle on January 1. The model switches from the fill cycle to the release cycle on a variable date in June, with earlier fill dates in drier years (as early as June 1) and later fill dates in wetter years (as late as June 30). During the fill cycle, the model attempts to fill the reservoir fully without spilling. During the release cycle the model runs the powerhouse at a level to bring storage down to a carryover storage target by the end of the cycle.

In the fill cycle, the model calculates a forecast of total inflow to New Spicer Meadow Reservoir. The forecast uses perfect knowledge of inflows. The model adds this total inflow to the current storage in the reservoir, subtracts the capacity of the reservoir, and subtracts minimum instream flow requirements through the rest of the cycle to calculate a release volume for the fill cycle. The release volume is divided by the number of hours remaining in the cycle to set the release rate for the next week. Each week the model redoes the calculations. The release rate each week can change due to spills, minimum instream flows that are greater than the desired release rate, or the result of the multi-month hydrology calculation not equal to the day-to-day hydrology balance.

During the fill cycle, the model may release additional water through the low-level outlet beyond the capacity of the powerhouse in wet years. These releases can be utilized at Collierville Powerhouse when spills at New Spicer Meadow Reservoir are anticipated.

The release cycle works similarly to the fill cycle. However, the model subtracts the carryover target rather than the reservoir capacity. There is an additional constraint preventing the model from drawing the reservoir too low in anticipation of fall inflows. During the release cycle in dry years, the required release to meet the minimum instream flow requirement at Big Trees State Park is often higher than the calculated release rate. The model will release sufficient flow to meet the minimum instream flow requirement at Big Trees State Park and draw the reservoir down below the carryover target.

The New Spicer Meadow Powerhouse is operated at a minimum of 31 cfs regardless of the specified release rate. This is to meet minimum instream flow below the New Spicer Meadow

Dam and safeguard against ramping rate violations in the event of a powerhouse failure. During the Collierville Powerhouse maintenance period, releases through New Spicer Meadow Powerhouse are limited to 200 cfs to minimize spills at McKays Point Reservoir during the outage.

3.4 Routing along the North Fork Stanislaus River

The routing calculations used in the hydrology development are described in Section 2.7. The NFSP Operations Model uses the same calculation methodology to route releases from New Spicer Meadow and North Fork Diversion Dam to McKays Point Reservoir. The model utilizes a travel time reservoir which generally represents channel storage in the reach. The model uses the Muskingum equation to calculate outflow from the travel time reservoir as a function of inflow to the travel time reservoir.

3.5 Beaver Creek Diversion Dam operations

The Beaver Creek Diversion Dam is modeled with 3.8 acre-feet of usable storage. The model allows an additional 2.0 acre-feet of storage for reservoir surcharging during times of high flow.

The model uses a release rating curve based on the reservoir's storage level, developed from an analysis of historical gage data. This rating curve is shown in
Figure 11.

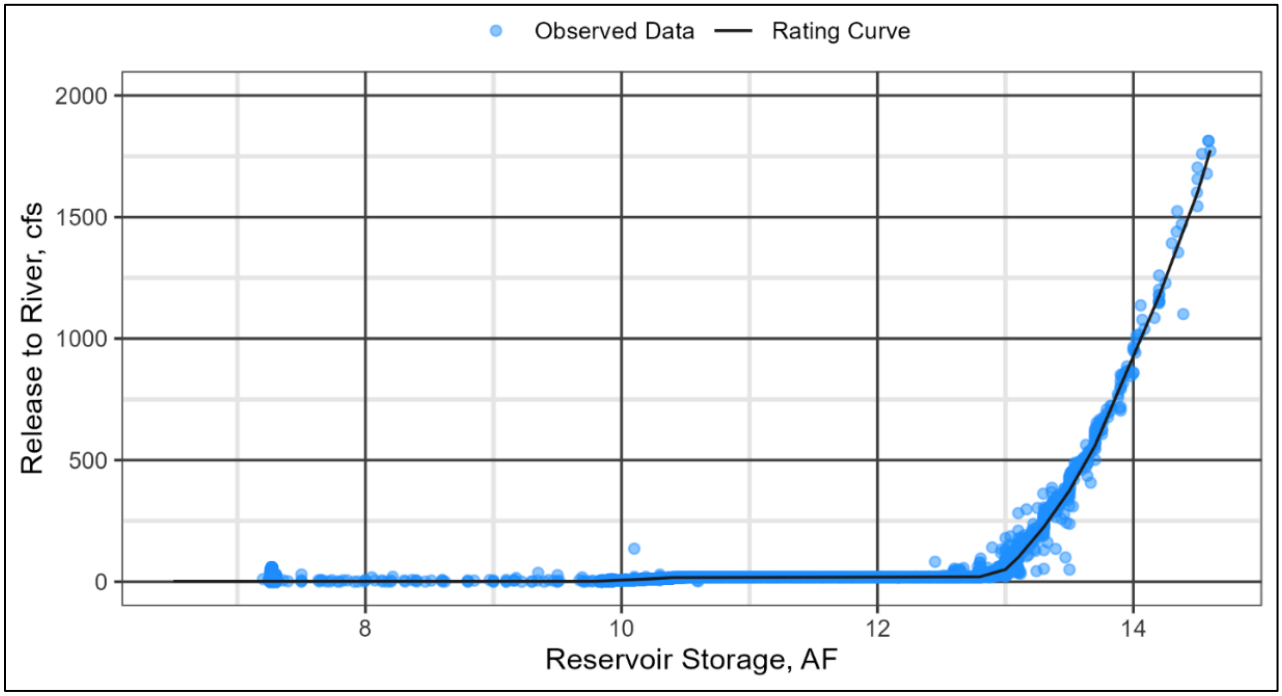


Figure 11. Beaver Creek Diversion Dam release rating curve.

The Beaver Creek Diversion Dam has a minimum flow requirement below the dam of 16.5 cfs. The model implements a buffer release of 10% in addition to the minimum flow release below the dam. When inflow to the diversion dam falls below the minimum instream flow requirement,

the model utilizes the release rating curve to pass inflow to the Creek while also drawing down storage in the reservoir until storage reaches the minimum pool. When the storage reaches minimum pool, the reservoir passes inflow until the runoff season.

When the runoff season begins, the model assumes that Beaver Creek Diversion Dam cannot divert water into the diversion tunnel until runoff reaches 43 cfs. Once inflow to the diversion dam exceeds 43 cfs the diversion tunnel will open and begin diversions up to the tunnel capacity of 400 cfs. Diversions continue until hydrologically unavailable in early summer.

3.6 McKays Point Reservoir Operations

McKays Point Reservoir is modeled with a maximum capacity of 2,088 acre-feet with a dead pool at 124 acre-feet. McKays Point Reservoir has a lower rule curve at 1,067 acre-feet, corresponding to a water surface elevation of 3,340 feet. McKays Point Reservoir has an upper rule curve at 1,730 AF (WSE 3,362 feet) in November through May and 1,924.8 AF (WSE 3,368 feet) in June through October. The lower rule curve represents the preferred minimum storage level to run Collierville Powerhouse while minimizing debris accumulation and the upper rule curve represents the preferred maximum storage level to avoid chance of spills. Storage weights are set such that storage will not go above the upper rule curve until Collierville Powerhouse is running at full capacity.

McKays Point Reservoir has a minimum flow requirement below the dam of 16.5 cfs. The model implements a buffer release of 10% in addition to the minimum flow release below the dam. There is an additional minimum instream flow requirement of 25 cfs below the confluence of the North Fork Stanislaus River and Beaver Creek. The model implements a buffer release of 10% on top of the minimum flow release below the confluence. During wet periods, the 25 cfs minimum instream flow release is met by the combination of the minimum instream flow release from McKays Point Reservoir and the minimum instream flow release from Beaver Creek. In the summer when Beaver Creek inflow recedes, McKays Point Reservoir will increase its releases to the North Fork Stanislaus River to maintain the minimum instream flow requirement at the confluence.

Collierville Powerhouse has a physical maximum flow capacity of approximately 1,600 cfs, but is modeled with a maximum flow capacity of 1398 cfs, in consideration of historical operating patterns (especially given an hourly time step model) where capacity is often reserved for short-term load-following up and regulation. The model has a one-day outage which takes down both powerhouse units, leaving the tunnel with 100 cfs of bypass capacity in order to move water into the Collierville Tunnel Tap for consumptive use and deliveries to Utica Water and Power Authority. The model then has a 30-day Collierville Powerhouse maintenance outage which takes down one unit at a time. As modeled, the powerhouse has an 800 cfs flow capacity from October 2 through October 31.

To operate Collierville Powerhouse, the model calculates an estimated daily inflow volume to McKays Point Reservoir. The model then calculates a daily generation volume considering the daily inflow volume, minimum flow requirements, and consumptive demands from the Collierville Tunnel Tap. The model then determines the maximum hourly flow rate. This hourly flow rate is higher with larger inflow volumes to account for the limited amount of usable

storage in McKays Point Reservoir. The hourly flow rate lookup table is shown in Table 15. The daily generation volume is divided by the maximum hourly flow rate to determine the number of generation hours in that day.

Table 15. Collierville Powerhouse maximum hourly flow lookup table.

Daily Generation Volume, AF	Maximum hourly flow rate, cfs
0 to 225	200
226 to 350	400
351 to 475	600
476 to 650	800
651 to 950	1000
951 to 1250	1250
Greater than 1250	1398

To determine which hours to schedule the generation, the model uses a set of lookup tables developed from an analysis of historical operations. Historical Collierville flows for water years 2021 through 2025 were averaged by hour of day, month, and weekend/weekday designation. The resulting averages were ranked to determine hour of day priorities, and these rankings resulted in the lookup tables. Each month has two lookup tables, one for weekends and one for weekdays. Examples of the resulting average flows are shown in

Figure **12** and Figure **13**, and an example of the resulting lookup tables are shown in Table 16.

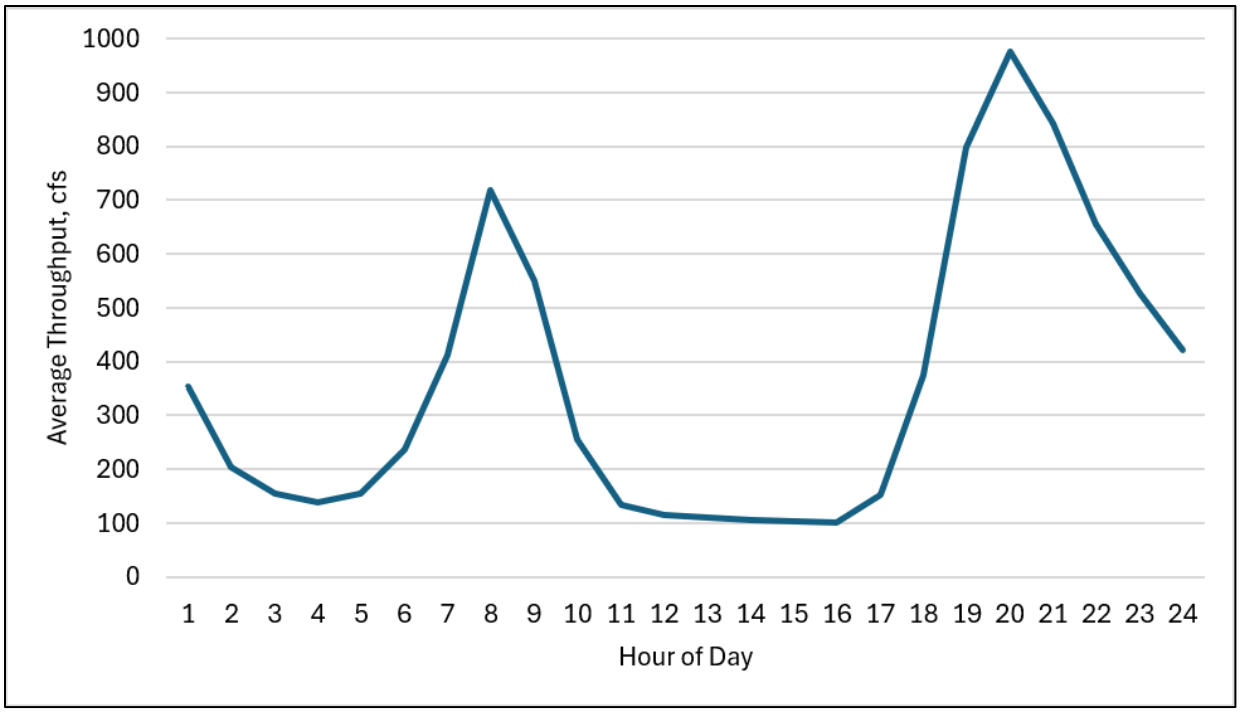


Figure 12. Average Collierville Powerhouse by hour, February weekdays.

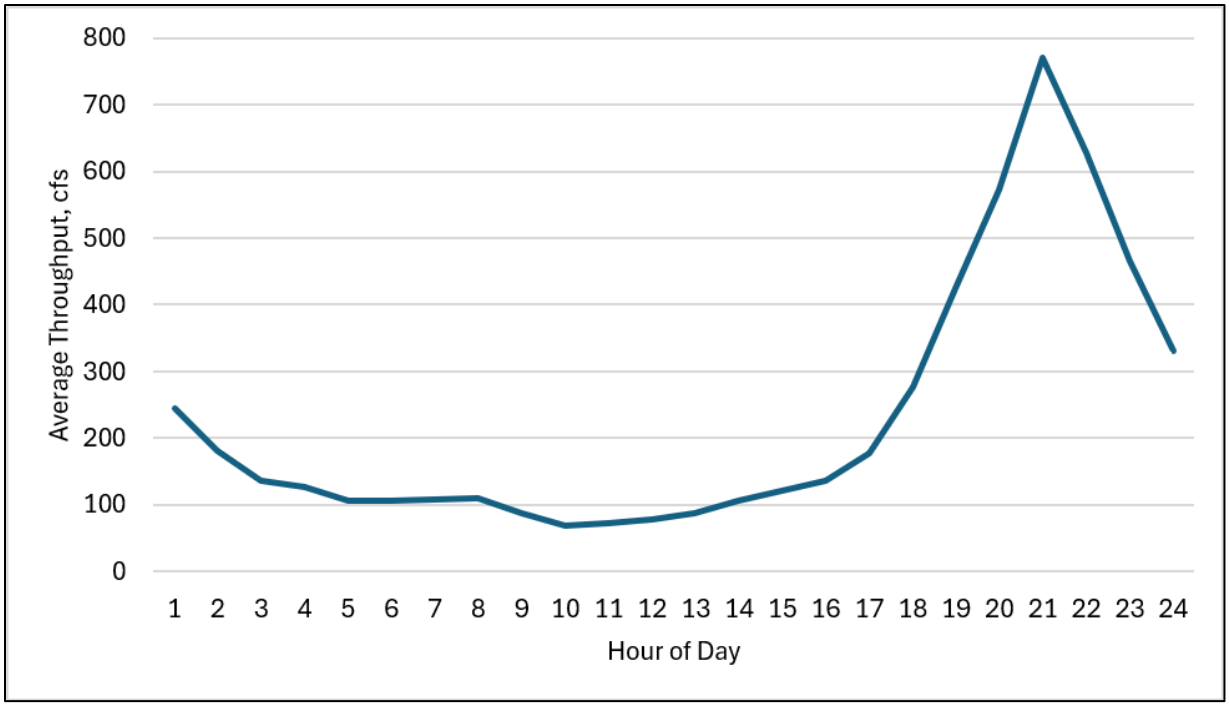


Figure 13. Average Collierville Powerhouse by hour, July weekdays.

Table 16. Collierville Powerhouse hourly generation priority lookup table, July weekdays.

Hour of Day	Generation Priority
1	9
2	11
3	14
4	18
5	22
6	24
7	17
8	15
9	19
10	23
11	21
12	20
13	16
14	13
15	12
16	10
17	8
18	6
19	5
20	3
21	1
22	2
23	4
24	7

The generation target at Collierville Powerhouse is then set as the maximum flow rate when the hour of day generation priority is less than or equal to the number of generation hours that day. The weighting on that generation target is 2000 points for the powerhouse flow being below the generation target and 3900 points for the powerhouse flow being above the generation target.

Collierville Powerhouse needs to curtail its throughput during times of high flow at the powerhouse tailwater. The model uses a relationship between flow at the Collierville tailwater and maximum powerhouse throughput developed by NCPA to begin to curtail the flow in Collierville Powerhouse when the flow below the confluence of the North fork Stanislaus and Middle Fork Stanislaus is above 5,000 cfs. For the model, Collierville Powerhouse is completely shut off when the flow below the confluence of the North fork Stanislaus and Middle Fork Stanislaus reaches 15,000 cfs or greater.

3.7 Consumptive Deliveries

The Model models two consumptive deliveries out of the Collierville Tunnel Tap.

Deliveries to node 901 represent deliveries to Hunter Water Treatment Plant for use in CCWD's Ebbetts Pass service area. The modeled demand is calculated as an average of deliveries in water years 2022 through 2025. Annual delivery volumes for these years are shown in Table 17. Each day's demand is an average of that calendar day over the four water years being used. A 7-day centered average of that calendar day average is then used to smooth out some data noise. Resulting daily demands at node 901 are shown in Figure 14.

Table 17. Annual Delivery volumes to CCWD.

Water Year	2022	2023	2024	2025	**Average**
Annual Delivery, Acre-Feet	1,376	1,336	1,343	1,444	1,383

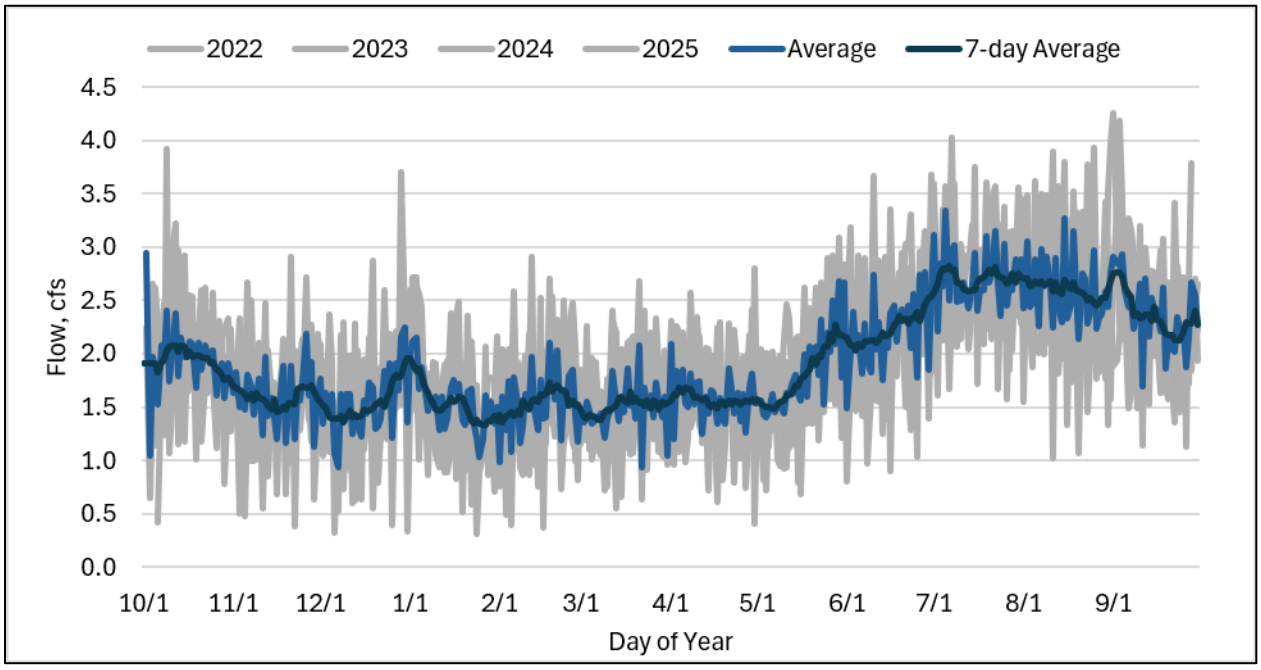


Figure 14. Average deliveries to CCWD Ebbetts Pass service area.

Deliveries to node 902 represent deliveries to Utica Water and Power Authority (UWPA). These deliveries are used to meet UWPA's consumptive demands in addition to hydropower production at UWPA powerhouses. Demands at this node are equal to the historical Collierville Tunnel Tap gaged flow minus the CCWD demand at node 901. Resulting demands are shown in Figure 15.

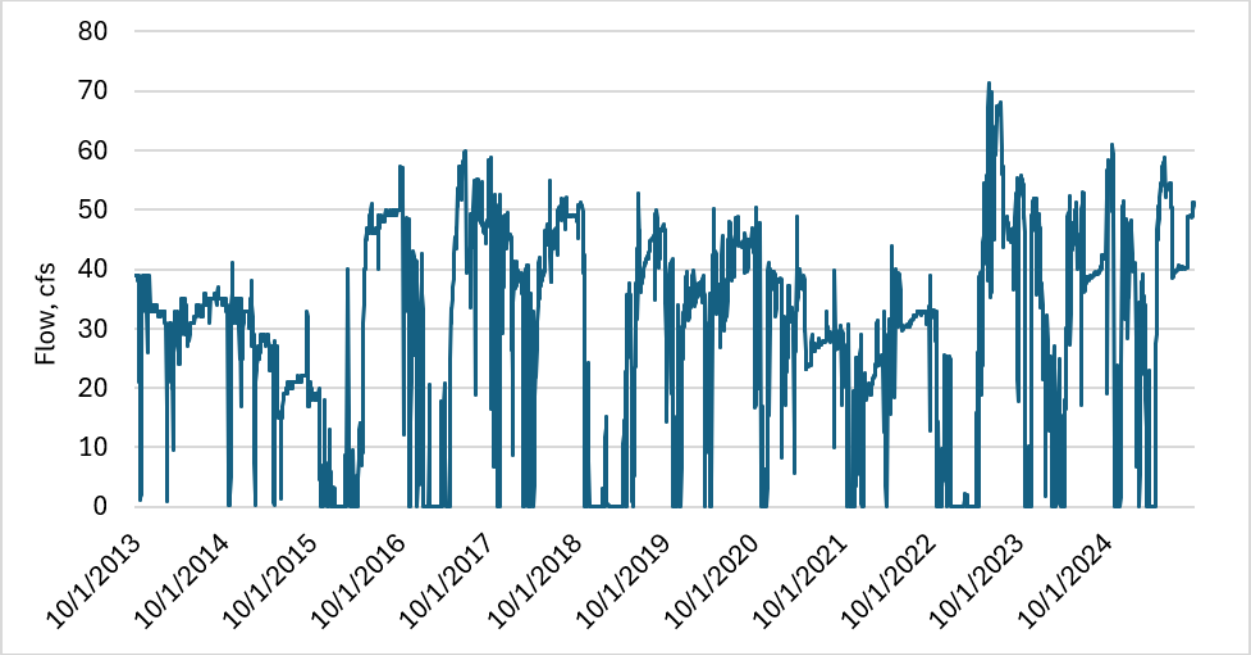


Figure 15. Demand at Node 902, deliveries to UWPA.

Demand weights are set to ensure that consumptive deliveries have a higher priority than flows in Collierville Powerhouse, but a lower priority than minimum instream flow requirements below McKays Point Reservoir.

3.8 Power Generation

Calculations of modeled powerhouse generation are post-processed by the model after runtime. At Collierville Powerhouse, the model uses an MW-per-AF lookup table as a function of McKays Point Reservoir water surface elevations and hourly flows as simulated by the model as described in Section 3.6.

At New Spicer Meadow Powerhouse there are three generating units. Units 1 and 2 have an 180 cfs flow capacity and an 80 cfs minimum throughput. Unit 3 has a 35 cfs flow capacity. The model uses total powerhouse throughput to determine flow through each unit. Unit usage as a function of total powerhouse throughput is shown in Figure 16. Generation at each unit is calculated as flow through the unit multiplied by head at New Spicer Meadow Reservoir multiplied by a factor approximating unit efficiency and frictional head losses.

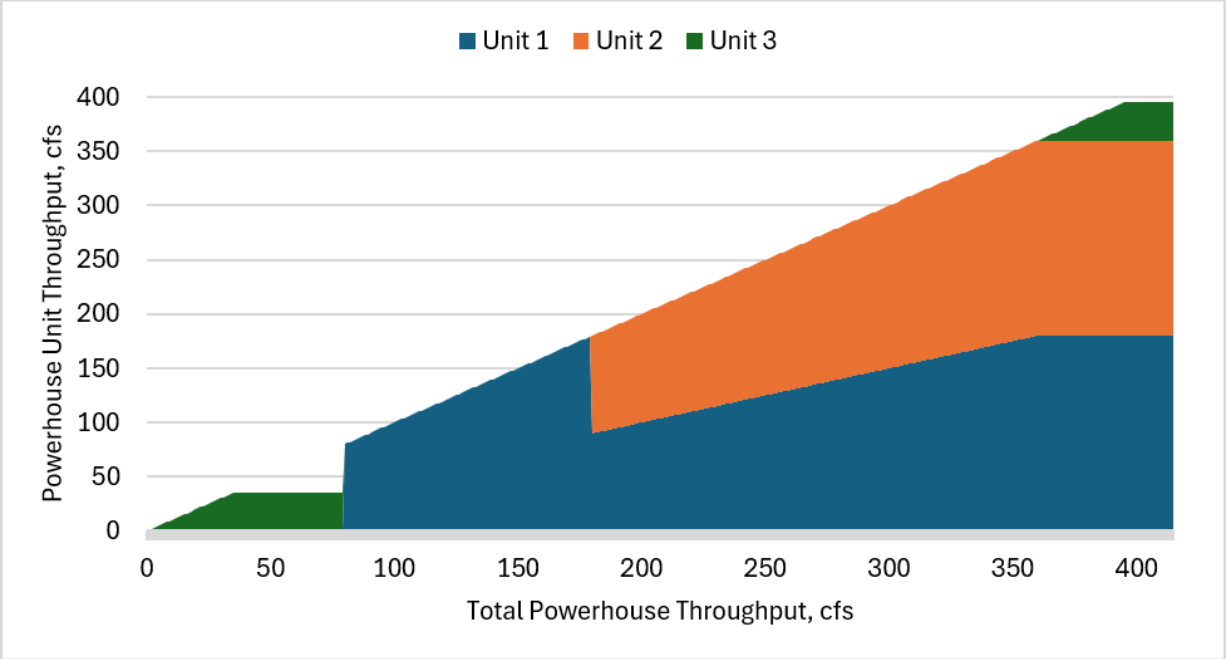


Figure 16. New Spicer Meadow Powerhouse Unit Throughput.

4.0 Sources Cited

California Department of Fish and Game (CDFG). 1979. Agreement between the California Department of Fish and Game and the Calaveras County Water District.

California Department of Water Resources. 1979. Bulletin 73-79, Evaporation from water surfaces in California.

Western Hydrologics. 2019. North Fork Stanislaus Travel Time Memo.

Western Hydrologics. 2026. North Fork Stanislaus Project Operations Model Validation Report.

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Pre-Application Document

Appendix B1

Model Validation

North Fork Stanislaus River Hydroelectric Project
FERC Project No. 2409

Prepared by:
Calaveras County Water District

September 2026

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North Fork Stanislaus Project

Operations Model Validation Report

Western Hydrologics has prepared an operations model of CCWD's North Fork Stanislaus Project for use in their upcoming FERC relicensing. The North Fork Stanislaus Project Operations Model (NFSP Model) is an hourly timestep operations model built on the OASIS modeling platform. The NFSP Model utilizes historic hydrology developed using gage data and a mass balance approach. More information on the development of the hydrology used in the NFSP Model can be found in the NFSP Model documentation. The NFSP Model uses historic deliveries to Utica Water and Power Authority. The NFSP Model uses an average of historic deliveries to CCWD's WTP over water years 2022 through 2025 to develop demand at the WTP.

Output from the NFSP Model is compared to historical gage data for the purposes of model validation. The validation analysis uses the full model period of record of water years 2014 through 2025, the period for which sufficient hourly gage data are available. The schematic of the North Fork Stanislaus Project model is shown in Figure 1. A list of locations analyzed for model validation is shown in Table 1.

Table 1. Locations analyzed for NFSP Model validation.

Location	USGS ID
NF Stanislaus Diversion Tunnel	11293580
NF Stanislaus below NF Diversion Dam	11293600
New Spicer Meadow Powerhouse	11293760
New Spicer Meadow Reservoir Storage	11293770
Highland Creek below New Spicer Meadow	11294000
NF Stanislaus at Avery	11294500
Beaver Creek Diversion	11295210
Beaver Creek Diversion Dam Storage	11295220
Beaver Creek below Diversion Dam	11295230
Collierville Powerhouse	11295250
McKays Point Reservoir Storage	11295260
NF Stanislaus below McKays Point Reservoir	11295270

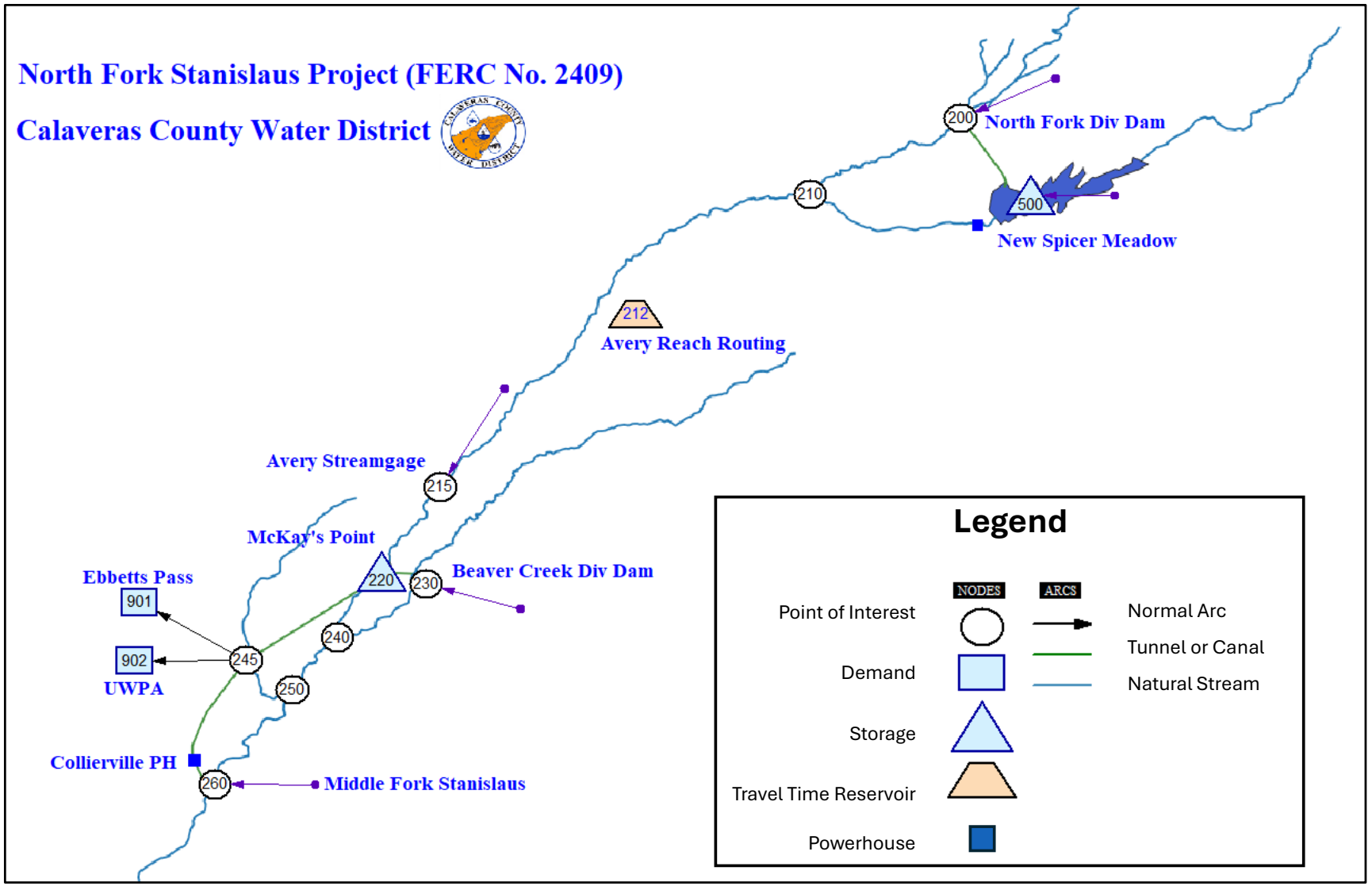


Figure 1. North Fork Stanislaus Project Operations Model Schematic.

1.0 North Fork Diversion Dam

The North Fork Diversion Dam is a passive diversion dam with head-based releases to the North Fork Stanislaus through an orifice plate and head-based diversions through the North Fork Diversion Tunnel to New Spicer Meadows Reservoir. There are minimum flow releases below the North Fork Diversion Dam that are exceeded in wetter years due to high storage forcing additional flow through the orifice plate. See the NFSP Model documentation for more information on the modeled operation of the North Fork Diversion Dam.

The North Fork Diversion Tunnel was shut down for 5 days in June 2019 and 9 days in May 2023. Both shutdowns occurred during times of high flow where inflow to the diversion dam was between 600 and 800 cfs. This affects the comparison between the observed and modeled flows during those dates.

North Fork Diversion Dam average daily seasonal diversions are shown in Figure 2. Figure 2 shows modeling results closely agree with observed data, although the shutdown in June of 2019 and May of 2023 are evident in the data shown. Similarly, these shutdowns are evident in the North Fork Diversion Dam average daily seasonal releases to the North Fork Stanislaus, shown in Figure 3. North Fork Diversion Dam annual diversions are shown in Figure 4. North Fork Diversion Dam annual releases to the North Fork Stanislaus River are shown in Figure 5. Model deviations from observed data are concentrated in 2017, 2019, and 2023, with good agreement between model results in observed data in other years. Deviations between model results and observed data in 2017 appear to be likely caused by operational complications due to high inflows.

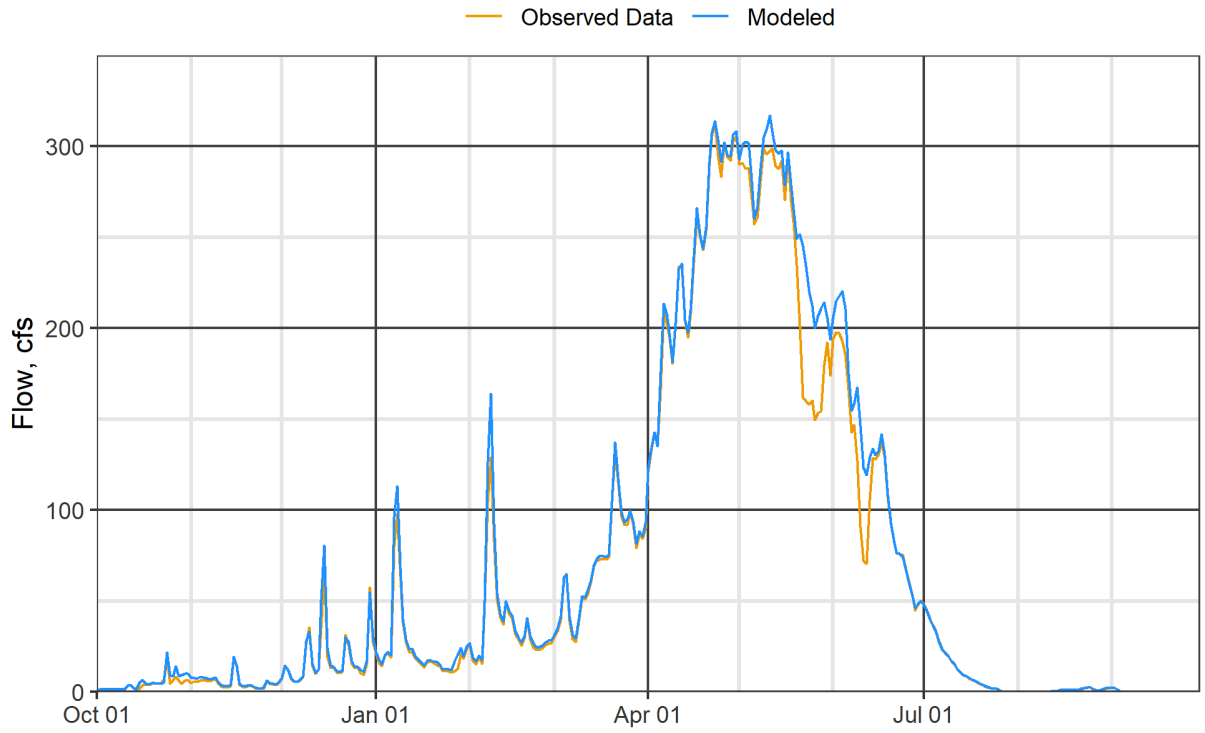


Figure 2. Average daily seasonal North Fork Diversion Dam diversions, water years 2014 through 2025.

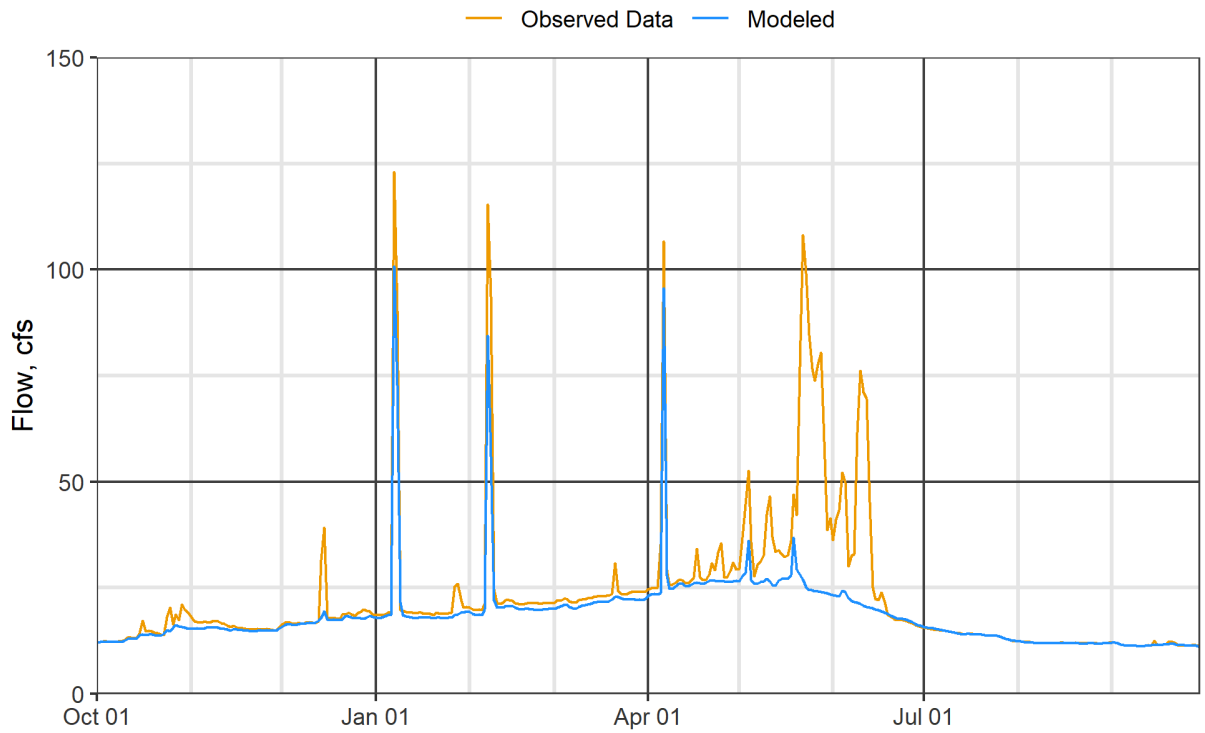


Figure 3. Average daily seasonal North Fork Diversion Dam releases, water years 2014 through 2025.

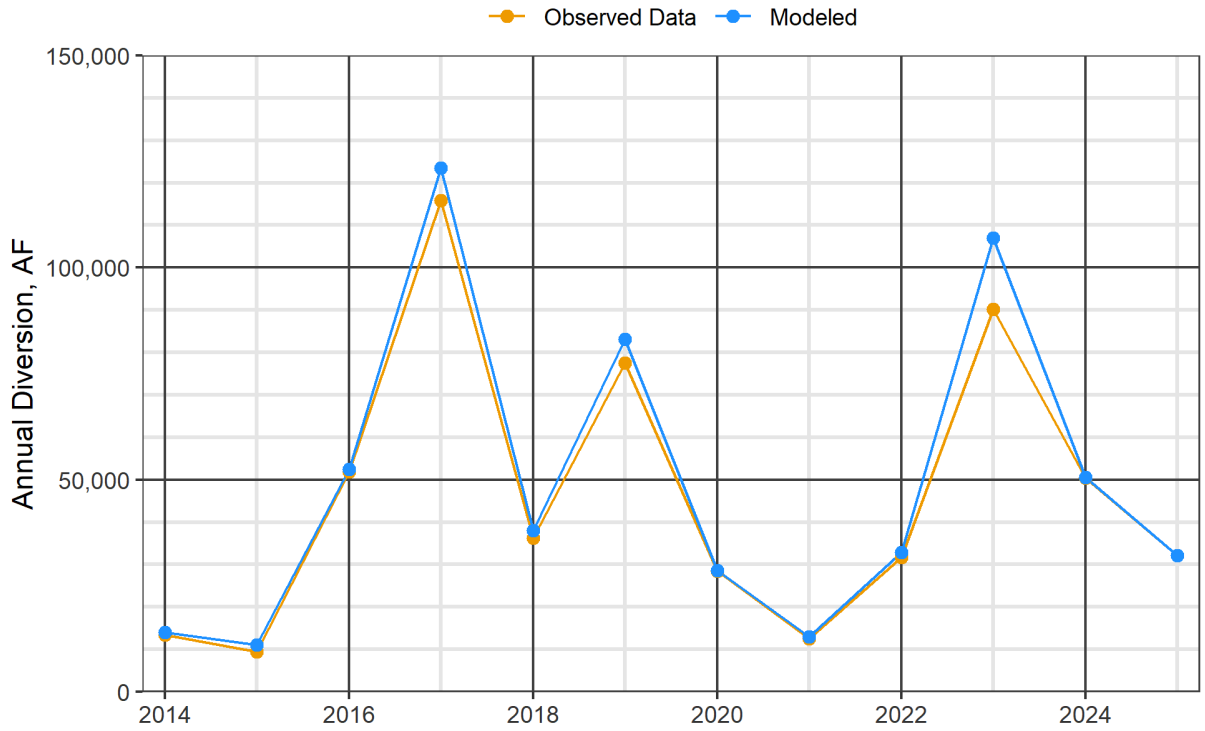


Figure 4. Annual North Fork Diversion Dam diversion volumes, water years 2014 through 2025.

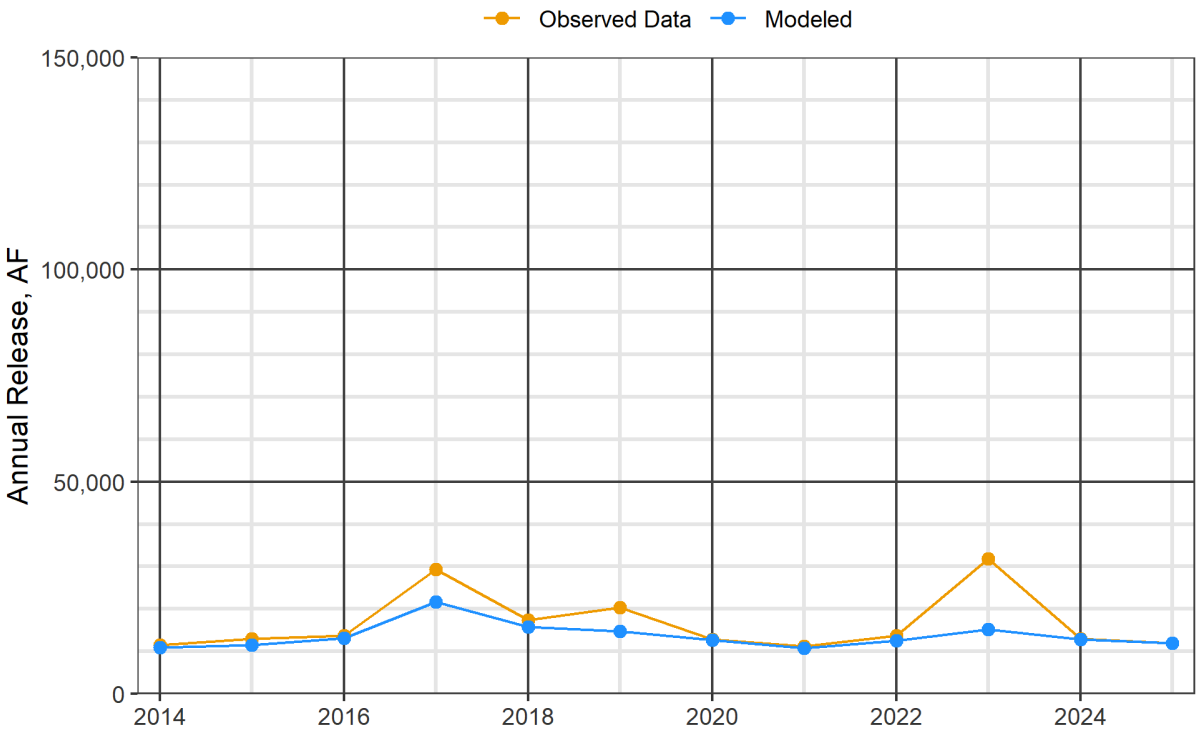


Figure 5. Annual North Fork Diversion Dam release volumes to the North Fork Stanislaus River, water years 2014 through 2025.

2.0 New Spicer Meadow Reservoir

New Spicer Meadow Reservoir has a minimum instream flow requirement on Highland Creek below the dam. There is an additional minimum instream flow requirement on the North Fork Stanislaus River just upstream of McKays Point Reservoir. New Spicer Meadow Reservoir makes releases during dry periods to maintain the minimum instream flow requirement on the North Fork Stanislaus River. This minimum instream flow requirement tends to be the driver of operations in dry years. New Spicer Meadow Powerhouse is modeled with a maintenance outage each September in which each powerhouse unit is taken out in succession over a total of 17 days.

New Spicer Meadow Reservoir is modeled with an 80,000 acre-foot carryover level. Historically the long-term average carryover level is around 80,000 acre-feet, but the reservoir has been carried over at varying storage levels in different years. This can be caused by variations in inflow hydrology, releasing storage to meet downstream minimum instream flow requirements, the reservoir operators taking advantage of opportunistic generation periods during the drawdown season, extended maintenance outages, and other factors which are not captured by the model. These variations in carryover levels produce variations in annual powerhouse throughput. New Spicer Meadow Reservoir storage generally represents recent historical operations, as shown in Figure 6. Monthly New Spicer Meadow Reservoir Powerhouse throughput is shown in Figure 7. Average daily seasonal New Spicer Meadow Reservoir Powerhouse throughput is shown in Figure 8. Annual New Spicer Meadow Reservoir Powerhouse throughput is shown in Figure 9. Annual total release from New Spicer Meadow Reservoir is shown in Figure 10.

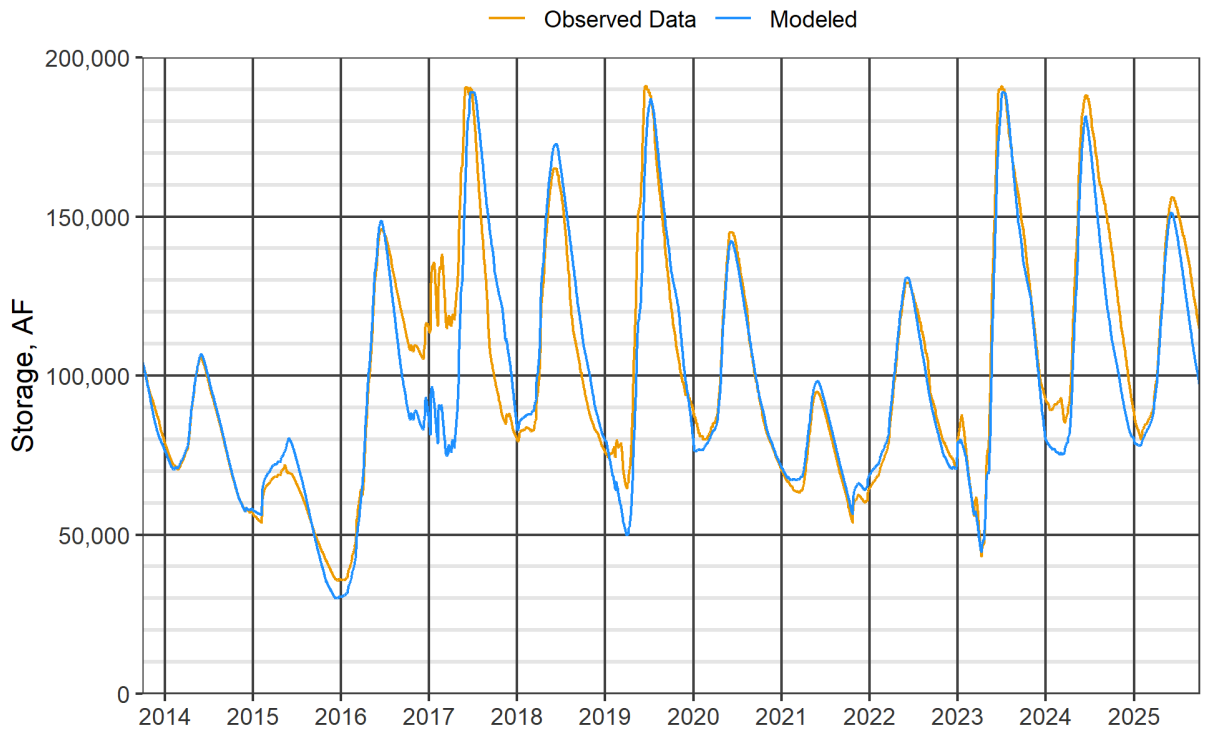


Figure 6. Daily New Spicer Meadow Reservoir storage, water years 2014 through 2025.

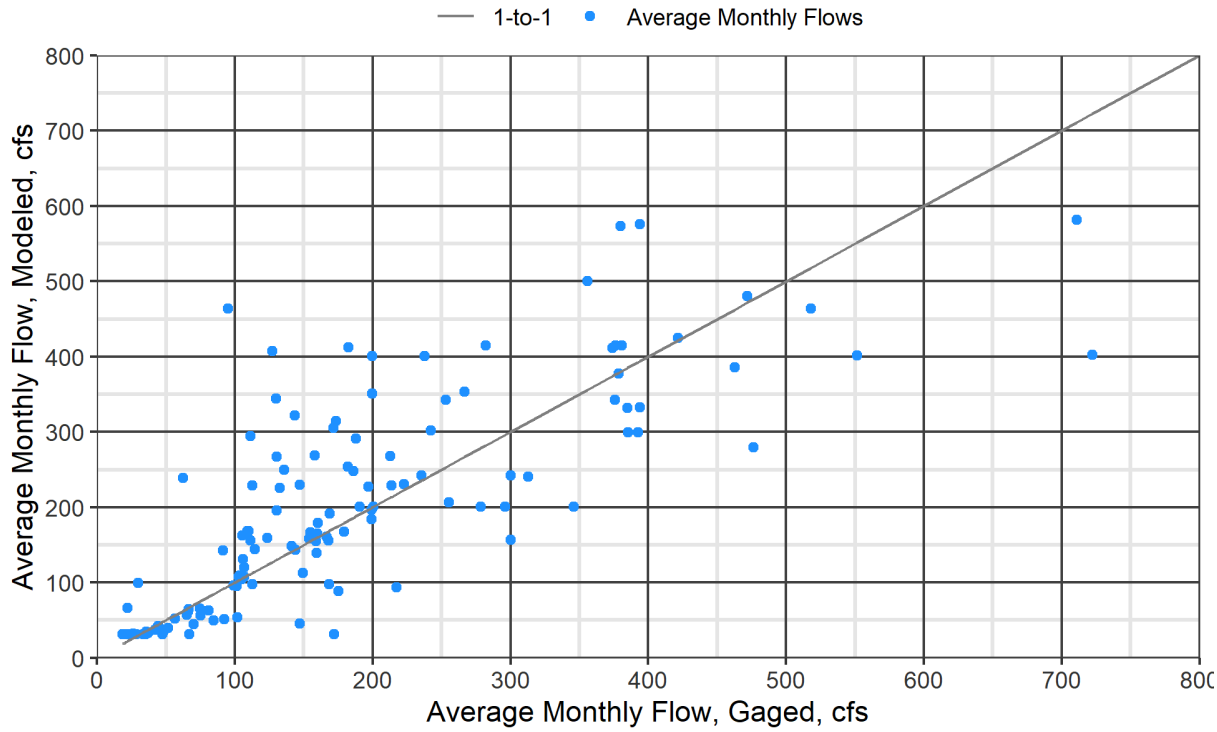


Figure 7. Monthly average New Spicer Meadow Powerhouse flow, water years 2014 through 2025.

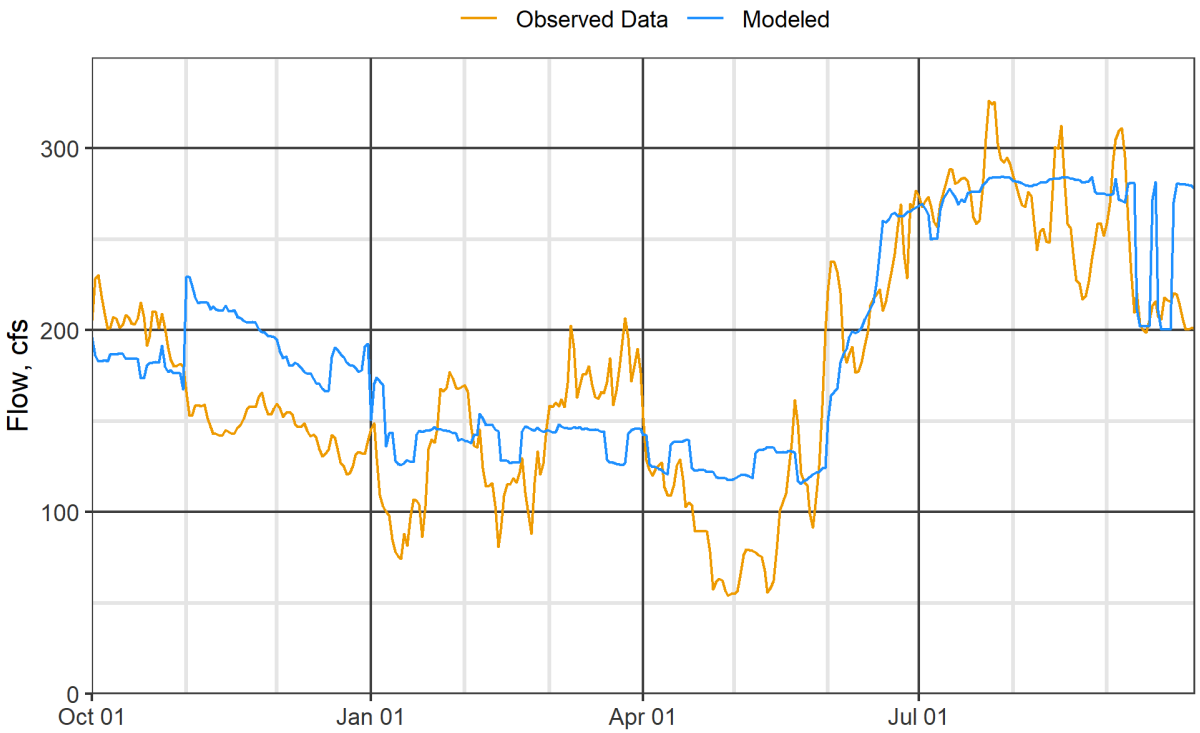


Figure 8. Average daily seasonal New Spicer Meadow Powerhouse, water years 2014 through 2025.

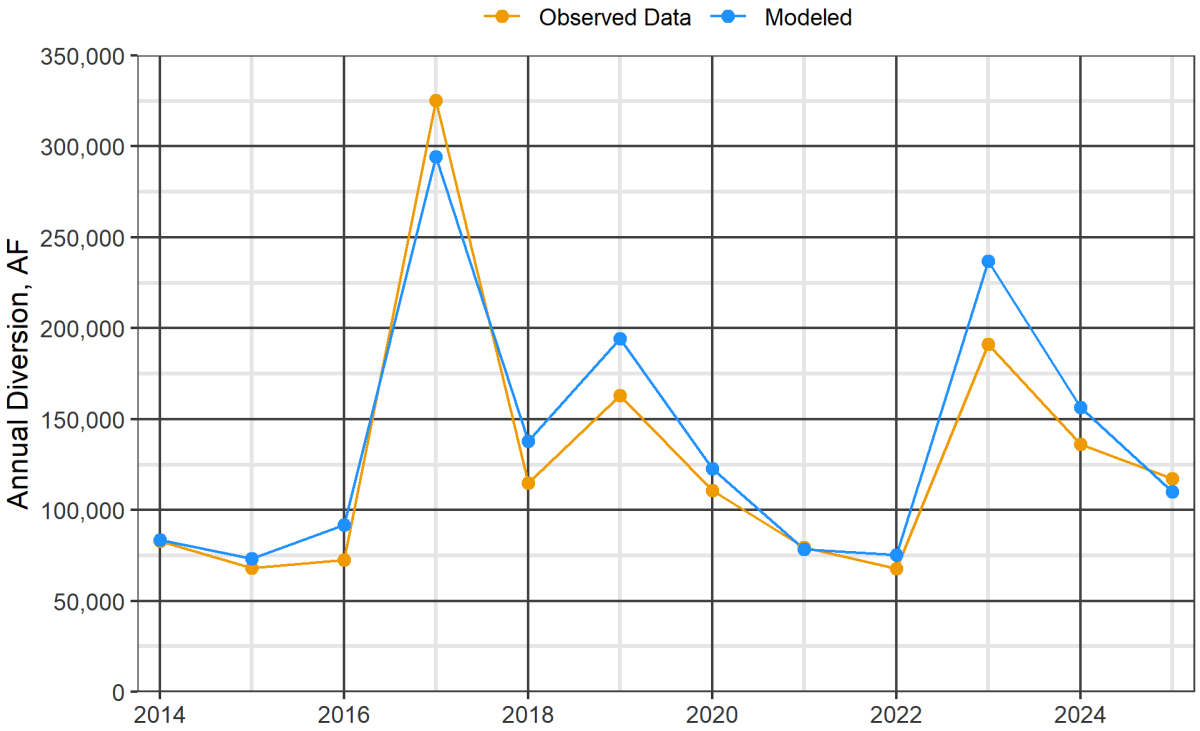


Figure 9. Annual New Spicer Meadow Powerhouse throughput volumes, water years 2014 through 2025.

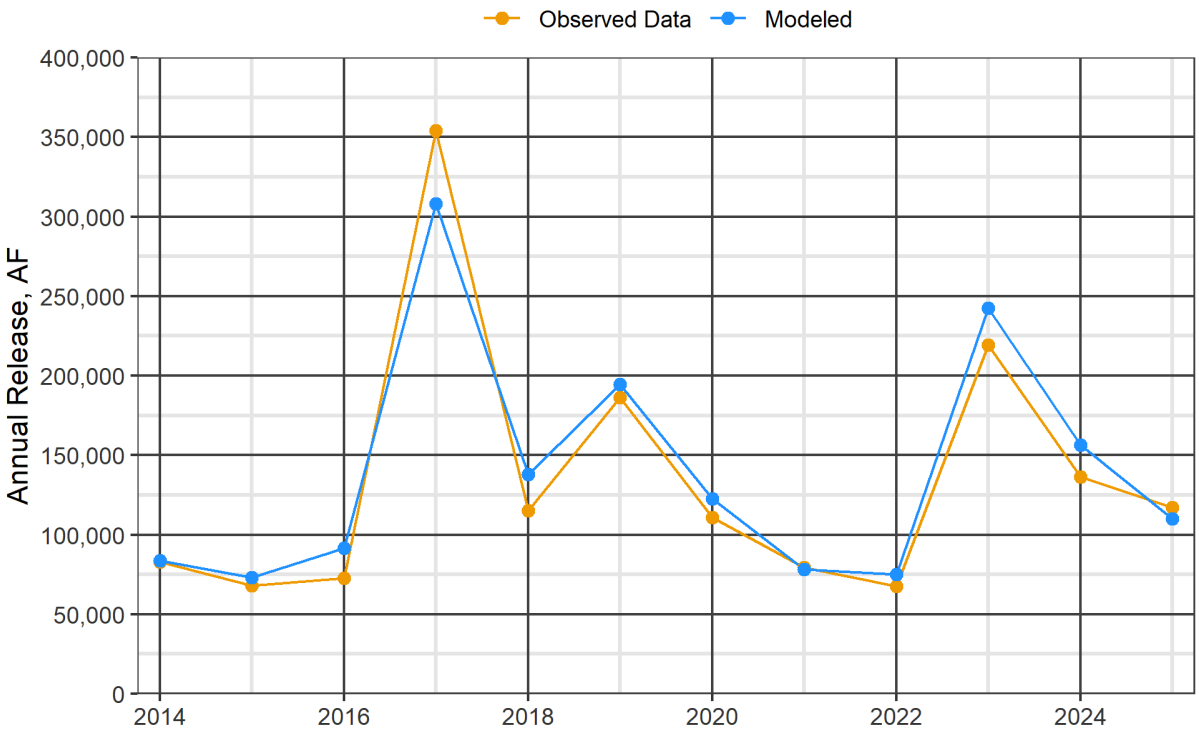


Figure 10. Annual New Spicer Meadow release to Highland Creek, water years 2014 through 2025.

3.0 North Fork Stanislaus River Flow at Avery

The Project maintains a streamgage on the North Fork Stanislaus River at Avery, upstream of McKays Point Reservoir, which is the compliance point for the Project's minimum instream flow requirement at Big Trees State Park. The minimum instream flow requirement at Big Trees State Park is 100 cfs in November through May and 150 cfs in June through October.

Average daily seasonal flow in the North Fork Stanislaus River at the Avery streamgage is shown in Figure 11. Monthly average flow in the North Fork Stanislaus River at the Avery streamgage is shown in Figure 12. Annual flow volumes at the Avery streamgage are shown in Figure 13. Figures 11 through 13 show that the synthetic North Fork Stanislaus unimpaired hydrology agrees with observed.

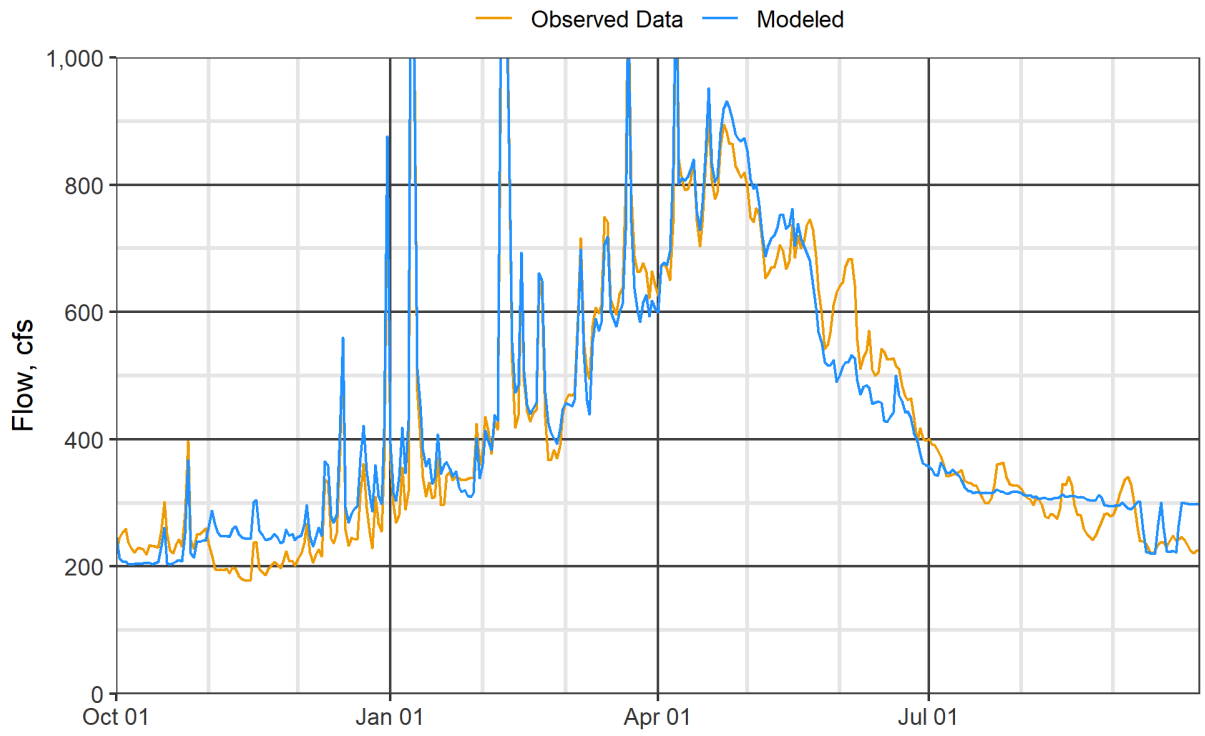


Figure 11. Average daily seasonal flow in North Fork Stanislaus River at Avery streamgage, water years 2014 through 2025.

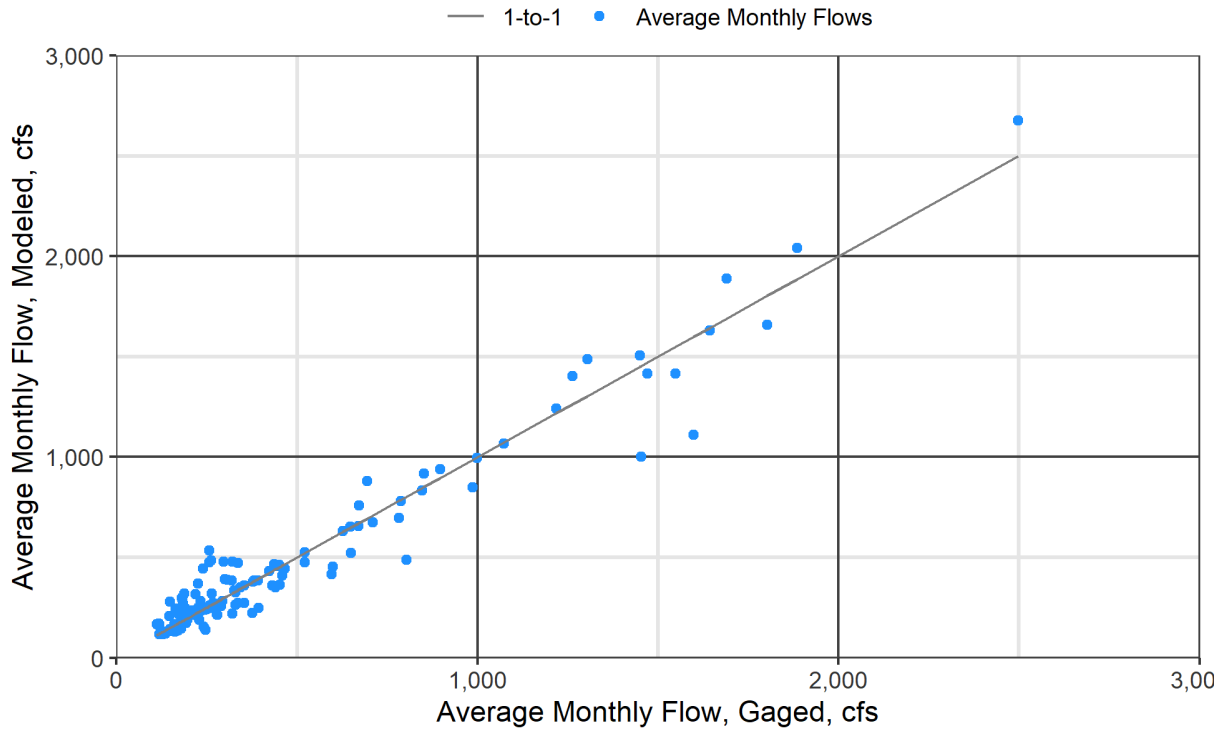


Figure 12. Monthly average North Fork Stanislaus River flow at Avery streamgage, water years 2014 through 2025.

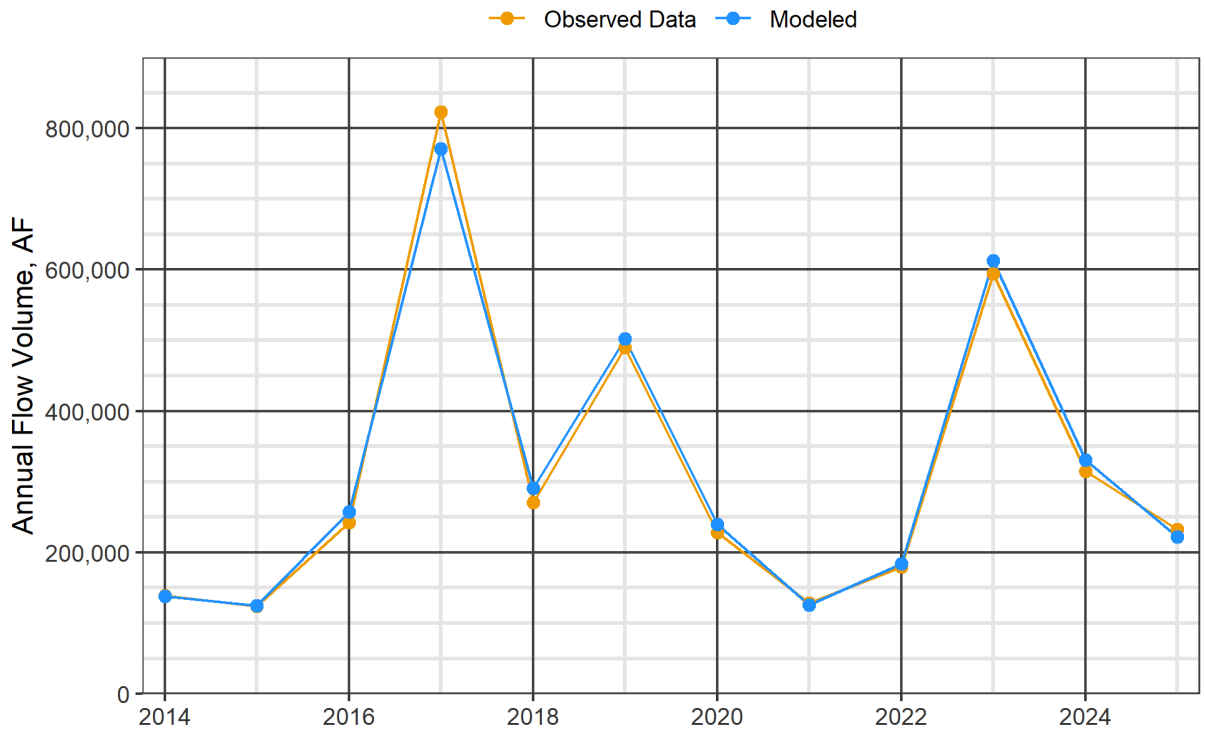


Figure 13. Annual flow at the North Fork Stanislaus at Avery streamage, water years 2014 through 2025.

4.0 Beaver Creek Diversion Dam

The Beaver Creek Diversion Dam diverts water to McKays Point Reservoir through a tunnel with a capacity of 400 cfs. There is a 20 cfs minimum instream flow requirement below the Beaver Creek Diversion dam which is modeled with a 2 cfs buffer flow. When inflows recede at the end of the runoff season, storage is used to maintain minimum instream flows until the reservoir reaches dead pool. After the reservoir reaches dead pool, diversions are stopped until inflow exceeds 30 cfs at the beginning of the next runoff season.

The Beaver Creek diversion tunnel had no flow in mid-January 2017 through November 17 due to operational complications resulting from high flows. Because of this situation, Beaver Creek modeled diversions and modeled releases to Beaver Creek do not match historical data in 2017. This effect can be seen in the average daily seasonal plots in Figure 14 and Figure 15, in annual Diversions shown in Figure 16, and annual Releases shown in Figure 17.

When 2017 is removed from the analysis, model flows match observed much more closely as shown in Figure 18 and Figure 19. Remaining differences between modeled and observed releases are generally due to large diurnal fluctuations in reservoir inflow and sediment management issues in wetter years which are not included in the model.

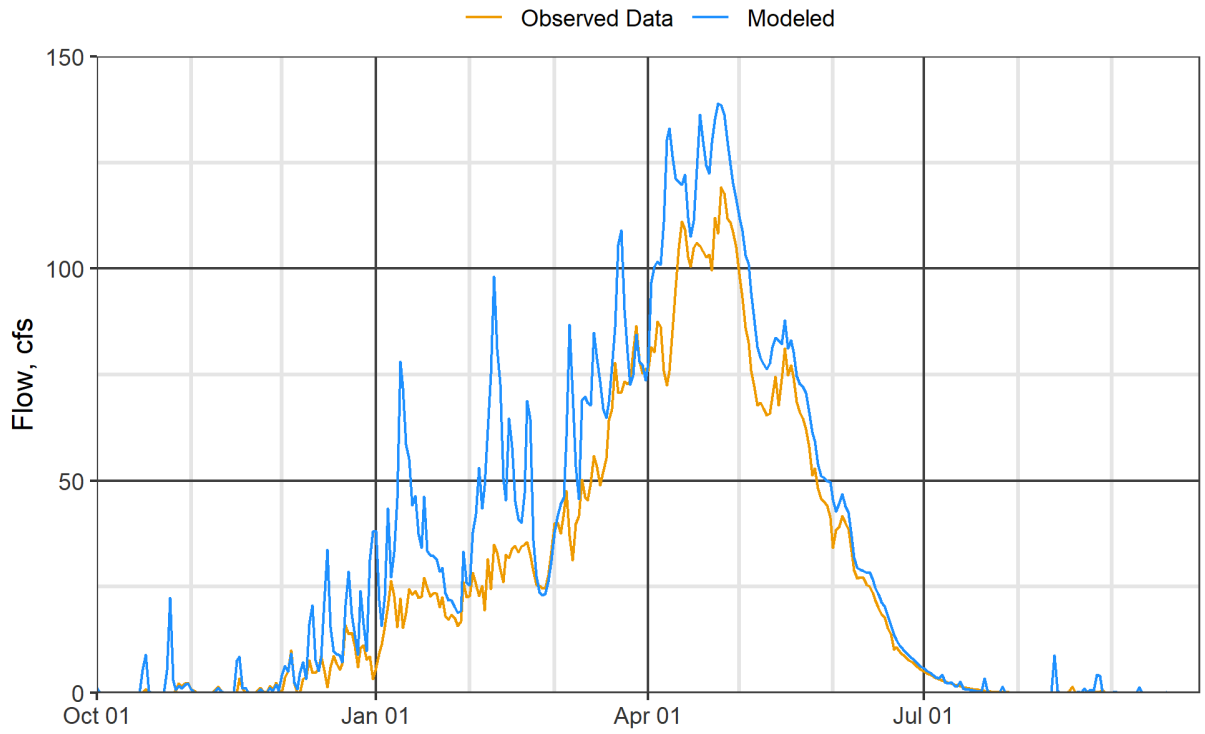


Figure 14. Average daily seasonal diversions from Beaver Creek Diversion Dam, water years 2014 through 2025.

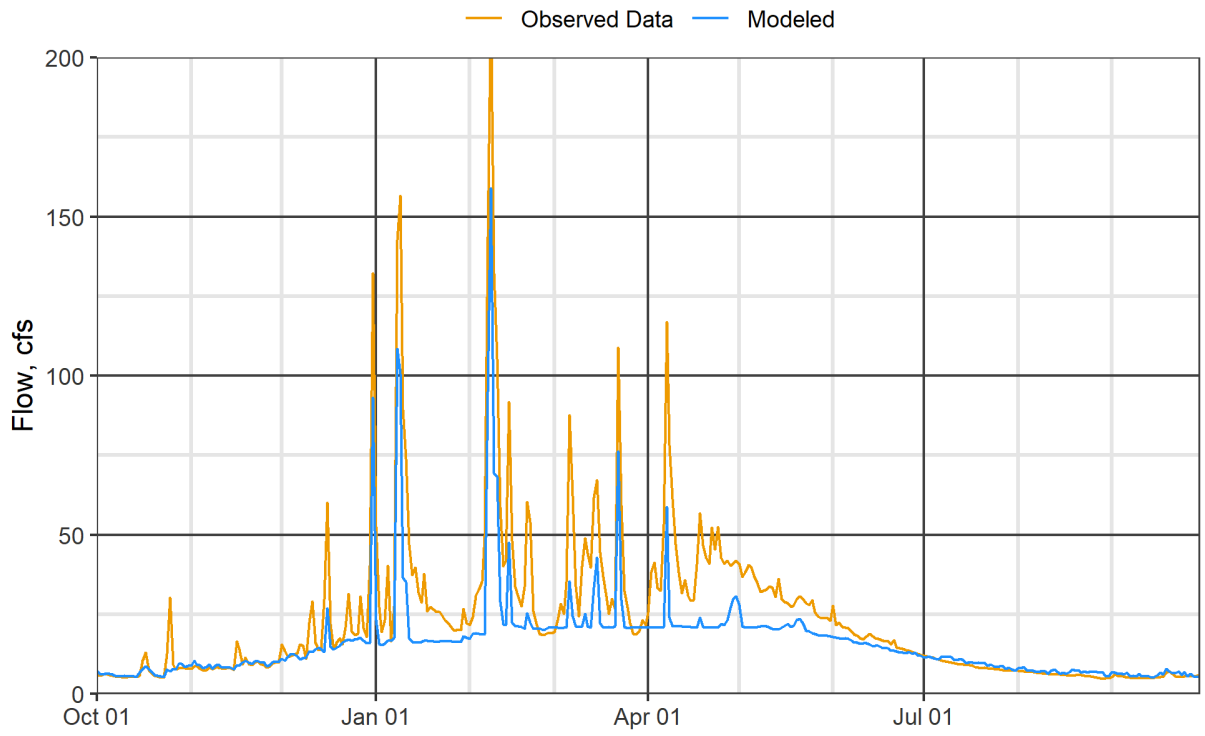


Figure 15. Average daily seasonal Beaver Creek Diversion Dam releases to Beaver Creek, water years 2014 through 2025.

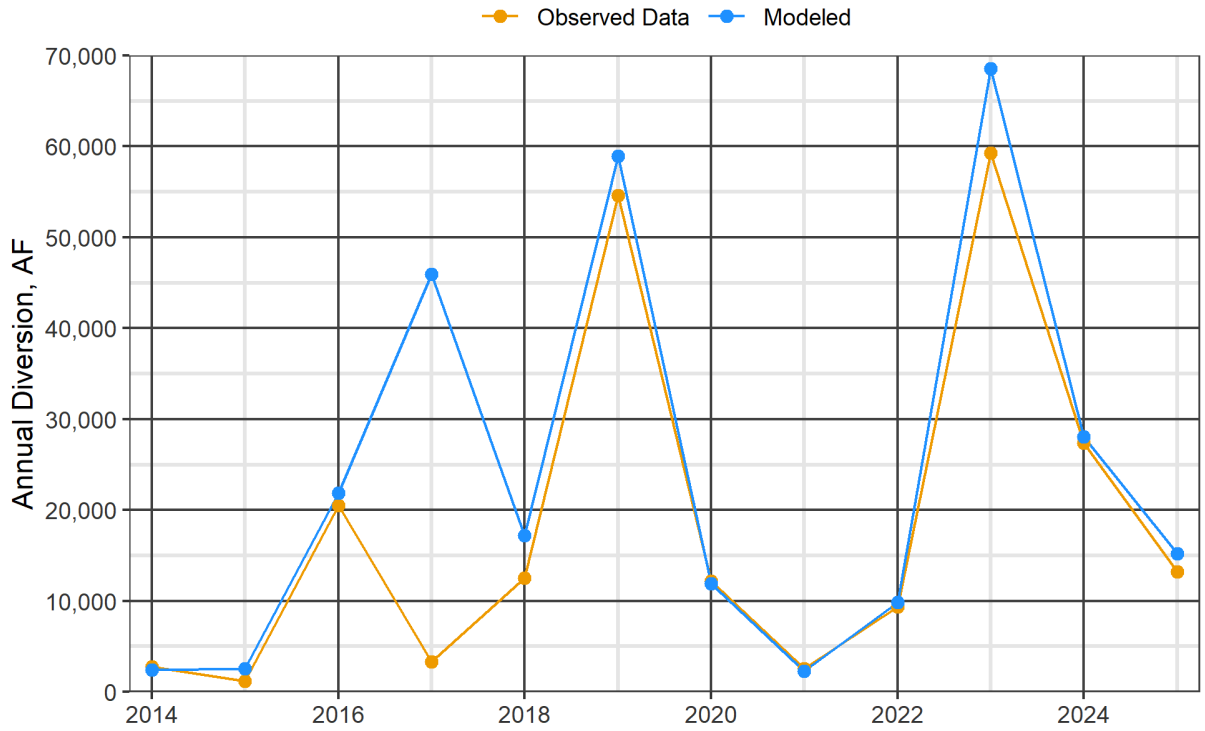


Figure 16. Annual diversions from Beaver Creek Diversion Dam, water years 2014 through 2025.

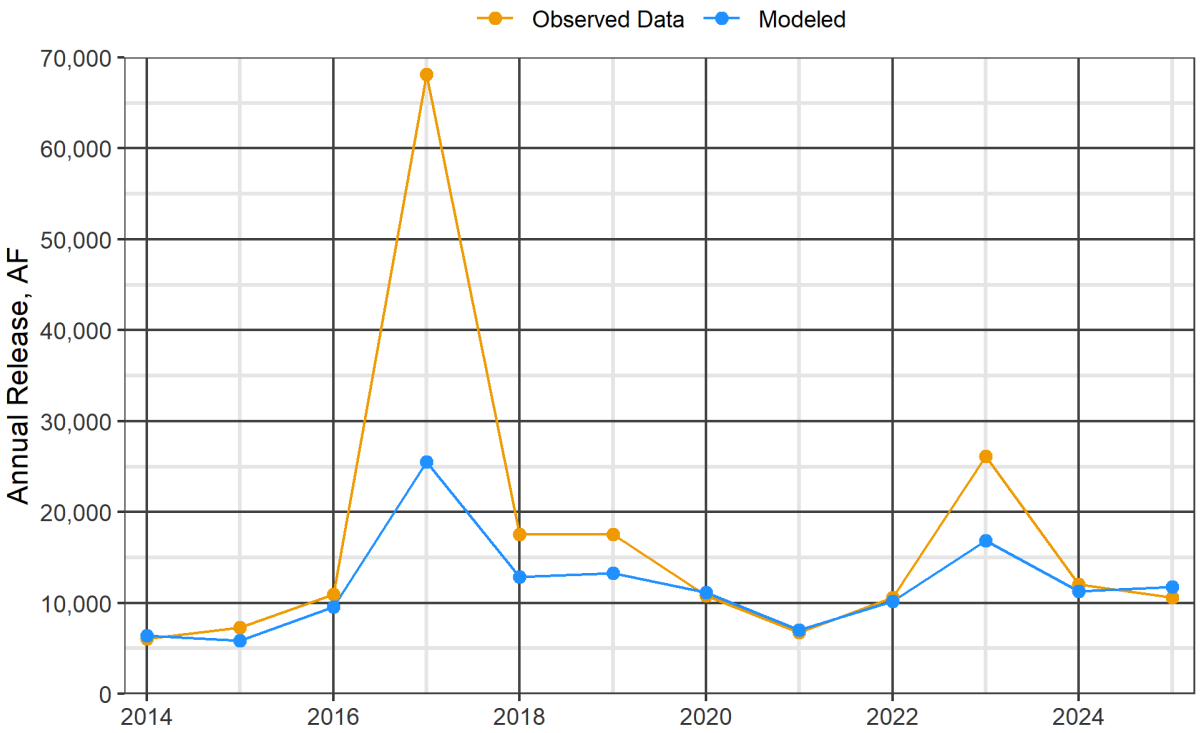


Figure 17. Annual releases to Beaver Creek from Beaver Creek Diversion Dam, water years 2014 through 2025.

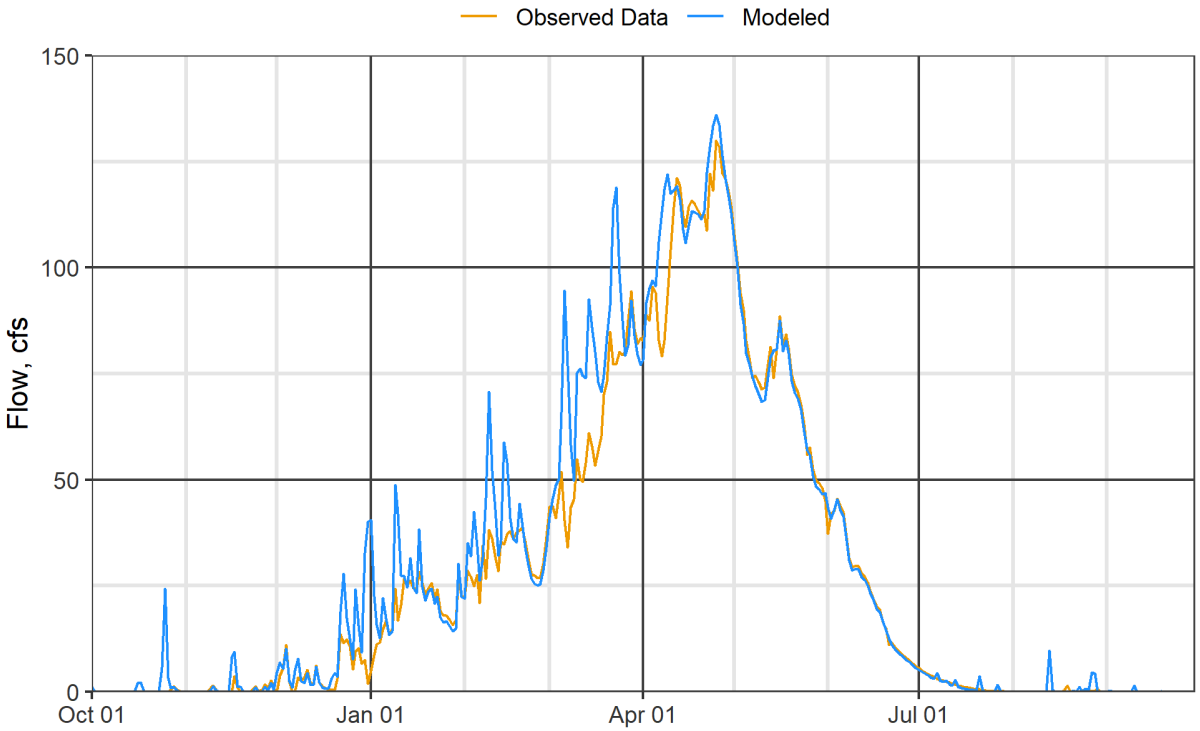


Figure 18. Average daily seasonal diversions from Beaver Creek Diversion Dam, water years 2014 through 2025, excluding 2017.

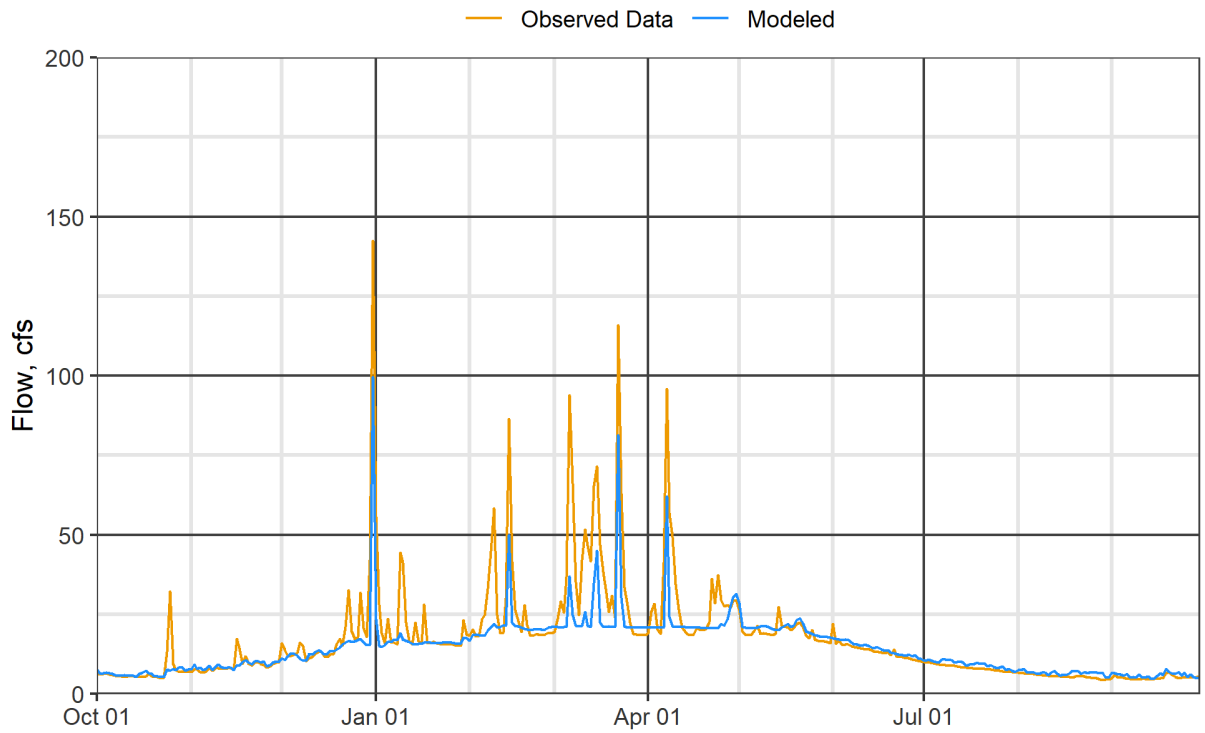


Figure 19. Average daily seasonal daily Beaver Creek Diversion Dam release to Beaver Creek, water years 2014 through 2025, excluding 2017.

5.0 McKays Point Reservoir

McKays Point Reservoir diverts water into the Collierville Tunnel, which conveys water into the Collierville Powerhouse. The Collierville Tunnel has a tap that diverts water from the tunnel for consumptive use. McKays Point Reservoir has minimum instream flow releases into the North Fork Stanislaus River, and excess inflow to the Reservoir is spilled into the North Fork Stanislaus River.

A significant portion of the flow through Collierville Powerhouse is accretion flows in the North Fork Stanislaus River. Flow through Collierville Powerhouse is also influenced by diversions from Beaver Creek, releases from the North Fork Diversion Dam, and releases from New Spicer Meadow. Collierville Powerhouse is run in the model as a peaking powerhouse with the flow being regulated by McKays Point Reservoir. The hourly peaking logic controlling the interactions between reservoir storage and powerhouse flows is described in greater detail in the NFSP Model documentation.

Differences in Collierville Powerhouse generation patterns are heavily influenced by the Beaver Creek tunnel outage in 2017, discussed in the Beaver Creek section.

Collierville Powerhouse average daily seasonal flows are shown in Figure 20. Average daily seasonal releases from McKays Point Reservoir to the North Fork Stanislaus River are shown in Figure 21. Collierville Powerhouse monthly throughput volumes are shown in Figure 22. Collierville Powerhouse annual throughput volumes are shown in Figure 23. McKays Point Reservoir annual releases to the North Fork Stanislaus River are shown in Figure 24.

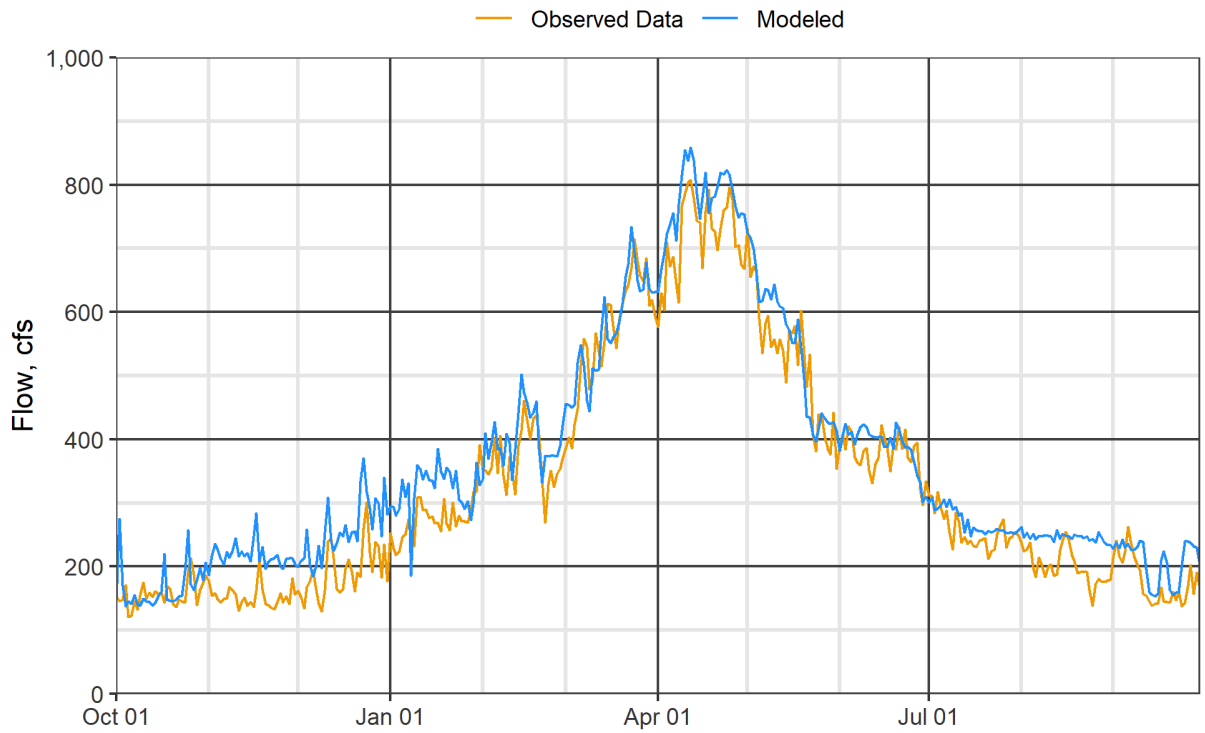


Figure 20. Average daily seasonal flow through Collierville Powerhouse, water years 2014 through 2025.

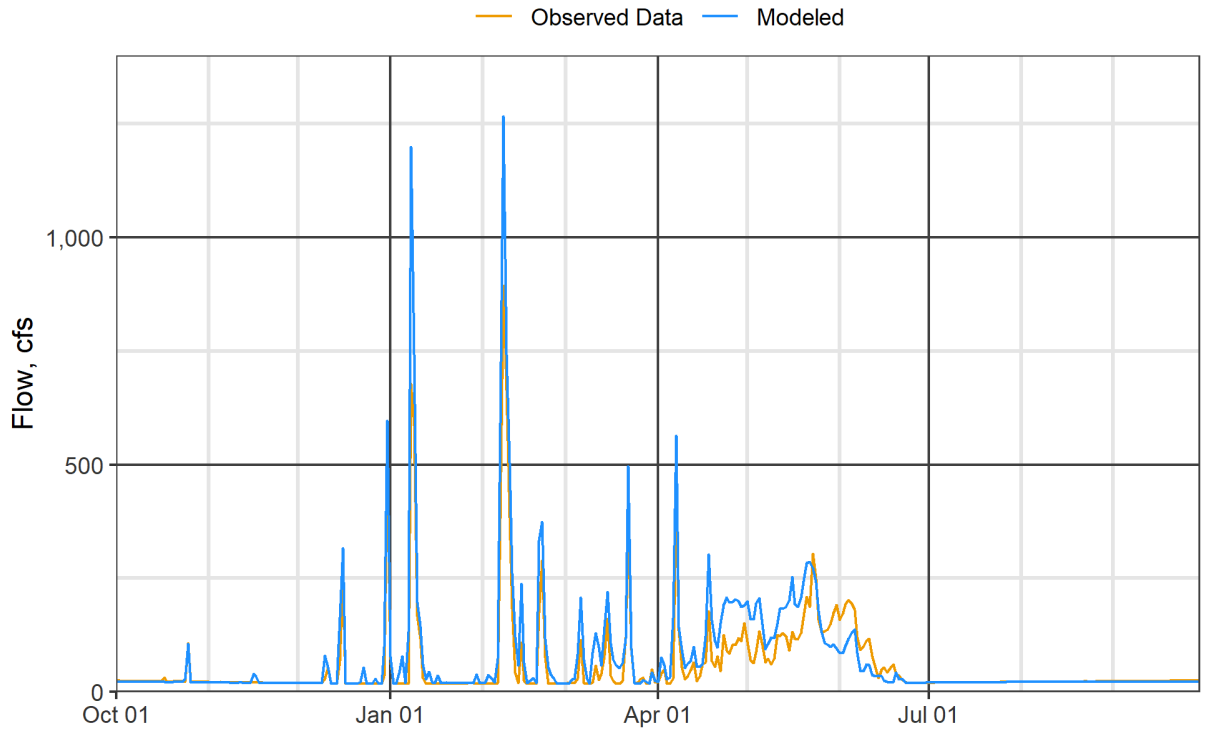


Figure 21. Average daily seasonal McKays Point Reservoir release to North Fork Stanislaus River, water years 2014 through 2025.

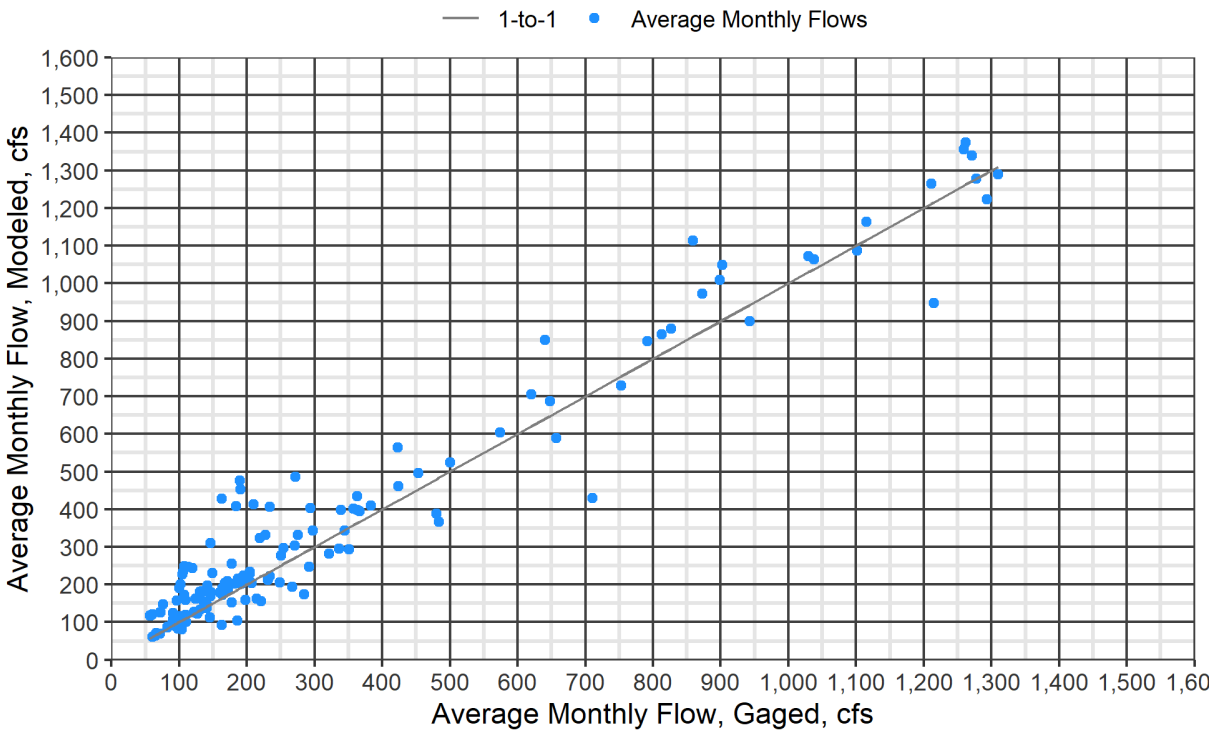


Figure 22. Monthly average Collierville Powerhouse flows, water years 2014 through 2025.

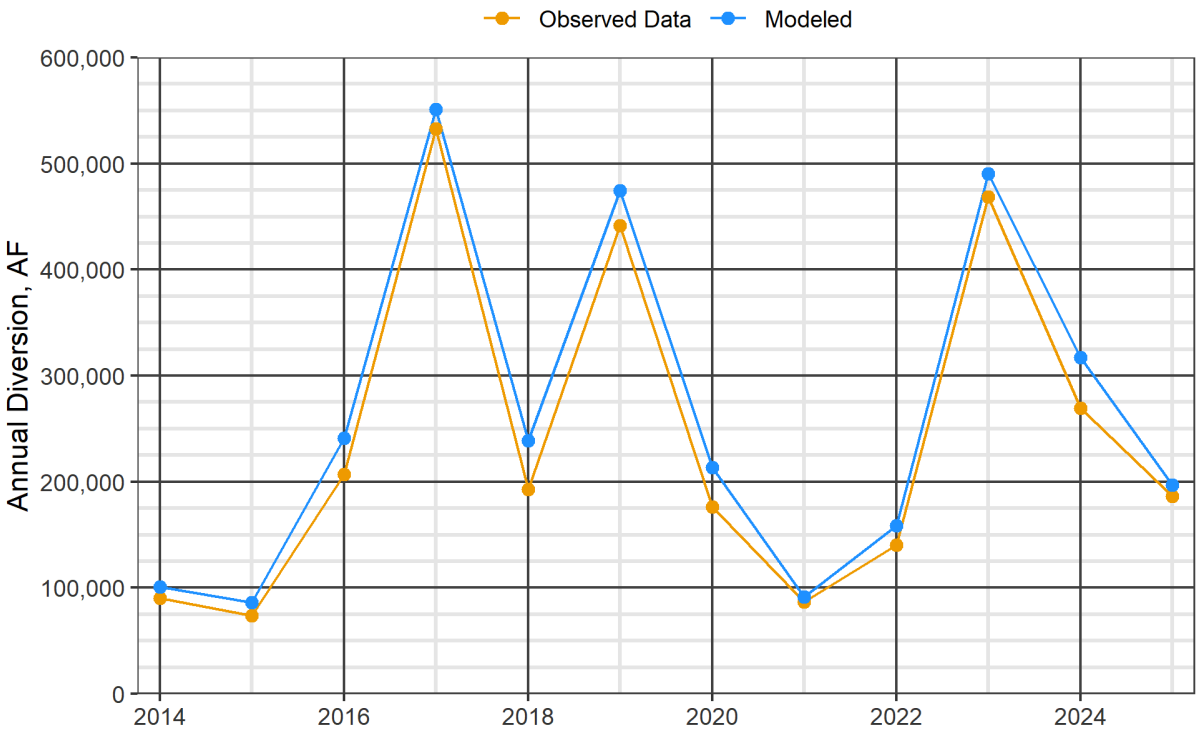


Figure 23. Annual Collierville Powerhouse flow volumes, water years 2014 through 2025.

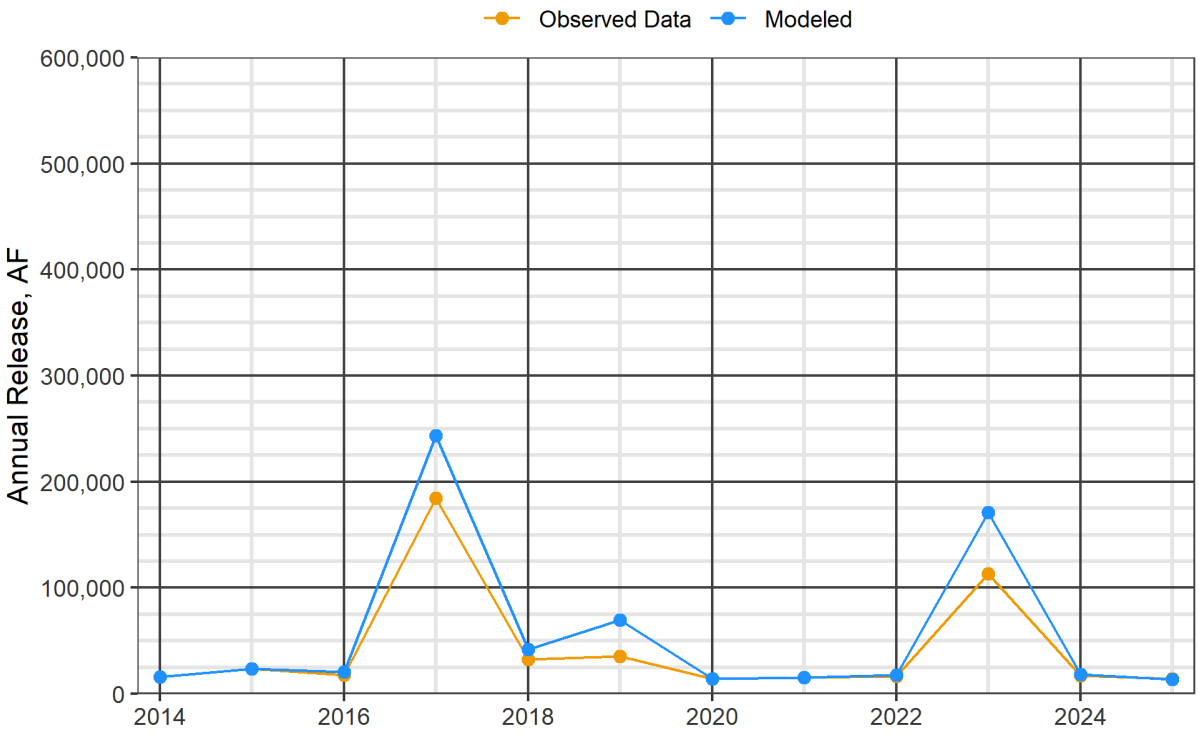


Figure 24. Annual McKays Point Reservoir releases to the North Fork Stanislaus River, water years 2014 through 2025.

6.0 Deliveries

Deliveries are made from the Collierville Tunnel Tap to two delivery points: CCWD's Water Treatment Plant and the Utica Water and Power Authority's water supply canals. The model uses historical deliveries to the Utica Water and Power Authority's water supply canals, and uses a recent historical average, averaged over 2022 through 2025, for demand at CCWD's Water Treatment Plant. Historical deviations in delivery to CCWD's Water Treatment Plant from the recent historical average result in deviations from historical Collierville Tunnel Tap flows.

Annual Flow through the Collierville Tunnel Tap is shown in Figure 25.

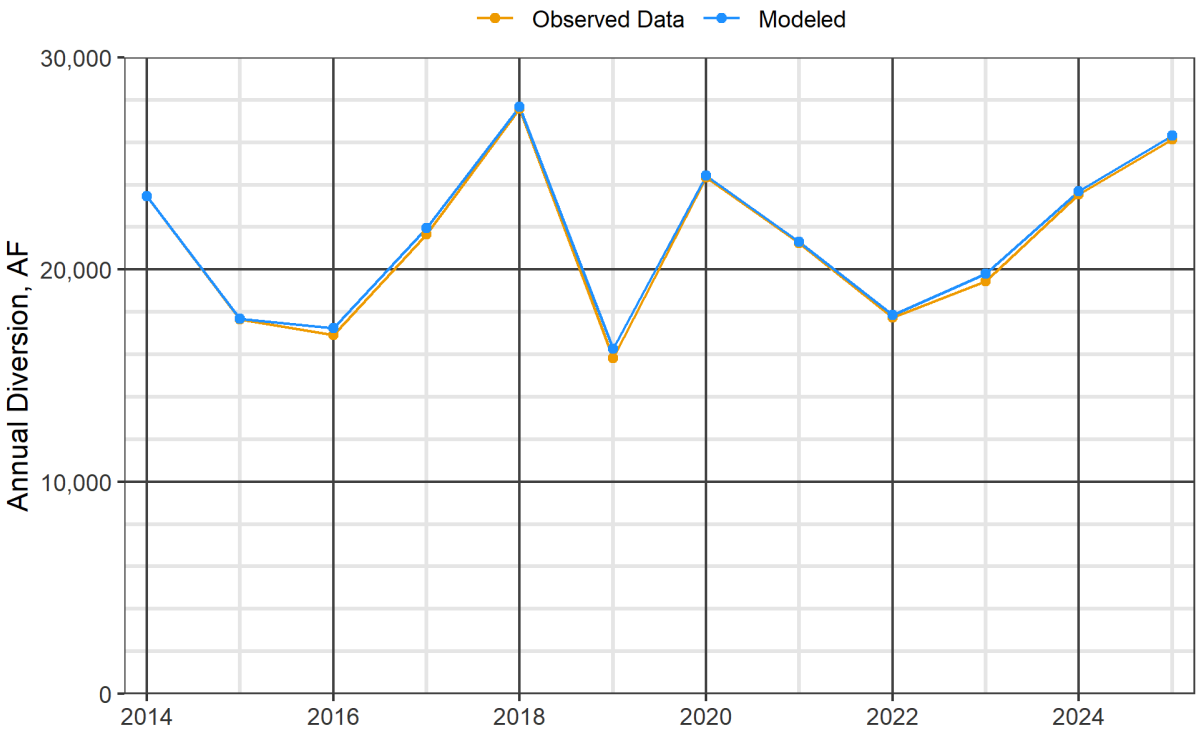


Figure 25. Annual flow volumes through the Collierville Tunnel Tap, water years 2014 through 2025.

Pre-Application Document

Appendix B2

Hydrology and North Fork Stanislaus Hydroelectric Project Water Balance/Operations Model Output Data

North Fork Stanislaus River Hydroelectric Project
FERC Project No. 2409

Prepared by:
Calaveras County Water District

September 2026

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The Hydrology and North Fork Stanislaus Hydroelectric Project Water Balance/Operations Model Output Data are included as a separate upload of Microsoft Excel™ files as part of this PAD filing.

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Pre-Application Document

Appendix B3

North Fork Stanislaus River Hydroelectric Project
FERC Project No. 2409

Prepared by:
Calaveras County Water District

September 2026

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ANNOTATED LICENSE - CURRENT FERC LICENSE REQUIREMENTS[1]

The Federal Power Commission's, the Federal Energy Regulatory Commission's (FERC) predecessor agency, issued an Order Issuing the License for the North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409, on February 8, 1982. The Order included 61 articles, of which 32 articles were FERC's standard Form L-2, Terms and Conditions of License for Unconstructed Major Project Affecting Lands of the United States. Of the 61 articles in the existing license, Articles 14, 27, 28, 34, 35, 36, 38, 39, 40, 42 through 49, 51 through 55, and 57 through 60 are "completed" or "no longer pertinent" because the articles pertain to an activity that has been completed or is no longer relevant, respectively. As a result, the existing license contains 35 active articles. The general topic of each active article is provided in Table 1.

Table 1. List of active articles in the existing FERC license for the North Fork Stanislaus Hydroelectric Project.

Article	Description	Article	Description
1	General	20	Keep clear to adequate width lands along open conduits and dispose of temporary structures, unused timber, brush, refuse, etc. and remove dead or dying trees along periphery of reservoirs
2	FERC approval of changes	21	Removal of timber on U.S. lands
3	FERC approval of changes	22	Preparation and suppression of wildfires on Project lands
4	FERC inspection and supervision	23	Use of water for fire suppression, sanitary and domestic needs on U.S.-owned lands
5	Acquire title in fee or land use for Project	24	Construction liability
6	Make good any defect of title	25	Permit use of US-owned lands for transportation and communication
7	FERC determines cost of Project	26	Approval of land management agency of roads, quarries, borrow pits on U.S. lands
8	Install and monitor stream gages	29	Disposal of mineral and vegetation on U.S. lands
9	Install additional capacity or other changes as directed by FERC	30	Surrender of license
10	Coordination with other projects	31	Licensee rights terminate at end of license unless new license is issued
11	Headwater or other Project benefits	32	Terms and conditions of Federal Power Act
12	Navigable waters and public use releases	33	Control of vectors
13	Reasonable use of reservoir or lands	37	Minimum flows
15	Construct, maintain, and operate fish and wildlife facilities as ordered by FERC	41	Avoid or minimize disturbance to natural, scenic, historical, and recreational values of the Project Area
16	Allow U.S. agencies at their own expense to construct, maintain, and operate fish and wildlife facilities on Project lands and waters	50	Water level fluctuations in streams
17	Construct, maintain, and operate recreation facilities as ordered by FERC	56	Payment of annual charges
18	Allow public free access to Project lands and waters	61	Lease of Project lands
19	Take reasonable measures to prevent, soil erosion, stream sedimentation, and any form of water or air pollution	**Total = 35 Active Articles**	

[1] This document is CCWD's good faith effort to provide a description of the current license requirements (i.e., the requirements of the existing license as amended during the license term) and meets the requirements of 18 C.F.R. §5.6(d)(2)(v)(A). CCWD may update this description periodically during relicensing.

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Articles in the existing FERC Project license are shown below. Unless otherwise noted, the article that was included in the Order Issuing the License and has not been amended by FERC. Articles that are completed or out-of-date are noted. The FERC Library accession number of each FERC order (*i.e.*, an order that modified a license article) that amended an article is provided where available.

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.

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[On July 26, 1991, PG&E filed an amendment for P-2019 to include the tunnel tap water delivery facilities located downstream of the existing 30-inch-diameter butterfly guard valve at the Mill Creek tap into the P-2019 license.[2] FERC approved the amendment for P-2019 and also modified the facilities for P-2409 in an Order Amending License[3] on September 25, 1991.]

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 United States, 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.

[2] Available in FERC ELibrary at Accession Number 19910729-0108.
[3] Available in FERC ELibrary at Accession Number 19910927-0345.

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Article 6. In the event the project is taken over by the United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a nonpower licensee under the provisions of Section 15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, that the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

Article 7. The actual legitimate original cost of the project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Federal Power Act and the Commission's Rules and Regulations thereunder.

Article 8. The Licensee shall install and thereafter maintain gages and stream- gaging stations for the purpose of determining the state and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character and locations of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 9. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

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Article 10. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 11. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States, the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the cost of making the determinations pursuant to the then current regulations of the Commission under the Federal Power Act.

Article 12. The operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Commission may prescribe for the purposes hereinbefore mentioned.

Article 13. On the application of any person, association, corporation, Federal Agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

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Article 14. 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.

[On February 12, 1992, FERC issued an Order Approving Partial Transfer of License, Amending License, and Issuing License (Transmission Line)[4] which transferred the Collierville and Spicer Meadows transmission lines to the Northern California Power Agency (NCPA). Since the Project no longer includes any transmission lines, CCWD considers this license article "out-of-date".]

Article 15. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 16. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 17. The Licensee shall construct, maintain, and operate, or shall arrange for the construction, maintenance, and operation of such reasonable recreational facilities, including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities, and utilities, giving consideration to the needs of the physically handicapped, and shall comply with such reasonable modifications of the project, as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal or State agencies, after notice and opportunity for hearing.

[4] Available in FERC ELibrary at Accession Number 19920218-0624.

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Article 18. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 19. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 20. The Licensee shall consult with the appropriate State and Federal agencies and, within three years of the date of issuance of this license, shall submit for Commission approval a plan for clearing the reservoir area. Further, the Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed.

Upon approval of the clearing plan all clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statues and regulations.

[CCWD filed a reservoir clearing plan[5] on June 17, 1985, which was approved by FERC[6] on August 2, 1985. CCWD subsequently filed a revised reservoir clearing plan[7] on November 16, 1987, which was approved by FERC[8] on January 14, 1988. CCWD considers this license article as it pertains to the Clearing Plan and clearing for initial construction "expired. The remainder of the article is "active".]

Article 21. Timber on lands of the United States 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

[5] Available in FERC ELibrary at Accession Number 19850619-0569.
[6] Available in FERC ELibrary at Accession Number 19850812-0185.
[7] Available in FERC ELibrary at Accession Number 19871130-0305.
[8] Available in FERC ELibrary at Accession Number 19880129-0009.

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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 22. 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 23. The Licensee shall interpose no objection to, and shall in no way prevent, the use by the agency of the United States having jurisdiction over the lands of the United States affected, or by persons or corporations occupying lands of the United States under permit, of water for fire suppression from any stream, conduit, or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license, or the use by said parties of water for sanitary and domestic purposes from any stream, conduit, or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license.

Article 24. 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 work 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 25. 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 26. In the construction and maintenance of the project, the location and standards of roads and trails on lands of the United States and other uses of lands of the United States, including the location and condition of quarries, borrow pits, and spoil disposal areas, shall be subject to the approval of the department or agency of the United States having supervision over the lands involved.

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Article 27. 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.

[On February 12, 1992, FERC issued an Order Approving Partial Transfer of License, Amending License, and Issuing License (Transmission Line)[9] which transferred the Collierville and Spicer Meadows transmission lines to the Northern California Power Agency (NCPA). Since the Project no longer includes any transmission lines, CCWD considers this license article "out-of-date".]

Article 28. 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.

[On February 12, 1992, FERC issued an Order Approving Partial Transfer of License, Amending License, and Issuing License (Transmission Line)[10] which transferred the Collierville and Spicer Meadows transmission lines to the Northern California Power Agency (NCPA). Since the Project no longer includes any transmission lines, CCWD considers this license article "out-of-date".]

Article 29. The Licensee shall cooperate with the United States in the disposal by the United States, under the Act of July 3l, 1947, 61 Stat. 681, as amended (30 U.S.C. sec. 601, et seq.), of mineral and vegetative materials from lands of the United States occupied by the project or any part thereof: Provided, That such disposal has been authorized by the Commission and that it does not unreasonably interfere with the occupancy of such lands by the Licensee for the purposes of the license: Provided further, That in the event of disagreement, any question of unreasonable interference shall be determined by the Commission after notice ad opportunity for hearing.

Article 30. 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.

[9] Available in FERC ELibrary at Accession Number 19920218-0624.
[10] Available in FERC ELibrary at Accession Number 19920218-0624.

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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 31. 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 32. 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 33. The Licensee shall implement measures necessary for the control of vectors at the project, and shall obtain the recommendations of the State of California and the appropriate mosquito control district. In the event of the Licensee's failure to undertake effective control measures, the Commission reserves the right to order the Licensee to take appropriate measures for the control of vectors at the project.

Article 34. The Licensee, following consultation with the U.S. Forest Service and the California Department of Fish and Game, shall file with the Commission's Regional Engineer in San Francisco, California, and the Director, Office of Electric Power Regulation, prior to any ground disturbing activity, a detailed plan to control soil erosion and to minimize the quantity of inorganic sediments, or other potential pollutants resulting from construction of project facilities that would enter the North Fork Stanislaus River, Highland Creek, Beaver Creek, and the Stanislaus River. This plan shall include an implementation schedule, maintenance program, and evidence of agency consultation. The Director, Office of Electric Power Regulation may require changes in the plan to minimize erosion, sedimentation, or water pollution.

[CCWD filed an Erosion Control Plan[11] on August 6, 1985, and documentation of consultation[12] on January 30, 1987. On February 21, 1986, FERC advised the materials filed by CCWD met the requirements of the Article.[13] CCWD considers this license article "out-of-date".]

[11] Available in FERC ELibrary at Accession Number 19850808-0260.
[12] Available in FERC ELibrary at Accession Number 19860210-0233.
[13] Available in FERC ELibrary at Accession Number 19860221-0732.

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Article 35. The Licensee shall, in cooperation with the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the California Department of Parks and Recreation conduct a thermal prediction analysis to estimate downstream water temperatures during project operation, and to determine the type of outlet structure needed at Spicer Meadow Dam for the purpose of releasing water of suitable temperature for downstream fishery and recreational uses. The thermal prediction analysis shall include that section of the North Fork Stanislaus River from the confluence with Highland Creek to below the proposed McKays Point Diversion Dam. A report on the results of the analysis with recommendations and evidence of agency consultation shall be filed with the Commission within two years from the date of issuance of this license.

Further, the Licensee shall consult with the above resource agencies in the design of any outlet structure shown to be needed by the studies. Final design of any outlet structure shall be filed on the appropriate Exhibit L drawing for Commission approval pursuant to Article 52.

[CCWD filed a report on the analysis of water temperature[14]on January 22, 1985. CCWD considers this license article "out-of-date".]

Article 36. The Licensee shall, in cooperation with the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the California Department of Parks and Recreation conduct a three-year post operation study to determine an operation schedule needed to release water of suitable temperature from Spicer Meadow Dam for downstream fishery and recreational uses. A report of the post-operation study with recommendations for any project modification shall be filed with the Commission within one year following its completion.

[CCWD filed a Post-Construction Water Temperature Study Plan[15] on March 23, 1989. FERC approved the plan with modifications[16]on March 7, 1990. CCWD filed a final report[17] on November 8, 1994. CCWD considers this license article "out-of-date".]

Article 37. The Licensee shall release a continuous minimum flow of 16.5 cfs immediately below Spicer Meadow Dam and below McKays Diversion Dam and a flow of 16.5 cfs or the natural inflow, if less, below the North Fork Diversion Dam and below Beaver Creek Diversion Dam. After the project becomes operational, the Licensee shall, in cooperation with the California Department of Fish and Game and the U.S. Fish and Wildlife Service, evaluate the minimum f1ow below McKays Diversion Dam to determine the adequacy and any modifications needed to protect and enhance the downstream aquatic habitat and fish resources of the North Fork Stanislaus River. Further, Licensee shall file, within 2 years after the project becomes operational, the results of the evaluation, evidence of agency consultation and, for Commission approval, recommendations for any proposed modification of the minimum flow.

[14] Available in FERC ELibrary at Accession Number 19850128-0256.
[15] Available in FERC ELibrary at Accession Number 19890419-0109.
[16] Available in FERC ELibrary at Accession Number 19900308-0455.
[17] Available in FERC ELibrary at Accession Number 19941116-0309.

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Article 38. The Licensee, following consultation with the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the U.S. Forest Service, shall file, within five years from the date of issuance of this license, a revised Exhibit S for approval, which shall include:

(1) a detailed fish management plan for Spicer Meadow Reservoir and the North Fork Stanislaus River, including consideration of stocking, reservoir operating levels, rate of change in flow releases, and other measures to protect and enhance the fish resource;

(2) a detailed comprehensive plan for the mitigation and enhancement of the wildlife resources affected by the construction, operation, and maintenance of the project including clearing and revegetation of the penstock right-of-way lands to include, among other things, development and maintenance procedures, materials, and a schedule for implementation of the wildlife mitigation plan. The plan shall also specify the location and acreage of replacement lands for Gabbot Meadow, and

(3) estimated costs, and the portion to be paid by the Licensee and any other entities for implementing the fish and wildlife management plans.

[FERC's August 8, 1984, Order[18] amended Article 38 to give CCWD an additional two years to submit the revised Exhibit S. CCWD submitted a Revised Exhibit S[19] on February 3, 1988. On June 16, 1989, FERC approved the Revised Exhibit S.[20] Two outside or licensing agreements are particularly relevant to Exhibit S. the first is a February 1991 agreement that was fully executed on August 13, 1991, between CCWD, CDFW, and the United States Department of the Interior, Fish and Wildlife Service (USFWS).[21] The agreement pertained to mitigation and replacement of lands for wildlife loses, especially for those lost by inundation of Gabbot Meadow by the New Spicer Meadows Reservoir. The parties agreed the agreement provided full mitigation regarding these potential and real Project impacts for wildlife loses due to the construction and operation of the reservoir. The more relevant items of the agreement were: 1) CCWD would purchase Segales Meadow (i.e., Replacement Meadow); 2) CCWD would donate the purchased land to the U.S. for administration as part of the Stanislaus National Forest; 3) CCWD would enter into a $65,000 Wildlife Collection Agreement with the Forest Service for certain initial enhancements to the Replacement Meadow to be made by the Forest Service; 4) CCWD and the agencies would visit the Replacement Meadow each year to agree on annual maintenance measures; 5) CCWD would fund the Forest Service up to $25,000 annually to perform the annual maintenance; and 6) CCWD would monitor effectiveness every year for the first 5 years and then every fifth year for the term of the license. The agreement included measures at Corral Meadow, Big Flat, Sandy Meadow, Lower Pacific Valley, and Upper Gardner / Bear Tree Meadow / Half Moon Lake. CCWD purchased the Replacement Meadow, deeded it to the United States, provided the initial funding, participated in the inspections, and funded and is continuing to fund the annual maintenance. The Replacement Meadow and other meadows were not made part of P-2409 (i.e., not Project facilities or within the FERC Project Boundary).

[18] Available in FERC ELibrary at Accession Number 19840820-0012.
[19] Available in FERC ELibrary at Accession Number 19880218-0096.
[20] Available in FERC ELibrary at Accession Number 19890619-0472.
[21] Not available in FERC ELibrary; available from CCWD upon request.

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The second relevant outside of licensing agreement is a November 30, 1988, agreement between CCWD, NCPA, and CDFW[22] that required mitigation for project impacts to fish and wildlife due to construction in Clark's Flat, the North Fork Stanislaus River, and Hobart Creek (tributary to New Spicer Meadows Reservoir). The parties agreed the 1988 Agreement provided full mitigation regarding these potential and real Project construction and operations impacts in these areas. The more relevant items of the agreement were: 1) NCPA would pay to CDFW $500,000 for the purchase of Hope Valley in Alpine County, CA; 2) NCPA would arrange for the title of the purchased lands to be vested in the State of California; 3) the State would manage the lands for fish and wildlife mitigation and recreational use of those resources; and 4) NCPA would reimburse CDFW for operation and maintenance expenses of the purchased lands up to $200,000 with payment requests to be on an annual basis with 10 yearly payments of $20,000. NCPA provided the funding to CDFW, CDFW purchased the portion of Hope Valley, vested it with the State, and as of 2025, NCPA's remaining liability is approximately $170,000 because CDFW has not been consistent in submitting invoices to NCPA and requesting reimbursement. The purchased lands were not made part of P-2409 (i.e., not Project facilities or within the FERC Project Boundary). CCWD considers this license article complete.]

Article 39. The Licensee, in cooperation with the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the U.S. Forest Service, shall monitor wildlife mitigative measures, file with the Commission during project construction annual progress reports; and within 3 years following commencement of commercial operations, file a final report showing the findings of this program together with recommendations on the need for modifications of physical structures and additional measures to further protect and enhance wildlife.

[CCWD filed materials related to Article 39[23] on February 18, 1994. FERC confirmed the materials adequately fulfilled the final requirements for Article 39[24] on April 26, 1994. CCWD considers this license article complete.]

Article 40. The Licensee shall arrange for a preconstruction survey of all areas proposed to be disturbed by project construction or operation to determine the impacts, if any, on endangered or threatened species of flora and fauna. This survey shall be conducted by a professional(s) in the fields of botany and wildlife, and shall include the transmission line right-of-way, spoil sites, construction campsites, roads, laydown areas, and other project facility sites. The Licensee shall provide for a review of this survey by the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the U.S. Forest Service. Should it be determined from the survey that specimens of any threatened or endangered species of flora or fauna would be adversely affected by the construction or operation of the project, the Licensee shall cooperate with the aforementioned agencies in developing and implementing a mitigation plan for the affected species. A copy of the plan shall be filed with the Commission.

[22] Not available in FERC ELibrary; available from CCWD upon request.
[23] Available in FERC ELibrary at Accession Number 19940302-0162.
[24] Available in FERC ELibrary at Accession Number 19940512-0202.

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[FERC issued a letter on May 29, 1985 informing CCWD that all requirements of Article 40 were met.[25] CCWD considers this license article complete.]

Article 41. The Licensee shall avoid or minimize any disturbance caused by construction and maintenance of the project works to the natural, scenic, historical, and recreational values of the Project Area, blending project works with natural views and revegetating, stabilizing, and landscaping all construction laydown areas, access road cuts, borrow and fill areas, and spoil areas as soon as practicable after construction.

Article 42. The Licensee shall cooperate with the California Department of Parks and Recreation in its baseline study of pre-project riparian vegetation along the North Fork Stanislaus River in Calaveras Big Trees State Park. Licensee shall continue to cooperate in monitoring the status of the riparian vegetation within the park boundaries for two years following commencement of commercial operations to determine the effects, if any, of project operations. If the study indicates that project operations have adversely affected riparian vegetation in the park, Licensee shall, in consultation with the California Department of Parks and Recreation, file with the Commission a plan to compensate the Department of Parks and Recreation for the removal of riparian vegetation that has been adversely affected by project operations.

[CCWD submitted a report on riparian vegetation[26] on June 25, 1992. CCWD considers this license article complete.]

Article 43. Licensee shall, in cooperation with the California Department of Parks and Recreation, during the second summer season (June through August), following commencement of commercial operation of project facilities, monitor safety conditions at the swimming area adjacent to the bridge over the North Fork Stanislaus River within Calaveras Big Trees State Park and file with the Commission, within six months following completion of the monitoring program, a report outlining any measures necessary to reduce safety hazards and to mitigate the possible loss of recreational opportunities.

[CCWD filed an application to amend Article 43[27] on July 19, 1991, to include a third summer of monitoring. FERC approved the request[28] on November 12, 1991. CCWD filed a mitigation plan[29] on January 31, 1995, and supplemental information[30] on September 5, 1995. FERC approved the mitigation plan[31] on May 6, 1996. CCWD considers this license article complete.]

[25] Available in FERC ELibrary at Accession Number 19850604-0069.
[26] Available in FERC ELibrary at Accession Number 19920629-0167.
[27] Available in FERC ELibrary at Accession Number 19910722-0169.
[28] Available in FERC ELibrary at Accession Number 19911115-0230.
[29] Available in FERC ELibrary at Accession Number 19950202-0046.
[30] Available in FERC ELibrary at Accession Number 19950911-0042.
[31] Available in FERC ELibrary at Accession Number 19960513-0123.

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Article 44. Licensee shall, within one year from the date of issuance of this license, file for Commission approval an amendment to the Exhibit R describing Licensee's program for the development, operation, and maintenance of recreational facilities at Utica and Union Reservoirs.

[Utica and Union reservoirs are no longer part of P-2409. The reservoirs were originally part of Pacific Gas and Electric Company's (PG&E) Utica Project, FERC Project No. 2019 (P-2019). On May 5, 1994, PG&E filed with FERC an application for a new license for P-2019, and NCPA filed a competing application. On November 29, 1995, FERC approved a transfer of the P-2019 license from PG&E to CCWD, and in the same order approved a transfer of the reservoirs and Lake Alpine from CCWD to NCPA as P-11563 and the transfer of PG&E's Angels Project, FERC Project No. 2699 (P-2699) from PG&E to CCWD. The remaining portions of P-2019 retained the project number P-2019.[32] Subsequently, CCWD transferred the P-2019 license to the Utica Power Authority (UPA), which later changed its name to the Utica Water and Power Authority (UWPA). On July 22, 1997, NCPA filed an application for new license for P-11563 in competition with an application from the UPA. On September 3, 2003, in conformance with a July 28, 1997, settlement agreement between NCPA and UPA, FERC issued to NCPA a new license for P-11563 with a term of 30 years expiring on August 31, 2033.[33] The new licenses for P-2019 and P-2699 expire on August 31, 2033. Since Utica and Union reservoirs are not part of P-2019, CCWD considers this article out-of-date.]

Article 45. Licensee shall, prior to the start of project construction, consult and cooperate with Calaveras County officials concerning housing accommodations for project-related workers.

[The Project was constructed in accordance with Article 45 and CCWD considers this license article complete.]

Article 46. Licensee shall, prior to the start of project construction, provide to the Vallecito Unified School District, Mark Twain Union Elementary School District, and Bret Harte Union High School District, funds equal to the difference between the incremental operating expenditures required to accommodate students who are dependents of project-related workers and the incremental revenues received from the State for the enrollment of these students.

[The Project was constructed in accordance with Article 46 and CCWD considers this license article complete.]

Article 47. Licensee shall, prior to the start of project construction, provide to the Calaveras County Office of Sheriff, a sufficient amount of money to offset the additional costs of public safety necessitated by construction activities and the influx of project-related workers and their dependents into Calaveras County.

[32] Federal Energy Regulatory Commission. 1995. Order Approving Transfer of Licenses and Designating New Docket Number. Issued November 29, 1995.
[33] Federal Energy Regulatory Commission. 2003. Order Issuing New License. Issued September 3, 2003.

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[The Project was constructed in accordance with Article 47 and CCWD considers this license article complete.]

Article 48. Licensee shall reimburse Calaveras County for the costs of maintaining and repairing all portions of county roads that are impacted during construction by project-related truck traffic.

[The Project was constructed in accordance with Article 48 and CCWD considers this license article complete.]

Article 49. The Licensee shall, prior to commencement of any construction or land disturbance and the project, file for Commission review a comprehensive cultural resource management plan. This plan should be consistent with studies already agreed to by the Licensee, the California State Historic Preservation Officer (SHPO), and the U.S. Forest Service, and it should be prepared in consultation with these agencies. The plan should be prepared by a professional archeologist and, among other things, should include: (1) the results of any necessary resurvey or additional survey work; (2) an analysis of surface collections of artifacts and of test excavations at previously identified archeological sites; (3) information derived from an historic and ethnographic study of the Project Area; (4) refined evaluations of the significance of cultural resource sites discovered at the project; (5) specific proposals for the avoidance of, or mitigation of damage to, cultural resource properties that might be affected by project activities; and (6) a timetable for any data recovery that might be necessary. Any data recovery proposed as part of the management plan shall be reviewed by the SHPO and the Forest Service, and shall be carried out by the Licensee prior to disturbance of a particular site or sites. The Management plan shall be filed with the Commission prior to disturbance of a particular site or sites. The Licensee shall make available funds in a reasonable amount for any survey or data recovery work as required. 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 the SHPO to develop a mitigation plan for the protection of significant archeological or historical resources. If the Licensee and the SHPO cannot agree on the amount of money to be expended on archeological or historical 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.

[CCWD filed a summary of cultural resources information[34] in compliance with Article 49 on July 1, 1992. CCWD considers this license article complete.]

Article 50. Licensee shall operate the project in such a manner as not to cause fluctuations in the stream greater than one foot per hour, downstream of each project discharge facility, excluding Collierville Powerhouse. Licensee shall, in consultation with, and to the satisfaction of, the San Francisco Regional Engineer, establish the location of, and provide equipment for, measurement

[34] Available in FERC ELibrary at Accession Number 19920709-0126.

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of the stream fluctuation, downstream of each project discharge facility, excluding Collierville Powerhouse.

[FERC's March 6, 1987, Order Amending License[35] modified Article 50 to remove the requirement to not cause fluctuations in the stream greater than one foot per hour downstream of Collierville Powerhouse.]

Article 51. Licensee shall locate and design Collierville afterbay dam so that it does not eliminate the present whitewater rafting access point at Camp Nine Bridge.

[On February 3, 1987, CCWD filed an application for amendment[36] to remove the proposed Collierville afterbay dam after the level of New Melones Reservoir was raised which eliminated the free-flowing section of river downstream of Collierville Powerhouse under most conditions. FERC's March 6, 1987 Order Amending License[37] approved the request. CCWD considers this license article complete.]

Article 52. The Licensee shall submit for approval 60 days prior to the start of construction of project structures revised Exhibit L drawings showing the final design of the project structures and shall not commence construction of such project structures until the Exhibit L drawings have been approved by the Director, Office of Electric Power Regulation. The Spicer Meadow rockfill dam shall be adequately compacted as demonstrated by test fills and in accordance with U.S. Army Corps of Engineers Manual EM 110-2-2300. All dams as shown on the revised Exhibit L drawings shall be designed to be stable under Probable Maximum Flood and earthquake loading conditions consistent with basin characteristics and the history of the seismic activity in the area. The Licensee shall prior to, or simultaneously with the filing of the revised Exhibit L drawings, submit for review the detailed basis for determining the Probable Maximum Flood and the design earthquake. The Licensee shall also provide in its final design drawings facilities for diversion of water to the Utica ditch of Project No. 2019.

[CCWD filed revised Exhibit L drawings throughout the license term. FERC considers Exhibit L drawings as Controlled Unclassified Information - Critical Energy Infrastructure Information (CUI-CEII), not available for public release. The current list of FERC-approved Exhibit L drawings will be provided in CCWD's Pre-Application Document.]

Article 53. The Licensee shall file with the Commission's Regional Engineer and the Director, Office of Electric Power Regulation, one copy each of the contract drawings and specifications 60 days prior to the start of construction. The Director, Office of Electric Power Regulation, may require changes in the plans and specifications so as to assure a safe and adequate project.

[35] Available in FERC ELibrary at Accession Number 19870313-0279.
[36] Available in FERC ELibrary at Accession Number 19870210-0358.
[37] Available in FERC ELibrary at Accession Number 19870313-0279.

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[FERC waived the time requirement in Article 53[38] on May 11, 1988. CCWD submitted plans on July 18, 1988 and FERC responded in a letter[39] on August 16, 1988 that they found no significant deficiencies or errors. Additional revisions to drawings and exhibits are discussed elsewhere. CCWD considers this article complete.]

Article 54. The Licensee shall retain a Board of three or more qualified, independent, engineering consultants to review the design, specifications, and construction of the project for safety and adequacy. The names and qualifications of the Board members shall be submitted to the Director, Office of Electric Power Regulation, for approval. Among other things, the Board shall assess the geology of the project site; the design, specifications and construction of the dikes, dams, spillways, powerhouses, electrical and mechanical equipment involved in water control and emergency power supply; the filling schedule for the reservoirs; the construction inspection program; and construction procedures and progress. The Licensee shall submit to the Commission copies of the Board's report on each meeting. Reports reviewing each portion of the project shall be submitted prior to or simultaneously with the submission of the corresponding Exhibit L final design drawings. The Licensee shall also submit a final report of the Board upon completion of the project. The final report shall contain a statement indicating the Board's satisfaction with the construction, safety, and adequacy of the project structures.

[The Project was constructed in accordance with Article 54 and CCWD considers this license article complete.]

Article 55. Licensee shall locate and design Collierville Powerhouse so that it is protected from flooding damage when the New Melones Lake is at maximum water surface elevation.

[The Project was constructed in accordance with Article 55 and CCWD considers this license article complete.]

Article 56. The Licensee shall pay the United States the following annual charges, effective the first day of the month in which this license is issued:

(a) For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable annual charge as determined by the Commission in accordance with the provisions of its regulations, in effect from time to time. From January 1, 1994, the authorized installed capacity for that purpose is 258,726 kW. Under the regulations currently in effect, projects with an authorized installed capacity of less than or equal to 1.5 MW will not be assessed an annual charge.

(b) For the purpose of recompensing the United States for the use, occupancy, and enjoyment of its lands, a reasonable annual charge as determined by the Commission in accordance with its regulations in effect from time to time. The acreage of United

[38] Available in FERC ELibrary at Accession Number 19880609-0237.
[39] Not available in FERC ELibrary; available from CCWD upon request.

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States lands for that purpose will be determined after submission of "as-built" exhibits for approval.

[There have been several amendments to the Project's total installed capacity. CCWD submitted an amendment application to increase the FERC authorized installed capacity of the Project to 256.8 MW[40] on June 2, 1989, which FERC approved in an Order Amending License[41] on November 8, 1989. CCWD submitted a revised Exhibit M on June 21, 1991, increasing the Project's total FERC authorized installed capacity to 266.0 MW[42] which FERC approved[43] on June 28, 1991. CCWD filed an amendment to install a microturbine/generator unit at McKays Point Diversion Dam, which increased the Project's total installed capacity to 266.3MW[44] on April 22, 1991. FERC approved via an order Amending License[45] on March 12, 1992. FERC issued an Order Amending License[46] including increasing the Project's total installed capacity to 266.364 MW on May 14, 1993. FERC issued an Order Amending License including decreasing the Project's total installed capacity to 259.064 MW on September 30, 1994. FERC issued an Order Amending License[47] including decreasing the Project's total installed capacity to 258.726 MW on October 7, 1997.]

Article 57. Within one year from the date of commencement of operation of the project, the Licensee shall file for approval "as-built" Exhibits J, K and L drawings and Exhibit M, conforming with the Commission's regulations at that time, to show the project as finally constructed and located and the amount of U.S. lands occupied by it.

[CCWD submitted "as-built" Exhibits J, K, and L drawings and Exhibit M[48] on June 20, 1991. FERC approved the exhibits in an Order Amending License[49] on June 28, 1991. Additional revisions to drawings and exhibits are discussed elsewhere. CCWD considers this license article complete.]

Article 58. The Licensee shall commence construction of the project within 4 years from the effective date of this license and, in good faith and with due diligence, shall prosecute and complete construction of the project works within 8 years from the effective date of this license.

[FERC's January 13, 1984 Order[50] granted CCWD an additional two years to start and complete construction. The Project was constructed in accordance with Article 58 and CCWD considers this license article complete.]

[40] Available in FERC ELibrary at Accession Number 19890605-0587.
[41] Available in FERC ELibrary at Accession Number 19891113-0174.
[42] Available in FERC ELibrary at Accession Number 19910624-0199.
[43] Available in FERC ELibrary at Accession Number 19910703-0263.
[44] Available in FERC ELibrary at Accession Number 19910425-0116.
[45] Available in FERC ELibrary at Accession Number 19920316-0401.
[46] Not available in FERC ELibrary; available from CCWD upon request.
[47] Available in FERC ELibrary at Accession Number 19971007-3100.
[48] Available in FERC ELibrary at Accession Number 19910624-0199.
[49] Available in FERC ELibrary at Accession Number 19910703-0263.
[50] Available in FERC ELibrary at Accession Number 19840117-0247.

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Article 59. The Licensee for Project No. 2409 shall attempt to negotiate a settlement with Pacific Gas and Electric Company (PG&E) on the adequate compensation for the effects of Project No. 2409 on PG&E's licensed projects. The settlement shall provide compensation to PG&E for appropriate damages attributable to the proposed North Fork Stanislaus River Project No. 2409. If the Licensee and PG&E cannot reach settlement within six months from the date of issuance of this license, the Commission reserves the right to determine the appropriate compensation, after notice and opportunity for hearing.

[FERC approved an agreement between CCWD and PG&E[51] on October 2, 1989. CCWD considers this license article complete.]

Article 60. The Licensee shall review and approve the design and construction procedures for contractor-designed cofferdams and deep excavations prior to the start of construction. The Licensee shall file with the Commission's Regional Engineer and Director, Office of the Electric Power Regulation, one copy of the approved construction drawings and specifications, and a copy of the letter of approval.

[The Project was constructed in accordance with Article 60 and CCWD considers this license article complete.]

Article 61.

(a) In accordance with the provisions of this article, the Licensee shall have the authority to grant permissions for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain other types of use and occupancy, without prior Commission approval. The Licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the Licensee shall also have continuing responsibility to supervise and control the uses and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the Licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the Licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, cancelling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The types of use and occupancy of project lands and waters for which the Licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities; and (3)

[51] Available in FERC ELibrary at Accession Number 19891013-0234.

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embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the Licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The Licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the uses and occupancies for which it grants permission are maintained in good repair and comply with applicable State and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the Licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the Licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the Licensee's costs of administering the permit program. The Commission reserves the right to require the Licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modifications of those standards, guidelines, or procedures.

(c) The Licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges and roads for which all necessary State and Federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the Project Boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir. No later than January 31 of each year, the Licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The Licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary State and Federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary Federal and State water quality certificates or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the Project Boundary, for which all necessary Federal and State approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational

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resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 45 days before conveying any interest in project lands under this paragraph (d), the Licensee must file a letter to the Director, Office of Electric Power Regulation, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G or K map may be used), the nature of the proposed use, the identity of any Federal or State agency official consulted, and any Federal or State approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the Licensee to file an application for prior approval, the Licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraphs (c) or (d) of this article:

(1) Before conveying the interest, the Licensee shall consult with Federal and State fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the Licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved Exhibit R or approved report on recreational resources of an Exhibit E; or, if the project does not have an approved Exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include covenants running with the land adequate to ensure that: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; and (ii) the grantee shall take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project.

(4) The Commission reserves the right to require the Licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G or K drawings (Project Boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to

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exclude lands conveyed under this article from the project shall be consolidated for consideration when revised Exhibit G or K drawings would be filed for approval for other purposes.

(g) This order is final unless an application for rehearing is filed within 30 days from the date of its issuance, as provided in Section 313(a) of the Act. The filing of an application for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order, except as specifically ordered by the Commission. Failure of the Licensee to file an application for rehearing shall constitute acceptance of this license. In acknowledgment of acceptance of this license, the license shall be signed for the Licensee and returned to the Commission within 60 days from the date of issuance of this order.

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Pre-Application Document

Attachment 2C

Project Maps
Exhibit J and K

North Fork Stanislaus River Hydroelectric Project
FERC Project No. 2409

Prepared by:
Calaveras County Water District

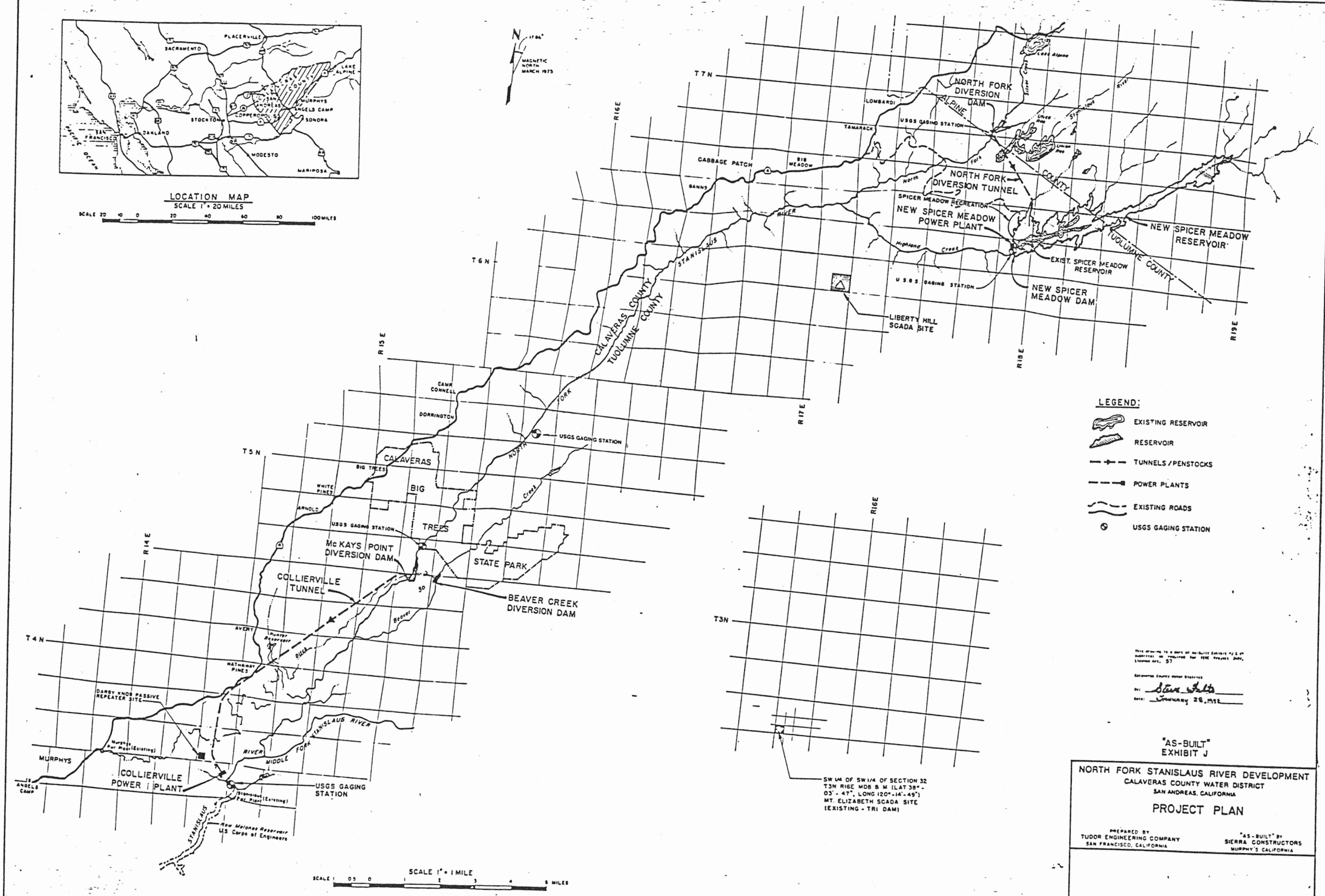
September 2026

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LOCATION MAP
SCALE 1" = 20 MILES

SCALE 20 10 0 20 40 60 80 100 MILES



LEGEND:

- EXISTING RESERVOIR
- RESERVOIR
- TUNNELS / PENSTOCKS
- POWER PLANTS
- EXISTING ROADS
- USGS GAGING STATION

This drawing is a part of exhibit J of the application for FERC Project 2409, License Art. 57

Calaveras County Water District

By: Steve Felts

Date: January 26, 1982

"AS-BUILT"
EXHIBIT J

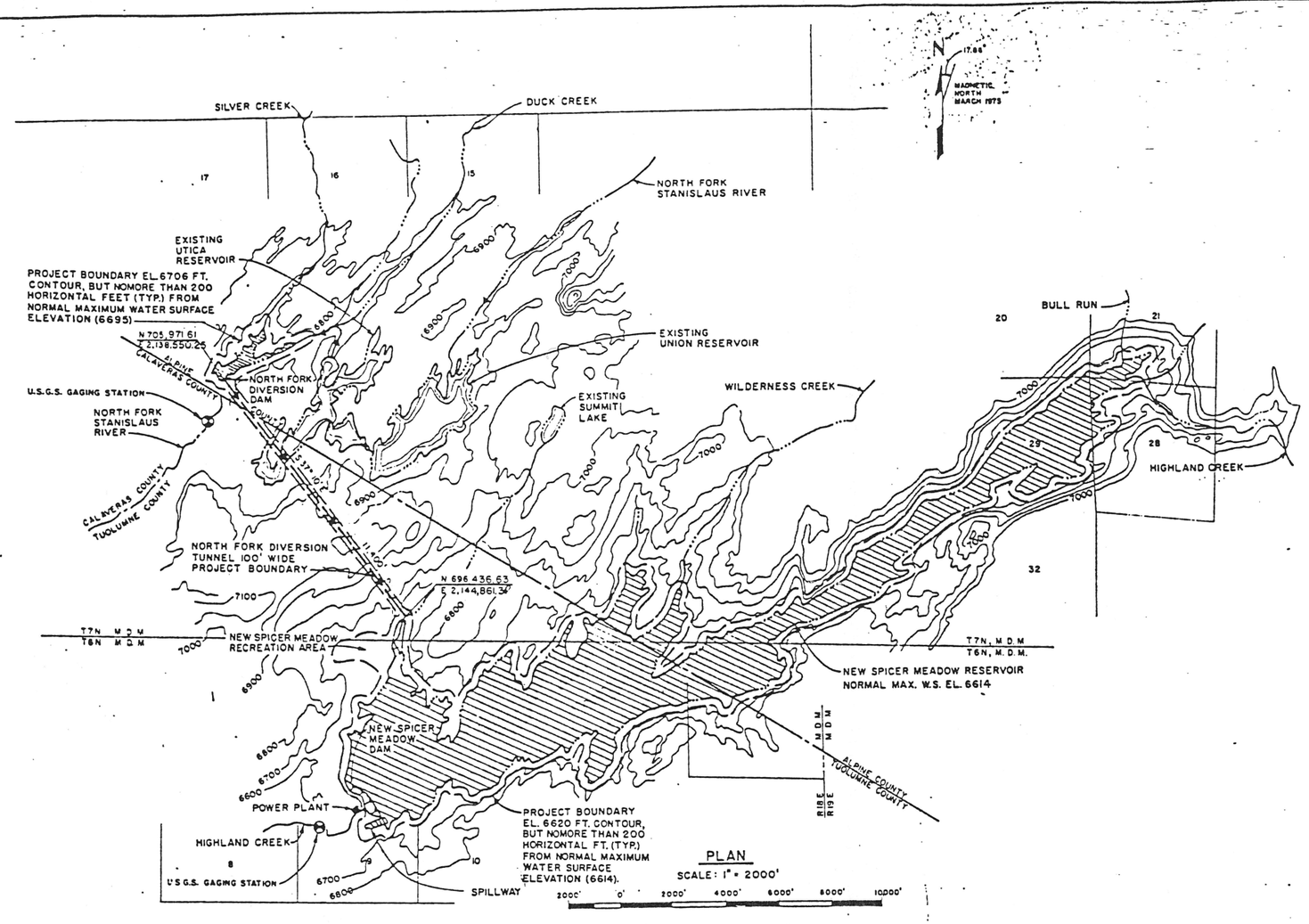
NORTH FORK STANISLAUS RIVER DEVELOPMENT
CALAVERAS COUNTY WATER DISTRICT
SAN ANDREAS, CALIFORNIA

PROJECT PLAN

PREPARED BY
TUDOR ENGINEERING COMPANY
SAN FRANCISCO, CALIFORNIA

"AS-BUILT" BY
SIERRA CONSTRUCTORS
MURPHYS, CALIFORNIA

2409-76 R409-12 2409-158



NOTES

1. ALL PROPERTY WITHIN 200' OF NORTH FORK DIVERSION DAM AND TUNNEL, AND NEW SPICER MEADOW RESERVOIR IS IN THE STANISLAUS NATIONAL FOREST (US FOREST SERVICE LAND TOTALING 2202 ACRES)
2. SECTIONS SHOWN ON THIS SHEET ARE FROM THE U.S.G.S. STANISLAUS RIVER, CALIF., 1958, SHEET 3. THOSE SECTIONS NOT SHOWN HERE HAVE NOT YET BEEN SURVEYED BY THE GOVERNMENT FOR INCLUSION IN THE SECTIONALIZED LAND SYSTEM.
3. TOPOGRAPHY IS FROM THE U.S.G.S STANISLAUS RIVER, CALIF., 1958, SHEET 3.

"AS-BUILT"
EXHIBIT K-1

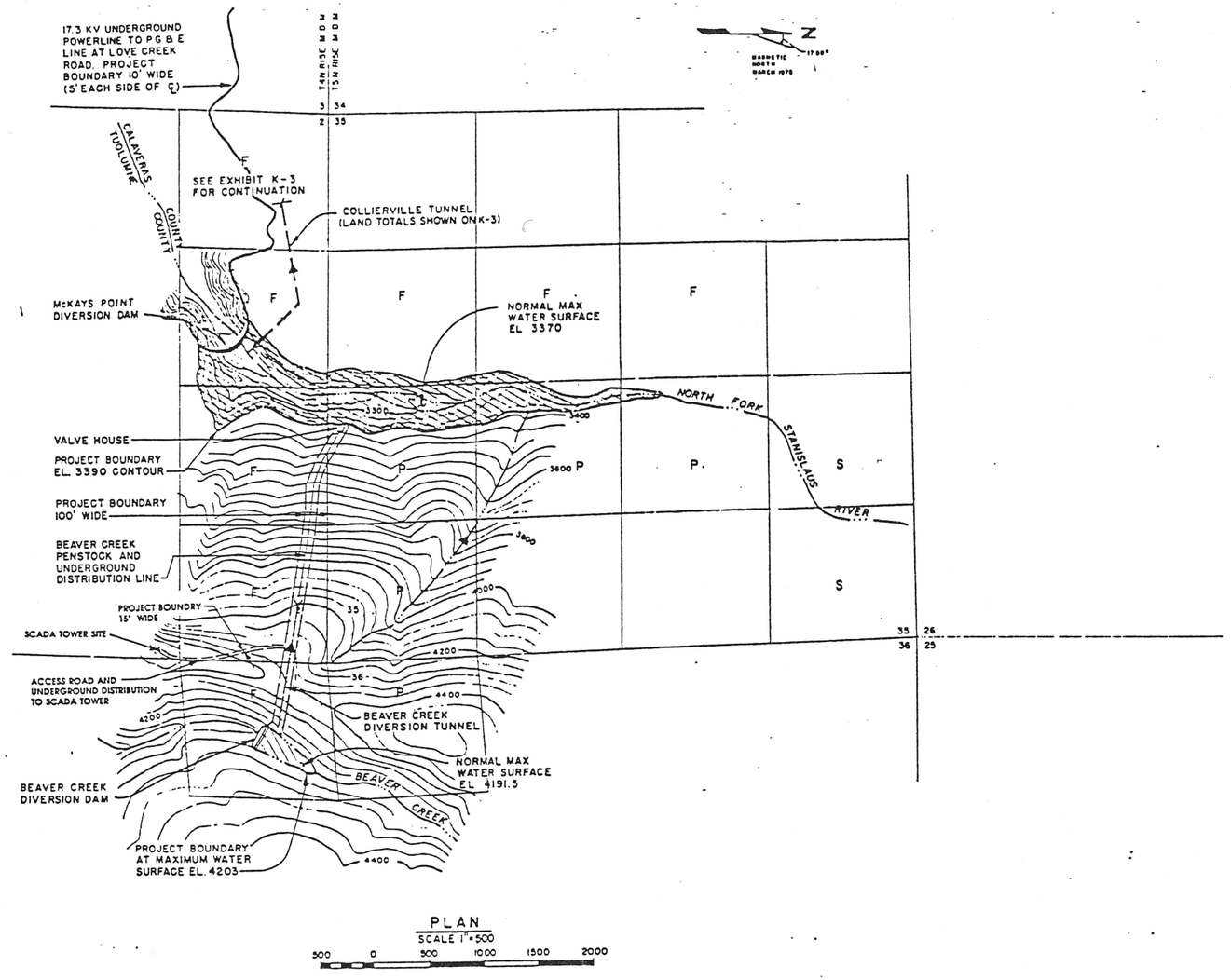
NORTH FORK STANISLAUS RIVER DEVELOPMENT
CALAVERAS COUNTY WATER DISTRICT
SAN ANDREAS, CALIFORNIA

NORTH FORK DIVERSION DAM AND TUNNEL
NEW SPICER MEADOW DAM

PREPARED BY
TUDOR ENGINEERING COMPANY
SAN FRANCISCO, CALIFORNIA

"AS BUILT" BY
SIERRA CONSTRUCTORS
MURPHY'S CALIFORNIA

THIS DRAWING IS SUBMITTED IN COMPLIANCE WITH FERC ORDER 2409-041 PARAGRAPH D
CALAVERAS COUNTY WATER DISTRICT
BY Steve Felt
DATE MARCH 25, 1992



PLAN
SCALE 1"=500
500 0 500 1000 1500 2000

LEGEND

F FEDERAL LAND (U.S FOREST SERVICE LAND TOTALING 43.4 ACRES)
S STATE LAND
P PRIVATE LAND

THIS DRAWING IS SUBMITTED IN COMPLIANCE WITH FERC ORDER 2409-041 PARAGRAPH D

CALAVERAS COUNTY WATER DISTRICT

BY: Steve Falk

DATE: July 17, 1993

"AS-BUILT"
EXHIBIT K-2

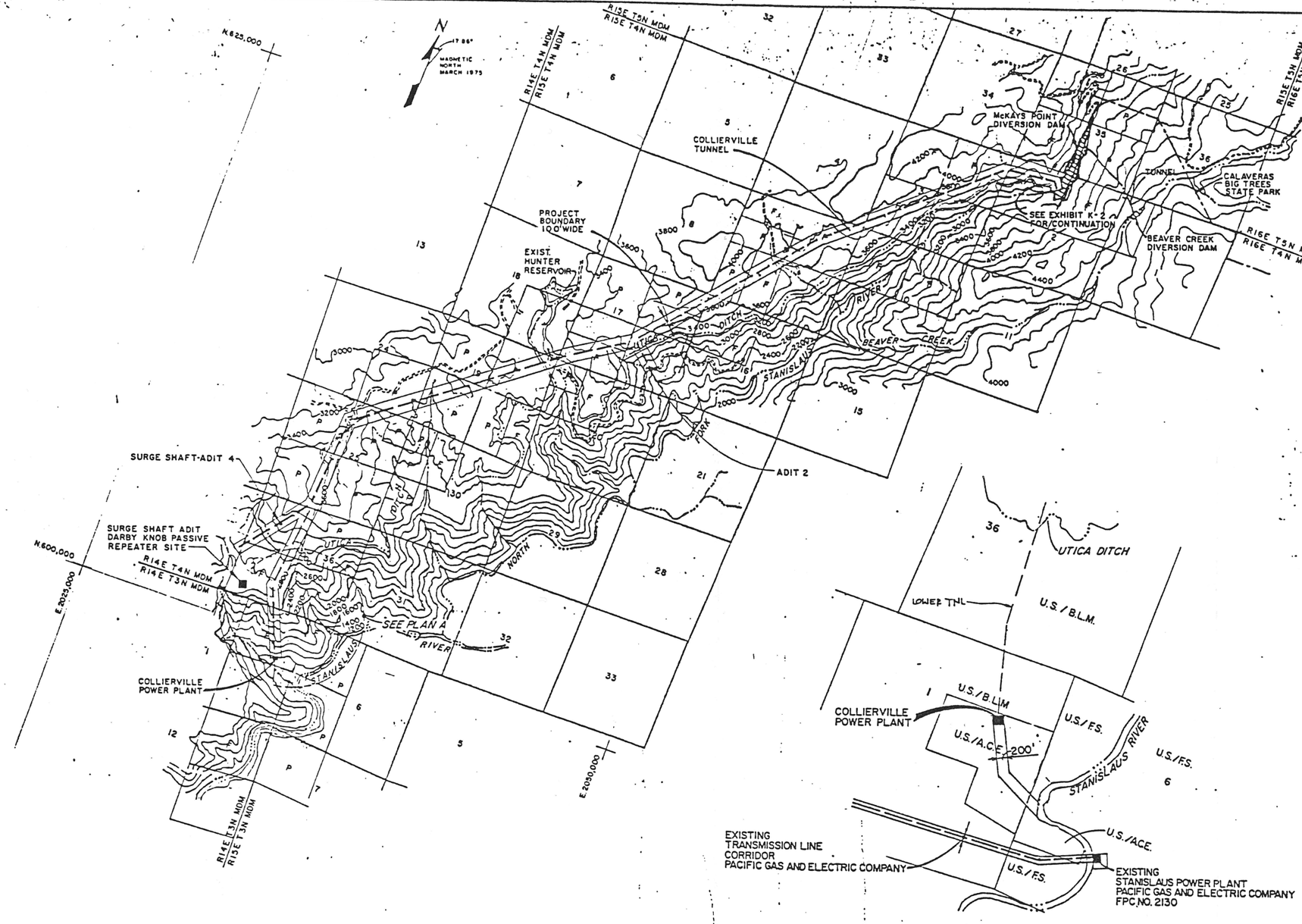
NORTH FORK STANISLAUS RIVER DEVELOPMENT
CALAVERAS COUNTY WATER DISTRICT
SAN ANDREAS, CALIFORNIA

McKAYS POINT DIVERSION DAM
BEAVER CREEK DIVERSION DAM

PREPARED BY
TUDOR ENGINEERING COMPANY
SAN FRANCISCO, CALIFORNIA

"AS-BUILT" BY
SIERRA CONSTRUCTORS
MURPHY'S CALIFORNIA

2409-129



PLAN
SCALE 1" = 2000'
2000 0 2000 4000 6000 8000 10,000

PLAN A
COLLIERVILLE POWER PLANT
SCALE 1" = 1000'
1000 500 0 1000 2000 3000 4000 5000

LEGEND

F FEDERAL LAND
(U.S. FOREST SERVICE LAND TOTALING 33 ACRES–
U.S. BUREAU OF RECLAMATION LAND TOTALING 12 ACRES–
U.S BUREAU OF LAND MANAGEMENT TOTALING 11 ACRES)

S STATE LANDS

P PRIVATE LANDS

THIS DRAWING IS SUBMITTED IN COMPLIANCE WITH FERC ORDER 2408-041 PARAGRAPH D
CALAVERAS COUNTY WATER DISTRICT
BY Steve Felte
DATE March 25, 1992

"AS-BUILT"
EXHIBIT K-3

NORTH FORK STANISLAUS RIVER DEVELOPMENT
CALAVERAS COUNTY WATER DISTRICT
SAN ANDREAS, CALIFORNIA

COLLIERVILLE PROJECT TUNNEL, POWER PLANT

PREPARED BY
TUDOR ENGINEERING COMPANY
SAN FRANCISCO, CALIFORNIA

"AS-BUILT" BY
SIERRA CONSTRUCTORS
MURPHY'S CALIFORNIA

2408-166

SECTION 3.0

INTRODUCTION TO THE RIVER BASIN

Per 18 C.F.R.§ 5.6 (d)(3)(i), a potential applicant must, based on existing, relevant, and reasonably available information, include a discussion with respect to each resource that includes a description of the existing environment; summaries of existing data or studies regarding the resource; a description of known or potential adverse impacts and issues associated with the construction operation and maintenance of the proposed Project; and a description of any existing Project facilities or operations and management activities undertaken for enhancing resources affected by the Project.

This section consists of 12 subsections. Section 3.1 provides a general description of the river basin in which the Project occurs. Sections 3.2 through 3.12 describe existing, relevant, and reasonably available information regarding the following resources:

- 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)
- Cultural Resources (Section 3.11)
- Tribal Interests (Section 3.12)

Where appropriate, existing information is noted as either a source document (i.e., contains original data collected by the author) or anecdotal information.

As part of the relicensing process, CCWD developed river miles (RM) for the NFSR, Stanislaus River, Highland Creek, and Beaver Creek based on CCWD's Relicensing GIS measuring in 0.1-mile increments along the thalweg from the most downstream location in the river (e.g., the confluence of Beaver Creek with the NFSR is designated as RM 0.0). The stream for which the

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river mile is provided is indicated in the RM designation (e.g., BC RM 0.0 indicating RM 0.0 on Beaver Creek).

3.1 General Description of the River Basin

Section 3.1 is divided into six subsections, which include general descriptions of the river basin in which the Project is located (Section 3.1.1), other water projects in the basin (Section 3.1.2), stream reaches potentially affected by the Project (Section 3.1.3), climate in the basin (Section 3.1.4), land uses in the basin (Section 3.1.5), and water uses in the basin (Section 3.1.6).

3.1.1 The Stanislaus River Basin

The Project is located within the Stanislaus River Basin. The basin originates as three forks (i.e., North, Middle, and South) along the crest of the Sierra Nevada mostly in the STF, north of Yosemite National Park. The basin drains 1,195 square miles (NOAA 2024), before joining the San Joaquin River south of Manteca. Snowmelt contributes the largest portion of the flows in the basin, with the highest runoff usually occurring in the months of April, May, and June. The average unimpaired runoff in the basin is about 1.1 million acre-feet (maf), as measured at BOR's New Melones Dam. The median historical unimpaired runoff is 1.1 maf per year, with a range of between 0.2 and 3.0 maf (USFWS 1995).

The NFSR originates at an elevation of over 8,000 feet within the Carson-Iceberg Wilderness and extends approximately 41 miles draining 271.9 square miles (sq-mi[1]) to where it joins the Middle Fork Stanislaus River (MFSR) at an elevation of 1,200 feet, approximately 2.4 miles upstream of BOR's New Melones Reservoir. Named tributaries to the NFSR include, from upstream to downstream: Duck Creek, Silver Creek, Bloods Creek, Highland Creek, Big Meadow Creek, Big Rattlesnake Creek, Mill Creek, Beaver Creek, and Griswold Creek. All Project facilities, excluding Collierville Powerhouse, are located on the NFSR.

The MFSR originates at an elevation of approximately 10,000 feet within the Emigrant Wilderness and flows approximately 47.6 miles, draining 284.3 sq-mi to its confluence within the NFSR. Named tributaries to the MFSR include, from upstream to downstream: Deadman Creek, Douglas Creek, Eagle Creek, Drew Creek, McCormick Creek, Lion Creek, Basin Creek, Mill Creek, Cascade Creek, Bull Creek, Smoothwire Creek, Bushy Hollow Creek, Tunnel Creek, and Dry Meadow Creek. There are no Project facilities located on the MFSR.

The South Fork Stanislaus River (SFSR) originates at an elevation of over 9,200 feet within the Emigrant Wilderness and flows approximately 48.5 miles and drains 106.7 sq-mi before reaching the Stanislaus River at BOR's New Melones Reservoir. Named tributaries to the SFSR include,

from upstream to downstream: Herring Creek, Willow Creek, Deer Creek, and Fivemile Creek. There are no Project facilities located on the SFSR.

[1] Basin drainage areas (sq-mi) in this section calculated from the National Hydrography Dataset (NHD) sourced WBDHU10 polygons (USDA-NRCS, USGS and EPA), 2016. Processing completed in ESRI ArcGIS Pro ver. 3.3.2.

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The mainstem Stanislaus River originates at the NFSR and MFSR confluence and flows approximately 2.1 miles to the normal maximum water surface elevation (NMWSE) of BOR's New Melones Reservoir. This section of the Stanislaus River has minimal drainage area and no named tributaries other than the NFSR and MFSR. The Project's Collierville Powerhouse and PG&E's Stanislaus Powerhouse are both located on the mainstem Stanislaus River upstream of New Melones Reservoir. From New Melones Dam, the mainstem Stanislaus River flows approximately 60 miles downstream to its confluence with the San Joaquin River near Manteca, California.

Figure 3.1-1 shows Project facilities and the NFSR, MFSR, SFSR, and mainstem Stanislaus River drainage areas above New Melones Reservoir. A more detailed description of the NFSR and mainstem Stanislaus River above New Melones Reservoir, including specific locations of Project facilities in the basin, is provided below.

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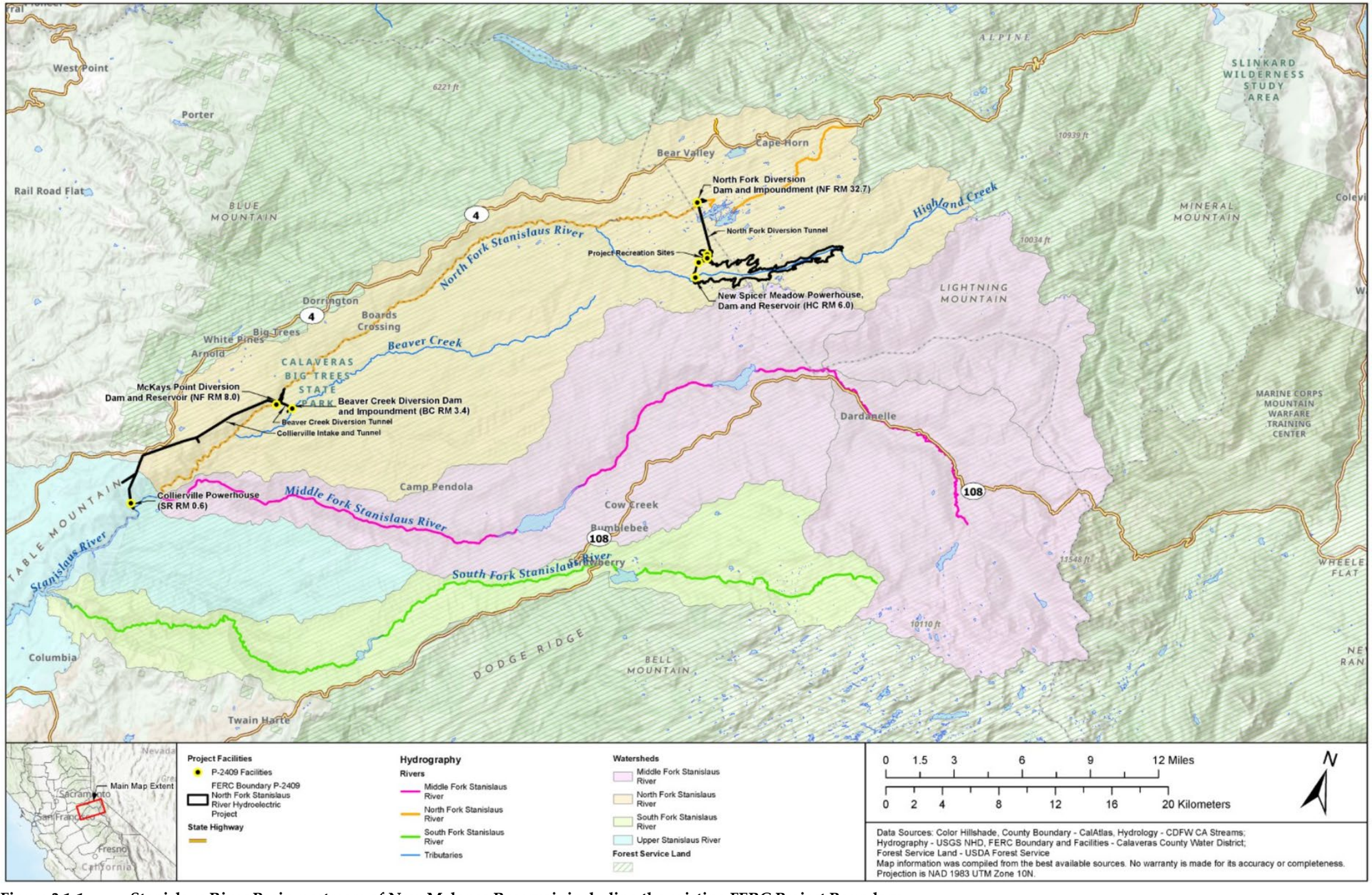


Figure 3.1-1. Stanislaus River Basin upstream of New Melones Reservoir including the existing FERC Project Boundary.

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From its headwaters, the NFSR flows into NCPA's Union Reservoir (NMWSE of 6,850.2 feet, gross storage of 3,130 acre feet [ac-ft]) and Utica Reservoir (NMWSE of 6,819.6 feet, maximum capacity of 2,334 ac-ft). Utica and Union dams and reservoirs, together with Lake Alpine Dam, are part of NCPA's Upper Utica Project, FERC Project No. 11563 (P-11563). From Utica Dam, the NFSR continues 1.3 miles to the Project's North Fork Diversion Dam (NMWSE of 6,695 feet, gross storage of 350 ac-ft with no water right storage[2]). Water from Lake Alpine flows approximately 2.5 miles in Silver Creek to the NFSR and Project's North Fork Diversion Dam. The drainage area at the North Fork Diversion Dam (NF RM 32.7) is 28.2 sq-mi. The NFSR continues another 5.8 miles to its confluence with Highland Creek at NF RM 26.9 (Figure 3.1-2).

Highland Creek originates at an elevation of over 8,000 feet within the Carson-Iceberg Wilderness and travels approximately 7.6 miles into the Project's New Spicer Meadow Reservoir (NMWSE of 6,614 feet, gross storage of 189,000 ac-ft and combined water right storage of 189,350 ac-ft). New Spicer Meadow Reservoir is not located within the wilderness area and impounds approximately 6.7 river miles of Highland Creek (i.e., from HC RM 12.7 to HC RM 6.0). The drainage area at New Spicer Meadow Dam (HC RM 6.0) is 45.5 sq-mi. Highland Creek continues 6 miles to its confluence with the NFSR (Figure 3.1-2).

From the confluence with Highland Creek, the NFSR flows 18.2 miles to the Project's McKays Point Reservoir (NMWSE of 3,370 feet, gross storage of 2,088 ac-ft with 2,088 ac-ft of water right storage). Approximately 2.5 miles of the NFSR, from NF RM 9.0 to NF RM 11.5, flows through Calaveras Big Trees State Park; however, no Project facilities are located within the park. The drainage area at McKays Point Dam (NF RM 8.0) is 166.1 sq-mi. The NFSR continues 2.5 miles to its confluence with Beaver Creek (RM 5.5) (Figure 3.1-2).

Beaver Creek originates in the STF at an elevation of approximately 7,000 feet and flows approximately 14.2 miles downstream to Beaver Creek Diversion Dam Impoundment (NMWSE of 4,195 feet, gross storage of 25 ac-ft with 25 ac-ft of water right storage). Approximately 2.6 river miles of Beaver Creek, from BC RM 4.0 to BC RM 6.6, flows through Calaveras Big Trees State Park; however, no Project facilities are located within the park. The drainage area at Beaver Creek Diversion Dam (BC RM 3.4) is 29.5 sq-mi. Beaver Creek continues 3.4 miles to its confluence with the NFSR (Figure 3.1-2).

The NFSR flows 5.5 miles downstream from the confluence with Beaver Creek to the confluence with the MFSR, where the mainstem Stanislaus River begins. The Project's Collierville Powerhouse Tailrace discharges into the Stanislaus River approximately 1.8 miles downstream from the NFSR and MFSR confluence (i.e., SR RM 0.6). PG&E's Stanislaus Powerhouse discharges into the Stanislaus River approximately 0.4 mile below the Collierville Powerhouse Tailrace (i.e., SR RM 0.2). The Stanislaus River flows another 0.1 mile to BOR's New Melones Reservoir (NMWSE of 1,086 feet, volume of 2,400,000 ac-ft). The total length of the Stanislaus River from the NFSR and MFSR confluence to the NMWSE of BOR's New Melones Reservoir is 2.1 miles (Figure 3.1-2).

[2] See Section B.5.1.2 of Attachment 2B, for a description of CCWD's power water rights.

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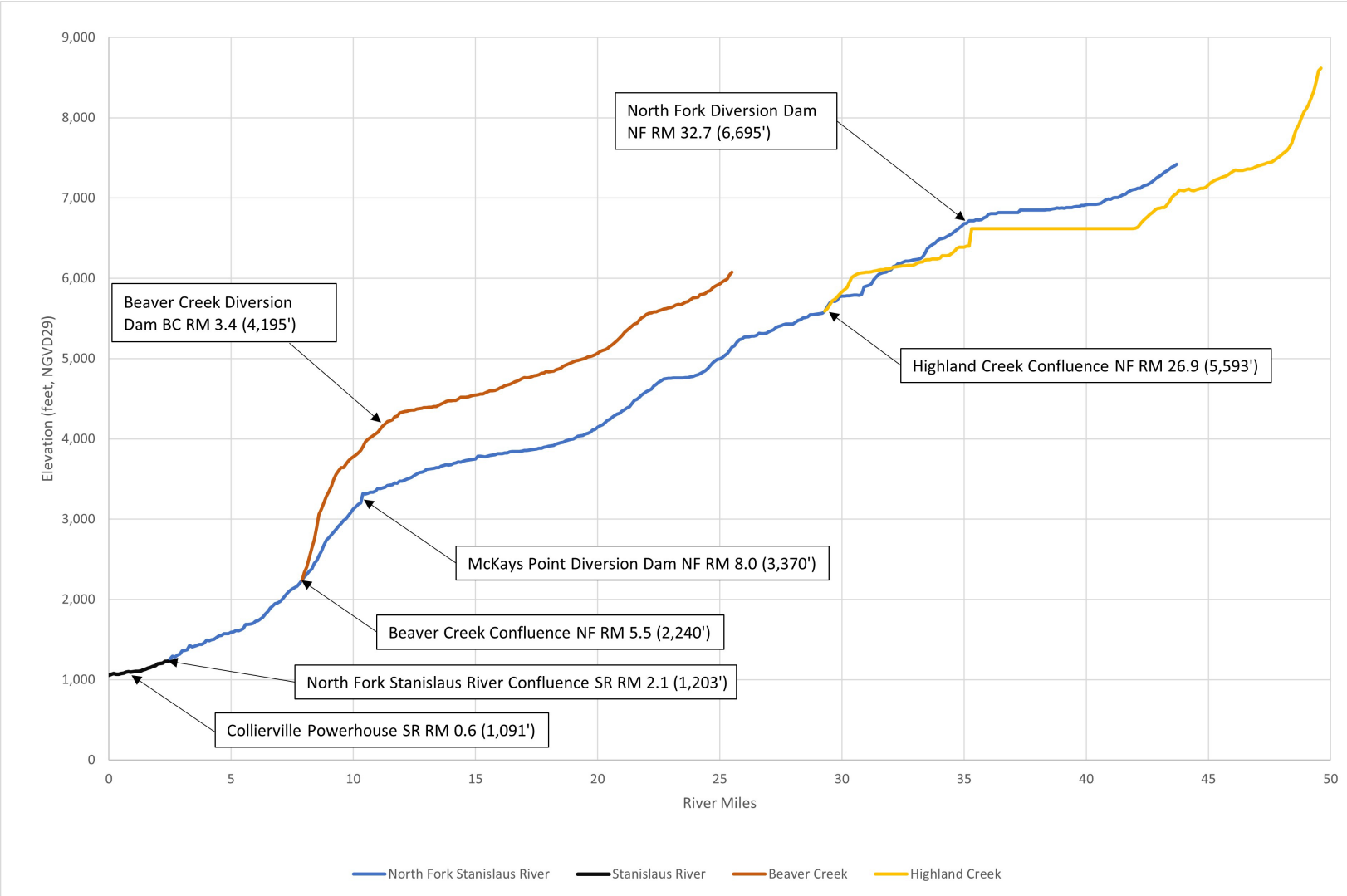


Figure 3.1-2. Gradient profile for Highland Creek, Beaver Creek, North Fork Stanislaus River, and mainstem Stanislaus River to BOR's New Melones Reservoir. Elevations at dams are the NMWSE for the impoundment behind the dam.

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3.1.1 Water Projects in the Stanislaus River Basin

In addition to the Project, there are three existing FERC-licensed water projects in the NFSR watershed – NCPA's Upper Utica Project, UWPA's Utica Hydroelectric Project, and UWPA's Angels Hydroelectric Project. Each of these water projects is described briefly below from upstream to downstream.

In addition to the water projects in the NFSR watershed, there are two water projects in the MFSR watershed – Tri-Dam Project's Beardsley/Donnells Hydroelectric Project, FERC Project No. 2005; and Tri-Dam Power Authority's Sand Bar Hydroelectric Project, FERC Project No. 2975. One water project is located in the SFSR watershed – PG&E's Phoenix Hydroelectric Project, FERC Project No. 1061. One project spans both the MFSR and SFSR watersheds – PG&E's Spring Gap/Stanislaus Hydroelectric Project, FERC Project No. 2130. Three projects are located on the mainstem Stanislaus River watershed – BOR's New Melones Project, Tri-Dam Project's Tulloch Hydroelectric Project, FERC Project No. 2067, and DWR's Goodwin Dam. These projects are not discussed further in this PAD. Figure 3.1-3 shows the locations of these water projects.

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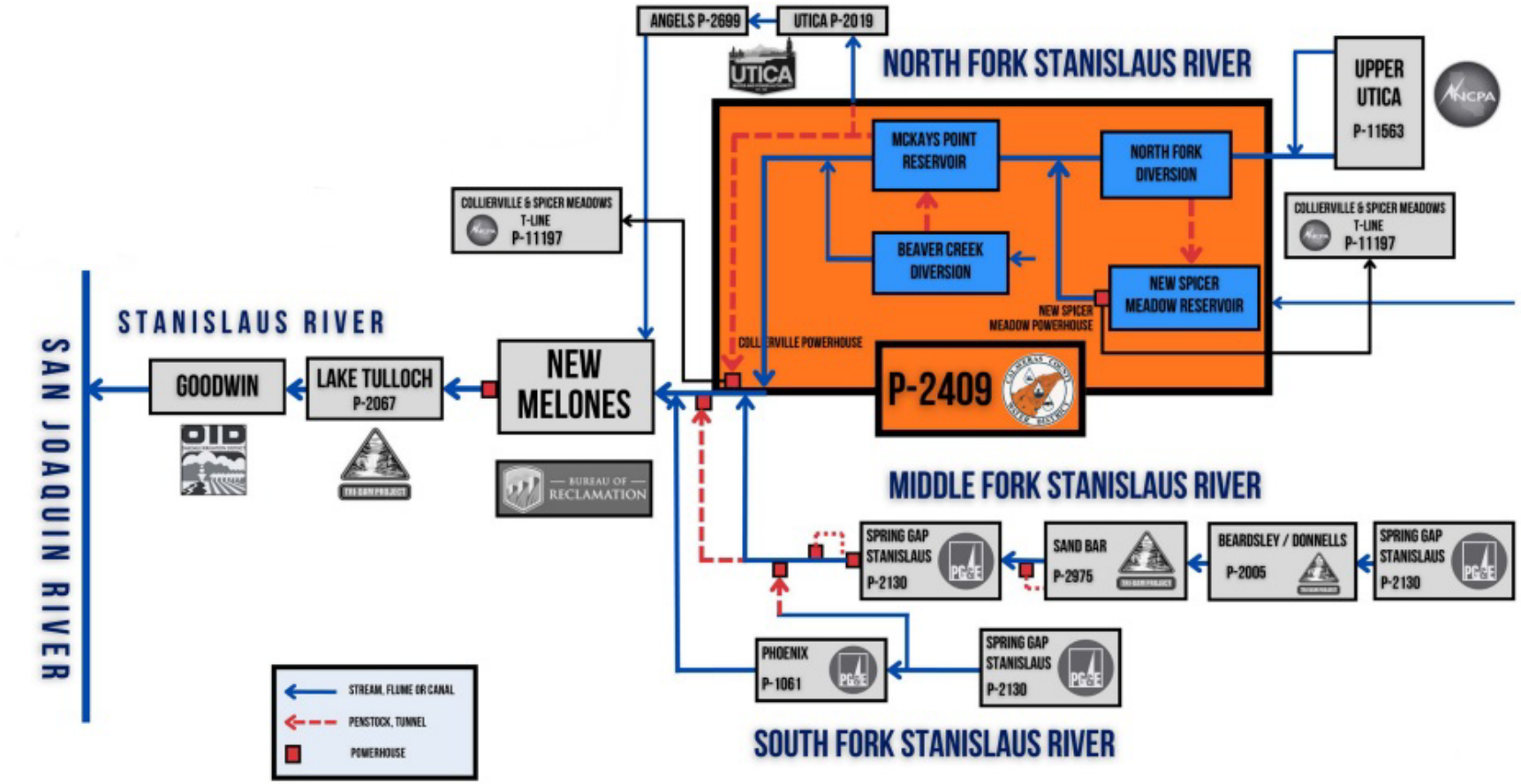


Figure 3.1-3. Schematic of water projects in the Stanislaus River Basin.

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3.1.1.1 Upper Utica Project

The Upper Utica Project, FERC Project No. 11563, is owned and operated by NCPA. The project includes three reservoirs and the associated dams that create the impoundments; 1) Lake Alpine, on Silver Creek, a tributary of the NFSR; 2) Union Reservoir, on the NFSR; and 3) Utica Reservoir, on the NFSR. The project does not include any hydroelectric generation facilities, water conveyance facilities, or transmission lines. The project's initial license, which expires on August 31, 2033, was issued to NCPA on September 3, 2003. Some of the water released from Lake Alpine and Union and Utica reservoirs is diverted into the Project's New Spicer Meadow Reservoir by means of the Project's North Fork Diversion Dam and Tunnel.

3.1.1.2 Utica Hydroelectric Project

The Utica Hydroelectric Project, FERC Project No. 2019, is owned and operated by the UWPA. The project is located on Mill Creek and Angels Creek tributaries to the NFSR. The project facilities consist mainly of 1) Mill Creek Tap; 2) Upper Utica Canal; 3) Hunter Dam and Reservoir; 4) Lower Utica Canal; 5) Murphys Forebay; 6) Murphys Penstock; 7) Murphys Powerhouse, with an installed capacity of 3.65 MW; 8) Murphys Afterbay; 9) an access road network used to provide maintenance to the canals and flumes; and 10) other associated facilities. The project's initial license, which expires on August 31, 2033, was issued to UWPA on September 3, 2003. On August 11, 2025, UWPA submitted an application for a conduit exemption and license surrender for the project.

3.1.1.3 Angels Hydroelectric Project

The Angels Hydroelectric Project, FERC Project No. 2699, is owned and operated by the UWPA. The project is located on Angels Creek, which flows into New Melones Reservoir and French Gulch in the Upper Calaveras River Watershed. The project facilities consist of 1) Angels Diversion Dam; 2) Upper Angels Canal; 3) Ross Reservoir; 4) Lower Angels Canal; 5) Angels Forebay; 6) Angels Penstock; 7) Angels Powerhouse, with an installed capacity of 1.4 MW; and 8) Angels Switchgear and Switchyard. The project's initial license, which expires on August 31, 2033, was issued to UWPA on September 3, 2003. On August 11, 2025, UWPA applied for a conduit exemption and license surrender for the project.

3.1.2 Potentially Affected Stream Reaches

The Project potentially affects seven stream reaches:

- The 5.8-mile-long section of the NFSR from the North Fork Diversion Dam at elevation 6,695 feet to the confluence with Highland Creek at elevation 5,593 feet.
- The 6-mile-long section of Highland Creek from New Spicer Meadow Dam at elevation 6,614 feet to the confluence of the NFSR at elevation 5,593 feet.
- The 18.2-mile-long section of the NFSR from the confluence with Highland Creek at elevation 5,593 feet to the NMWSE of McKays Point Reservoir at elevation 3,370 feet.

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- The 2.5-mile-long section of the NFSR from McKays Point Diversion Dam at elevation 3,370 feet to the confluence with Beaver Creek at elevation 2,240 feet.
- The 3.4-mile-long section of Beaver Creek from Beaver Creek Diversion Dam at elevation 4,195 feet to the confluence with the NFSR at elevation 2,240 feet.
- The 5.5-mile-long section of the NFSR from the confluence with Beaver Creek at elevation 2,240 feet to the confluence of the MFSR at elevation 1,203 feet.
- The 2.1-mile-long section of the Stanislaus River from the NFSR and MFSR confluence at elevation 1,203 feet to the NMWSE of BOR's New Melones Reservoir at elevation 1,086 feet.

The Project also affects the North Fork Diversion Dam Impoundment, New Spicer Meadow Reservoir, McKays Point Diversion Dam Impoundment, and Beaver Creek Diversion Dam Impoundment.

3.1.3 Climate

Climate in the North Fork Stanislaus River Basin is typical of the central Sierra Nevada. The Western Regional Climate Center (WRCC) provides a monthly climate summary at Calaveras Big Trees State Park (4,700 feet elevation, Station #041277) at the central elevation of the extent of the Project, with a period of record from 1929 through 2016. At the park, the average maximum and minimum temperatures in July are 83.2 degrees Fahrenheit (°F) and 52.3°F, respectively. January average maximum and minimum temperatures are 45.2°F and 27.6°F, respectively. Average annual precipitation as rain is 54.36 inches, while average snowfall is 129.5 inches annually. Both forms of precipitation peak in January, averaging 10.39 inches of rain and 29.6 inches of snowfall (WRCC 2025).

3.1.4 Major Land Uses

The upper reaches of the NFSR and New Spicer Meadow Reservoir area are undeveloped apart from Forest Service roads providing access to and from State Route 4. Calaveras Big Trees State Park is located one mile upstream from McKays Point Diversion Dam; the NFSR and Beaver Creek flow through this park. The Park is known for its groves of giant sequoias, interspersed with hiking trails and campgrounds. The Collierville Tunnel, transporting water from McKays Point Diversion Dam, travels beneath small rural residential areas off State Route 4, before terminating at the Collierville Powerhouse just upstream of the BOR's New Melones Reservoir.

3.1.5 Major Water Uses

Beneficial uses of surface water designated by the California Regional Water Quality Control Board Central Valley Region's (CVRWQCB) Water Quality Control Plan for the Sacramento and San Joaquin River Basins, or Basin Plan (CVRWQCB 2019), in the NFSR and its tributaries, as a source to New Melones Reservoir, and New Melones Reservoir itself, are listed in Table 3.1-1.

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Table 3.1-1. Designated beneficial uses of surface water in the Stanislaus River from its sources to New Melones Reservoir.

Beneficial Use	Beneficial Use Description	Stanislaus River (Source to New Melones Reservoir)
Municipal and Domestic Supply (MUN)	Uses of water for community, military, or individual water supply systems, including, but not limited to, drinking water supply.	Existing
Irrigation (AGR)	Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation (including leaching of salts), stock watering, or support of vegetation for range grazing.	Existing
Stock Water (AGR)	Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation (including leaching of salts), stock watering, or support of vegetation for range grazing.	Existing
Hydropower Generation (POW)	Uses of water for hydropower generation.	Existing
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.	Existing
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.	Existing
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.	Existing
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.	Existing
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.	Existing

Source: CVRWQCB 2019

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3.2 Geology and Soils

Per 18 C.F.R. § 5.6 (d)(3)(ii), this section describes the existing geology, topography, and soils of the proposed Project and surrounding area. Components of the description must include a description of geological features, soils and a description of reservoir shorelines and streambanks, including steepness, composition, vegetative cover, and existing erosion.

This section discusses the geologic setting within and adjacent to the FERC Project Boundary that may influence, or be influenced by, continued Project operation. Section 3.2.1 describes the geologic setting; Section 3.2.2 describes the tectonic history; Section 3.2.3 describes mineral resources; and Section 3.2.4 describes physiography and geomorphology soil types.

3.2.1 Geologic Setting

The Project is located on the west slope of the Sierra Nevada in the NFSR Basin in Calaveras, Tuolumne, and Alpine counties, California. The Sierra Nevada geomorphic province is a west-tilted fault-block mountain range extending more than 400 miles along eastern California. The range forms a massive, continuous, and asymmetric physiographic feature approximately 40 to 80 miles wide, with elevations that rise from low, rolling foothills along the western margin to steep, rugged mountainous terrain exceeding an elevation of 8,000 feet along the eastern crest. Drainage within the province is dominated by west- to south-west-flowing river systems that have incised deep canyons into the western slope (Calaveras County Planning Department 2018). These geomorphic conditions strongly influence slope stability, erosion processes, and the performance of Project infrastructure, particularly along reservoir shorelines and access corridors.

Regionally, the geology of the Sierra Nevada is commonly divided into two major units: the Bedrock Series and the Superjacent Series (Clark & Lydon 1962). The Bedrock Series consists of northwest-trending belts of steeply dipping Paleozoic and Mesozoic metamorphic rocks intruded by Mesozoic plutonic rocks of the Sierra Nevada batholith. In the Project Vicinity, metamorphic rocks of the Calaveras Formation consist primarily of phyllite ranging from soft, carbonaceous varieties to hard, siliceous phyllite, typically occurring in thin beds approximately 2 to 4 inches thick (CCWD 1980). Bedding and foliation are steep to vertical and commonly parallel, and jointing is well developed with both vertical and low-angle sets; minor shear zones are present. These structural characteristics locally reduce rock mass strength and create preferential planes of weakness that increase susceptibility to rockfall, shallow slope failures, and localized instability on steep slopes adjacent to facilities, access roads, and reservoir shorelines (CCWD 1980).

Overlying the Bedrock Series, the Superjacent Series includes younger, generally flat-lying Tertiary volcanic and sedimentary deposits that locally form erosional caps on higher-elevation ridges and influence slope morphology and drainage patterns. This volcanic complex comprises pyroclastic deposits and volcanic flows, including tuffs, welded tuffs, lahars, and lava flows with compositions ranging from rhyolitic to basaltic. Associated unconsolidated fluvial gravels and alluvium derived from volcanic source materials occur locally and contribute to variable soil and slope conditions within the Project Vicinity (CCWD 1980). Figure 3.2-1 presents a geologic map of the Project Vicinity.

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In portions of the Project Vicinity affected by Pleistocene glaciation, granitic bedrock is commonly exposed at the surface and classified as Rockland, with bedrock exposure exceeding 50 percent in many locations (CCWD 1980). Where soils are present, they are extremely thin, generally less than 2 inches thick, slightly acidic, very low in fertility, and composed of rocky, cobbly coarse sand. Higher elevations were further modified by glacial processes that removed soil and weathered rock, deposited moraines, and transported sediment downstream via meltwater. Small glacial deposits remain at higher elevations, while younger alluvial deposits consisting of sand and gravel occur within and adjacent to modern stream channels (CCWD 1980).

Unconsolidated materials within the Project Vicinity, including alluvium, colluvium, decomposed granite, and glacial sediments, exhibit variable engineering properties that influence slope and shoreline stability. Colluvial soils and decomposed granitic materials mantling hillslopes are prone to downslope movement under saturated conditions, while alluvial deposits along stream channels and reservoir margins are subject to erosion and reworking during high-flow events (CCWD 1985). These materials generally have lower shear strength than underlying bedrock and may be sensitive to changes in groundwater conditions, reservoir water-level fluctuations, and seismic shaking (Schneider et al. 2001). Soil characteristics described in the Project Vicinity, including shallow depth to bedrock, low cohesion, moderate to high erodibility, and locally high shrink–swell potential, can affect foundation stability and increase erosion and mass wasting risks when soils are disturbed during construction or maintenance activities (USDA-NRCS 2025a). In addition, regulated flows and sediment trapping by Project reservoirs reduce the downstream sediment supply, which may contribute to channel incision and bank instability below the impoundments (CCWD 1985).

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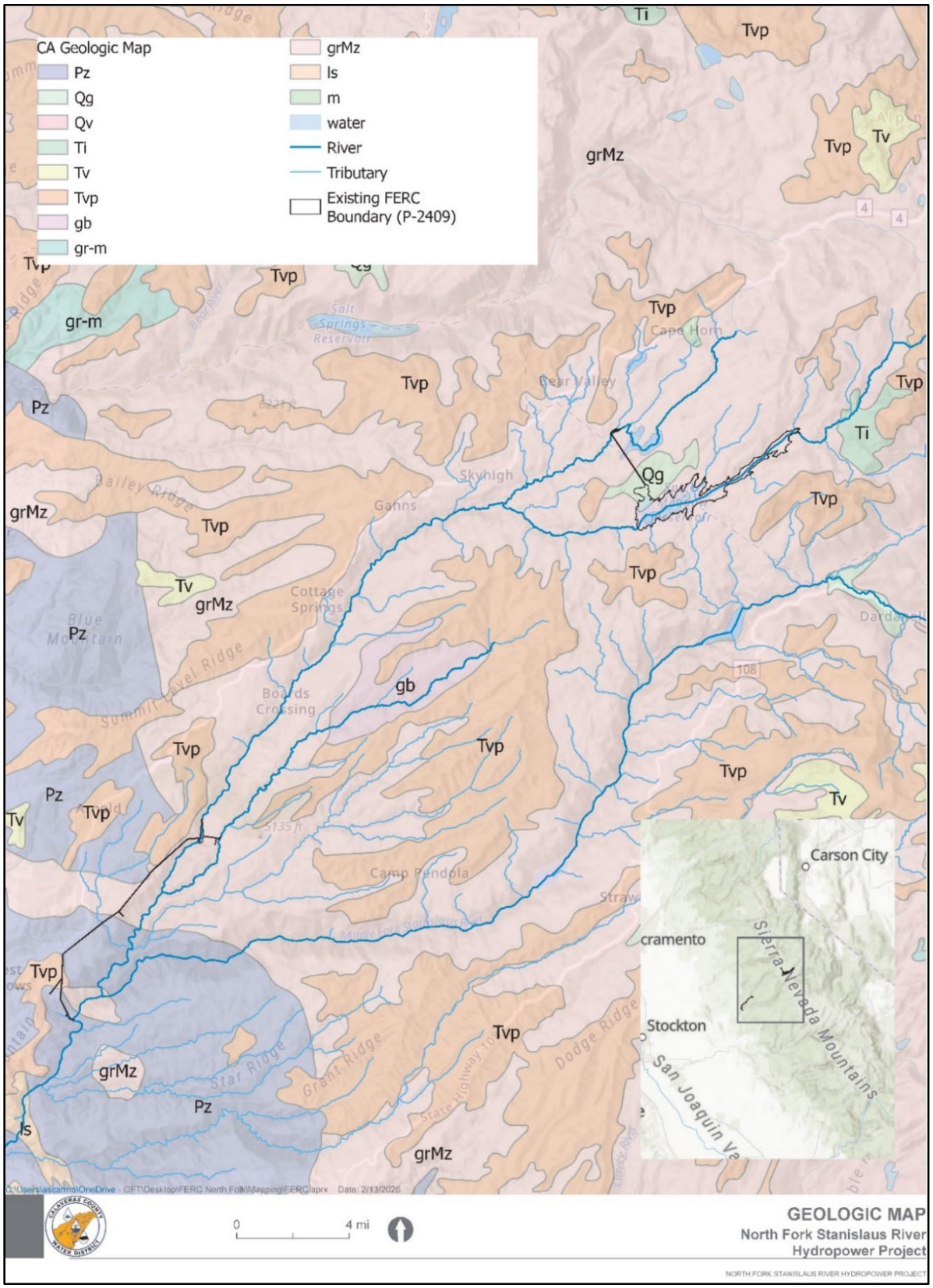


Figure 3.2-1. Geologic Map - Source: California Department of Conservation 2010.

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3.2.2 Tectonic History

The Project Vicinity is within the Sierra Nevada foothills of east-central California, a region shaped by long-term tectonic processes associated with the evolution of the western margin of the North American Plate (Calaveras County Planning Department 2018). Deformation zones along the margins of the Sierra Nevada and the Central Valley define a crustal-scale, semi-rigid block commonly referred to as the Sierra Nevada microplate. This microplate exhibits relatively low levels of Quaternary faulting and seismicity and is generally considered to move independently with respect to both the Pacific and North American plates (PG&E 2017).

The geologic framework of the region was established during the Paleozoic and Mesozoic eras, when tectonic activity was dominated by subduction of the Farallon Plate beneath the North American Plate. Prolonged subduction led to accretion of oceanic and island-arc terranes, crustal compression, and regional uplift, contributing to the formation of the Sierra Nevada foothills (Calaveras County Planning Department 2018). These processes also produced the Sierra Nevada batholith and associated metamorphic belts.

During the late Cenozoic, tectonic conditions changed as the Farallon Plate was largely consumed and the Pacific Plate came into contact with the North American Plate. This transition resulted in development of the San Andreas Fault system, a right-lateral transform fault located west of Calaveras County (Calaveras County Planning Department 2018). Although the Project Vicinity is not crossed by the primary trace of the San Andreas Fault, regional deformation associated with this fault system continues to influence uplift and seismicity in the broader region. Ongoing tectonic processes include uplift of the Sierra Nevada block and regional seismic activity associated with faults within the San Andreas Fault system (Calaveras County Planning Department 2018).

Within the regional setting, the California Department of Conservation identifies the Bear Mountains Fault Zone and the Melones Fault Zone as the nearest potentially active Quaternary and late Quaternary faults to the Project Vicinity (California Department of Conservation, n.d.). These fault zones define the Foothills Fault System, which traverses the western portion of Calaveras County. Faults within this system have been mapped near Valley Springs, Mokelumne Hill, areas south of Melones near Jamestown, and south of Copperopolis, including the Poorman Gulch, Youngs Creek, Waters Peak, Ione, Rawhide Flat East, Bowie Flat, Rawhide Flat West, and Negro Jackpoint Faults (Calaveras County Planning Department 2018).

Within and immediately adjacent to the Project Boundary, only pre-Quaternary faults are present. These faults represent older structural features formed during Mesozoic and early Cenozoic deformation related to subduction processes. While they locally influence bedrock structure, fracture patterns, and canyon alignment, they are not considered active under current geologic classifications.

As shown in Figure 3.2-2, the Project Boundary does not intersect any mapped Quaternary faults, defined as faults that have exhibited movement within the last approximately 2.6 million years. Mapped Quaternary faults occur regionally to the west and east of the Project Vicinity, outside the FERC Project Boundary, where they are associated with broader tectonic deformation along the

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western Sierra Nevada margin and near the Sierra Nevada–Basin and Range transition zone. No active or potentially active faults are known within the Project Vicinity. However, seismic activity remains a potential hazard. The Project Vicinity lies within Seismic Zone 3 of the Seismic Zone Map of the Contiguous United States, as referenced in the USACE's *Recommended Guidelines for Safety Inspection of Dams*, where major earthquake damage may occur (USACE 1977).

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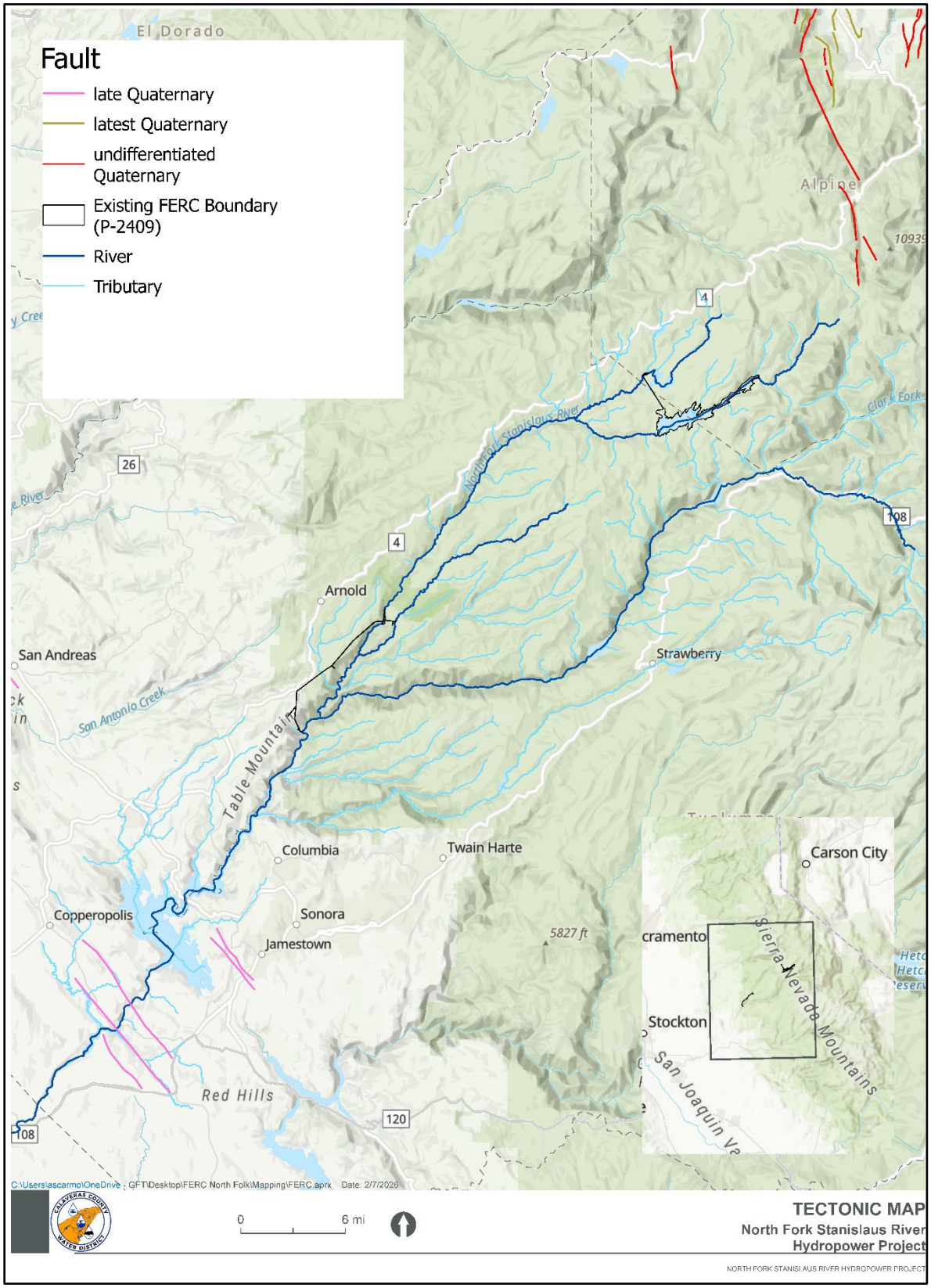


Figure 3.2-2. Tectonic Map - Source: California Department of Conservation, n.d.

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3.2.3 Mineral Resources

The Project Vicinity contains a diverse suite of metallic and nonmetallic mineral resources that reflect its complex geologic framework. Precious metal mineralization in the broader Project Vicinity is commonly concentrated within structurally controlled zones bounded by major fault systems and thrust contacts. Lode gold and silver deposits typically occur within quartz-vein networks developed along faults and joint systems in a variety of host rock types. Placer gold deposits occur both within modern stream channels and within older Tertiary alluvial deposits (PG&E 2017).

The regional geologic setting has historically supported a wide range of precious metal and industrial mineral occurrences. Gold and silver mineralization occurs both within quartz-vein systems and in association with sulfide minerals, with cumulative historic production estimated to be substantial (Clark 1977). Other commodities identified in the broader areas include tungsten, copper, barite, antimony, sulfur, and minor industrial materials, as well as sand, gravel, and stone used locally for construction. While large-scale commercial mining has largely ceased, the geologic framework remains favorable for mineralization, and inactive mines, prospects, and active mineral claims, particularly for gold and silver, remain present within and near the Project Vicinity (Clark 1977). Mineral resources in the Project Vicinity are shown in Figure 3.2-3.

Gold has historically been the most significant metallic resource in the Project Vicinity. Lode gold mineralization is primarily associated with quartz-vein systems developed within regionally extensive metamorphic belts, including those of the Mother Lode gold belt, a northwest–southeast-trending geologic province that extends for more than 120 miles along the western flank of the Sierra Nevada. The Mother Lode is characterized by gold-bearing quartz veins hosted within metamorphic rocks such as slate, schist, greenstone, and metasedimentary units, with mineralization commonly localized along major fault zones, shear zones, and fracture networks formed during Mesozoic tectonic deformation. Hydrothermal fluids migrating along these structures deposited gold within quartz veins, creating numerous high-grade lode deposits throughout the region. Adjacent structural zones related to the Mother Lode system also host gold mineralization, reflecting the regional scale and structural complexity of the belt. These deposits were extensively mined during the nineteenth and early twentieth centuries (Clark & Lydon 1962). Placer gold was initially recovered from rich surface placers during early mining activity and later from drift, hydraulic, and dredge operations targeting Tertiary paleochannel gravels as well as modern alluvial stream deposits (Clark & Lydon 1962).

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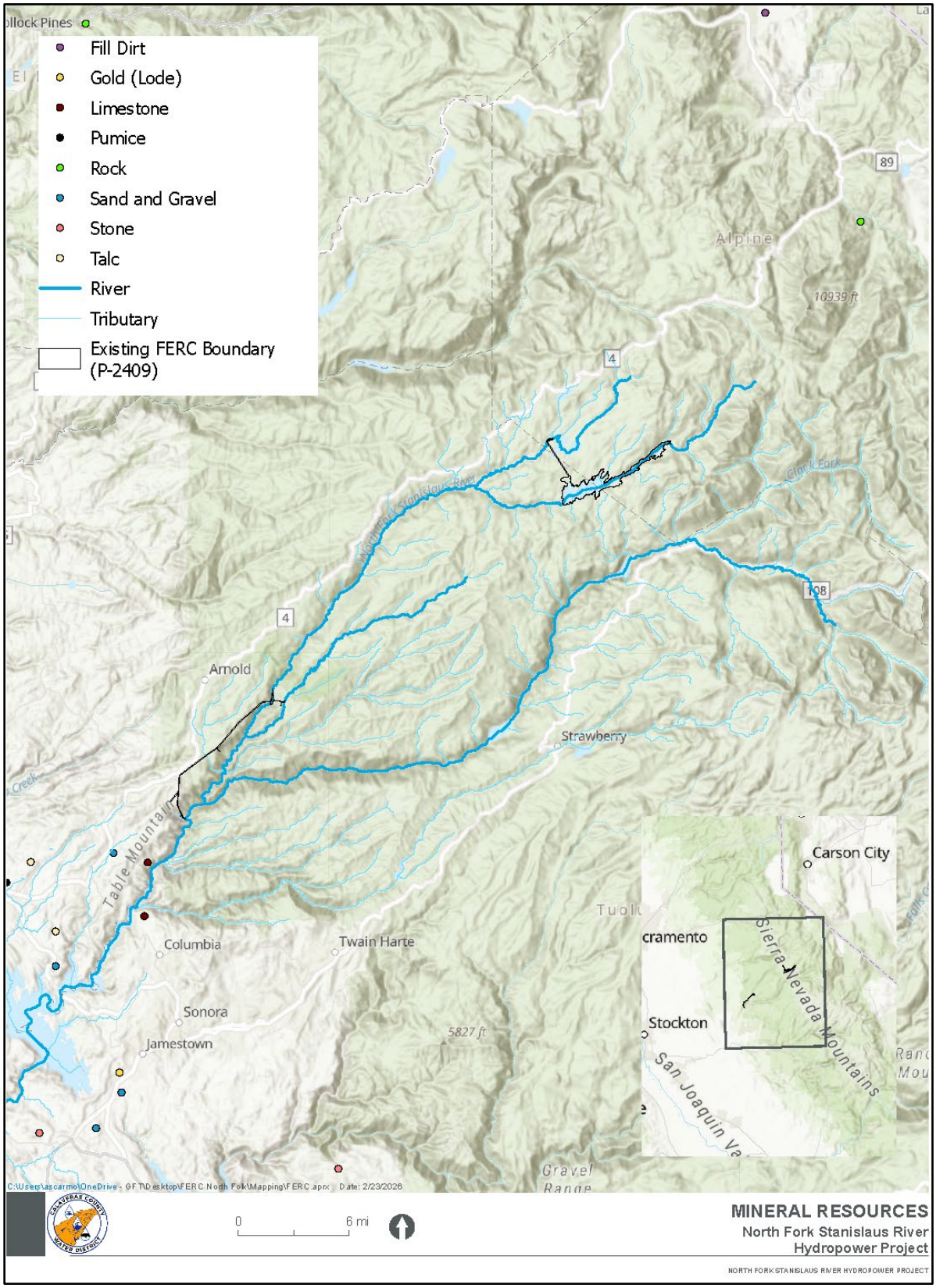


Figure 3.2-3. Mineral Resources - Source: California Department of Conservation, n.d.

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Copper represents the second most important metallic resource in the Project Vicinity and occurs primarily within regionally developed foothill copper belts (Clark & Lydon 1962). Copper mineralization is associated with metamorphosed volcanic and sedimentary rock assemblages, and historic production peaked during periods of increased demand in the mid-nineteenth and twentieth centuries. Zinc and minor lead were locally recovered as by-products of copper mining, and small quantities of secondary (cement) copper were historically recovered from mine drainage waters (Clark & Lydon 1962).

Among nonmetallic mineral resources, limestone and dolomite are of major economic importance. Extensive carbonate deposits occur within structurally controlled belts in the broader Project Vicinity and have supported the manufacture of cement, lime, and related industrial products (Clark & Lydon 1962). These deposits represent some of the most significant nonmetallic mineral resources in the region and have contributed substantially to historical mineral production.

Additional mineral resources documented within the Project Vicinity include chromite associated with serpentinized ultramafic rocks; clay and silica sand derived from sedimentary formations and used in ceramics, glass, and industrial products; and stone and aggregate materials utilized for construction, road base, roofing granules, and decorative stone. Other commodities produced in lesser quantities include manganese, tungsten, molybdenum, asbestos, soapstone, quartz crystal, sand, and gravel (Clark & Lydon 1962).

3.2.4 Physiography and Geomorphology Soil Types

The Project Vicinity is located within the Sierra Nevada physiographic province of east-central California (Calaveras County Planning Department 2018). Elevations generally increase from approximately 1,000 feet above mean sea level in the western portion of the Project Boundary to more than 8,000 feet along the eastern Project Boundary.

The Project Vicinity contains soils formed in alluvium, colluvium, and residuum derived from volcanic, granitic, and metasedimentary rocks, distributed across valley floors, foothills, and steep mountainous terrain. These soils differ greatly in depth, drainage, water-holding capacity, and susceptibility to erosion, which directly influence vegetation, hydrology, and land-use limitations.

In the Central Sierra Foothills Area parts of Calaveras and Tuolumne counties (Area Symbol CA630, as indicated in Table 3.2-1), the dominant soils are Cogna, Pentz, Peters, Bellota, Archerdale, Hicksville, and Redding. Cogna soils occur on nearly level alluvial fans and valley floors and are very deep (greater than 60 inches), well drained, and have high available water capacity, making them among the most productive soils in the area (USDA-NRCS 2025a). Archerdale and Hicksville soils occur on stream terraces and valley bottoms and are also deep and well to moderately well drained, although Archerdale soils have high shrink–swell potential, while Hicksville soils have low shrink–swell and moderately high permeability (USDA-NRCS 2025a).

Foothill soils such as Pentz and Peters dominate rolling to steep slopes. These soils formed from water-reworked volcanic tuff and are shallow to bedrock (10–20 inches), well drained, and have very low available water capacity. Pentz soils have low shrink–swell potential, while Peters soils have high to very high shrink–swell potential, making them particularly susceptible to cracking,

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surface movement, and engineering limitations (USDA-NRCS 2025a). Bellota soils, which formed in alluvium over volcanic residuum, are moderately deep to a duripan (20–39 inches), with slow water movement and low available water, and moderate shrink–swell behavior (USDA-NRCS 2025a). Redding soils occur on high terraces, fan remnants, and contain a cemented duripan that restricts drainage and root growth; they are moderately-well drained but develop a seasonal perched water table at about 17 inches during winter, supporting vernal pool ecosystems (USDA-NRCS 2025a).

In the STF (Area Symbol CA731, as indicated in Table 3.2-1), soils are primarily shallow, rocky, and highly influenced by steep topography. Lithnip and Hawkinspeak soils dominate steep mountain slopes and form from andesite and tuff breccia. Lithnip soils are very shallow (4–10 inches to bedrock), somewhat excessively drained, and have very low available water, while Hawkinspeak soils are deeper (20–40 inches) and well drained, but still have low water-holding capacity (USDA-NRCS 2025b). Cryumbrepts and Xerochrepts occur on steep mountain slopes and are typically shallow to moderately deep, excessively to well drained, and highly erosion-prone because of steep gradients and limited soil depth (USDA-NRCS 2025b).

More developed mountain soils such as Fishsnooze, Josephine, and Fiddletown occur where soils are deeper. Fishsnooze soils are moderately deep (20–40 inches), well drained, and contain higher organic matter (about 8 %) than most mountain soils, although available water remains very low (USDA-NRCS 2025b). Josephine and Fiddletown soils are moderately deep to deep (35 inches to more than 60 inches), well drained, and have low to moderate available water with moderate shrink–swell in Josephine soils (USDA-NRCS 2025b).

The soil series described above represent regional soil types identified within Project Vicinity. Within the FERC Project Boundary, soils are mapped and presented using NRCS soil map unit symbols (MUSYM), which often represent complexes or associations of multiple soil series. As a result, individual soil series may be components of one or more mapped soil units shown on Figures 3.2-4 and 3.2-5 and summarized in Table 3.2-1.

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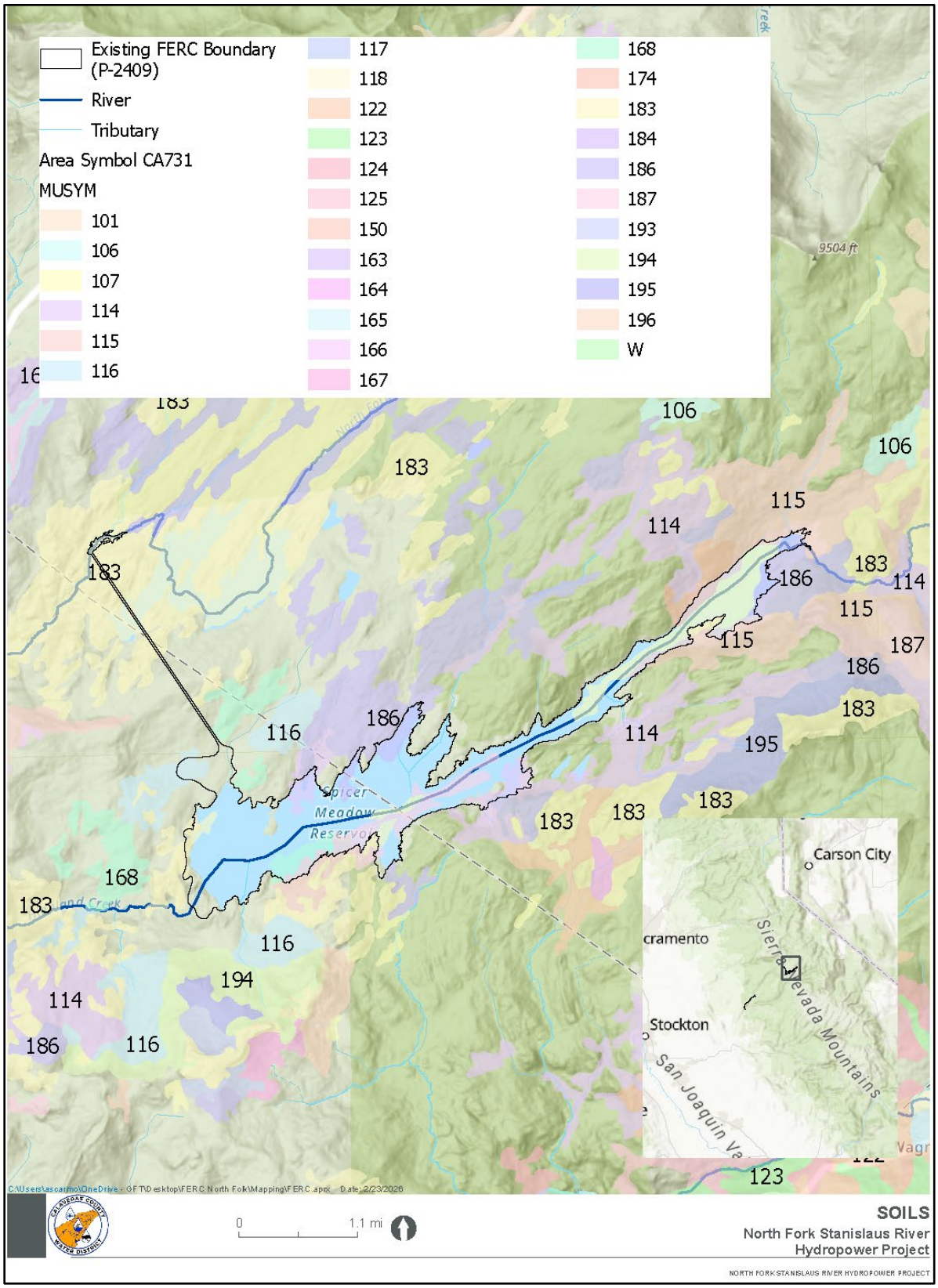


Figure 3.2-4. Soil Map Upper Watershed - Source: USDA-NRCS 2025a and 2025b.

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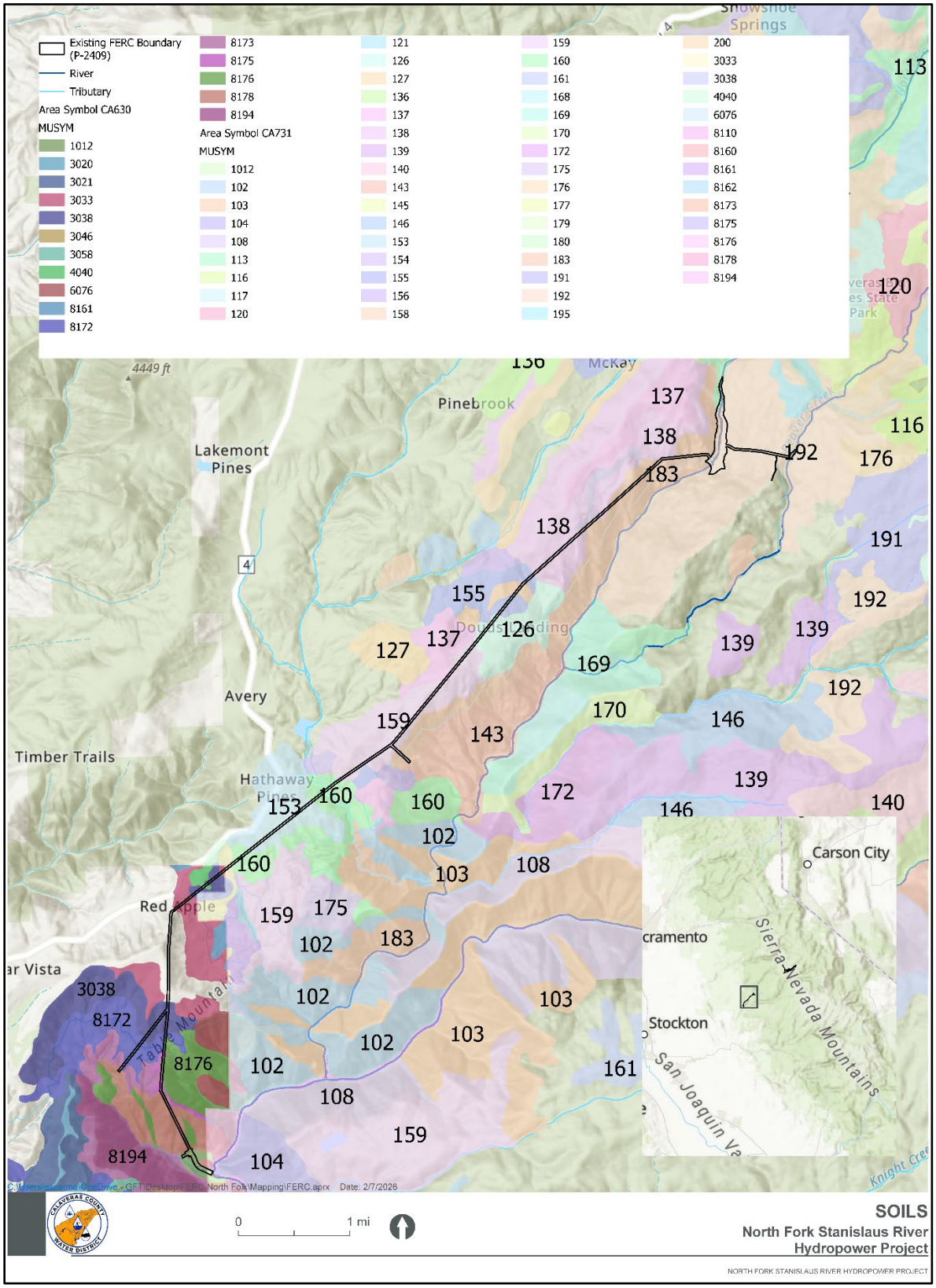


Figure 3.2-5. Soil Map Lower Watershed - Source: USDA-NRCS 2025a and 2025b.

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Table 3.2-1. Map Units Within Project Vicinity.

Area Symbol	Map Unit Symbol (MUSYM)	Generalized Soil Setting	General Soil Description
CA731	101, 106, 107	Upland slopes and ridgelines	Shallow to moderately deep mountain soils on steep terrain; well drained; commonly coarse textured with rock fragments
CA731	114, 115, 116, 117	Canyon slopes and uplands	Moderately deep soils on steep slopes; formed from weathered bedrock; well drained; erosion potential influenced by slope
CA731	122, 123, 124, 125	Lower slopes and colluvial landforms	Mixed upland soils on dissected terrain; variable depth and texture; influenced by downslope movement of material
CA731	150, 163, 164, 165, 166, 167, 168	Upland mountain terrain	Mountain soils formed from granitic or metamorphic parent materials; coarse-textured; shallow to moderately deep
CA731	174, 183, 184, 186, 187	River corridors and adjacent slopes	Soils associated with canyon bottoms and river terraces; deeper and more variable; influenced by fluvial processes
CA731	193, 194, 195, 196	Reservoir margins and adjacent uplands	Poorly developed or disturbed soils influenced by reservoir inundation and drawdown; variable texture
CA731	W	Open water	Reservoir surface; no soil component
CA630	1012	Foothill slopes and uplands	Moderately deep soils on rolling to steep foothill terrain; well drained
CA630	3020, 3021, 3033, 3038	Upland slopes and ridges	Mountain soils on steep slopes; coarse textured; shallow depth to bedrock common
CA630	3046, 3058	Dissected uplands	Soils on complex terrain; variable depth; influenced by erosion and slope instability
CA630	4040	Canyon and steep hillside terrain	Shallow soils with exposed bedrock; steep slopes
CA630	6076	Reservoir margins	Soils influenced by inundation and shoreline processes
CA630	8161, 8172, 8173, 8175, 8176, 8178, 8194	Steep canyon walls and mountainous uplands	Shallow, rocky soils on very steep slopes; well drained; limited soil development

Source: USDA-NRCS 2025a and 2025b

Soil reaction ranges from acidic to moderately alkaline, with most surface horizons falling between a pH of 5.1 and 7.3. Forested upland soils tend to be more acidic, while some foothill soils become neutral to alkaline at depth due to calcium carbonate accumulation (USDA–NRCS 2025a, 2025b).

Cation exchange capacity (CEC) varies from low in coarse-textured and shallow soils to moderate or high in finer-textured clay loam and clay soils, indicating variable but often adequate nutrient-holding capacity across the Project Vicinity. Calcium carbonate is generally absent at the surface and present only in select subsoils, while gypsum is not reported, indicating limited sulfate accumulation.

Salinity and sodicity are not significant constraints, as soils are consistently non-saline and non-sodic, with low electrical conductivity and negligible sodium adsorption ratios. Overall, soil

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chemical properties in the Project Vicinity support vegetation growth, with localized limitations related primarily to soil acidity or texture rather than chemical toxicity or salinity.

3.2.4.1 Glacial History

The Sierra Nevada experienced extensive alpine glaciation during the Pleistocene, with glaciers distributed along much of the range rather than being confined to isolated valleys (Moore & Moring 2013). Based on geologic mapping and previous studies, Moore & Moring estimate that at maximum extent, glaciers covered approximately 20,000 km² of the Sierra Nevada. Ice accumulation was concentrated at high elevations along the range crest, from which valley glaciers flowed downslope, eroding bedrock and depositing glacial sediments. This glaciation produced widespread geomorphic features including cirques, U-shaped valleys, moraines, and numerous rock-basin depressions that later became lakes (Moore & Moring 2013).

The oldest recognized glaciation is commonly referred to as the *Sherwin glaciation*. Deposits attributed to this episode are preserved discontinuously and are generally more weathered and eroded than younger glacial features, indicating their greater age. Sherwin-age deposits demonstrate that extensive glaciation occurred early in the Pleistocene and that large valley glaciers were already present in the Sierra Nevada at that time (Moore & Moring 2013).

Younger than the Sherwin deposits are glacial features commonly assigned to the *Tahoe glaciation*. Moore and Moring (2013) describe Tahoe-age moraines and drift as being more widespread and better preserved than Sherwin deposits, indicating a later but still substantial period of glaciation. Tahoe glaciation represents a major episode of ice expansion, during which valley glaciers extended far down major drainages, particularly in higher and more interior parts of the range.

The youngest major glacial episode recognized across the Sierra Nevada is the *Tioga glaciation*. Tioga deposits are the most clearly preserved and laterally continuous of the glacial records described in the paper. Moore and Moring (2013) note that Tioga glaciers occupied many of the same valleys as earlier glaciers but generally did not extend as far downslope as the oldest ice advances. The preservation of sharp-crested moraines, fresh erosional landforms, and abundant glacial deposits indicates that Tioga glaciation represents the most recent period of widespread alpine ice in the Sierra Nevada.

In addition to these major episodes, Moore and Moring (2013) recognize that minor readvances and stillstands occurred during overall glacial retreat, producing nested moraine sequences in some valleys. The distribution and relative preservation of these glacial features demonstrate that glacier extent varied both temporally and spatially across the range. Collectively, these glaciation episodes document a long history of repeated alpine glaciation, with ice extent controlled by elevation, climate, and topography, and with diminishing glacial influence toward lower elevations on the western slope of the range.

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3.2.4.2 Hillslope Processes

Hillslope processes in the western Sierra Nevada are strongly influenced by climate, weathering, and sediment transport mechanisms that vary with elevation (Dixon, Heimsath, Kaste, & Amundson 2009). Dixon et al. (2009) quantified rates of soil production, saprolite weathering, and physical erosion at two types of climatically contrasting sites on the western slope, revealing fundamental differences in the mechanisms driving hillslope soil formation and transport. At the lower-elevation sites, *biotic activity* such as root growth and animal burrowing plays a significant role in soil transport and mixing, whereas at the higher-elevation sites, *surface erosion by overland flow* becomes increasingly important due to sparse vegetation and higher precipitation intensity (Dixon et al. 2009).

Soil production rates decrease with increasing soil depth and distance from the slope crest at lower elevations, a pattern consistent with diffusion-like processes such as bioturbation and root growth (Dixon et al. 2009). In contrast, at high elevations, soil production did not show a clear dependence on depth, suggesting differences in dominant transport or erosion mechanisms across the climatic gradient (Dixon et al. 2009).

Physical erosion on these hillslopes is closely linked to the degree of saprolite weathering, with more highly weathered saprolites producing soils that are more readily detached and transported downslope (Dixon et al. 2009). The correlations between physical erosion and saprolite weathering rates at both lower-elevation and higher-elevation sites suggest that chemical weathering facilitates physical erosion by weakening bedrock and saprolite, thereby enhancing sediment production on hillslopes (Dixon et al. 2009).

Sediment transport processes also vary with elevation and vegetation cover. At higher-elevation sites, lower vegetative density and higher susceptibility to overland flow produced rills beginning tens of meters downslope from ridge crests. In contrast, lower-elevation sites exhibited no rilling, indicating that vegetative cover and climatic context significantly modulate how hillslope sediments are mobilized and moved downslope (Dixon et al. 2009).

Mass soil movement in the Sierra Nevada includes a variety of gravitational slope failures that reshape the landscape under the influence of gravity. These processes fall under mass wasting, which is the downslope movement of soil, rock, and debris driven primarily by gravity when the driving forces exceed the strength of slope materials (LibreTexts 2025). Common types of mass movement described in the Sierra Nevada include rockfalls, rockslides, mudslides (debris flows), and slumps. Rockfalls involve sudden detachment and free fall of rocks from steep slopes. Rockslides occur along defined planes of weakness, allowing large rock masses to move downslope. Debris flows consist of water-saturated mixtures of soil and rock that move rapidly, often triggered by heavy rainfall or rapid snowmelt. Slumps are slower movements where blocks of earth rotate and translate down a curved surface, often forming terrace-like scarps (LibreTexts 2025). In the Sierra Nevada, rugged topography and steep slopes enhance these mass movement hazards, particularly following weathering, erosion, and water saturation of soils and fractures (LibreTexts 2025).

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A documented example is the 1997 Sourgrass debris flow in the Stanislaus River drainage, triggered by a rain-on-snow event during the New Year's storm (DeGraff 2001). The event initiated near 6,000 feet elevation and traveled approximately 2.4 miles to the NFSR, delivering an estimated 191,000 cubic yards of material. The debris temporarily dammed the river, and a substantial portion of the sediment was transported downstream and deposited in McKays Point Reservoir, reducing storage capacity by approximately 200 acre-feet (DeGraff 2001). This event demonstrates that debris flows, while infrequent, are a recognized natural hazard in the upper Stanislaus River watershed.

Overall, hillslope processes in the Sierra Nevada involve a complex interplay of biotic activity, weathering intensity, physical erosion, and sediment transport**,** each influenced by elevation and climate conditions that together shape the landscape's evolution (Dixon et al. 2009).

3.2.4.3 Erosion and Sedimentation

The NFSR Basin occupies a steep, high-relief granitic landscape of the central Sierra Nevada, where geomorphic processes are dominated by rock weathering, shallow soil mantles, colluvial transport, and episodic fluvial entrainment during snowmelt and storm events. In its upper elevations, including the NFSR headwaters and Highland Creek, exposed granodiorite and thin alpine soils limit sediment production to small volumes of sand, gravel, and weathered rock generated primarily from slope wash, freeze–thaw fracturing, and shallow mass wasting. These materials historically entered channels through rilling, bank erosion, and debris flows during peak runoff, supplying bed material to downstream reaches (CCWD 1985).

Downstream of the alpine headwaters, the basin transitions into mixed forested terrain with thicker soils and greater colluvial storage, particularly in tributaries such as Beaver Creek. In these areas, erosion potential increases as weathered soils and decomposed granite accumulate on hillslopes and in valley bottoms. During high flows, these deposits are mobilized and delivered to stream channels, contributing both suspended sediment and coarse bedload to the fluvial system (CCWD 1985). This natural pattern of sediment generation creates a longitudinal increase in sediment supply from the upper watershed to the middle and lower reaches of the NFSR.

Superimposed on these natural geomorphic processes is a highly regulated hydrologic and sediment regime created by a series of reservoirs, diversion dams, tunnels, and power facilities. The North Fork Diversion, Alpine, Utica, Union, New Spicer Meadow, Beaver Creek Diversion, and McKays Point reservoirs intercept runoff from most of the basin's major sediment-producing tributaries. These impoundments function as long-term sediment traps, capturing gravel, sand, and much of the suspended load that would otherwise be transported downstream (CCWD 1985). As a result, the NFSR below these facilities receives substantially reduced sediment supply relative to its transport capacity, a condition that favors channel armoring, bed incision, and bank instability.

During Project construction and maintenance, erosion and sedimentation risks are elevated because soils, colluvium, and weathered bedrock are disturbed by excavation, road building, tunnel portals, reservoir clearing, and powerhouse construction. To prevent short-term pulses of sediment

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from entering streams, extensive control systems are employed throughout the basin, including cofferdams, diversion channels, settling ponds, sediment basins, berms, ditches, and level spreaders. These structures isolate active construction from flowing water and capture sediment before runoff is returned to natural channels (CCWD 1985). Where fine sediment remains in suspension, filtration and flocculation are used to further reduce turbidity before discharge.

Soil erodibility within the Project Vicinity varies from low to moderately high, as defined by the USDA SSURGO K-factor values (USDA SSURGO, n.d.). The K-factor represents the inherent susceptibility of soil to erosion by water, with higher values indicating greater potential for soil loss. Within the existing Project Boundary, mapped K-factor classes range from 0.00 to 0.10 (very low erodibility) to 0.51 to 0.64 (moderately high erodibility). The majority of the Project Vicinity appears to be dominated by low to moderate erodibility classes (generally between 0.11 and 0.40). Areas with higher K-factor values are more limited in extent and are primarily associated with localized soil types that are more susceptible to detachment, particularly near river corridors and tributaries. Figure 3.2-6 depicts the soil erodibility in the Project Vicinity.

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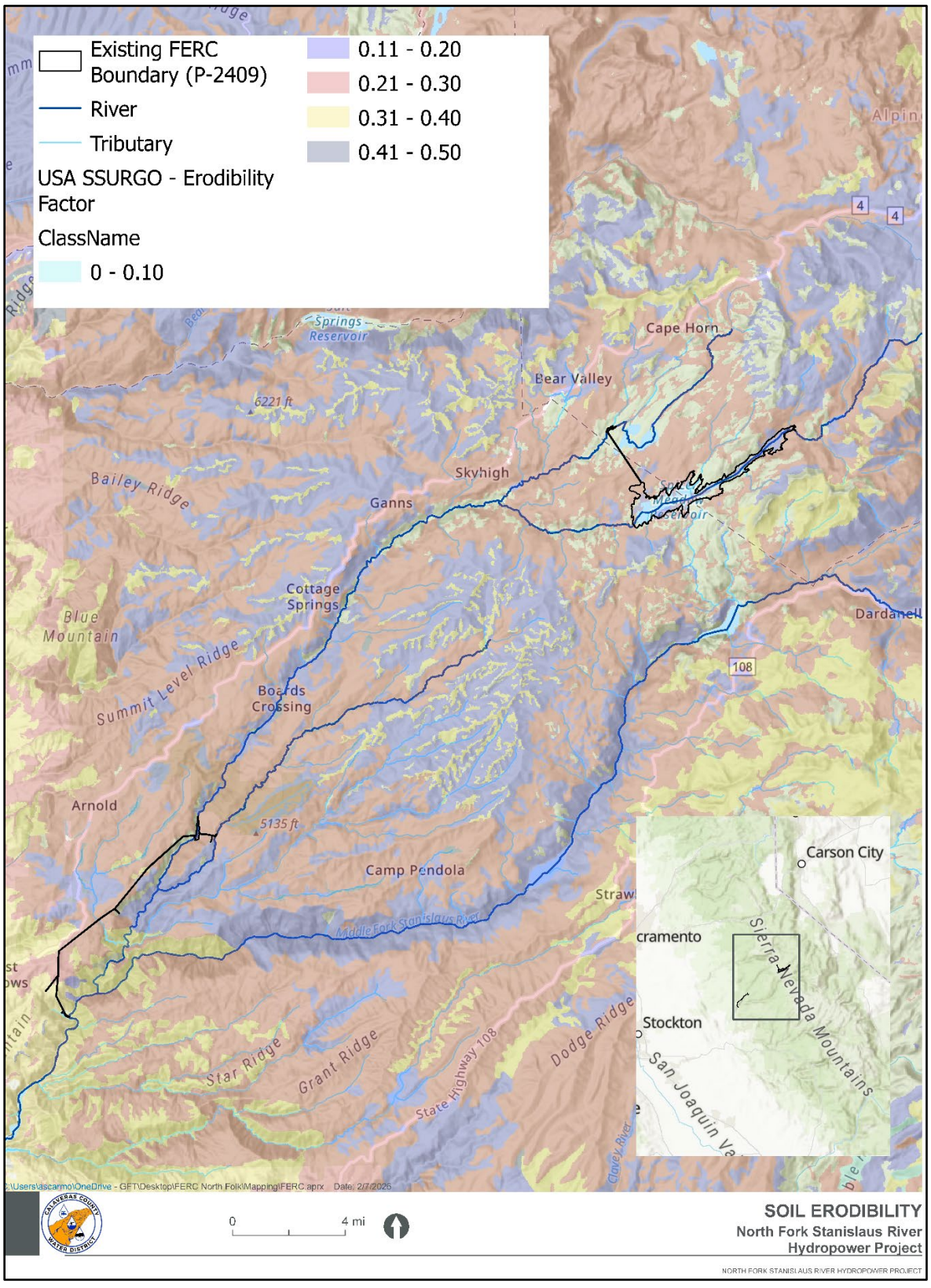


Figure 3.2-6. Soil Erodibility Map - Source: SSURGO, n.d.

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3.2.4.4 Fluvial Geomorphology

The NFSR is situated near the center of the gently west-sloping flank of the Sierra Nevada, a large, asymmetric mountain range extending more than 400 miles across eastern California (CCWD 1980). Within the Project Vicinity, the river and its tributaries have incised deeply into the upland surface, forming narrow, bedrock-controlled canyons with steep valley walls and high local relief. Channel morphology and valley form reflect long-term fluvial incision superimposed on structurally and lithologically controlled terrain.

At Clark Flat, where the river lies at approximately 1,080 feet elevation, the canyon is V-shaped and about 1,700 feet deep, with local relief exceeding 2,500 feet (CCWD 1980). Upstream, canyon depth progressively decreases as the river approaches the former limit of Pleistocene glaciation. Near the confluence with Highland Creek, approximately 25 river miles upstream of Clark Flat and at an elevation of about 5,600 feet, canyon depth is roughly 1,000 feet (CCWD 1980). Above this point, glacial modification has broadened and subdued valley morphology, resulting in wider valleys and reduced fluvial incision. Near the Alpine County border at the confluence with Silver Creek, canyon depth decreases to approximately 250 feet, and near Union–Utica Reservoir at about 6,800 feet elevation, local relief is on the order of 100 feet (CCWD 1980). The Highland Creek canyon averages 800 to 900 feet in depth and deepens to more than 1,600 feet near Gabbot Meadow at approximately 6,530 feet elevation, reflecting a transitional zone between fluvial incision and glacially modified topography (CCWD 1980).

Reservoir shorelines, streambanks, canals, and spill channels within the Project Vicinity are directly associated with specific Project facilities, which includes four primary impoundments and associated conveyance works along the NFSR and its tributaries (CCWD 2025). Reservoir shorelines occur at the North Fork Diversion Dam impoundment, New Spicer Meadow Reservoir impoundment, Beaver Creek Diversion Dam impoundment, and McKays Point Reservoir impoundment (North Fork Stanislaus River Hydroelectric Project Fact Sheet, n.d.). Shoreline areas fluctuate with seasonal hydrology and Project operations, resulting in periodic inundation and exposure and are underlain by local granitic bedrock and associated colluvial and alluvial deposits typical of the Sierra Nevada foothills (CCWD 2025; California Geological Survey 2010).

Streambanks are present along reaches of the NFSR upstream and downstream of these impoundments and below diversion structures, where channel form varies from steeper bedrock-controlled banks to lower-gradient alluvial sections composed of cobble, gravel, and sand. Bank stability is influenced by natural channel conditions and regulated flow releases from Project facilities designed under the existing FERC license (CCWD 2025).

Project conveyance features include engineered tunnels, canals, and penstocks that divert water between reservoirs, intakes, and powerhouses, including the North Fork Diversion Tunnel, Beaver Creek Diversion Tunnel and Penstock, and the McKays Point–Collierville conveyance system supplying the Collierville Powerhouse. These conveyance alignments are tunnel and channel features excavated through bedrock or constructed with earth and concrete linings, with riprap and other armoring to control seepage and erosion; they are maintained separately from natural

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geomorphic processes except at planned drainage crossings (North Fork Stanislaus River Hydroelectric Project Fact Sheet, n.d.; CCWD 2025).

Spill channels and overflow works occur at the principal dams and diversion structures. While the Project's existing FERC License does not provide detailed engineering descriptions of spillway configurations, the license obligates the Licensee to manage flows and take reasonable measures to prevent soil erosion and stream sedimentation adjacent to streams and reservoirs (CCWD 2025). These spill facilities convey excess flows during high-water events and are designed to withstand high velocities and erosive forces typical of Sierra Nevada storm events. These features convey high flows during storm events and periods of elevated runoff and are designed to withstand high flow velocities and erosive forces typical of Sierra Nevada hydrologic conditions.

Vegetative cover along stream banks and reservoir margins varies with slope, soil depth, elevation, and disturbance history. Steep, rocky reaches generally support sparse to moderate vegetation, while gentler areas with thicker soils support more continuous plant cover (CCWD 1980). Lands within and adjacent to the existing FERC Project Boundary are predominantly forested, consistent with mid- to upper-elevation Sierra Nevada vegetation patterns. Conifer forest is the dominant cover type, occupying uplands, canyon walls, and higher elevation slopes. Conifer woodland occurs in more open stands or transitional settings, while hardwood forest and hardwood woodland are more common at lower elevations and along ecotonal zones influenced by warmer and drier conditions. Shrub and herbaceous communities occur in discontinuous patches, typically associated with shallow soils, exposed bedrock, canopy openings, or previously disturbed areas (CDFW, n.d.).

Localized erosion, slope raveling, and shallow slope failures occur where soils are thin, disturbed, or underlain by decomposed granite or colluvium. Alteration of natural flow regimes and sediment transport by reservoirs and diversion structures has reduced downstream sediment supply, which may contribute to channel incision and bank erosion below the Project facilities (CCWD 1980).

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3.3 Water Resources

Per 18 C.F.R. § 5.6 (d)(3)(iii), this section describes water resources of the proposed project and surrounding area which requires a description of existing water quality within the proposed Project Boundary and adjacent areas that could be affected by Project construction, operation, and maintenance. Consistent with these requirements, this section identifies applicable federal and state water quality standards; summarizes available monitoring data and publicly available information; describes known impairments, where applicable; and outlines regulatory oversight by agencies with authority over water quality.

This section describes existing water quantity and water quality conditions within the FERC Project Boundary and Vicinity that may affect or be affected by the North Fork Stanislaus River Hydroelectric Project (Project). This section is divided into two sections. Section 3.3.1 describes water quantity and uses, and Section 3.3.2 discusses water quality.

3.3.1 Water Quantity and Use

Section 3.1 of this PAD provides a description of the North Fork Stanislaus River (NFSR) basin including hydroelectric and water projects in the basin, existing dams in the basin, tributaries downstream of the Project, drainages areas at key locations, relevant river miles, a streambed gradient from the Project to New Melones Reservoir on the Stanislaus River, and a description of reaches potentially affected by the Project. Information regarding existing hydrology and water availability for use by the Project, as well as monthly flow duration curves and maximum and minimum flow releases from Project powerhouses and in Project-affected reaches is provided in Attachment 2B, draft Exhibit B. In addition, draft Exhibit B describes the critical period used to calculate the Project's dependable capacity. Morphometric information for Project reservoirs and improvements is provided in Attachment 2A, draft Exhibit A. Water rights that affect the Project are described in draft Exhibit B. Beneficial uses of surface water designated by the Basin Plan are listed in Table 3.1-1. The water balance and operations model is described in draft Exhibit B. There is one recreation area within the Project (New Spicer Meadow Campground, Day Use, and Boat Launch) that receives drinking water from a nearby well.

3.3.2 Water Quality

The water quality information presented in this section provides an overview of the existing physical and chemical water quality conditions in the Project Vicinity from collected data within existing public reports and publicly available databases. The Project watershed is mostly located within wild Forest Service land, and water quality monitoring is not a requirement of the current FERC license. There is minimal publicly available water quality data for the FERC Project Boundary.

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Calaveras County Water District (CCWD) draws water from multiple surface and groundwater sources, including the Calaveras, Mokelumne, and Stanislaus Rivers and selected groundwater wells. These sources supply water to several systems throughout the County (CCWD 2024).

Sources of drinking water evaluated by CCWD include rivers, lakes, streams, ponds, reservoirs, springs, and wells. Water travels over the surface of the landscape, and naturally occurring minerals or other materials can be picked up. Micro contaminants (such as bacteria and virus) may come from sewer treatment plants, septic systems, agricultural farms, livestock operations, and/or wildlife presence. Other inorganic contamination (such as salt, pesticides, herbicides, or metals) can also occur in the water due to stormwater runoff, mining, residential uses, or farming (CCWD 2024).

CCWD tests for potential contaminants in accordance with federal and state regulatory requirements. Based on the available *2024 Annual Water Quality Report* (CCWD 2024), a range of regulated substances were monitored in 2024, including metals (e.g., barium), disinfectant residuals (e.g., chlorine), disinfection byproducts (e.g., haloacetic acids [HAA5] and total trihalomethanes [TTHMs]), and lead and copper from plumbing (CCWD 2024). Most detected constituents were well below their respective regulatory limits. In some systems, disinfection byproducts such as HAA5 were noted, but overall concentrations were within acceptable ranges or treated as part of normal compliance monitoring. No exceedances of primary health-based standards were reported across the water systems served by CCWD in 2024 (CCWD 2024).

The Bear Valley Wastewater Treatment Facility is located 1.5 miles northwest of the North Fork Diversion Dam, which has a discharge permit which authorizes discharge into Bloods Creek, a tributary of the NFSR. As part of the National Pollutant Discharge Elimination Systems (NPDES) permit issued by the California State Water Resources Control Board (SWRCB), there are limits of the levels of contaminants authorized to be released on a daily, weekly and monthly basis. The limitations of the discharge can be found in Table 3.3-1. There are other parameters with limitations which include: pH is limited to 6.0-9.0 standard units; biochemical oxygen demand and total suspended solids are limited to not exceeding 85 percent in an average monthly removal; Survival of aquatic organisms in a 90-hour bioassays of undiluted waste are limited to 70 percent for any one bioassay and 90 percent for any three consecutive bioassays' total residual chlorine is not to exceed 0.011 milligrams per liter (mg/L) as a 4-day average and 0.019 mg/L as a 1 hour average; and lastly, total coliform organisms shall not exceed 23 most probable number per 100 milliliters (M/100ML, as a 7-day median and 240 MPN/100mL, more than once in a 30-day period.

Table 3.3-1. Limitations of contaminants for the NPDES permit issued by the SWRCB on June 23, 2022.

Parameters	Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand 5-day @ 20°Celsius	30 mg/L	45 mg/L	N/A
Total Suspended Solids	30 mg/L	45 mg/L	N/A
Copper, Total Recoverable	6.1 micrograms per liter (µ/L)	N/A	9.0 µ/L
Lead, Total Recoverable	0.72 µ/L	N/A	1.6 µ/L
Aluminum, Total Recoverable	340 µ/L	590 µ/L	N/A

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Table 3.3-1. (Continued).

Parameters	Average Monthly	Average Weekly	Maximum Daily
Ammonia Nitrogen, Total (as N)	13 µ/L	23 µ/L	N/A
Nitrate Plus Nitrite, Total (as N)	10 µ/L	17 µ/L	N/A
Settleable Solids	0.1 milliliters/liter (ML/L)	0.2 ML/L	N/A

Source: SWRCB 2022b NPDES Permit

The 2024 report presents results from monitoring conducted between January 1 and December 31, 2024, showing that the drinking water delivered by CCWD is regularly tested and adheres to the stringent health-based regulatory limits established by the SWRCB and the U.S. Environmental Protection Agency (EPA). Detection of substances in the treated water does not necessarily indicate health risk; rather, levels are compared against regulatory maximum contaminant levels (MCLs) and other standards to ensure protection of public health. The report also discusses any recent abnormalities that have been identified in prior years (CCWD 2024).

To ensure the water is safe to drink, water quality within the Project is regulated under the Clean Water Act (CWA) by EPA and implemented at the state level by the SWRCB. These agencies establish water quality criteria, maximum contaminant levels, beneficial use designations, and impairment listings for surface waters and groundwater resources.

3.3.2.1 Applicable Water Quality Standards and Impairment Status

The state of California is responsible for implementing and enforcing water quality standards through the implementation of the federal CWA. State authority is administered by the State Water Resources Control Board and its Regional Water Quality Control Boards.

The Project is located within the Central Valley Regional Water Quality Control Board (CVRWQCB) region. The CVRWQCB establishes water quality objectives and identifies designated beneficial uses for surface waters and groundwater within its region through the *Water Quality Control Plan for the Sacramento River Basin* and *San Joaquin River Basin (Basin Plan)* (SWRCB 2019). The Basin Plan provides the regulatory framework used to evaluate water quality conditions and ensure protection of designated beneficial uses within the Project area.

The Basin Plan identifies beneficial uses such as municipal and domestic supply (MUN), agricultural supply (AGR), water contact recreation (REC-1), non-contact recreation (REC-2), cold and warm freshwater habitat (COLD and WARM), fish migration (MIGR), spawning (SPWN), wildlife habitat (WILD), and hydropower generation (POW), and establishes numeric and narrative objectives necessary to protect those uses. The Basin Plan surface water quality objectives for water quality are included in Table 3.3-2. These objectives are implemented through regulatory mechanisms including Waste Discharge Requirements, National Pollutant Discharge Elimination System permits, and Total Maximum Daily Loads, consistent with the Clean Water Act and the Porter-Cologne Water Quality Control Act.

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Table 3.3-2. Water quality objective measured by the Basin Plan.

Water Quality Objectives	Additional Information
Bacteria	In waters designated for REC-1, the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period; shall not exceed 200/100ml or 10 percent of the total number of samples taken during any 30-day period exceed 400/100ml.
Biostimulatory Substances	Water shall not contain biostimulatory substances which promote aquatic growth in concentrations that cause nuisance or adversely affect beneficial uses.
Chemical Constituents	Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses including Arsenic, Barium, Boron, Cadmium, Copper Cyanide, Iron, Manganese, Molybdenum, Selenium, Silver, and Zinc.
Cryptosporidium and Giardia	Waters shall not contain Cryptosporidium and Giardia in concentrations that adversely affect the public water system component of the MUN beneficial use. Compliance with this objective will be assessed at existing and new public water system intakes.
Color	Water shall be free of discoloration that causes nuisance or adversely affects beneficial use.
Dissolved Oxygen	For surface water bodies outside the legal boundaries of the Delta, the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main water mass, and the 95-percentile concentration shall not fall below 75 percent of saturation. The dissolved oxygen concentrations shall not be reduced below the following minimum levels at any time: Waters designated WARM 5.0 mg/l Waters designated COLD 7.0 mg/l
Floating Material	Water shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses.
Oil and Grease	Water shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.
pH	The pH shall not be depressed below 6.5 nor raised above 8.5.

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Table 3.3-2. (Continued).

Water Quality Objectives	Additional Information
Pesticides	No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses. Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by the Environmental Protection Agency or the Executive Officer. Pesticide concentrations shall not exceed those allowable by applicable antidegradation policies. Pesticide concentrations shall not exceed the lowest levels technically and economically achievable. Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of pesticides in excess of the Maximum Contaminant Levels set forth in California Code of Regulations, Title 22, Division 4, Chapter 15. Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of thiobencarb in excess of 1.0 µg/l. For the purposes of this objective, the term pesticide shall include: (1) any substance, or mixture of substances which is intended to be used for defoliating plants, regulating plant growth, or for preventing, destroying, repelling, or mitigating any pest, which may infest or be detrimental to vegetation, man, animals, or households, or be present in any agricultural or nonagricultural environment whatsoever, or (2) any spray adjuvant, or (3) any breakdown products of these materials that threaten beneficial uses. Note that discharges of "inert" ingredients included in pesticide formulations must comply with all applicable water quality objectives.
Radio Activity	Radionuclides shall not be present in concentrations that are harmful to human, plant, animal, or aquatic life nor that result in the accumulation of radio nuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life. At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 64442 of Section 64442 and Table 64443 of Section 64443 of Title 22 of the California Code of Regulations. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect.
Sediment	The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
Settleable Material	Water shall not contain substances in concentration that result in the deposition of material that causes nuisance or adversely affects beneficial uses.
Suspended Material	Water shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.
Tastes and Odors	Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.

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Table 3.3-2. (Continued).

Water Quality Objectives	Additional Information
Temperature	The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. Temperature objectives for COLD interstate waters, and WARM interstate waters are as specified in the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California including any revisions. At no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature. In determining compliance with the water quality objectives for temperature, appropriate averaging periods may be applied provided that beneficial uses will be fully protected.
Toxicity	All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Water Board. The Regional Water Board will also consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for toxic substances developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the State Water Board Division of Drinking Water Programs, the U.S. Food and Drug Administration, the National Academy of Sciences, the U.S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective. The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality factors shall not be less than that for the same water body in areas unaffected by the waste discharge, or, when necessary, for other control water that is consistent with the requirements for "experimental water" as described in Standard Methods for the Examination of Water and Wastewater, latest edition. As a minimum, compliance with this objective as stated in the previous sentence shall be evaluated with a 96-hour bioassay. In addition, effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate; additional numerical receiving water quality objectives for specific toxicants will be established as sufficient data become available; and source control of toxic substances will be encouraged.

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Table 3.3-2. (Continued).

Water Quality Objectives	Additional Information
Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits: Where natural turbidity is less than 1 Nephelometric Turbidity Unit (NTU), controllable factors shall not cause downstream turbidity to exceed 2 • Where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU. • Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent. • Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs. • Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent. In determining compliance with the above limits, appropriate averaging periods may be applied provided that beneficial uses will be fully protected. Exceptions to the above limits will be considered when a dredging operation can cause an increase in turbidity. In those cases, an allowable zone of dilution within which turbidity in excess of the limits may be tolerated will be defined for the operation and prescribed in a discharge permit.

Source: CVRWQCB 2019.

In addition, California Code of Regulations Title 22 contains a list of rules and regulations that addresses human health and safety issues, including drinking water standards that set numeric maximum contaminant levels (MCLs) and other criteria for toxic pollutants in water. These standards define allowable concentrations for constituents that may pose risks to public health and apply to waters designated for municipal and domestic supply (MUN).

Contaminants that may be present in water include Microbial Contamination (viruses and or bacteria that may come from human-made sources such as sewage treatment plants, septic systems, or agricultural livestock operations); Inorganic Contaminants (salts or metals that may be naturally occurring or can result from urban stormwater runoff, mining, farming); Pesticides or Herbicides (may come from variety of sources such as urban runoff or residential uses); Organic Chemical Contaminants (synthetic and volatile organic chemicals that are by-products of industrial processes and petroleum production), or Radioactive Contaminants (can be naturally occurring or could be the result of oil or gas production or mining activities).

CCWD tests for the substances in Table 3.3-3 and publishes the results annually online in their website through the *Annual Water Quality Report* (Calaveras County 2024). The monitoring CCWD conducts annually includes the Ebbetts Pass Water System, specifically for drinking water. The CCWD Annual Reports dating back to 2015 were reviewed. Ebbetts Pass supply is drawn from the Collierville Tunnel, which is within the FERC Project Boundary (CCWD 2005). According to *Ebbetts Pass Water Master Plan for the Calaveras County Water District* (CCWD

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2005) the System's running annual average concentrations of haloacetic acids (HAA5's) exceeded the maximum contaminant level in the fourth quarter 2002 and first quarter of 2003. CCWD implemented treatment and distribution modification in February 2003, which resulted in the level to be in normal range (CCWD 2005). In the 4th quarter of 2020, there was another exceedance of HAA5's, and CCWD again implemented treatment changes including additional flushing schedules to eliminate the exceedance. Since the implementation of treatment and distribution modifications in 2020, the HAA5's level was within the normal range.

Table 3.3-3. Substances tested by the CCWD and their typical sources.

Substances Tested	Typical Sources
Barium	Discharges of oil drilling wastes and from metal refineries; erosion on natural deposits
Calcium	No known typical source
Chlorate	No known typical source
Chloride	Runoff/leaching from natural deposits; seawater influence
Chlorine	Drinking water disinfectant added for treatment
Color	Naturally occurring organic materials
Control of DBP Precursors [TOC]	Various natural and human-made sources
Copper	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Corrosivity	Natural or industrially influenced balance of hydrogen, carbon, and oxygen affected by temperature and other factors
HAA5 [sum of 5 haloacetic acids]	By-product of drinking water disinfection
Hardness, Total [as CaCO3]	Caused by naturally occurring calcium and magnesium
Iron	Leaching from natural deposits; industrial wastes
Magnesium	Naturally occurring
Manganese	Leaching from natural deposits
Odor, Threshold	Naturally occurring organic materials
Sodium	Naturally occurring
Specific Conductance	Substances that form ions when in water; seawater influence
Sulfate	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids	Runoff/leaching from natural deposits
TTHMs [total trihalomethanes]	By-product of drinking water disinfection
Turbidity	Soil runoff
Zinc	Runoff/leaching from natural deposits; industrial wastes

Source: CCWD 2024.

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The reported data represent potential contaminants that could affect municipal and domestic supply (MUN) sources throughout the County including within the Project. Monitoring includes naturally occurring constituents as well as contaminants that may be associated with wastewater systems, stormwater runoff, agricultural practices, industrial activities, or resource extraction. However, the Project is located in a predominantly rural river corridor characterized by limited urban development and minimal industrial land uses. Most of the typical sources for contaminants are not likely to occur due to the rural location of the river. As such, common sources of industrial discharges, refinery-related pollutants, concentrated agricultural return flows, or saline intrusion are not prevalent in the immediate Project Vicinity. Accordingly, while countywide monitoring addresses a broad range of potential contaminants to ensure compliance with Title 22 drinking water standards, many of the typical anthropogenic sources associated with those contaminants are limited within the Project area.

Every two years, the California State Regional Water Control Board submits to the EPA a list of rivers, lakes, and reservoirs that failed to meet designated uses or water quality standards. These rivers, lakes, and reservoirs are added to the Section 303(d) listing. None of the waterbodies in the Project are listed as impaired by the California State Water Resources Control Board (SWRCB 2024).

In 2012, as part of the annual testing from CCWD, there was one sampling effort that identified a contaminant above acceptable levels, and an evaluation was conducted to determine if the exceedance warranted New Spicer Meadow Reservoir being added to the Section 303(d) listing. (SWRCB 2022a). A pollutant (Alkalinity as $CaCO_3$, which measures the water's capacity to neutralize acids) was in exceedance and was considered a violation. This would potentially impact the Cold Freshwater Habitat (COLD) beneficial use. The pH level was also found to be in exceedance, which may impact the Water Contact Recreation (REC-1), Non-contact Recreation (REC-2), and COLD benefits.

It was determined by the SWRCB that there was insufficient information to determine if this should warrant being placed on the 303(d) list of impaired waters, and future monitoring would continue (SWRCB 2022a). No substances tested since the violation occurred have been in exceedance, and no additional violations have been noted (SWRCB 2024).

According to the CVRWQCB, beneficial uses are critical to water quality management in California. Table 3.3-4 provides a list of beneficial uses and whether there was a violation for potential listing in the 303 (d) list, as identified in the Basin Plan.

Table 3.3-4. Beneficial uses of the Project according to the Basin Plan and if there has been a violation in testing by the CCWQCB.

Beneficial Use	Violation
Municipal and Domestic Supply (MUN)	No
Irrigation (ARG)	No
Stock Water (ARG)	No
Hydropower Generation (POW)	No
Water Contact Recreation (REC-1)	Yes
Canoeing and Rafting (REC-1)	No

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Table 3.3-4. (Continued).

Beneficial Use	Violation
Non-Contact Water Recreation (REC-2)	Yes
Warm Freshwater Habitat (WARM)	No
Cold Freshwater Habitat (COLD)	Yes
Wildlife Habitat (WILD)	No

Source: CVRWQCB 2019 and CCWD 2024

Examples of MUN benefits that can be found within the Project include uses of water for the community and individual water supply including drinking water. ARG benefits in the Project include irrigation at local homes or businesses and stock water for grazing species such as free-range cattle. POW benefits include hydropower generation. REC-1 benefits in the Project include any potential ingestion of water such as during canoeing and rafting as well as swimming, wading, water skiing, or fishing. REC-2 benefits in the Project include being near the water but not having contact with it. Examples include picnics, hunting, hiking, sunbathing, camping, boating, or simply enjoying the aesthetic views. WARM benefits include preserving or enhancing aquatic habitats, vegetation, and wildlife. COLD benefits include the same benefits as WARM but are limited to the cold-water ecosystems. Lastly, WILD benefits in the Project area include waters that support terrestrial ecosystems including local vegetation, wildlife (fish, mammals, reptiles, amphibians, birds, and invertebrates) and their food sources (CVRWQCB 2019).

3.3.2.2 Water Temperature

Limited temperature data are available for the North Fork Stanislaus River (including at New Spicer Meadow Reservoir, Highland Creek, and Beaver Creek) at this time. The nearest CDEC monitoring station is at Goodwin Dam located 24 miles south of the southern end of the FERC Project area, south of New Melones Reservoir (NWIS 2026). The Avery Gage located south of Big Trees State park does record water temperature, but the publicly available information is limited to a 24-hour window (NCPA 2026). Due to the distance, it is assumed that the temperature data at New Melones Reservoir is not relevant to the activities in the Project (Center for Business and Research University 2026 and CEDEN 2026).

To provide for a better understanding of baseline water temperature conditions in Project affected stream reaches, during early summer 2026 CCWD commenced a water temperature monitoring effort to seasonally collect hourly water temperature data at twenty (20) locations in the watershed. The approximate locations of the temporary water temperature loggers are shown in Figure 3.3-1, below. CCWD intends to collect data from approximately June through September 2026, and again seasonally in 2027. In addition, CCWD plans to record several water temperature profiles within New Spicer Meadow Reservoir. More details of the water temperature study can be found in Section 4, Issues and Proposed Studies, of this PAD.

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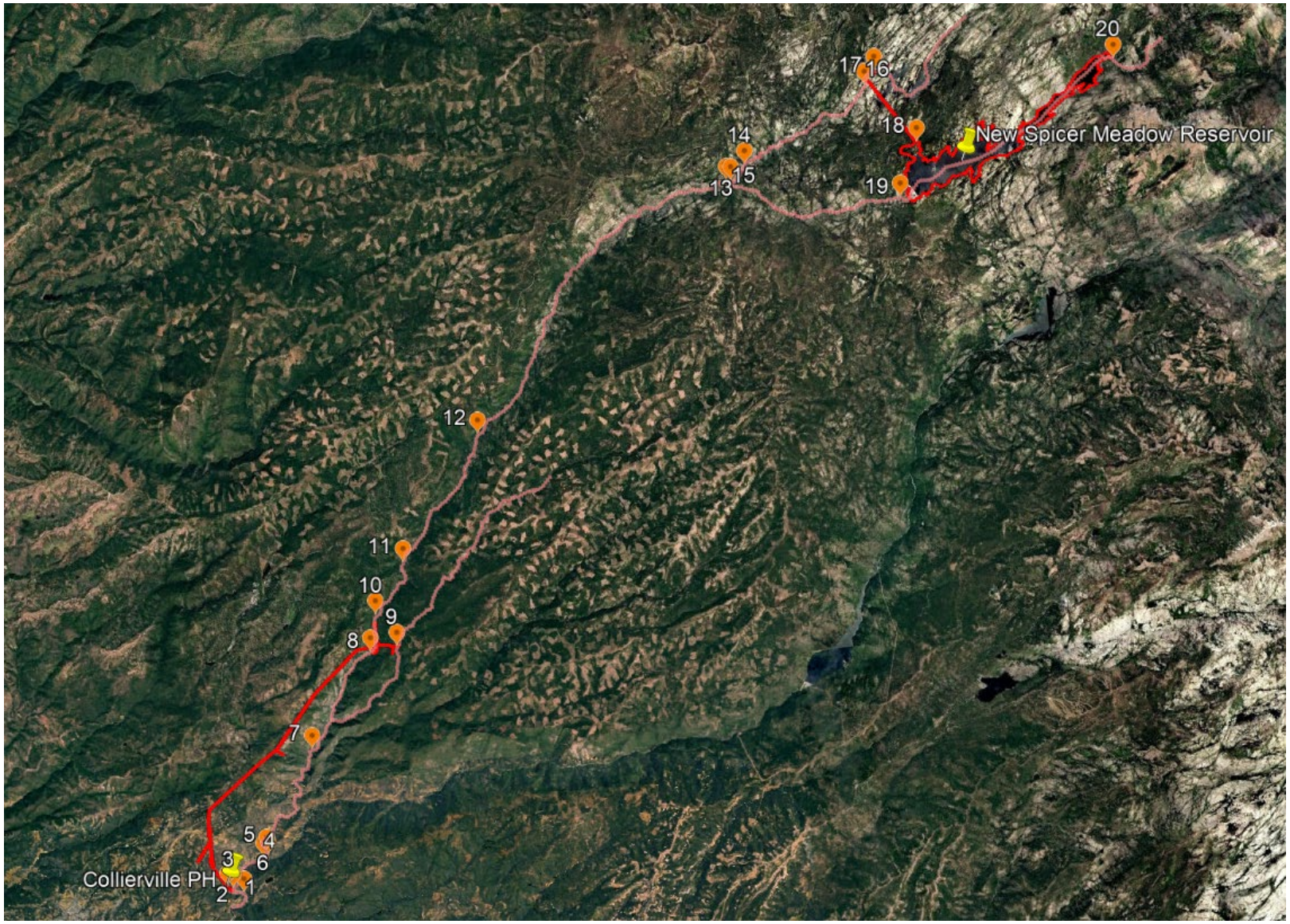


Figure 3.3-1. Locations of temporary water temperature loggers.

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3.4 Aquatic Resources

Per 18 C.F.R. § 5.6 (d)(3)(iv), this section describes aquatic resources, including invasive species, in the Project Vicinity. This section discusses the existing fish and macroinvertebrate communities, including the presence or absence of anadromous, catadromous or migratory fish and any known potential upstream or downstream impacts of the project on the aquatic community. Components of this description must include identification of existing aquatic communities; identification of fish habitat; temporal and special distribution of fish and aquatic species and their associated trends with respect to species and lift stage composition, standing crop, age and growth data, spawning run timing, and the extent and location of spawning, rearing, feeding, and wintering habitat.

This section is organized into four subsections. Section 3.4.1 describes fisheries resources, Section 3.4.2 describes benthic macroinvertebrates (BMI), Section 3.4.3 describes aquatic invasive species (AIS), Section 3.4.4 describes amphibians and aquatic reptiles.

To compile a list of aquatic resources potentially affected by the Project, CCWD examined the area within the Project reservoirs and Project-affected stream reaches. CCWD also examined tributaries to these reservoirs and stream reaches, for the purposes of describing populations that may use the Project reservoirs and bypass reaches for only portions of the year or life history. The aquatic resources Assessment Area of the Proposed Project includes the NFSR, Highland Creek, Beaver Creek, Stanislaus River, and associated project impoundments (i.e., New Spicer Meadow Reservoir, Beaver Creek Diversion Dam impoundment, North Fork Diversion Dam impoundment, and McKays Point Reservoir) as identified in Figure 3.4-1. Additionally, to assess amphibians and aquatic reptiles, which may inhabit upland areas near aquatic habitats, CCWD examined a 0.25-mile buffer around these aquatic areas (to capture habitat immediately upland of these aquatic features) and the area within.

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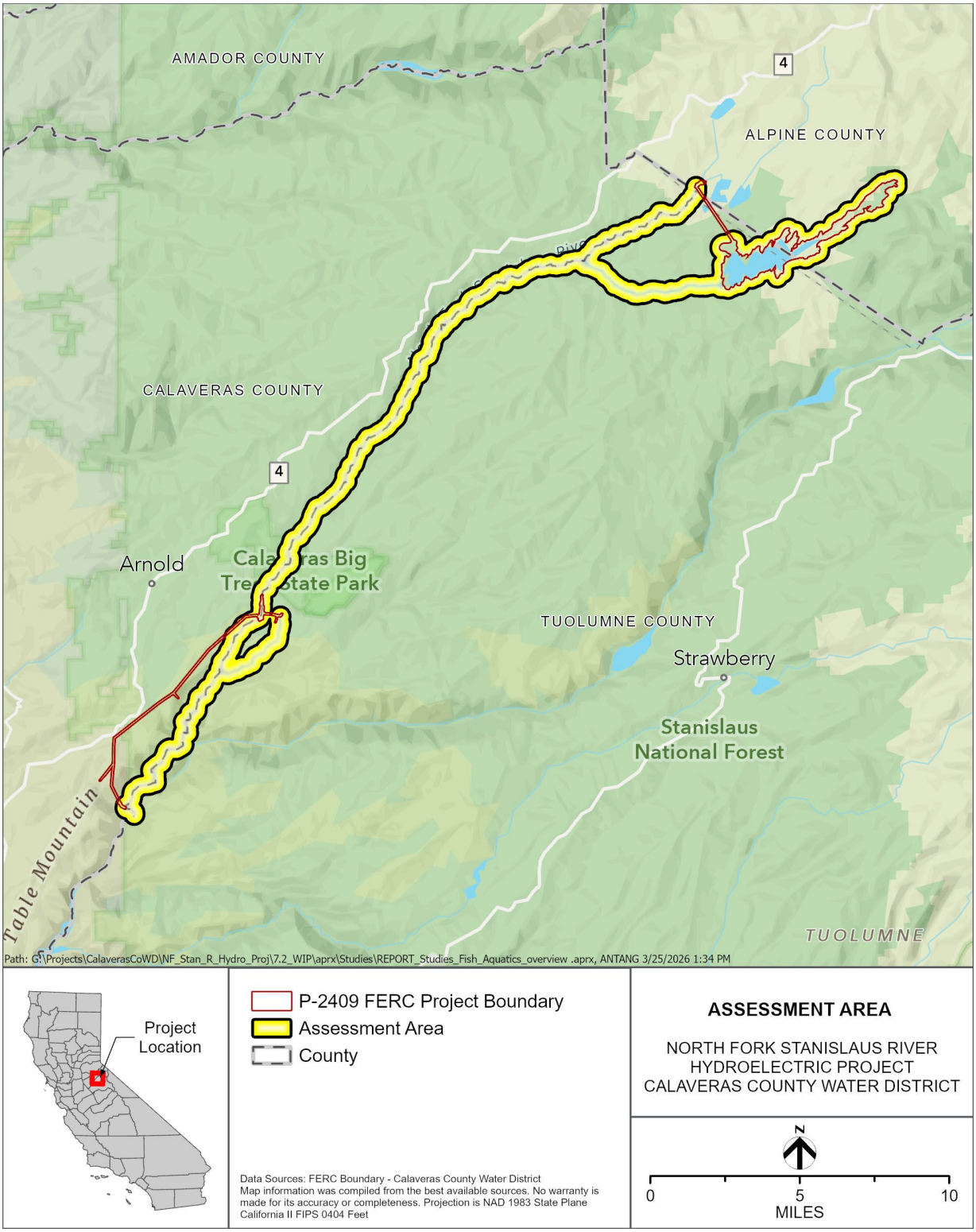


Figure 3.4-1. FERC Project Boundary and Assessment Area. Note that the 0.25-mile buffer around river reaches and impoundments is included to assess amphibians and aquatic reptiles, which may inhabit upland areas near aquatic habitats.

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3.4.1 Fisheries Resources

This section describes fish communities in the Assessment Area (AA) (Section 3.4.1.1) and New Melones Reservoir (Section 3.4.1.2), special-status fish species (Section 3.4.1.3), and fish stocking (Section 3.4.1.4).

3.4.1.1 Fish Community in the Assessment Area

A review of available literature on fish population monitoring in the AA produced limited results. While limited instream fisheries surveys were identified, several documents indicate that the AA is primarily inhabited by rainbow trout, brown trout, Sacramento sucker, and California roach. Due to the limited amount and overall quality of available data, comprehensive documentation of exact species distributions across the AA is not feasible. Section 3.4.1.3 provides the best available information for special-status species; however, for most other species, distributional information remains generalized and is not described in detail in this section. However, the upper elevation stream reaches and reservoirs of the AA can generally be thought to be part of the rainbow trout assemblage and the lower reaches of the NFSR transitions to the pikeminnow-hardhead-sucker fish assemblage at lower elevations as described in Moyle (2002). CCWD reviewed GIS information provided by the Forest Service, which included 2010 snorkel surveys that documented hardhead, rainbow trout, Sacramento sucker, and brown trout at the lower end of the AA on the Stanislaus River above New Melones Reservoir. A list of fish species documented within the AA is provided in Table 3.4-1.

Table 3.4-1. Fish Species Reported to occur in the Aquatic Resources Assessment Area.

Family	Common Name	Scientific Name	Origin
Salmonidae	Rainbow trout	*Oncorhynchus mykiss*	N
	Eagle lake rainbow trout	*Oncorhynchus mykiss*	I
	Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*	I
	Brown trout	*Salmo trutta*	I
	Brook trout	*Salvelinus fontinalis*	I
Cyprinidae	Sacramento pikeminnow	*Ptychocheilus grandis*	N
	Hardhead	*Mylopharodon conocephalus*	N
	Speckled dace	*Rhinichthys osculus*	N
	California roach	*Lavinia symmetricus*	N
Catostomidae	Sacramento sucker	*Catostomus occidentalis*	N
Centrarchidae	Smallmouth bass	*Micropterus dolomieui*	I
	Largemouth bass	*Micropterus salmoides*	I
Ictaluridae	Catfish	*Ictaluurus spp.*	I
	Brown bullhead	*Ameiurus nebulosus*	I
Leuciscidae	Golden shiner	*Notemigonus crysoleucas*	I

Source: FERC 1980, CDFW 2013, CDFW 2019, and NCPA 1993
Notes: N=native fish species, I=introduced fish species

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Some specific information is available regarding the fish community in New Spicer Meadow Reservoir from the CDFW. CDFW (2013) captured fish via gillnetting in 2013. Angler surveys documented information including species and number of fish landed in 2015, 2016, and 2018 (CDFW 2019). The gillnetting and angler survey results, including type of fish and number caught per sampling year, are presented in Table 3.4-2.

Table 3.4-2. Results of CDFW Gill Netting in 2013 and Angler Surveys in 2015, 2016, and 2018 in New Spicer Meadow Reservoir.

Species	Number of Fish Caught per Year				
	2013	2015	2016	2018	Totals
Rainbow Trout	14	16	127	38	195
Brown Trout	-	2	1	-	3
Lahontan Cutthroat Trout	2	5	27	44	78
Brook Trout	1	-	6	1	8

Source: CDFW 2013 and CDFW 2019

Additional specific survey information is available as part of a previously proposed Griswold Creek Diversion Project that was never developed. NCPA (1993) conducted fisheries surveys in Griswold Creek (a tributary to the NFSR several miles upstream of the confluence with the MFSR) and the NFSR. In Griswold Creek, electrofishing and snorkeling were conducted at multiple sites in 1985, and additional electrofishing was conducted in 1989 and 1990. Although exhaustive species lists are not provided, sampling in Griswold Creek showed that rainbow trout and Sacramento sucker were the dominant species with California roach and brown trout also observed. Additional snorkeling in the NFSR (presumably downstream of the confluence with Griswold Creek) documented rainbow trout, Sacramento sucker, and hardhead (NCPA 1993).

3.4.1.2 Fish Community in New Melones Reservoir

Although New Melones Reservoir is not a part of the Project or the AA, fish species present in this reservoir have the potential to move upstream into the NFSR and AA. The Collierville Powerhouse and the AA are immediately upstream of the high water mark of New Melones Reservoir. Table 3.4-3 lists the fish species reported to occur in New Melones Reservoir as described by the BOR (2007). New Melones Reservoir is a larger, lower elevation reservoir that generally contains introduced warmwater fisheries but also contains some native species as well.

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Table 3.4-3. Fish Species Reported to occur in New Melones Reservoir.

Family	Common Name	Scientific Name	Origin
Leuciscidae	Sacramento pikeminnow	*Ptychocheilus grandis*	N
	Hardhead	*Mylopharodon conocephalus*	N
	Hitch	*Lavinia exilicauda*	N
	Sacramento blackfish	*Orthodon microlepidotus*	N
Catostomidae	Sacramento sucker	*Catostomus occidentalis*	N
Cyprinidae	Common carp	Cyprinus carpio	I
	Golden shiner	*Notemigonus crysoleucas*	I
Ictaluridae	White catfish	*Ameiurus catus*	I
	Brown bullhead	*Ameiurus nebulosus*	I
	Channel catfish	*Ictalurus punctatus*	I
Salmonidae	Rainbow trout	*Oncorhynchus mykiss*	N
	Kokanee salmon	*O. nerka*	N
	Brown trout	*Salmo trutta*	I
Poecillidae	Western mosquitofish	*Gambusia affinis*	I
Cottidae	Prickly sculpin	*Cottus asper*	N
	Riffle sculpin	*Cottus gulosus*	N
Centrarchidae	Green sunfish	*Lepomis cyanellus*	I
	Bluegill	*Lepomis macrochirus*	I
	Red-eye bass	*Micropterus coosae*	I
	Spotted bass	*Micropterus punctulatus*	I
	Largemouth bass	*Micropterus salmoides*	I
	White crappie	*Pomoxis annularis*	I
	Black crappie	*Pomoxis nigromaculatus*	I

Source: BOR 2007
Notes: N=native fish species, I=introduced fish species

3.4.1.3 Special-status Fish Species

Special-status species are commonly characterized as species that are at potential risk or actual risk to their persistence in a given area, or across their native habitat. These species have been identified and assigned a status ranking by governmental agencies. The degree to which a species is at risk of extinction or extirpation is the determining factor in the assignment of a status ranking. Some common threats to a species or population's persistence include habitat loss, degradation, and fragmentation, as well as human conflict and intrusion. For the purposes of this section, special-status species for the AA were identified based on a review of fish listed under the ESA, California Endangered Species Act (CESA), CDFW species designations, and species designated as sensitive by the Forest Service for the STF. As a result of this review, it was determined that there are two special-status fish species known to occur in the AA (Table 3.4-4): hardhead and Lahontan cutthroat trout. Lahontan cutthroat trout is listed under the federal ESA, so information

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on this species is discussed in detail in Section 3.6 – Endangered Species Act-Listed Species of the PAD. Information on the remaining special-status fish species is discussed below (i.e., hardhead).

Hardhead

Hardhead is designated as a species of special concern by CDFW (Moyle et al. 2015) and is listed by the Forest Service as a sensitive species (Forest Service 2013). Although their exact distribution in the AA is not fully understood, FERC (1980) lists hardhead presence within the FERC Project Boundary. In addition, NCPA (1993) identified hardhead in 1989 during snorkel surveys in the lower NFSR near the confluence with Griswold Creek as described in Section 3.4.1.1.

Hardhead is a large cyprinid native to the Sacramento and San Joaquin River basins (Moyle 2002). Hardhead has a very restrictive microhabitat preference and prefers large, warm streams containing deep, rock-bottomed pools and runs with sand-gravel-boulder substrates, low turbidity, and low water velocities (20-40 centimeters per second; Moyle 2002). It prefers water temperatures >20°C for growth and 24-28°C for optimal physiological performance, and most often occur in streams with temperatures over 20°C. Hardhead are typically found in streams at low to mid elevations, but can occur up to 5,000 feet in elevation (Moyle et al. 2015). During juvenile stages, hardhead belong to the pikeminnow-hardhead-sucker complex and are typically found in intermittent pools feeding on filamentous algae (Moyle 2002; Wang 1986).

Hardhead sexually mature in their third year and primarily spawn in April and May. Adults living in larger rivers sometimes migrate upstream to spawn, while others move short distances from their home pool (Moyle 2002; Grant and Maslin 1999). Females produce 7,000 to 24,000 eggs per year. Hardhead spawn over gravel and rocky substrate in riffles, runs, or at the heads of pools. Larval and post-larval fish utilize dense cover along stream margins and move into deeper habitats or swept downstream into the main river as they grow (Moyle 2002).

3.4.1.4 Fish Stocking

According to CDFW (2019), New Spicer Meadow Reservoir has been stocked for recreational fishing since 1953. Historically rainbow trout and brook trout were stocked, but more recently CDFW stocks fingerling size rainbow trout to maintain a recreational fishery. CDFW (2019) shows annual releases from 2001 to 2015 ranging from approximately 25,000 to 75,000 fingerlings (Table 3.4-4). CDFW (2026) also shows stocking of trout in 2025 into New Spicer Meadow Reservoir, but does not provide additional historical information or specifics for 2025 releases. The current recreational fishery in New Spicer Meadow Reservoir includes brook trout, Lahontan cutthroat trout, brown trout, and rainbow trout (CDFW 2013, 2019). According to CDFW (2019), the reported catch rates do not correspond well with stocking records as only rainbow trout have been stocked in New Spicer Meadow Reservoir since 2001 by CDFW and there are no records of brown trout or Lahontan cutthroat trout stockings.

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Table 3.4-4. Fish stocking information at New Spicer Meadow Reservoir from 2001 to 2015.

Date	Species	Number	Size-Class
6/18/2001	Eagle lake rainbow trout	51,000	Fingerling
7/9/2002	Rainbow trout	39,872	Fingerling
7/9/2002	Rainbow trout	34,668	Fingerling
7/29/2003	Eagle lake rainbow trout	50,224	Fingerling
6/21/2004	Rainbow trout	51,900	Fingerling
6/23/2005	Rainbow trout	50,000	Fingerling
8/8/2006	Rainbow trout	21,090	Fingerling
8/8/2006	Rainbow trout	28,959	Fingerling
8/13/2007	Rainbow trout	50,050	Fingerling
7/21/2008	Rainbow trout	50,000	Fingerling
6/17/2009	Rainbow trout	50,018	Fingerling
6/30/2010	Rainbow trout	50,336	Fingerling
7/8/2011	Rainbow trout	50,050	Fingerling
7/13/2012	Rainbow trout	41,646	Fingerling
6/4/2013	Rainbow trout	25,000	Fingerling
6/3/2014	Rainbow trout	25,000	Fingerling
7/6/2015	Rainbow trout	21,060	Fingerling

Source: CDFW 2019

In addition, CDFW (2026a) shows stocking of trout in 2025 within the NFSR and Beaver Creek near Calaveras Big Trees State Park, but additional records and specifics are not provided. Additional stocking records in the AA were not identified.

3.4.2 Benthic Macroinvertebrates

Limited sources were identified with information about BMI. FERC (1980) presents BMI sampling that occurred in August and November of 1974, which is described below.

In August 1974, samples were taken using a Surber square-foot sampler on Highland Creek above New Spicer Meadow Reservoir and the NFSR downstream of the Highland Creek confluence. In Highland Creek, 29 taxa were collected with the most numerous being Ephemeroptera (mayflies), Plecoptera (stoneflies), and Diptera (true flies). In the NFSR, 27 taxa were collected with the most numerous being Coleoptera (riffle beetles) and mayflies. Twelve taxa were common to both streams.

In November 1974, samples were taken at one location on Beaver Creek and three locations on the NFSR, including at the confluence with Little Rattlesnake Creek, near Boards Crossing, and near Big Trees Crossing. At each of the four locations, samples were taken from bedrock, fast riffle, slow riffle, and pool habitat types. In the NFSR, Mayflies (Ephemeroptera), caddisflies (Trichoptera), and true flies (Diptera) were the most diverse groups of aquatic insects collected, and in Beaver Creek, caddisflies and true flies were the most diverse groups collected. The number of species per 2 square feet by substrate sampled for bedrock, fast riffle, slow riffle, and pool was 18, 52, 52, and 54, respectively. For each of the habitat types, samples on Beaver Creek produced

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a greater number of organisms than similar habitats on the NFSR. Additionally, the mean biomass (grams/square meter) by substrate type for bedrock, fast riffle, slow riffle, and pool was 1.05, 8.79, 7.18, and 14.84, respectively.

In addition, NCPA (1993) notes sampling conducted in the upper reaches of the NFSR and describes the major groups of aquatic insects observed. Taxa observed include the mayfly families Heptageniidae and Ephemerellidae, the fly family Chironomidae, and the water-penny beetle family Psephenidae. Caddisfly families also observed include Rhyacophilidae, Philopotomidae, Limnephilidae, Hydroptilidae, Lepidostomatidae, and Hydropsychidae. Stonefly families included Pternonarcidae, Perlidae, Capniidae, Chloroperlidae, and Periodidae.

3.4.3 Aquatic Invasive Species

No invasive mussels have been identified in the AA. If introduced, zebra, quagga, and golden mussels have the potential to disrupt ecological processes and potentially affect fisheries or other aquatic resources. The golden mussel was recently found in the Sacramento-San Joaquin Delta. NCPA has a mussel prevention plan (NCPA 2025) that was approved by CDFW in September 2025 (CDFW 2025a). As part of this plan, water quality sampling is conducted at New Spicer Meadow Reservoir and McKays Reservoir and visual surface surveys are conducted at New Spicer Meadow Reservoir Boat Ramp. Additionally, eDNA testing for zebra, quagga, and golden mussels occurs in Highland Creek below New Spicer Meadow Powerhouse, three NFSR locations (i.e., downstream of the North Fork Diversion Dam, Boards Crossing, and Avery Gauge upstream of McKays Reservoir), and in McKays Reservoir (NCPA 2025). NCPA is required to submit annual reports to CDFW to demonstrate the implementation of the plan by March 31 of each year (CDFW 2025a). Results to this point have shown no invasive mussel detections and water quality and temperature sampling have also shown that conditions are not conducive for these species.

Downstream of the AA, the BOR has a Quagga and Zebra Mussel Prevention Program (BOR 2026a) to prevent the spread of these aquatic invasive species in New Melones Reservoir. More recently, the BOR also developed a program to prevent the spread of the new invasive golden mussel in New Melones Reservoir (BOR 2026b).

In addition to invasive mussels, Table 3.4-1 identifies the fishes that have been introduced into the AA. Table 3.4-3 identifies introduced fishes in New Melones Reservoir, downstream of the AA, that have potential to move upstream into the AA. Introduced fish can significantly diminish, replace, or cause extirpation or extinction of native fish species. Introduced predator fish, such as largemouth bass, can be particularly damaging to native fish populations.

3.4.4 Amphibians and Aquatic Reptiles

This section describes the common amphibian and aquatic reptile species potentially occurring in the AA (Section 3.4.4.1) and the special-status amphibians and aquatic reptile species potentially occurring in the AA (Section 3.4.4.2).

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3.4.4.1 Common Amphibian and Aquatic Reptile Resources

There are 13 common amphibian and aquatic reptile species that are known to, or have the potential to, occur in the AA. Six of these are common amphibian species in the family Plethodontidae (lungless salamanders), which do not need standing or flowing surface waters for reproduction, including arboreal salamander (*Aneides lugubris*), California slender salamander (*Batrachoseps attenuatus*), Hell Hollow slender salamander (*Batrachoseps diabolicus*), yellow-eyed ensatina (*Ensatina eschscholtzii xanthoptica*), Sierra Nevada ensatina (*Ensatina eschscholtzii platensis*), and Mount Lyell salamander (*Hydromantes platycephalus*). With the exception of these species, all other salamanders and frogs described in this section reproduce in rivers, streams, lakes, ponds (ephemeral or permanent), and reservoirs. A species list including habitat associations and known occurrences is included in Table 3.4-5.

Table 3.4-5. Common amphibian and aquatic reptile species potentially occurring in the Assessment Area.

Species		Suitable Habitat	Known Occurrences in Project Vicinity
Common Name	**Scientific Name**		
AMPHIBIANS			
Sierra newt	*Taricha sierrae*	Tends to use streams for breeding, but may use ditches and other bodies of water. The species may occasionally enter larger rivers, including areas of fast water. Terrestrially, the species is found in moist habitats under woody debris or in rock crevices and burrows. The species can be found at elevations up to 6,500 feet.	Known to occur in the southwestern portion of the AA; the portion of the AA near New Spicer Meadow Reservoir is outside of the species' known range (Nafis 2026, Stebbins and McGinnis 2012). The species has been observed within the AA adjacent to the NFSR near Candy Rock, downstream of Stanislaus Hydroelectric Powerhouse, and on Candy Rock Road/Forest Route 4N03 between 2021 and 2025 (iNaturalist 2026).
Arboreal salamander	*Aneides lugubris*	Found in oak woodland, chaparral, coastal sage scrub, montane conifer forest, redwood forest, and mixed evergreen-deciduous forest; prefers open or edge habitat to dense forests. Found under rocks and woody debris, in stumps and tree cavities, and sometimes in urban areas. The species can be found at elevations up to 6,500 feet.	May occur in the AA below elevation 6,500 feet (Nafis 2026, Hansen and Shedd 2025). The species has been observed in the Project Vicinity, at Mercer Caverns in 2025 and near French Gulch Road in 2026, less than 5 miles outside of the AA (iNaturalist 2026).
Sierra Nevada ensatina	*Ensatina eschscholtzii platensis*	Found under rocks, logs, bark, and other debris in oak woodlands and shaded evergreen and deciduous forests at elevations up to 9,100 feet.	Known to occur in southwestern portion of the AA and likely to occur throughout the AA (iNaturalist 2026); the species' range overlaps the entire AA (Nafis 2026). Several observations of the species are noted in the AA near the NFSR in Calaveras Big Trees State Park from 2019, and throughout the southwestern portion of the Project Vicinity (iNaturalist 2026). The AA is within the zone of potential hybridization of Sierra Nevada ensatina and yellow-eyed ensatina (Hansen and Shedd 2025; Stebbins 2003).

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Table 3.4-5. (Continued).

Species		Suitable Habitat	Known Occurrences in Project Vicinity
Common Name	**Scientific Name**		
Yellow-eyed ensatina	*Ensatina eschscholtzii xanthoptica*	Found under rocks, logs, bark, and other debris in oak woodlands and shaded evergreen and deciduous forests at elevations up to 9,100 feet.	May occur in southwestern parts of the AA based on the species' range (Nafis 2026). Several observations were noted in the Project Vicinity less than 8 miles south of the AA, the closest being recorded in 2024 approximately 3.3 miles south of the Stanislaus Hydroelectric Powerhouse (iNaturalist 2026). The AA is within the zone of potential hybridization of Sierra Nevada ensatina and yellow-eyed ensatina (Hansen and Shedd 2025; Stebbins 2003).
Mount Lyell salamander	*Hydromantes platycephalus*	Occupies granite talus with seeps (usually downslope of snowfields whose melt persists into the summer), caves, granite boulders, rock fissures, rocky stream edges, and seepages from springs and melting snow, as well as cliff faces and vertical cavern walls at elevations of 4,000–12,000 feet.	May occur in northeastern parts of the AA based on the species' range (Nafis 2026, CDFW 2016a). Several occurrences are documented approximately 13–18 miles outside of the AA, southeast of New Spicer Meadow Reservoir between 1941 and 2019 (CDFW 2026b, 2026c).
California slender salamander	*Bathrachoseps attenuatus*	Found under logs, woody debris, leaf litter, stones, and artificial cover in oak woodlands, redwood forests, and occasionally coastal prairie and chaparral communities at elevations up to 3,000 feet.	May occur in the southwestern parts of the AA below elevation 3,000 feet based on the species' range (Nafis 2026; Hansen and Shedd 2025). The closest observations were noted more than 20 miles outside of the AA (iNaturalist 2026).
Hell Hollow slender salamander	*Batrachoseps diabolicus*	Found under rocks, logs, bark, sometimes associated with metamorphic talus, and in seepages in grassy foothills, shaded canyons, oak woodlands, and chaparral communities at elevations up to approximately 4,000 feet. The species can occasionally be found in high-elevation montane forests.	Unlikely to occur in the AA; the species' range is outside of, but near, the AA, approximately 2 miles downstream of the Stanislaus Hydroelectric Powerhouse (Nafis 2026; CDFW 2016b).
California toad	*Anaxyrus boreas halophilus*	Inhabits marshes, springs, creeks, small lakes, meadows, woodlands, forests, and desert riparian areas at elevations up to 11,800 feet. The species can hybridize with Yosemite toad (*Anaxyrus canorus*) in higher-elevation habitats.	Likely to occur in the AA based on the species' range, suitable habitat, and prevalence (Nafis 2026, Stebbins 2003). The species has been observed in the Project Vicinity, including along Forest Route 4N05 in 2025, approximately 0.3 mile southeast of the AA (iNaturalist 2026). The AA is within the zone of potential hybridization of California toad and Yosemite toad (Stebbins 2003).
Sierran treefrog	*Pseudacris sierra*	Breeds in slow streams, permanent and seasonal ponds, ditches, lakes, shallow wetlands, and wet meadows at elevations up to 11,600 feet.	Known to occur; several observations of the species throughout the AA and Project Vicinity (iNaturalist 2026).

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Table 3.4-5. (Continued).

Species		Suitable Habitat	Known Occurrences in Project Vicinity
Common Name	**Scientific Name**		
American bullfrog	*Lithobates catesbeianus*	Inhabits permanent water bodies, including marshes, ponds, lakes, reservoirs, and streams, usually with aquatic vegetation at elevations up to 9,000 feet.	Likely to occur in southwestern portion of the AA; the northeastern portion of the AA near New Spicer Meadow Reservoir is outside of the species' range (Nafis 2026, Stebbins 2003). Several recent observations of the species outside of the AA (but in Project Vicinity) are primarily distributed northwest of the NFSR and near New Melones Reservoir (downstream of the AA) (iNaturalist 2026).
AQUATIC REPTILES			
Sierra garter snake	*Thamnophis couchii*	Inhabits a wide variety of aquatic environments, including small streams to large, fast-moving rivers, meadow ponds, and lakes at elevations of 300–8,000 feet.	Known to occur; several observations of the species throughout the AA and Project Vicinity (iNaturalist 2026).
Mountain garter snake	*Thamnophis elegans*	Inhabits stream sides, springs, and lakes within grasslands, meadows, brush, woodland, and coniferous forest at elevations up to 11,600 feet.	Known to occur; several observations of the species throughout the AA and Project Vicinity (iNaturalist 2026).
Valley garter snake	*Thamnophis sirtalis fitchi*	Inhabits a wide variety of habitats such as forests, grassland, chaparral and are often found near ponds, marshes, and streams at elevations up to 8,000 feet.	Likely to occur based on the species' distribution and suitable habitat (Nafis 2026). Several observations of the species throughout Project Vicinity (iNaturalist 2026).

3.4.4.2 Special-status Amphibians and Aquatic Reptiles

This section addresses special-status amphibian and aquatic reptile species that are: 1) listed, proposed for listing, or candidate for listing as threatened or endangered under the federal ESA; 2) listed, proposed for listing, or under review as rare, threatened, or endangered under the CESA; 3) designated by CDFW as Fully Protected or Species of Special Concern; or 4) designated by the Forest Service as sensitive within the STF. Note that special-status species described in this section are excluded from the species described in Section 3.4.4.1.

The list of special-status amphibian and aquatic reptile species known or with the potential to occur in the AA was developed by querying the following resources:

- USFWS's Information for Planning and Consultation (IPaC) portal (USFWS 2026).
- CDFW's California Natural Diversity Database (CNDDB) (CDFW 2026b).

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- The most current Pacific Southwest Region's (Region 5) Regional Forester's Sensitive Animal Species List (Forest Service 2013) for the STF; and
- CCWD's surveys within the AA and other reasonably available information or databases.

The IPaC query was based on the spatial extent of the FERC Project Boundary. The CNDDB database queries were based on a search of the four USGS 7.5-minute topographic quadrangles in which the FERC Project Boundary is located (i.e., Murphys, Stanislaus, Tamarack, and New Spicer Meadow Reservoir) and the 19 surrounding quadrangles.[1]

Results of the queries identified six special-status amphibian and aquatic reptile species with the potential to occur within the AA, all of which have ranges that partially or fully overlap the AA (Table 3.4-6). Three of these species have been previously documented in the AA, and therefore are likely to occur: foothill yellow-legged frog – South Sierra DPS (*Rana boylii* pop. 5), Sierra Nevada yellow-legged frog (*Rana sierrae*), and southern long-toed salamander (*Ambystoma macrodactylum sigillatum*). The three remaining species, Yosemite toad (*Anaxyrus canorus*), California red-legged frog (*Rana draytonii*), and northwestern pond turtle (*Actinemys marmorata*), have not been documented in the AA but may occur based on geographic location, elevation, and presence of suitable habitat. The northwestern pond turtle (*Actinemys marmorata*) is included as it primarily occupies aquatic habitat, while using terrestrial habitat for nesting and possibly overwintering depending on the individual and environmental conditions. The limestone salamander (*Hydromantes brunus*) is a special-status species identified on the Sensitive Animal Species List for the STF (Forest Service 2013), but is not discussed further due to the AA being outside of the species' range. One of the special-status species, southern long-toed salamander, is considered a CDFW Species of Special Concern, while the other five species are listed or under review for listing under the federal ESA and are discussed in detail in Section 3.6 – Endangered Species Act-Listed Species of this PAD.

[1] The surrounding quadrangles include: Rail Road Flat, Fort Mountain, Dorrington, Boards Crossing, Crandall Peak, Twain Harte, Columbia SE, Columbia, Angels Camp, Calaveritas, Bear River Reservoir, Mokelumne Peak, Pacific Valley, Ebbetts Pass, Dardanelle's Cone, Dardanelle, Donnel Lake, Liberty Hill, and Calaveras Dome.

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Table 3.4-6. Special-status amphibian and aquatic reptile species with the potential to occur in the Assessment Area.

Species		Suitable Habitat	Known Occurrences in the Project Vicinity	Status[1]
Common Name	**Scientific Name**			
AMPHIBIANS				
Southern long-toed salamander	*Ambystoma macrodactylum sigillatum*	Inhabits alpine meadows, high mountain ponds, and lakes at elevations of 3,000–9,000 feet.	Known to occur in northeastern part of the AA; the southwestern portion of the AA is outside of the species' known range (CDFW 2025b; Nafis 2026). Occurrences within the AA are documented in and near Union Reservoir, Elephant Rock Lake, NFSR, two ponds near New Spicer Meadow Reservoir, and 10 ponds along the NFSR between 1954 and 2005 (CDFW 2026b).	SSC
Yosemite toad	*Anaxyrus canorus*	See Section 3.6 – Endangered Species Act-Listed Species		FT, SSC, FSS
Foothill yellow-legged frog – South Sierra DPS	*Rana boylii* pop. 5	See Section 3.6 – Endangered Species Act-Listed Species		FE, SE, FSS, BLMS
California red-legged frog	*Rana draytonii*	See Section 3.6 – Endangered Species Act-Listed Species		FT, SSC
Sierra Nevada yellow-legged frog	*Rana sierrae*	See Section 3.6 – Endangered Species Act-Listed Species		FE, ST, FSS
AQUATIC REPTILES				
Northwestern pond turtle	*Actinemys marmorata*	See Section 3.6 – Endangered Species Act-Listed Species		FPT, SSC, FSS, BLMS

Notes:
[1] Status Codes:
Federal
FE = Listed as endangered under the federal Endangered Species Act
FT = Listed as threatened under the federal Endangered Species Act
FPT = Federally proposed as threatened
FSS = Forest Service Sensitive species
BLMS = Bureau of Land Management Sensitive Species
State
SE = Listed as endangered under the California Endangered Species Act
ST = Listed as threatened under the California Endangered Species Act
SSC = California Department of Fish and Wildlife Species of Special Concern

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3.5 Terrestrial Resources

Per 18 C.F.R.§ 5.6 (d)(3)(v), this section includes a description of the wildlife and botanical resources, including invasive species, in the Project Vicinity. This description must include upland habitats in the Project Vicinity and a listing of plant and animal species as well as temporal and spatial distribution of species considered important because of their commercial, recreational or cultural value.

This section discusses terrestrial resources that occur in the FERC Project Boundary or its Vicinity (Assessment Area).[1] This section is divided into six subsections. Section 3.5.1 discusses botanical resources, including vegetation communities, plant species that have the potential to occur or are known to occur within the FERC Project Boundary, special-status plants within the Assessment Area,[2] and non-native invasive plants (NNIP)[3] within the Assessment Area. Section 3.5.2 identifies special-status wildlife[4, 5] that have potential or are known to occur within the Assessment Area. Section 3.5.3 discusses general wildlife resources, including wildlife habitat. Section 3.5.4 discusses commercially valuable wildlife species.[6] Section 3.5.5 discusses wetland, littoral, and riparian habitats within the Assessment Area.

Figure 3.5-1 presents a map of the FERC Project Boundary and the Assessment Area.

[1] "Assessment Area" as referenced herein is defined as the existing FERC Project Boundary with a 0.25-mile buffer and each potentially Project-affected stream reach plus a 50-foot buffer.

[2] For the purpose of this document, a special-status plant species is a species that 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 the CESA; (3) has a California Rare Plant Rank (CRPR) of 1 or 2; (4) is listed by the STF as a Forest Service Sensitive (FSS) or Watch List (WL) species; or (5) is listed by BLM as a BLM Sensitive species (BLM-S). Plant 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.

[3] For the purpose of this document, an NNIP is a plant species that meets one or more of the following criteria: (1) listed as a noxious weed by the CDFA with a rating of A or B; (2) listed by the Cal-IPC as High or Moderate; or (3) listed by the STF as an Invasive Plant.

[4] For the purpose of this document, a special-status wildlife species is a species that 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; (4) listed as Fully Protected (FP) under California law pursuant to Fish and Game Code Sections 3511, 4700, 5050 and 5515; (5) listed by the STF as a FSS species; or (6) is listed by the BLM as a BLM-S species. 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.

[5] Aquatic reptiles, mollusks, and snails are discussed in Section 3.4.

[6] For the purpose of this document, a commercially-valuable wildlife species is a species that 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).

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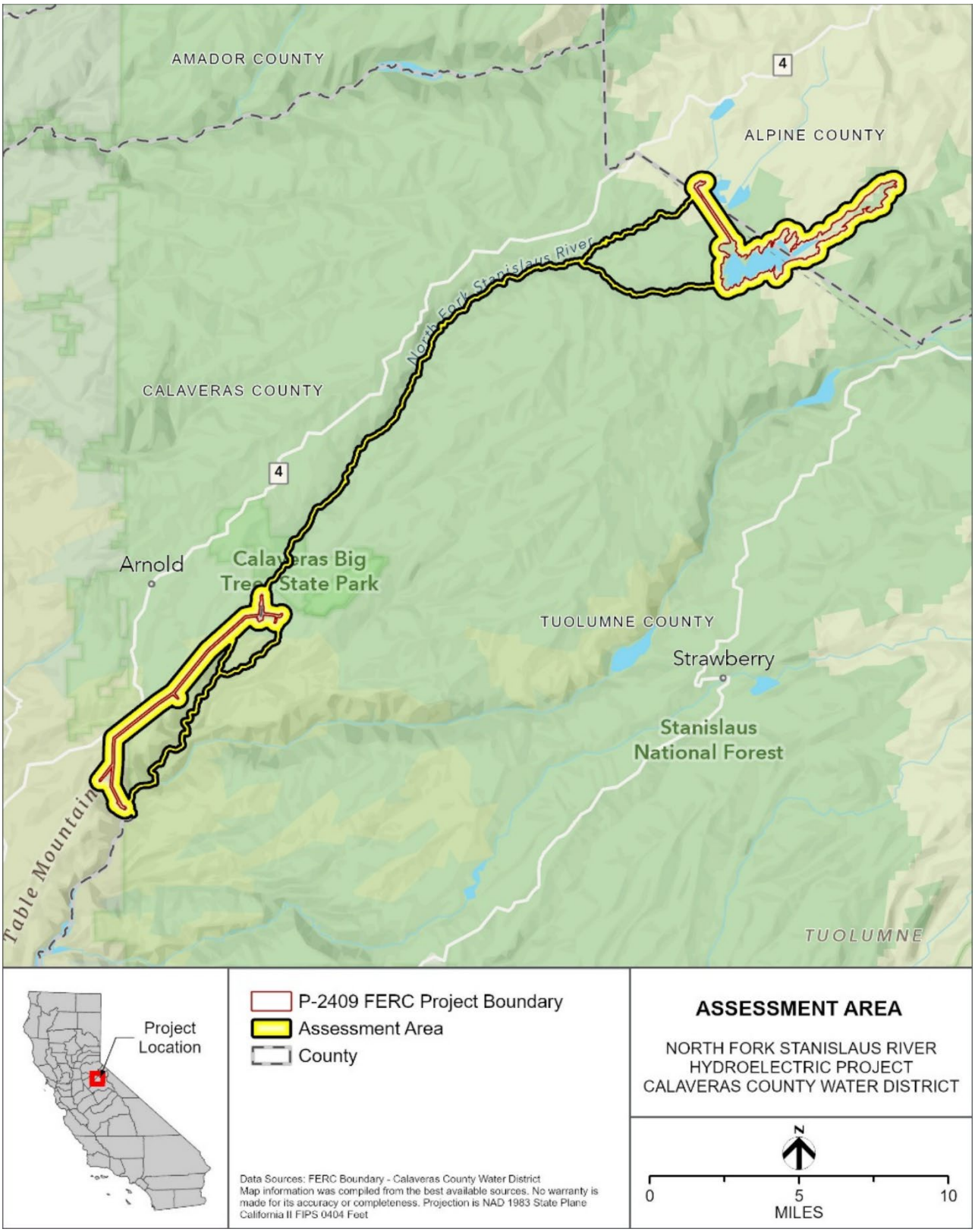


Figure 3.5-1. FERC Project Boundary and Assessment Area.

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3.5.1 Botanical Resources

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

3.5.1.1 Vegetation Communities

The vegetation communities described below occur within the habitat area as modeled in the Fire and Resource Assessment Program (FRAP; CAL FIRE 2022), which is the most current statewide model based on habitats formally described in the California Wildlife Habitat Relationship Model (CWHR). The CDFW's Vegetation Classification and Mapping Program (CDFW 2025), which is based on the more descriptive Manual of California Vegetation (Manual; CNPS 2026), is generally preferred by agencies due to it conforming to the National Vegetation Classification standard (Federal Geographic Data Committee 2025). However, the CDFW's Vegetation Classification and Mapping Program does not currently include modeled vegetation data for the FERC Project Boundary or the Assessment Area. Correlations between the FRAP and the Manual are noted when possible.

FRAP vegetation communities can be considered sensitive based on dominance by species that would be classified as sensitive if converted to the corresponding Manual vegetation type and having a NatureServe ranking of S1, S2, or S3 (Faber-Langendoen et al. 2012). Additionally, vegetation communities dominated by hydrophytic vegetation occur in areas often considered as wetlands or other waters of the United States and waters of the State as defined by both the United States Army Corps of Engineers (Environmental Laboratory 1987) and the State Water Resources Control Board (SWRCB 2019). These communities could be protected under the Clean Water Act and/or the Implementation Guidance for the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (SWRCB 2020). As such, these vegetation communities are also considered sensitive.

Table 3.5-1 includes a summary of all vegetation communities and other land covers found in the habitat area along with their NatureServe ranking when present, whether or not it is a sensitive natural community, total acres, and percent of the habitat area covered. Explanations for why certain habitats are considered sensitive are included in their descriptions below. A map of these vegetation types in the habitat area is included in Attachment 3.5A, *Vegetation Cover*.

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Table 3.5-1. Modeled Vegetation Communities and Other Land Covers in the FERC Project Boundary and Assessment Area.

Vegetation Communities	Rank	Sensitive Natural Community	Acres in FERC Project Boundary	Percent of FERC Project Boundary	Acres in Assessment Area	Percent of Assessment Area
Annual grassland	Unranked	No	78.63	3.31%	298.12	2.79%
Blue oak-Foothill pine	S4	No	0.70	0.03%	18.55	0.17%
Blue oak woodland	S4	No	Not modeled as present	Not modeled as present	18.90	0.18%
Chamise-Redshank chaparral	S5	No	1.60	0.07%	22.78	0.21%
Douglas fir	S4	No	Not modeled as present	Not modeled as present	37.37	0.35%
Fresh emergent wetland	Unranked	Yes	1.56	0.07%	1.56	0.01%
Jeffery pine	S4	No	1.69	0.07%	28.01	0.26%
Juniper	S4	No	4.56	0.19%	101.59	0.95%
Lodgepole pine	S4	No	56.16	2.36%	802.28	7.50%
Mixed chaparral	Unknown	Maybe	25.49	1.07%	511.72	4.79%
Montane chaparral	Unknown	Maybe	9.71	0.41%	336.85	3.15%
Montane hardwood	S5 or S4	No	42.56	1.79%	1,302.46	12.18%
Montane hardwood-conifer	S5 or S4	No	13.16	0.55%	535.75	5.01%
Montane riparian*	Unknown	Yes	Not modeled as present	Not modeled as present	5.00	0.05%
Perennial grassland	S3	Yes	2.39	0.10%	122.91	1.15%
Ponderosa pine	S4	No	20.86	0.88%	778.26	7.28%
Red fir	S4	No	51.06	2.15%	885.01	8.28%
Sierran mixed conifer	S4	No	99.88	4.20%	1,831.49	17.13%
Subalpine conifer	Unknown	Maybe	0.35	0.02%	6.11	0.06%
Wet meadow	Unranked	Yes	4.05	0.17%	4.67	0.04%
White fir	S4	No	34.25	1.44%	375.38	3.51%
Other Land Covers						
Barren	Unranked	No	158.72	6.68%	726.40	6.794%
Lacustrine	Unranked	Yes	1,768.53	74.40%	1,916.17	17.922%
Riverine*	Unranked	Yes	Not modeled as present	Not modeled as present	10.35	0.10%
Urban	Unranked	No	1.00	0.04%	13.81	0.129%
		Total	**2,376.94**	**100%**	**10,691.50**	**100%**

* Denotes a community or land cover that is only in the stream reaches and not in the FERC Project Boundary or the 0.25-mile buffer around the FERC Project Boundary.

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Vegetation Community Descriptions

Annual Grassland (AGS)

This vegetation community is composed primarily of annual plant species such as wild oat (*Avena fatua*), soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), red brome (*Bromus rubens*), Mediterranean barley (*Hordeum marinum*), and tapering fescue (*Festuca myuros*). Large amounts of standing dead plant material can be found during summer and fall in years of abundant rainfall and light to moderate grazing pressure. Heavy spring grazing favors the growth of summer-annual herbs such as long-beaked filaree (*Erodium botrys*), redstem filaree (*Erodium cicutarium*), dove weed (*Croton setiger*), clovers (*Trifolium* sp.), and others. Regardless of the dominant species in any given area, all possible choices for converting this vegetation community into a Manual defined community are unranked as they are dominated by non-native species, which is not considered a sensitive natural community. There are 78.63 (3.31%) acres of this vegetation community in the FERC Project Boundary.

Blue Oak-Foothill Pine (BOP)

This vegetation community is dominated by blue oak (*Quercus douglasii*) and foothill pine (*Pinus sabiniana*) in the tree layer, with a general prevalence of blue oak over foothill pine. Co-occurring tree species can include coast live oak (*Quercus agrifolia*), interior live oak (*Quercus wislizeni*), valley oak (*Quercus lobata*), and California buckeye (*Aesculus californica*). The shrub layer tends to be relatively low in cover but can include species of ceanothus (*Ceanothus* sp.), manzanita (*Arctostaphylos* sp.), coffeeberry (*Frangula* sp.), Western redbud (*Cercis occidentalis*), gooseberry (*Ribes* sp.), elderberry (*Sambucus nigra*), and poison oak (*Toxicodendron diversilobum*). The herb layer is generally comprised of annual grasses and scattered occurrences of other herbs. This vegetation community is most functionally equivalent to blue oak woodland as described in the Manual, which has a CDFW ranking of S4 and is not considered a sensitive natural community. There is 0.70 (0.03%) acre of this vegetation community in the FERC Project Boundary.

Blue Oak Woodland (BOW)

This vegetation community is dominated by blue oak in the tree layer and sometimes co-dominated with other tree species such as California buckeye, California juniper (*Juniperus californica*), foothill pine, and coast live oak. Generally, these woodlands have an overstory of scattered trees, although the canopy can be nearly closed in some instances. Shrubs are often present but rarely extensive and occur often on rock outcrops. The herb layer is typically comprised of non-native annual grasses. Blue oak woodland as defined in the Manual has a CDFW ranking of S4 and is not considered a sensitive natural community. This vegetation community only occurs in the Assessment Area and not in the FERC Project Boundary.

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Chamise-Redshank Chaparral (CRC)

This vegetation community is dominated by chamise (*Adenostoma fasciculatum*) and/or redshank (*Adenostoma sparsifolium*) in the shrub layer. Generally, this chaparral type is nearly monotypic with minimal to no cover of other shrubs in its undisturbed form as well as a minimally developed herb layer. However, redshank dominated habitats can be more open allowing greater cover of other species as can chamise dominated habitats following recent disturbance. When they occur, other shrub species include toyon (*Heteromeles arbutifolia*), sugar bush (*Rhus ovata*), redberry (*Rhamnus* sp.), and poison oak. Redshank does not occur in the Sierra Nevada mountain range. Chamise-redshank chaparral as defined in the Manual has a CDFW ranking of S5 and is not considered a sensitive natural community. There are 1.60 (0.07%) acres of this vegetation community in the FERC Project Boundary.

Douglas Fir (DFR)

This vegetation community includes an overstory dominated by Douglas fir (*Pseudotsuga menziesii*) and includes a lower overstory of dense, sclerophyllous, broad-leaved evergreen trees typically including tan oak (*Notholithocarpus densiflorus*) and Pacific madrone (*Arbutus menziesii*). On wet sites, the shrub layer is typically well developed with minimal development of an herb layer. On dry sites, there is greater cover of shrubs and grasses. The nearest functional equivalent to this community in the Manual is Douglas fir – tan oak – madrone forest, which has a CDFW ranking of S4 and is not considered a sensitive natural community. This vegetation community only occurs in the Assessment Area and not in the FERC Project Boundary.

Fresh Emergent Wetland (FEW)

This vegetation community is characterized by erect, rooted herb hydrophytes. Dominant vegetation is generally perennial monocots such as species of sedge (*Carex* sp.) and rush (*Juncus* sp.) as well as saltgrass (*Distichlis spicata*), broad-leaf cattail (*Typha latifolia*), bulrush (*Schoenoplectus* sp.) and species in the water-plantain family (Alismataceae). All emergent wetlands are flooded frequently enough so that the roots of the vegetation prosper in an anaerobic environment. This is a sensitive natural community based on its frequent dominance of hydrophytic vegetation and meeting the criteria of Waters of the United States and/or Waters of the State. Additionally, since this community could have areas dominated by species ranked S3 in the Manual, and because none of those communities could be ruled out without field verification, this community would be considered a sensitive natural community by CDFW. There are 1.56 (0.07%) acres of this vegetation community in the FERC Project Boundary.

Jeffrey Pine (JPN)

This vegetation community is dominated by Jeffrey pine (*Pinus jeffreyi*) in the tree layer and can have lesser cover of other pine species as well as white fir (*Abies concolor*), California red fir (*Abies magnifica*), incense cedar (*Calocedrus decurrens*), and black cottonwood (*Populus nigra*). Shrub cover varies widely based on location but can include huckleberry (*Vaccinium* sp.), manzanita, scrub oaks, mountain misery (*Cercocarpus* sp.), rabbitbrush (*Ericameria* sp.), gooseberry, snowberry (*Symphoricarpos* sp.), and ceanothus. Herb cover also varies widely but

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can consist of buckwheat (*Eriogonum* sp.), bird's beak (*Cordylanthus* sp.), rockcress (*Boechera* sp.), beardtongue (*Penstemon* sp.), needlegrass (*Stipa* sp.), wildrye (*Elymus* sp.), and others. Jeffrey pine as defined in the Manual has a CDFW ranking of S4 and is not considered a sensitive natural community. There are 1.69 (0.07%) acres of this vegetation community in the FERC Project Boundary.

Juniper (JUN)

This vegetation community is dominated by one of several juniper species in the tree layer. Depending on location, these species can co-occur with white fir, Jeffrey pine, singleleaf pinyon pine (*Pinus monophylla*), rabbitbrush, and/or big sagebrush (*Artemisia tridentata)*. The density of shrubs and herbs in this community is inversely proportional to the density of the tree layer, which can be highly variable. Nearly all juniper habitats in the Manual are ranked S4, with the exception of Utah juniper woodland, which is ranked S3.2. Utah juniper woodland primarily occurs in the San Gabriel Mountains and the Great Basin province of California outside of the Assessment Area. As such, any juniper-dominated habitat in the Assessment Area would likely be a type ranked as S4 and would not be considered a sensitive community. There are 4.56 (0.19%) acres of this vegetation community in the FERC Project Boundary.

Lodgepole Pine (LPN)

This vegetation community is dominated by lodgepole pine in the tree layer, with sporadic occurrences of aspen (*Populus tremuloides*) and mountain hemlock (*Tsuga mertensiana*). The shrub layer is generally minimally developed with a wide range of herb layer cover. This vegetation community is often found around meadow and stream edges. Lodgepole pine as defined in the Manual has a CDFW ranking of S4 and is not considered a sensitive natural community. There are 56.16 (2.36%) acres of this vegetation community in the FERC Project Boundary.

Mixed Chaparral (MCH)

This vegetation community has a wide range of dominant and codominant species that vary from location to location. The shrub layer is generally dense with little space available for a developed herb layer. This habitat generally comprises shrubs less than 13 feet tall and is variably comprised of manzanita, ceanothus, chamise, silk-tassel bush (*Garrya* sp.), toyon, poison oak, scrub oaks, mountain mahogany (*Cercocarpus betuloides*), and others. Since this community could have areas dominated by species ranked S3 in the Manual, and because none of those communities could be ruled out without field verification, this community could be considered a sensitive natural community by CDFW. There are 25.49 (1.07%) acres of this vegetation community in the FERC Project Boundary.

Montane Chaparral (MCP)

This vegetation community has a wide range of dominant and codominant species that vary from location to location. The shrub layer is generally dense with little space available for a developed herb layer. This habitat generally comprises shrubs less than 10 feet tall with growth forms ranging from prostrate to tree like. Species in this habitat include manzanitas, mountain mahogany, ceanothus, toyon, cherry (*Prunus* sp.), huckleberry oak (*Quercus vacciniifolia*), Fremont silktassel

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(*Garrya fremontii*), and others. Since this community could have areas dominated by species ranked S3 in the Manual, and because none of those communities could be ruled out without field verification, this community could be considered a sensitive natural community by CDFW. There are 9.71 (0.41%) acres of this vegetation community in the FERC Project Boundary.

Montane Hardwood (MHW)

This vegetation community is nearly identical to montane hardwood-conifer as described below but has a relatively high prevalence of canyon live oak (*Quercus chrysolepis*). Montane hardwood as defined in the Manual is ranked S5. As described below, other possible corresponding forms of this habitat would be ranked either S5 or S4. Therefore, this habitat would not be considered a sensitive natural community by CDFW. There are 42.56 (1.79%) acres of this vegetation community in the FERC Project Boundary.

Montane Hardwood-Conifer (MHC)

This vegetation community includes both conifers and hardwoods, often as a closed canopy forest. Common species include ponderosa pine (*Pinus ponderosa*), Douglas fir, incense-cedar, California black oak (*Quercus kelloggii*), tan oak, Pacific madrone, Oregon oak (*Quercus garryana*), and other localized species. This vegetation community as defined must consist of at least one-third conifer trees and at least one-third broad-leaved trees. The understory is sparse; however, considerable ground and shrub cover can occur in ecotones or following disturbance. This vegetation community has no functional equivalent in the Manual. Two of the potential dominant species are tan oak and Oregon oak, which are S3-ranked communities in the Manual when they are the dominant species. Tan oak is a unique FRAP habitat itself, and as such any potential true stands of tan oak woodland would be captured in that habitat type. Oregon oak is not a FRAP habitat. There are no records of Oregon oak in the Vicinity of the FERC Project Boundary on the Consortium of California Herbaria (CCH 2025), and only one record on iNaturalist within 20 miles of the FERC Project Boundary (iNaturalist Network 2025). As such, this habitat, if present, is likely dominated by other species which would be ranked either S5 or S4 and would not be considered a sensitive natural community by CDFW. There are 13.16 (0.55%) acres of this vegetation community in the FERC Project Boundary.

Montane Riparian (MRI)

This vegetation community is dominated by a variety of riparian trees such as big-leaf maple (*Acer macrophyllum*), black cottonwood, white alder (*Alnus rhombifolia*), thinleaf alder (*Alnus viridis*), aspen, dogwood (*Cornus* sp.), willow (*Salix* sp.), California bay (*Umbellularia californica*), Fremont cottonwood (*Populus fremontii*), and water birch (*Betula occidentalis*). The community primarily grows along stream banks but can also occupy linear seeps. This is a sensitive natural community based on its frequent dominance of hydrophytic vegetation and meeting the criteria of Waters of the United States and/or Waters of the State. Additionally, since this vegetation community could have areas dominated by species ranked S3 in the Manual, and because none of those communities could be ruled out without field verification, this community would be

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considered a sensitive natural community by CDFW. This vegetation community only occurs in the Assessment Area and not in the FERC Project Boundary.

Perennial Grassland (PGS)

Away from the coast, this vegetation community is comprised of species found in the Annual Grassland habitat but has relict stands of perennial grasses at relatively low to moderate cover such as needlegrasses, onion grasses (*Melica* spp.), Idaho fescue (*Festuca idahoensis*), and wildryes. Habitats with Idaho fescue, onion grasses, needlegrasses, and native wildryes are all rated S3 in the Manual when they are a dominant species. Therefore, this community is considered a sensitive natural community by CDFW. There are 2.39 (0.10%) acres of this vegetation community in the FERC Project Boundary.

Ponderosa Pine (PPN)

This vegetation community is dominated by ponderosa pine in the tree layer, with some association of other pines, incense cedar, black oak, Oregon oak, canyon live oak, tan oak, Pacific madrone, white fir, and Douglas fir. This vegetation community usually has a well-developed shrub layer with various species of manzanita, ceanothus, and mountain misery, as well as bitter cherry, poison oak, dogwood, and Sierra gooseberry (*Ribes rozelii*). The herb layer tends to be dominated by species of bluegrass (*Poa* sp.), brome, sedge, lupine (*Lupinus* sp.), onion grass, and others. Ponderosa pine as defined in the Manual has a CDFW ranking of S4 and is not considered a sensitive natural community. There are 20.86 (0.88%) acres of this vegetation community in the FERC Project Boundary.

Red Fir (RFR)

This vegetation community is dominated by California red fir in the tree layer, with a nearly absent shrub layer and minimally developed herb layer in mature stands. Occasional co-occurrence with white fir on dry sites or lodgepole pine on mesic sites can exist. Red fir as defined in the Manual has a CDFW ranking of S4 and is not considered a sensitive natural community. There are 51.06 (2.15%) acres of this vegetation community in the FERC Project Boundary.

Sierran Mixed Conifer (SMC)

This vegetation community is co-dominated by a mixture of white fir, Douglas fir, ponderosa pine, sugar pine (*Pinus lambertiana*), incense cedar, and California black oak in the tree layer. Each of these species can have relative dominance over the other depending on location except for California black oak, which is always sporadically scattered in this community. The shrub layer is variously comprised of deerbrush (*Acmispon glaber*), manzanita, tan oak, gooseberry, rose (*Rosa* sp.), mountain misery, and chinquapin (*Chrysolepis* sp.). The herb layer is typically highly diverse with bromes, sedges, needlegrass, rush, and lupine being commonly encountered. This vegetation community is functionally most similar to either white fir – Douglas fir forest, or ponderosa pine – incense cedar – Douglas fir forest as described in the Manual. Both of these Manual communities have a CDFW rank of S4 and are not considered a sensitive natural community. There are 99.88 (4.20%) acres of this vegetation community in the FERC Project Boundary.

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Subalpine Conifer (SCN)

This vegetation community is generally dominated by low to medium statute conifer species such as Engleman spruce (*Picea engelmanii*), subalpine fir (*Abies lasiocarpa*) mountain hemlock, and several pine species. The canopy is generally open with a developed shrub layer of Parry manzanita (*Arctostaphylos parryana*), purple mountain heather (*Phyllodoce caerulea*), big sagebrush, and oceanspray (*Holodiscus discolor*). Since this community could have areas dominated by species ranked S3 or S2 in the Manual, and because none of those communities could be ruled out without field verification, this community could be considered a sensitive natural community by CDFW. There is 0.35 (0.02%) acre of this vegetation community in the FERC Project Boundary.

Wet Meadow (WTM)

This vegetation community is typically composed of open areas dominated by graminoids with seasonally moist soils. Species present in wet meadows are generally a variable mixture of bent grass (*Agrostis* sp.), sedge, rush, bulrush, wood rush (*Luzula* sp.), hairgrass (*Aira* sp.), and spikerush (*Eleocharis* sp.) as well as other species. Wet meadows can be found as a transition between FRAP-defined Fresh Emergent Wetland and Perennial Grassland habitats. This is a sensitive natural community based on its frequent dominance of hydrophytic vegetation and meeting the criteria of Waters of the United States and/or Waters of the State. There are 4.05 (0.17%) acres of this vegetation community in the FERC Project Boundary.

White Fir (WFR)

This vegetation community is dominated by white fir in the tree layer with at least 80 percent cover. Lower canopy and shrub cover can include canyon live oak, Jeffrey pine, sugar pine, incense cedar, and greenleaf manzanita (*Arctostaphylos patula*). The herb layer tends to be minimally developed. White fir forest as described in the Manual has a CDFW ranking of S4 and is not considered a sensitive natural community. There are 34.25 (1.44%) acres of this vegetation community in the FERC Project Boundary.

Other Land Cover Descriptions

Barren (BAR)

Barren areas are undeveloped bare grounds devoid of plants but have not become developed hardscapes. This habitat is not ranked and would not be considered a sensitive natural community. There are 158.72 (6.68%) acres of this land cover in the FERC Project Boundary.

Lacustrine (LAC)

Lacustrine habitats are inland depressions or dammed riverine channels containing standing water. They may vary from small ponds to large areas covering several square kilometers. Depth can vary from a few centimeters to hundreds of meters. Typical lacustrine habitats include permanently flooded lakes and reservoirs, intermittent lakes, and ponds (including vernal pools) so shallow that rooted plants can grow over the bottom. This is a sensitive natural community based on it

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frequently meeting the criteria of Waters of the United States and/or Waters of the State. There are 1,768.53 (74.40%) acres of this land cover in the FERC Project Boundary.

Riverine (RIV)

Rivers, creeks, and other riverine habitat exist where water flows downgradient over time, forming channels. These channels are frequently contiguous to lakes and fresh emergent wetland habitats, and riparian vegetation typically grows along the banks. As elevation and slope decline, the water generally covers a larger surface area and becomes a slow-moving river. Riverine habitat ranges from continuously flowing rivers to intermittent streams. This habitat is a sensitive natural community based on it frequently meeting the criteria of Waters of the United States and/or Waters of the State. This land cover only occurs in the Assessment Area and is not in the FERC Project Boundary.

Urban (URB)

Urban vegetation communities can consist of tree groves, street strips, shade tree/lawns, lawns, and shrub cover. These vegetated areas are typically dominated by ornamental plantings, many of which have not naturalized. Many naturalized species also occur in these habitats such as spotted spurge, knotweed (*Polygonum aviculare*), English ivy (*Hedera helix*), cotoneasters (*Cotoneaster* spp.), and others. This habitat is not ranked and would not be considered a sensitive natural community. There is 1.0 (0.04%) acre of this land cover in the FERC Project Boundary.

3.5.1.2 Special-status Plants

On the following days, CCWD queried the following databases to generate a list of special-status plants in the following manner:

- CDFW's California Natural Diversity Database (CNDDB) (CDFW 2026) for the Assessment Area on February 27, 2026.

- CNPS' Inventory of Rare and Endangered Plants of California (CNPS 2025) for all intersecting U.S. Geological Survey (USGS) quadrangles of the FERC Project Boundary on December 30, 2025.

Based on the database reviews, CCWD initially identified 33 special-status plants with the potential to occur in the Assessment Area. Table 3.5-2 provides the following for each of the 33 special-status plant species: (1) species name; (2) status; (3) habitat requirements (based on CNPS descriptions [CNPS 2025] unless noted); (4) potential to occur; and (5) rationale for that potential to occur in the Assessment Area.

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Table 3.5-2. Special-status Plant Species with Potential to Occur in the Assessment Area.

Common Name *Scientific Name*	Status[1]	Habitat Characteristics	Potential to Occur	Rationale
Three-bracted onion *Allium tribracteatum*	FSS, CRPR 1B.2	Volcanic soils in chaparral and montane coniferous forest. Elevation: 3,605–9,845 feet. Blooming period: April–August	Could occur	Habitat for this species is present, and nearest occurrence is 1.3 miles away.
Sierra bolandra *Bolandra californica*	WL, CRPR 4.3	Mesic and rocky soils in montane coniferous forest. Elevation: 3,195–8,040 feet. Blooming period: June–July	Could occur	Habitat for this species is present, and nearest occurrence is 0.1 mile away; however, there are no recent observations.
Upswept moonwort *Botrychium ascendens*	FSS, CRPR 2B.3	Mesic soil in meadows, seeps, and lower montane coniferous forest. Elevation: 3,655–8,860 feet. Sporing period: July–August	Could occur	Habitat for this species is present, and nearest occurrence is 6.6 miles away.
Scalloped moonwort *Botrychium crenulatum*	FSS, CRPR 2B.2	Bogs, fens, meadows, seeps, marshes, freshwater swamps, and montane coniferous forests. Elevation: 4,159–10,758 feet. Sporing period: June–September	Could occur	Habitat for this species is present, and nearest occurrence is 6.3 miles away.
Mingan moonwort *Botrychium minganense*	FSS, CRPR 4.2	Mesic soils in bogs, fens, and lower and upper montane coniferous forest. Elevation: 4,773–7,152 feet. Sporing period: July–September	Could occur	Habitat for this species is present, and nearest occurrence is 3.5 miles away.
Western goblin *Botrychium montanum*	FSS, CRPR 2B.1	Mesic soil in meadows, seeps, and montane coniferous forest. Elevation: 4,805–7,150 feet. Sporing period: July–September	Not expected to occur	Habitat for this species is present but nearest occurrence is over 20 miles away.
Yosemite moonwort *Botrychium simplex*	WL	Granitic soils in moist meadows, saturated moss or sedge mats, streamlets, and seeps. Elevation: 4,920–12,460 feet. Sporing period: June–September (Jepson Flora Project 2025)	Could occur	Habitat for this species is present.
Watershield *Brasenia schreberi*	WL, CRPR 2B.3	Freshwater marshes and swamps. Elevation: 95–7,220 feet. Blooming period: June–September	Not expected to occur	Habitat for this species is not present, and nearest occurrence is over 20 miles away.
Thread-leaved beakseed *Bulbostylis capillaris*	WL, CRPR 4.2	Meadows, seeps, and montane coniferous forests. Elevation: 1,295–6,810 feet. Blooming period: June–August	Could occur	Habitat for this species is present, and nearest occurrence is 0.2 mile away.
Pleasant Valley mariposa lily *Calochortus clavatus* var. *avius*	FSS, BLM-S, CRPR 1B.2	Josephine silt loam and volcanic soils in lower montane coniferous forest. Elevation: 1,000–5,905 feet. Blooming period: May–July	Could occur	Habitat for this species is present, and nearest occurrence is 4.3 miles away.
Fresno ceanothus *Ceanothus fresnensis*	WL, CRPR 4.3	Openings of cismontane woodland and lower montane coniferous forest. Elevation: 2,950–6,900 feet. Blooming period: May–July	Could occur	Habitat for this species is present, and nearest occurrence is 0.5 mile away.
Red Hills soaproot *Chlorogalum grandiflorum*	WL, BLM-S, CRPR 4.2	Serpentine, gabbro, or other soils in chaparral, cismontane woodland, and lower montane coniferous forest. Elevation: 800–5,545 feet. Blooming period: May–June	Could occur	Habitat for this species is present, and nearest occurrence is 8.4 miles away.

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Table 3.5-2. (Continued).

Common Name *Scientific Name*	Status[1]	Habitat Characteristics	Potential to Occur	Rationale
Sierra clarkia *Clarkia virgata*	WL, CRPR 4.3	Cismontane woodland and lower montane coniferous forest. Elevation: 1,310–5,300 feet. Blooming period: May–August	Could occur	Habitat for this species is present, and nearest occurrence is 8.4 miles away.
Crawford's spring beauty *Claytonia crawfordii*	WL, CRPR 1B.2	Rocky or volcanic soils in openings of upper montane coniferous forest. Elevation: 5,055–6,300 feet. Blooming period: April–May	Could occur	Habitat for this species is present, and nearest occurrence is 5 miles away.
Long-branched dendro *Dendrocollybia racemosa*	FSS	Occurring in mixed conifer forest below Elevation 3,937 feet	Not expected to occur	Habitat for this species is present, but nearest occurrence is over 20 miles away.
Yellow-lip pansy monkeyflower *Diplacus pulchellus*	FSS, BLM-S, CRPR 1B.2	Clay and vernally mesic soils, often in disturbed areas of meadows, seeps, and lower montane coniferous forest. Elevation: 1,965–6,560 feet. Blooming period: April–July	Could occur	Habitat for this species is present, and nearest occurrence is 0.8 mile away.
Round-leaved sundew *Drosera rotundifolia*	WL	Swamps, wet meadows, forests, and peatlands often with Sphagnum spp. Elevation: 0–8,850 feet. Blooming period: June–September (Jepson Flora Project 2025)	Could occur	Habitat for this species is present.
Subalpine fireweed *Epilobium howellii*	WL, CRPR 4.3	Mesic soils in subalpine coniferous forest, meadows, and seeps. Elevation: 6,560–10,245 feet. Blooming period: July–August	Not expected to occur	Habitat for this species is present, but nearest occurrence is over 20 miles away.
Stanislaus monkeyflower *Erythranthe marmorata*	BLM-S, CRPR 1B.1	Cismontane woodland and lower montane coniferous forest. Elevation: 325–2,955 feet. Blooming period: March–May	Not expected to occur	Habitat for this species is present, but nearest occurrence is over 20 miles away.
Parry's horkelia *Horkelia parryi*	FSS, BLM-S, CRPR 1B.2	Ione formations and other soils in chaparral and cismontane woodland. Elevation: 260–3,510 feet. Blooming period: April–September	Could occur	Habitat for this species is present, and nearest occurrence is 7 miles away.
Copper-flowered bird's-foot trefoil *Hosackia oblongifolia* var. *cuprea*	CRPR 1B.3	Mesic soils in upper montane coniferous forest and the edges of meadows and seeps. Elevation: 7,870–9,020 feet. Blooming period: June–August	Could occur	Habitat for this species is present, and nearest occurrence is 3.9 miles away.
Foothill jepsonia *Jepsonia heterandra*	WL, CRPR 4.3	Rocky metamorphic soils in cismontane woodland and lower montane coniferous forest. Elevation: 160–1,640 feet. Blooming period: August–December	Could occur	Habitat for this species is present, and nearest occurrence is 0.4 mile away.
Holzinger's orthotrichum moss *Lewinskya holzingeri*	CRPR 1B.3	Usually on rocks in and along streams and rarely on tree limbs in montane coniferous forests and cismontane and pinyon and juniper woodland. Elevation: 2,345–5,905 feet.	Not expected to occur	Habitat for this species is present, but nearest occurrence is over 20 miles away.

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Table 3.5-2. (Continued).

Common Name *Scientific Name*	Status[1]	Habitat Characteristics	Potential to Occur	Rationale
Hutchison's lewisia *Lewisia kelloggii* ssp. *hutchisonii*	FSS, CRPR 3.2	Often in slate soils or sometimes rhyolite tuff in openings and ridgetops of upper montane coniferous forest. Elevation: 2,505–7,760 feet. Blooming period: April–August	Could occur	Habitat for this species is present, and nearest occurrence is 0.9 mile away.
Kellogg's lewisia *Lewisia kelloggii* ssp. *kelloggii*	FSS, CRPR 3.2	Often in slate soils or sometimes rhyolite tuff in openings and ridgetops of upper montane coniferous forest. Elevation: 4,805–7,760 feet. Blooming period: April–August	Could occur	Habitat for this species is present, and nearest occurrence is 0.8 mile away.
Humboldt lily *Lilium humboldtii* ssp. *humboldtii*	WL CRPR 4.2	Openings in chaparral, cismontane woodland, and lower montane coniferous forest: 295–4,200 feet. Blooming period: May–August	Could occur	Habitat for this species is present, and nearest occurrence is 6.1 miles away.
Stebbins' lomatium *Lomatium stebbinsii*	FSS, CRPR 1B.1	Gravel and volcanic clay soils in chaparral and lower montane coniferous forest. Elevation: 4,080–7,790 feet. Blooming period: February–May	Could occur	Habitat for this species is present, and nearest occurrence is 1.6 miles away.
Mi-Wuk navarretia *Navarretia miwukensis*	WL, BLM-S, CRPR 1B.2	Sparsely vegetated pyroclastic flows, often on gently sloping terrain, in lower montane coniferous forest. Elevation: 2,620–4,920 feet. Blooming period: May–July	Could occur	Habitat for this species is present, and nearest occurrence is 1.6 miles away.
Subalpine cryptantha *Oreocarya crymophila*	CRPR 1B.3	Volcanic and rocky soils in subalpine coniferous forest. Elevation: 8,530–10,500 feet. Blooming period: July–August	Not expected to occur	Habitat for this species is present, and nearest occurrence is 2.6 miles away; however, elevation in the FERC Project Boundary is more than 500 feet from the species lowest observed elevation.
Western waterfan lichen *Peltigera gowardii*	FSS, CRPR 4.2	On rocks in cold water creeks with little to no sediment or disturbance in riparian forests. Elevation: 3,490–8,595 feet.	Could occur	Habitat for this species is present, and nearest occurrence is 2.6 miles away.
Blister ribbon *Preissia quadrata*	FSS	On damp calcareous rocks and soil along streambanks preferring drier places than other liverworts in alpine and subalpine forests. Elevation: 3,500–11,000 feet	Could occur	Habitat for this species is present, and nearest occurrence is 0.01 mile away.
Pacific yew *Taxus brevifolia*	FSS	Generally dense, mixed-evergreen forest, lower slopes, or canyon bottoms. Elevation: 32–7,053 feet	Could occur	Habitat for this species is present, and nearest occurrence is 0.03 mile away.

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Table 3.5-2. (Continued).

Common Name *Scientific Name*	Status[1]	Habitat Characteristics	Potential to Occur	Rationale
Leconte violet *Viola nephrophylla*	WL	Shady areas in moist or swampy ground, lake margins, and yellow pine forest. Elevation: 1,100–7,550 feet. Blooming period: January–September (Jepson Flora Project 2025)	Could occur	Habitat for this species is present.

Source: All habitat descriptions are based on CNPS 2026 unless noted as CDFW 2025, CNPS 2025, Jepson Flora Project 2025, STF 2026, and BLM 2026

[1] Status:

CRPR 1B = California Rare Plant Rank, endangered in California and elsewhere
CRPR 2B = 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)
FSS = STF Forest Sensitive Species
WL = STF Forest Service Watch List Species
BLM-S = BLM Sensitive Species

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3.5.1.3 Non-native Invasive Plants

On December 30, 2025, CCWD queried the following databases to generate a list of non-native invasive plants in the following manner:

- California Invasive Plant Council (Cal-IPC's) Weed Mapper (CAL-IPC 2025) for weeds within the Upper Stanislaus River watershed.

- Forest Service Geodata Clearinghouse (USDA 2026) for all weeds mapped by the Forest Service in the FERC Project Boundary (Figure 3.5-2).

Based on the database reviews, CCWD initially identified 34 NNIP either known to occur or having the potential to occur in the Assessment Area. These species were selected because they are known to occur based on the Forest Service Geodata Clearinghouse in the Assessment Area, and/or were found on Cal-IPC's Weed Mapper and had a California Department of Food and Agriculture (CDFA) rating of A or B or is on the STF weed list. Table 3.5-3 provides for each of the 34 NNIP: (1) species name; (2) Cal-IPC rating; (3) CDFA rating; (4) if listed by the STF list of noxious weeds; and (5) if mapped by STF within 100 feet of the FERC Project Boundary.

As shown in Table 3.5-3, 34 weed species have the potential to occur in the Assessment Area. Of the species included below, bull thistle (*Cirsium vulgare*) and woolly mullein (*Verbascum thapsus*) are also weeds of concern for Calaveras Big Trees State Park (California State Parks 1989), which is located in the Assessment Area but outside of the FERC Project Boundary.

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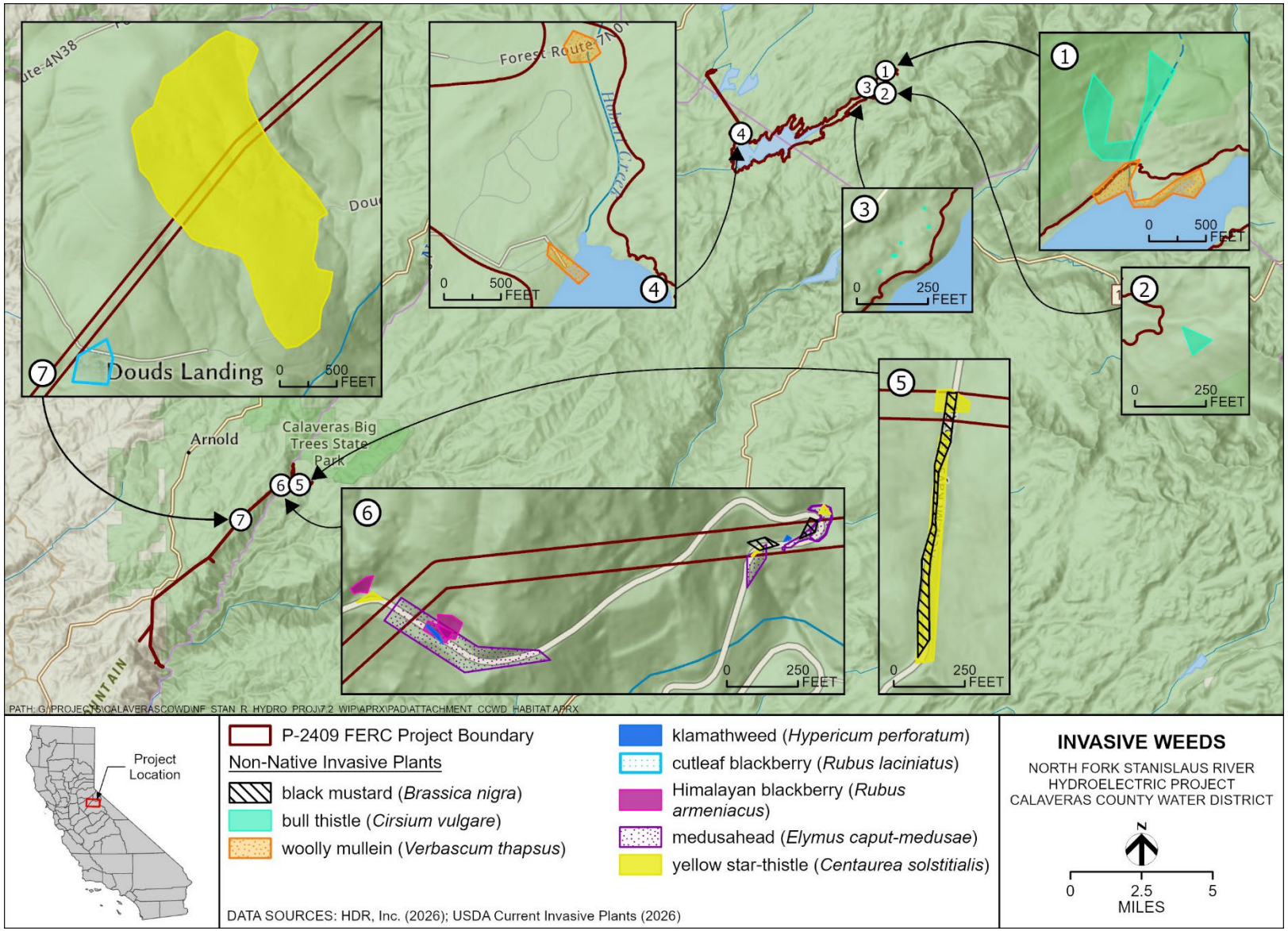


Figure 3.5-2. Invasive Weeds identified in the FERC Project Boundary.

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Table 3.5-3. NNIP Species with Potential to Occur in the Assessment Area.

Common Name *Scientific Name*	Cal-IPC Rating[1]	CDFA Rating	STF Noxious Weed (STF 2026)	Forest Service Mapped within 100 feet of the FERC Project Boundary
Tree-of-heaven *Ailanthus altissima*	Moderate	C-W	Yes	No
Alligator weed *Alternanthera philoxeroides*	High	A-W	No	No
Fertile capeweed *Arctotheca calendula*	Moderate	A-W	Yes	No
Black mustard *Brassica nigra*	Moderate	N/A	Yes	Yes
Cheatgrass *Bromus tectorum*	High	C	Yes	No
Italian thistle *Carduus pycnocephalus*	Moderate	C-W	Yes	Yes
Malta starthistle *Centaurea melitensis*	Moderate	W	Yes	Yes
Yellow starthistle *Centaurea solstitialis*	High	W	Yes	Yes
Bull thistle *Cirsium vulgare*	Moderate	W	Yes	Yes
Portuguese broom *Cytisus striatus*	Moderate	B	No	No
Foxglove *Digitalis purpurea*	Limited	N/A	Yes	Yes
Medusahead *Elymus caput-medusae*	High	W	Yes	Yes
Creeping spurge *Euphorbia myrsinites*	Watch	A	No	No
Oblong spurge *Euphorbia oblongata*	Limited	W	Yes	Yes
Fennel *Foeniculum vulgare*	Moderate	N/A	Yes	Yes
French broom *Genista monspessulana*	High	C-W	Yes	No
Baby's breath *Gypsophila paniculata*	Watch	B	No	No
Halogeton *Halogeton glomeratus*	Moderate	B-W	No	No
Klamathweed *Hypericum perforatum*	Limited	C-W	Yes	Yes
Yellowflag iris *Iris pseudacorus*	Limited	B	Yes	No
Perennial sweet pea *Lathyrus latifolius*	Watch	N/A	Yes	Yes
Perennial pepperweed *Lepidium latifolium*	High	W	Yes	Yes
Creeping water-primrose *Ludwigia peploides*	High	C-W	No	No
Sweet clover *Melilotus albus*	N/A	N/A	Yes	Yes
Parrotfeather *Myriophyllum aquaticum*	High	C	Yes	No
Kikuyugrass *Pennisetum clandestinum*	Limited	C-W	No	No

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Table 3.5-3. (Continued).

Common Name *Scientific Name*	Cal-IPC Rating[1]	CDFA Rating	STF Noxious Weed (STF 2026)	Forest Service Mapped in FERC Project Boundary
Crimson fountaingrass *Pennisetum setaceum*	Moderate	C	No	No
Russian knapweed *Rhaponticum repens*	Moderate	B-W	Yes	No
Himalayan blackberry *Rubus armeniacus*	High	N/A	Yes	Yes
Cutleaf blackberry *Rubus laciniatus*	N/A	N/A	Yes	Yes
Russian-thistle *Salsola tragus*	Limited	C-W	Yes	No
Spanish broom *Spartium junceum*	High	W	Yes	Yes
Common dandelion *Taraxacum officinale*	N/A	N/A	Yes	Yes
Woolly mullein *Verbascum thapsus*	Limited	N/A	Yes	Yes

Source: Cal-IPC 2025, CDFA 2026, STF 2026, and Forest Service 2026

Cal-IPC Ratings:

High: Species that have severe ecological impacts on the surrounding habitat

Moderate: Species that have substantial and apparent, but generally not severe, ecological impacts on the surrounding habitat

Limited: Species that are invasive, but their ecological impacts are minor

Watch: Species that have a high-risk of future invasiveness, are currently limited, and need ongoing monitoring

CDFA Ratings:

A: A pest of known economic or environmental detriment and is either not known to be established in California or it is present in a limited distribution that allows for the possibility of eradication or successful containment

B: A pest of known economic or environmental detriment and, if present in California, it is of limited distribution

C: A pest of known economic or environmental detriment and, if present in California, it is usually widespread

W: This notation indicates that a plant is included in the California Code of Regulations Section 4500 list of California State Noxious Weeds

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3.5.2 Special-status Wildlife Species

On February 17, 2026, CCWD queried CDFW's CNDDB database to generate a list of special-status wildlife species with potential to occur within the Assessment Area. The following databases were also queried to identify any additional species with potential to occur and bolster information from CNDDB: eBird and the Bat Acoustic Monitoring Portal (BatAMP) (eBird 2025a, eBird 2025b, BatAMP 2025). Beyond database queries, additional bat and bird species were considered based on the professional experience of biologists.

Based on the database queries, CCWD identified 35 special-status wildlife species with potential to occur in the Assessment Area. Table 3.5-4 provides for each of these special-status wildlife species: (1) status; (2) habitat requirements; (3) potential to occur in the Assessment Area and (4) rationale for why the species does or does not have potential to occur in the Assessment Area.

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Table 3.5-4. Special-status Wildlife Species with the Potential to Occur in the Assessment Area.

Common Name *Scientific Name*	Status	Habitat Requirements	Potential to Occur	Rationale
INVERTEBRATES				
Western bumble bee *Bombus occidentalis*	SCE FSS	Open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows. Typically nests underground in abandoned rodent burrows, such as old squirrel or other animal nests, and in open west-southwest slopes bordered by trees, although a few nests have been reported from above-ground locations such as in logs among railroad ties. Availability of nest sites may depend on rodent abundance (Xerces 2014). In California, this generalist short-tongued forager primarily feeds associated plants in the Fabaceae, Asteraceae, Rhamnaceae, and Rosaceae families (Thorp et al. 1983). Range occurs along the West Coast and Mountain West of North America, from Arizona, New Mexico and Mediterranean California, north through the Pacific Northwest and Tundra/Taiga region to Alaska. Eastward, the distribution stretches to the northwestern Great Plains and southern Saskatchewan (Hatfield et al. 2015).	Could occur	Suitable habitat for this species exists in the Assessment Area.
AMPHIBIANS				
Southern long-toed salamander *Ambystoma macrodactylum sigillatum*	SSC	Ranges in northeastern California except for the Modoc Plateau. Generally found in grasslands, dry woodlands, coniferous forests, alpine meadows, sagebrush, and intermediate habitats between those listed. Can be found in disturbed agricultural areas. At high elevations, above 6,900 feet, inhabits permanent water bodies that are deeper than 6 feet. Hardwood forests and granitic slopes are also used for upland habitat. This species strongly prefers fishless water bodies (Thomson et al. 2016).	Could occur	Suitable habitat for this species exists in the Assessment Area.
Northern leopard frog *Lithobates pipiens*	SSC FSS	Ranges in eastern El Dorado and Placer counties, northwestern Inyo County, and central Modoc County. Generally found in small streams, rivers, and lakes that do not freeze over winter. Damp upland habitat is used in the Vicinity of these water bodies that contain open grassy areas and meadows. This species avoids heavily grazed and cultivated areas (Thomson et al. 2016).	Not expected to occur	Although suitable habitat can be found within the Assessment Area, the Assessment Area is outside of the historic range and introduced populations of the species.
REPTILES				
California mountain kingsnake *Lampropeltis californiae*	BLM-S	Found in diverse habitats including coniferous forest, oak-pine woodlands, riparian woodland, chaparral, and coastal sage scrub. Prefers wooded areas near streams with rock outcrops and rotting logs exposed to the sun. Ranges from southern Oregon south through the Cascade and Sierra Nevada mountains and the Coast Range as far south as Santa Cruz County (Nafis 2026).	Could occur	Suitable habitat for this species exists in the Assessment Area.
Coast horned lizard *Phrynosoma blainvillii*	SSC	Ranges in the southern half of California outside of the desert, along the foothills of the Sierra Nevada to Butte County, and along the Central Coast ranges up to Contra Costa County. Generally, occurs in sage scrub, dunes, alluvial scrub, annual grassland, chaparral, oak, riparian, and Joshua tree woodland, coniferous forest, and saltbush scrub. Needs loose, fine soils for burrowing, open areas for basking, and dense foliage for cover. Negatively associated with Argentine ants (*Linepithema humi*) (Thomson et al. 2016).	Could occur	Suitable habitat may be found within the FERC Project Boundary, although the species range may only reach the lowest portions of the Assessment Area.
BIRDS				
American goshawk *Accipiter atricapillus*	SSC FSS BLM-S	Nests in mature and old-growth coniferous forests at high elevations in the Sierra Nevada, Cascade, North Coast, and Transverse ranges. Prefers stands with Pacific ponderosa pine (*Pinus ponderosa* var. *pacifica*), Jeffrey pine, lodgepole pine (*Pinus contorta* ssp. *murrayana*), Douglas-fir, and rarely pinyon (*Pinus monophylla*) - -juniper or quaking aspen. Prefers stands with larger trees, denser canopies, and relatively open understories (Shuford and Gardali 2008).	Could occur	Suitable nesting habitat may be found near or within the Assessment Area (complex forest structures).
Tricolored blackbird *Agelaius tricolor*	ST SSC	Mostly a year-round resident in California. Common locally throughout Central Valley and in coastal districts from Sonoma County south. Breeds locally in northeastern California. In winter, becomes more widespread along the central coast and San Francisco Bay area, and can be found in portions of the Colorado Desert. Preferred nesting habitat includes cattails, bulrushes, Himalayan blackberry, and agricultural silage. Dense vegetation is preferred, but heavily lodged cattails not burned in recent years may preclude settlement. Needs access to open water. Strips of emergent vegetation along canals are avoided as nest sites unless they are about 30 feet or more wide but, in some ponds, especially where associated with Himalayan blackberries and deep water, settlement may be in narrower fetches of cattails (Granholm 2008).	Not expected to occur	While suitable habitat may be found within various riparian areas of the Assessment Area, the FERC Project Boundary is outside of the breeding range of the species. Migrant individuals may be seen flying overhead or stopping through the area.
Grasshopper sparrow *Ammodramus savannarum*	SSC	Nests in a variety of grassland habitats throughout much of the Central Valley, Coast Range Mountains, and the Inland Empire region. Prefers short to middle-height, moderately open grasslands with scattered shrubs. Avoids areas with high shrub cover (Shuford and Gardali 2008).	Could occur	Suitable habitat may be present in lower elevations within the Assessment Area, although little is known about how prevalent nesting is above approximately Elevation 4,000 feet in the western Sierras (Shuford and Gidali 2008).
Golden eagle *Aquila chrysaetos*	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 (Polite et al. 1990).	Could occur	Suitable habitat exists throughout the Assessment Area.

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Table 3.5-4. (Continued).

Common Name *Scientific Name*	Status	Habitat Requirements	Potential to Occur	Rationale
Short-eared owl *Asio flammeus*	SSC	Found in open, treeless areas with elevated sites for perches and dense vegetation for roosting and nesting. Associated with perennial grasslands, prairies, dunes, meadows, irrigated lands, and saline and fresh emergent wetlands. Breeds in coastal areas in Del Norte and Humboldt counties, San Francisco Bay Delta, northeastern Modoc plateau, and east Sierras from Lake Tahoe to Inyo County and San Joaquin Valley. Winters in the Central Valley, western Sierra Nevada foothills and along the coastline (Polite 2005a).	Could occur	May overwinter in the foothills of the Sierra Nevada nearest the lower elevation portions of the Assessment Area, but otherwise not expected to occur within the FERC Project Boundary.
Long-eared owl *Asio otus*	SSC	Widespread but uncommon and local across California year-round, except in the Central Valley where it is a rarely encountered migrant and winter resident. Nests and roosts in dense stands of live oak in riparian thickets with dense canopies near meadow edges. Also nests in dense stands of conifers at higher elevations (Polite 2005b).	Could occur	Suitable habitat exists throughout the Assessment Area.
Burrowing owl *Athene cunicularia*		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 (*Otospermophilus beecheyi*). 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 northwest coast and elevations above 5,500 feet (Polite 1999).	Not expected to occur	While suitable habitat may exist in small parcels within the Assessment Area where open grasslands with mammal burrows intersperse forested habitats, the Assessment Area is outside of the summer and winter ranges of the species.
Redhead *Aythya americana*	SSC	Nests in freshwater emergent wetlands where dense stands of cattails and bulrushes are interspersed with areas of deep, open water. Also observed nesting in somewhat alkaline marshes and potholes (Shuford and Gardali 2008).	Could occur	Suitable habitat may exist in aquatic portions of the Assessment Area.
Swainson's hawk *Buteo swainsoni*	ST BLM-S	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 (*Eucalyptus* spp.) and Australian pines (*Casuarina equisetifolia*) 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, Owens, Fish Lake, and Antelope valleys. Winters primarily in Argentina, with most birds absent from California in October through February, although a few 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 kettling high overhead on thermals or foraging together on freshly cut agricultural fields (Polite 2006). Regulatory buffer of 1,320 feet (¼ mile) from active nests. Buffer should be increased to 1/2 mile if nesting area is away from urban development (CDFW 1994).	Not expected to occur	While suitable habitat can be found in the foothills of the Sierra Nevada and may be present at the lowest portions of the Assessment Area, breeding populations of the species tend to be locally common in the Sacramento and Great Basin ecoregions. The species is also noted to prefer landscapes with more level terrain and typically avoid mountainous regions and steep canyons (Woodbridge 1998). The species may occur as a migrant flyover, or to utilize the Assessment Area as a night stopover site.
Vaux's swift *Chaetura vauxi*	SSC	Nests in cavities in a variety of trees and less frequently in artificial structures such as smokestacks. Shows an affinity for old-growth coast redwood (*Sequoia sempervirens*) and Douglas fir forests with nest sites in large hollow trees and snags, especially tall, burnt-out stubs (Shuford and Gardali 2008).	Could occur	Suitable habitat exists throughout the Assessment Area.
Northern harrier *Circus hudsonius*	SSC	Nests on the ground in patches of dense, tall vegetation in undisturbed areas. Breeds and forages in a variety of open habitats such as marshes, wet meadows, weedy borders of lakes, rivers and streams, grasslands, pastures, croplands, sagebrush flats, and desert sinks (Shuford and Gardali 2008).	Could occur	Suitable habitat may be found within the Assessment Area where open grasslands border forested areas and aquatic features.
Olive-sided flycatcher *Contopus cooperi*	SSC	Nests in a wide variety of forest and woodland habitats below 9,000 feet in elevation in the coastal and mountainous portions of California. Occurs only as a migrant elsewhere in the state. Prefers forests and woodlands with adjacent meadows, lakes, or open terrain for foraging (Gaines 2005a).	Could occur	Suitable habitat may be found near or within the FERC Project Boundary (woodlands near open water).
Black swift *Cypseloides niger*	SSC	Breeding sites are very specific: behind or beside permanent or semi-permanent waterfalls, on perpendicular cliffs near water, and in sea caves. Breeds very locally in the Sierra Nevada and Cascade ranges; the San Gabriel, San Bernardino, and San Jacinto mountains; and in coastal bluffs and mountains from San Mateo County south to San Luis Obispo County (Shuford and Gardali 2008).	Could occur	Suitable habitat exists throughout the Assessment Area.
White-tailed kite *Elanus leucurus*	SSC	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 (Polite 2005c).	Not expected to occur	White suitable habitat may exist in areas that have lower densities of forested area near open grassland portions within the Assessment Area, the Assessment Area is outside of the understood year-round range of the species. The species would likely only occur as a rare migrant.

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Table 3.5-4. (Continued).

Common Name *Scientific Name*	Status	Habitat Requirements	Potential to Occur	Rationale
Willow flycatcher *Empidonax traillii*	SE FSS	Uncommon summer resident in wet meadows and montane riparian habitats from 2,000 to 8,000 feet in elevation in the Sierra Nevada and Cascade ranges. Most numerous where extensive thickets of low, dense willows edge on wet meadows, ponds, or backwaters (Gaines 2005b).	Could occur	Suitable nesting habitat may exist near and within the Assessment Area. Two observations of willow flycatcher exist near the Project, one approximately 1 mile west at Forest Meadow in June 2025 (eBird 2026b) and another near Red Hills Recreation Management Area, approximately 16 miles south (iNaturalist 2026).
Common loon *Gavia immer*	SSC	Very rare as a breeder in the state on large mountain lakes in the Cascade and Sierra Nevada ranges. Common September through May in estuarine and subtidal marine habitats along the entire coast. Very few non-breeding individuals oversummer on the north coast. Also, less commonly winters on large, deep lakes in valleys and foothills throughout the state (Granholm et al. 1990).	Could occur	Suitable breeding habitat may exist in the upper portions of the Assessment Area, although the species is considered to be rare.
Bald eagle *Haliaeetus leucocephalus*	BGEPA SE FP FSS	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 (*Pinus ponderosa*). Requires large bodies of water or rivers with abundant fish, and adjacent snags (Polite and Pratt 1999).	Known to occur	Suitable habitat present within the FERC Project Boundary where dense forest structures occur near large water bodies. Known occurrences at Spicer Meadow Reservoir and New Melones Lake as recently as January 2026 (eBird 2026a, iNaturalist 2026).
Yellow-breasted chat *Icteria virens*	SSC	Nests in early-successional riparian habitats with a well-developed shrub layer and an open canopy. Restricted to narrow borders of streams, creeks, sloughs, and rivers. Often nest in dense thickets of blackberry and willow (Shuford and Gardali 2008).	Could occur	Suitable habitat exists throughout the Assessment Area.
Loggerhead shrike *Lanius ludovicianus*	SSC	Shrublands and open woodlands with a fair amount of grass cover and areas of bare ground. Requires tall shrubs or trees, fences, or power lines for hunting perches and territorial advertisement. Also requires open areas of short grasses, forbs, or bare ground for hunting, large shrubs or trees for nest placement, and thorny vegetation or barbed wire fences for impaling prey. Ranges across most of the state, but absent from the highest mountains and the northwest forests and coast (Shuford and Gardali 2008).	Could occur	Suitable habitat may exist at the lower elevations of the Assessment Area, although may only occur as a flyover in higher elevation portions of the Project.
American white pelican *Pelecanus erythrorhynchos*	SSC	In California, nests almost exclusively in large lakes in the Klamath Basin region. On migration and over winter, occurs across much of the state in open wetlands and sheltered bays and lagoons. Nests on ground on earthen, sandy, and rocky islands or rarely on peninsulas or floating tule mat islands. Nests may be in the open in the sand or interspersed with or adjacent to tall weeds and open, low-stature shrubs. Roosts along water edges, beaches, sandbars, or old drift wood (Shuford and Gardali 2008).	Could occur	Suitable habitat may be found within the Assessment Area where open wetlands occur on migratory routes. Likely to occur as a nonbreeding migrant within the Assessment Area.
Purple martin *Progne subis*	SSC	Present in California from mid-March through late September. Requires concentrations of nesting cavities, relatively open-air space above accessible nest sites, and relatively abundant aerial insect prey. In the coastal mountains, Cascade Range, and Sierra Nevada foothills, inhabits open forests, woodlands, and riparian areas. Extirpated as a breeder from most of the Central Valley except the Sacramento area where it has taken to nesting in hollow-box bridges. In southern California, there is now only a rare and local breeder on the coast and in interior mountain ranges, with few breeding localities. Absent from higher desert regions except as a rare migrant (Shuford and Gardali 2008).	Not expected to occur	Suitable habitat may exist within the Assessment Area, although the species is not likely to occur within it, as the species is fairly rare and locally abundant in few areas of California. The nearest occurrences are in Sacramento County, approximately 60 miles northwest (CDFW 2026).
Bank swallow *Riparia riparia*	ST	A colonial nester in riparian and lacustrine bluffs or cliffs with fine-textured or sandy soils into which the nest cavities are dug. Also nests in earthen banks as well as sand and gravel pits. Declined drastically in the state over the 20th Century due to loss of riparian habitat and stabilization of natural banks. Currently most numerous in the Sacramento Valley along the Sacramento, Feather, and American Rivers, and Cache Creek in western Yolo County. Scarce and very local on the central coast. Occurs elsewhere in the state as an uncommon to rare migrant (Green 1999).	Not expected to occur	The species may occur as a rare flyover, although they are not expected to nest in the Assessment Area. The FERC Project Boundary is within the migratory range of the species. The nearest occurrence to the lowest portion of the Project is approximately 40 miles to the northwest, near Camanche Reservoir (CDFW 2026).
Yellow warbler *Setophaga petachia*	SSC	Usually found in riparian deciduous habitats in summer: cottonwoods, willows, alders (*Alnus* ssp.), and other small trees and shrubs typical of low, open-canopy riparian woodland. Also breeds in montane shrubbery in open coniferous forests (Green 2005).	Could occur	Suitable nesting habitat occurs within the Assessment Area.
Great gray owl *Strix nebulosa*	SE FSS	Breeds in California red fir, lodgepole pine, 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 in the Sierra Nevada Range, from the Vicinity of Quincy south to the Yosemite region. (Gaines and Granholm 1990).	Could occur	Suitable habitat exists and overlaps with that of the California spotted owl, nearer to meadows. Approximately five occurrences of the owl were found within 10 miles southeast of the FERC Project Boundary near New Melones Lake (CDFW 2026, eBird 2026a).
Yellow-headed blackbird *Xanthocephalus*	SSC	Nests in fresh marshes with tall, emergent vegetation such as bulrushes and cattails adjacent to deep water (Shuford and Gardali 2008).	Not expected to occur	Suitable habitat may occur within the Assessment Area, often overlapping with red-winged blackbird. However, the FERC Project Boundary is within the migratory range and the species is not expected to nest within it. May occur as a flyover.

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Table 3.5-4. (Continued).

Common Name *Scientific Name*	Status	Habitat Requirements	Potential to Occur	Rationale
MAMMALS				
Pallid bat *Antrozous pallidus*	SSC FSS BLM-S	Ranges across all of California in a wide variety of habitats with preference for arid, semi-arid, and rocky, mountainous areas (Miller 2002); it is abundant in xeric ecosystems. 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) (Harris et al. 1990). Common tree species used are coast redwoods; oaks (valley, live, blue); and pine (ponderosa, lodgepole). When hibernating, pallid bats can be found roosting in buildings, caves, or rock crevices; overwintering roosts will typically be found in protected structures out of direct sunlight with stable temperatures (Miller 2002). Ranges across nearly all of California except for high elevation portions of the Sierra Nevada and Del Norte, western Siskiyou, Humboldt, and northern Mendocino counties (Harris et al. 1990).	Could occur	Suitable roosting and foraging habitat may be present throughout the lower portions of the Project nearer to New Melones Lake, and between this and the higher portions of the Project.
Sierra Nevada mountain beaver *Aplodontia rufa californica*	SSC	Ranges across the Sierra Nevada from Shasta and Lassen counties south to Tulare County. Generally found in dense riparian forests and open shrubscapes around most forest types. Specifically found in forests with open to moderate canopy cover and a dense understory near water. Requires deep, friable soils and a cool, moist microclimate (Polite and White 1990).	Not expected to occur	The Assessment Area is likely outside of the upper elevation limits of the species in the western Sierra Nevada. Habitat surrounding water sources within the Assessment Area are coniferous with moderate to dense canopy cover, which may preclude the already uncommon species from occurring (Polite and White 1990).
Townsend's big-eared bat *Corynorhinus townsendii*	SSC FSS BLM-S	This species has a broad range in the western U.S., occupying montane forests dominated by pine, fir, and aspen trees as well as subalpine areas and arid desert habitats (Adams 2003, Kunz and Martin 1982). Roosting commonly occurs in caves and cave-like structures, including anthropogenic mines and buildings, bridges, and hollow trees (Harris 2000a). Abandoned buildings are typically used in summer months, with a preference of caves and mines in the winter (Adams 2003). Maternity colonies are relatively well documented compared to other species. These maternity colonies will almost exclusively be found in caves and cave-like systems. Townsend's big-eared bats are extremely sensitive to disturbance and will relocate roosts at minimal signs of human activity (Kunz and Martin 1982). Ranges throughout California except for high elevation portions of the Sierra Nevada. Generally, prefers mesic habitats but is known to occur in all non-alpine habitats of California. This species may use different roosting sites for day and night (Harris 2000a).	Could occur	Suitable habitat for this species exists in the Assessment Area, although the species would be unlikely to occur anywhere near heavy development or high human activity.
Spotted bat *Euderma maculatum*	SSC BLM-S	Ranges across the eastern half of California from the low foothills and over the Cascade and Sierra Nevada crests to Nevada, as well as all of 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 (Harris 2000b).	Could occur	While the spotted bat may have range and distribution that covers the FERC Project Boundary, range maps and information regarding their population sizes are sparse. Suitable habitat may exist in coniferous forests, although the species is unlikely to roost within the FERC Project Boundary. Distributions are generally patchy, and the species is rare throughout its range.
Western mastiff bat *Eumops perotis californicus*	SSC BLM-S	Ranges throughout Southern California, the central coast, and the Sierra Nevada. Generally occurs in open, arid, or semi-arid habitats. Roosts in rock crevices and buildings (Ahlborn and White 1990a).	Not expected to occur	Distributions are patchy, and their range extends from southern California north to about halfway up the state in the Sierras. Roosting behavior would likely preclude the species from occurring within the FERC Project Boundary. This species is rare throughout its range.
Western red bat *Lasiurus frantzii*	SSC	Historically, the range of western red bats extended from southern British Columbia south into Mexico, with a gap in the Great Basin Desert (Solick et al. 2020); however, Solick et al. (2020) show more accurate ranges, documenting the species from north-central and coastal California to southeastern Arizona and sparsely up into Utah and southwestern Nevada. The western red bat is a foliage roosting species and finds itself in riparian habitats within arid and semi-arid regions of southwestern U.S.; it almost exclusively roosts within densely foliated trees: willow, cottonwood, sycamore, elder, and ash species (Andersen and Geluso 2018, Solick et al. 2020). Day and night roosts are commonly on habitat edges near streams or open fields, hidden away in all directions except for below to allow lift generation. The species has been documented utilizing fruit trees in orchards (Pierson et al. 2006).	Could occur	Suitable habitat exists throughout the Assessment Area.
Sierra Nevada snowshoe hare *Lepus americanus tahoensis*	SSC	An uncommon resident at upper elevations in the northern Sierra Nevada Range from Lassen and southeastern Shasta counties south through Madera County. Primarily occurs in montane riparian habitats with thickets of alders and willows and presence of young coniferous trees interspersed with chaparral (Hoefler et al. 1990a).	Could occur	Suitable habitat exists throughout the Assessment Area.

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Table 3.5-4. (Continued).

Common Name *Scientific Name*	Status	Habitat Requirements	Potential to Occur	Rationale
Western white-tailed jackrabbit *Lepus townsendii townsendii*	SSC	In California, occurs only on the western edge of the Great Basin, from the Modoc Plateau through Owens Valley. Sagebrush, subalpine conifer, juniper, alpine dwarf-shrub, perennial grassland, low sagebrush, wet meadow, and early successional stages of various coniferous habitats (Hoefler et al. 1990b).	Could occur	Although rare throughout its range, suitable habitat is present in patches throughout the Assessment Area.
Sierra marten *Martes caurina sierrae*	FSS	Found in a variety of late successional coniferous forests such as redwood, Sierran mixed conifer, lodgepole pine, California red fir, ponderosa pine (*Pinus ponderosa*), Jeffrey pine, western white pine (*Pinus monticola*), whitebark pine (*Pinus albicaulis*), and mountain hemlock (*Tsuga mertensiana*) (Forest Service 2018). Sierra martens prefer forested habitats with complex ground structure that supports an adequate prey base and denning behaviors; additionally, riparian areas and stream corridors are important for Sierra marten movement and foraging (Forest Service 2018, NatureServe 2025). At elevations below 6,725 feet in the northern Sierra Nevada, martens have high preference for lodgepole pine associations, while at higher elevations martens strongly prefer red fir associations (NatureServe 2025).	Could occur	Suitable habitat is present throughout higher elevation portions of the Assessment Area.
Small-footed myotis *Myotis ciliolabrum*	BLM-S	Common in arid uplands in California; in coastal California it occurs from Contra Costa County south to the Mexican border. It also occurs on the east side of the Sierra Nevada and in Great Basin and desert habitats from Modoc, Kern, and San Bernardino counties. Found from sea level to 8,900 feet in elevation. Seeks cover in caves, buildings, mines, crevices, and occasionally under bridges and under bark (Granholm et al. 1990a).	Could occur	Suitable roosting and foraging habitat for this species exists throughout the Assessment Area.
Long-eared myotis *Myotis evotis*	BLM-S	Found throughout most of California, but it avoids the arid Central Valley and hot deserts. The species has been found in nearly all brush, woodland, and forest habitats from sea level to 9,000 feet in elevation. Can roost in buildings, crevices, spaces under bark, snags, and caves (Granholm et al. 1990b).	Could occur	Suitable roosting and foraging habitat for this species exists throughout the Assessment Area.
fringed myotis *Myotis thysanodes*	FSS BLM-S	Occurs in much of California except the Central Valley and Colorado and Mojave deserts. Occurs in a wide variety of habitats; records range in elevation from sea level to 9,350 feet in New Mexico (Barbour and Davis 1969). Optimal habitats are pinyon-juniper, valley foothill hardwood, and hardwood-conifer, generally at 4,000 to 7,000 feet in elevation (Polite et al. 2005).	Could occur	Suitable habitat for this species exists in the FERC Project Boundary.
Yuma myotis *Myotis yumanensis*	BLM-S	Widespread in California, but uncommon in the Mojave and Colorado desert regions, except for the mountain ranges bordering the Colorado River Valley. Ranges from sea level up to 11,000 feet in elevation, but uncommon above 8,000 feet in elevation. Roosts in buildings, mines, caves, or crevices. The species has also been observed roosting in abandoned swallow nests and under bridges (Granholm et al. 1990c).	Could occur	Suitable roosting and foraging habitat for this species exists throughout the Assessment Area.
Fisher *Pekania pennanti*	SSC FSS BLM-S	Large areas of mature, dense forest stands with snags and greater than 50% canopy closure. Uncommon permanent resident of the Sierra Nevada, Cascades, and Klamath mountains; also found in a few areas in the North Coast Ranges (USFWS 2014).	Could occur	Suitable habitat exists within the Assessment Area where dense, mature forests occur.

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Table 3.5-4. (Continued).

Common Name *Scientific Name*	Status	Habitat Requirements	Potential to Occur	Rationale
Mount Lyell shrew *Sorex lyelli*	SSC	Ranges in northern Mono County and the easternmost portions of Madera and Mariposa counties. Generally occurs in high montane and steppe communities. Specifically requires moist soil and inhabits nearby riparian areas (Johnson 2008).	Not expected to occur	Historic ranges indicate that the species occurred in a small population in the eastern Sierra Nevada only, from approximately 7,000 to 10,000 feet in elevation. More recent evidence shows that the species may occur in the western Sierra Nevada, though this is based on only one specimen found at approximately 4,000 feet in elevation near Fresno County. Beyond this species, no further range expansion is known.
American badger *Taxidea taxus*	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 and White 1990).	Could occur	Suitable habitat exists throughout the Assessment Area.

Source: BatAMP 2026, CDFW 2025, eBird 2026, and iNat 2026

[1] Status:
BGEPA = Protected under the Bald and Golden Eagle 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 (Section) 3511
SSC = Considered a Species of Special Concern by CDFW
FSS = Forest Service Sensitive Species
BLM-S = BLM Sensitive Species

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3.5.3 Wildlife Resources

A variety of wildlife use the habitat within the FERC Project Boundary and Assessment Area and have been observed by members of the public and resource agency staff. Four amphibian species, three reptile species, four mammal species, and 42 species of birds have been recorded in or around the FERC Project Boundary (iNaturalist 2026, eBird 2025, eBird 2025).

The amphibian species include: western toad (*Anaxyrus boreas*), ensatina (*Ensatina eschscholtzii*), Pacific treefrog (*Pseudacris regilla*), and Sierra newt (*Taricha sierrae*).

The reptile species include: southern alligator lizard (*Elgaria multicarinata*), western fence lizard (*Sceloporus occidentalis*), and Sierra gartersnake (*Thamnophis couchii*).

The mammal species include: mule deer (*Odocoileus hemionus*), California ground squirrel (*Otospermophilus beecheyi*), western gray squirrel (*Sciurus griseus*), and northern gray fox (*Urocyon cinereoargenteus*).

Some bird species include: mallard (*Anas platyrhynchos*), California scrub-jay (*Aphelocoma californica*), oak titmouse (*Baeolophus inornatus*), cedar waxwing (*Bombycilla cedrorum*), Canada goose (*Branta canadensis*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*B. lineatus*), California quail (*Callipepla californica*), turkey vulture (*Cathartes aura*), hermit thrush (*C. guttatus*), wrentit (*Chamaea fasciata*), American dipper (*Cinclus mexicanus*), northern flicker (*Colaptes auratus*), western wood-pewee (*Contopus sordidulus*), ruby-crowned kinglet (*Corthylio calendula*), common raven (*Corvus corax*), Nuttall's woodpecker (*Dryobates nuttallii*), house finch (*Haemorhous mexicanus*), and bald eagle.

Additional bird species include: dark-eyed junco (*Junco hyemalis*), acorn woodpecker (*Melanerpes formicivorus*), wild turkey (*Meleagris gallopavo*), California towhee (*Melozone crissalis*), common merganser (*Mergus merganser*), northern mockingbird (*Mimus polyglottos*), Townsend's solitaire (*Myadestes townsendi*), osprey (*Pandio haliaetus*), spotted towhee (*Pipilo maculatus*), eared grebe (*Podiceps nigricollis*), bushtit (*Psaltriparus minimus*), rock wren (*Salpinctes obsoletus*), black phoebe (*Sayornis nigricans*), Say's phoebe (*S. saya*), yellow-rumped warbler (*Setophaga coronata*), western bluebird (*Sialia mexicana*), red-breasted sapsucker (*Sphyrapicus ruber*), lesser goldfinch (*Spinus psaltria*), Bewick's wren (*Thryomanes bewickii*), American robin (*Turdus migratorius*), Hutton's vireo (*Vireo huttoni*), golden-crowned sparrow (*Zonotrichia atricapilla*), and white-crowned sparrow (*Z. leucophrys*).

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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 habitat[7] were used to evaluate the potential for game animals to occur within the FERC Project Boundary. Table 3.5-5 lists game species, their habitat requirements, their potential seasonal distribution within the FERC Project Boundary, and if any commercially valuable wildlife species are also considered California special-status species. No hunting is known to occur in the FERC Project Boundary.

Table 3.5-5. 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]	Special-status Species[3]
REPTILES AND AMPHIBIANS		
Striped racer *Coluber lateralis*	Yearlong – BOP, BOW, MCH, MCP, MHW, MHC, MRI, PPN, SMC, WTM, WFR	Not a special status species
Ring-necked snake *Diadophis punctatus*	Yearlong – AGS, BOP, BOW, MCH, MCP, MHW, MHC, MRI, PGS, PPN, SMC, URB, WFR	Not a special status species
Common ensatina *Ensatina eschscholtzii*	Yearlong – BOP, BOW, MCH, MCP, MHW, MHC, MRI, PPN, SMC, WTM, WFR	Not a special status species
Western skink *Plestiodon skiltonianus*	Yearlong – AGS, BOP, BOW, MCH, MCP, MHW, MHC, MRI, PGS, PPN, SMC, WFR	Not a special status species
Common sagebrush lizard *Sceloporus graciosus*	Yearlong – JPN, LPN, MCH, MCP, MHW, MHC, MRI, PPN, SMC, WFR	Not a special status species
Common gartersnake *Thamnophis sirtalis*	Yearlong – AGS, BOP, BOW, JPN, LAC, MCH, MCP, MHW, MHC, MRI, PGS, PPN, SMC, WTM, WFR	Not a special status species
BIRDS		
Greater white-fronted goose *Anser albifrons*	Yearlong – AGS, LAC, PGS, WTM, MR	Not a special status species
Redhead *Aythya americana*	Yearlong – LAC, MRI	SSC
California quail *Callipepla californica*	Yearlong – AGS, BOP, BOW, MCH, MCP, MHW, MHC, MRI, PGS, PPN, SMC, URB, WTM, WFR	Not a special status species
Greater sage-grouse *Centrocercus urophasianus*	Yearlong – BAR, WTM	SCC
Sooty grouse *Dendragapus fuliginosus*	Yearlong – AGS, JPN, LPN, MHW, MHC, MRI, PGS, PPN, RFR, SMC, WFR	Not a special status species
MAMMALS		
American beaver *Castor canadensis*	Yearlong – AGS, BOW, LAC, LPN, MCP, MHC, MRI, PGS, RFR, SMC, WTM, WFR	Not a special status species
Snowshoe hare *Lepus americanus*	Yearlong – JPN, LPN, MRI RFR, SMC, WFR	Not a special status species
Black-tailed jackrabbit *Lepus californicus*	Yearlong – AGS, BOP, BOW, JPN, LPN, MCH, MCP, MHW, MHC, MRI, PGS, PPN, RFR, SMC, URB, WTM, WFR	Not a special status species
White-tailed jackrabbit *Lepus townsendii*	Yearlong – JPN, LPN, MRI, PGS, RFR, WTM	SCC
Long-tailed weasel *Mustela frenata*	Yearlong – AGS, BOP, BOW, JPN, LPN, MCH, MCP, MHW, MHC, MRI, PGS, PPN, RFR, SMC, URB, WTM, WFR	Not a special status species

[7] CCWD cross-walked the vegetation alliances and other land covers against California Wildlife Habitat Relationship (CWHR) habitat classifications following the Manual of California Vegetation Online (CNPS 2026).

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Table 3.5-5. (Continued).

Common Name *Scientific Name*	Temporal and Spatial Distribution and General Habitat Requirement [1, 2]	Special-status Species[3,4]
Western spotted skunk *Spilogale gracilis*	Yearlong – AGS, BOP, BOW, JPN, LPN, MCH, MCP, MHW, MHC, MRI, PGS, PPN, RFR, SMC, URB, WTM, WFR	Not a special status species
Brush rabbit *Sylvilagus bachmani*	Yearlong – AGS, BOP, BOW, MCH, MCP, MHW, MHC, MRI, PGS, PPN, SMC, URB	Not a special status species
American badger *Taxidea taxus*	Yearlong – AGS, BAR, BOP, BOW, JPN, LPN, MCH, MCP, MHW, MHC, MRI, PGS, PPN, RFR, SMC, WTM, WFR	SSC

Source: CDFW 2025e

[1] Habitat Types: AGS = Annual grassland, BOP = Blue oak – foothill pine, BOW = Blue oak woodland, DFR = Douglas fir, JPN = Jeffrey pine, LPN = Lodgepole pine, MCH = Mixed chaparral, MCP = Montane chaparral, MHW = Montane hardwood, MHC = Montane hardwood-conifer, MRI = Montane riparian, PGS = Perennial grassland, PPN = Ponderosa pine, RFR = Red fir, SMC = Sierran mixed conifer, WTM = Wet meadow, WFR = White fir, BAR = Barren, LAC = Lacustrine, URB = Urban

[2] Temporal and Spatial Distribution - CWHR habitat types. CCWD cross walked the 17 vegetation communities and three other land covers within the FERC Project Boundary into 20 different CWHR habitat classifications, following the Manual (CNPS, A Manual of California Online 2026).

[3] Special Status SSC = Considered a Species of Special Concern by CDFW.

3.5.5 Wetlands, Riparian, and Littoral Habitats

Existing data from the National Wetland Inventory (USFWS 2026b) determined that multiple wetlands and riparian habitats occur in the Assessment Area. Table 3.5-6 includes details about modeled wetland data for the Assessment Area. These habitats are depicted in Attachment 3.5B, *Wetlands*.

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Table 3.5-6. Mapped National Wetland Inventory Features in the FERC Project Boundary and Assessment Area.

Type	Definition	Acres in FERC Project Boundary	Percent of Aquatic Habitats in the FERC Project Boundary	Acres in Assessment Area	Percent of Aquatic Habitats in the Assessment Area
Lacustrine Limnetic	Includes all habitats in which a lake or other body of open water with no more than 30 percent vegetation cover and is greater than 8.2 feet deep.	1.98	8.93%	49.79	13.79%
Palustrine Emergent	Includes all wetlands dominated by vegetation and are generally less than 20 acres in size and are no deeper than 8.2 feet. Vegetation is comprised of persistent emergent species with at least 30 percent absolute cover.	0.33	1.48%	10.44	2.89%
Palustrine Scrub-Shrub	Includes all wetlands dominated by vegetation and are generally less than 20 acres in size and are no deeper than 8.2 feet. Vegetation is comprised of woody plants that are less than 20 feet tall. This wetland type floods seasonally.	0.29	1.30%	6.75	1.87%
Palustrine Unconsolidated Bottom	Includes all wetlands dominated by vegetation and are generally less than 20 acres in size and are no deeper than 8.2 feet. Wetlands include at least 25 percent cover of particles smaller than stones and a vegetative cover less than 30 percent characterized by the lack of large stable surfaces for plant and animal attachment.	0.39	1.78%	16.15	4.47%
Upper Perennial Riverine	Includes all wetlands and habitats contained within a channel that is typically flowing all year, except during years of extreme drought. The substrate consists of rock, cobbles, or gravel with occasional patches of sand with very little floodplain development.	12.78	57.67%	229.92	63.67%
Intermittent Riverine	Includes all wetlands and habitats contained within a channel that is typically flowing part of the year. If water is not flowing, it may remain in isolated pools or surface water may be absent. This wetland type seasonally floods.	4.22	19.05%	42.36	11.73%
Unknown Riverine	Includes all wetlands and habitats contained within a channel that has an unknown flow duration with an unconsolidated bottom. This wetland type is semi-temporarily flooded.	2.17	9.79%	5.69	1.58%
	Total	**22.16**	**100%**	**361.10**	**100%**

Source: Federal Geographic Data Committee 2013

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Terrestrial Resources

Attachment 3.5A
Vegetation Cover Maps

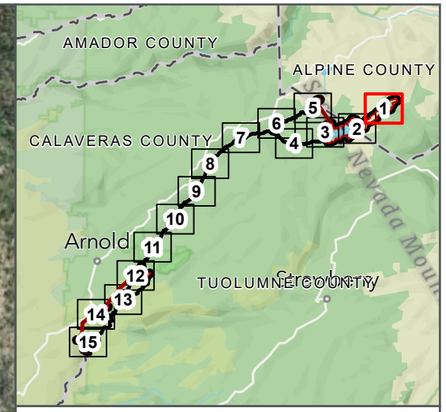
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FERC Project No. 2409

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Calaveras County Water District

September 2026

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P-2409 FERC Project Boundary

Assessment Area

Vegetation Type

- Annual Grassland
- Barren
- Fresh Emergent Wetland
- Jeffrey Pine
- Juniper
- Lacustrine
- Lodgepole Pine
- Montane Chaparral
- Montane Hardwood
- Perennial Grassland
- Red Fir
- Sierran Mixed Conifer
- Subalpine Conifer
- White Fir

DISCLAIMER: Map information was compiled from the best available sources.
No warranty is made for its accuracy or completeness.

DATA SOURCES: HDR, Inc. (2026); National Wetland Inventory (2026); ESRI World Imagery

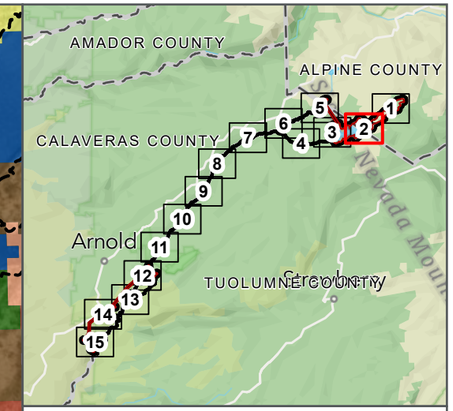
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P-2409 FERC Project Boundary

Assessment Area

Vegetation Type

- Annual Grassland
- Barren
- Jeffrey Pine
- Juniper
- Lacustrine
- Lodgepole Pine
- Montane Chaparral
- Montane Hardwood
- Perennial Grassland
- Red Fir
- Sierran Mixed Conifer
- Subalpine Conifer
- Wet Meadow
- White Fir

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DATA SOURCES: HDR, Inc. (2026); National Wetland Inventory (2026); ESRI World Imagery

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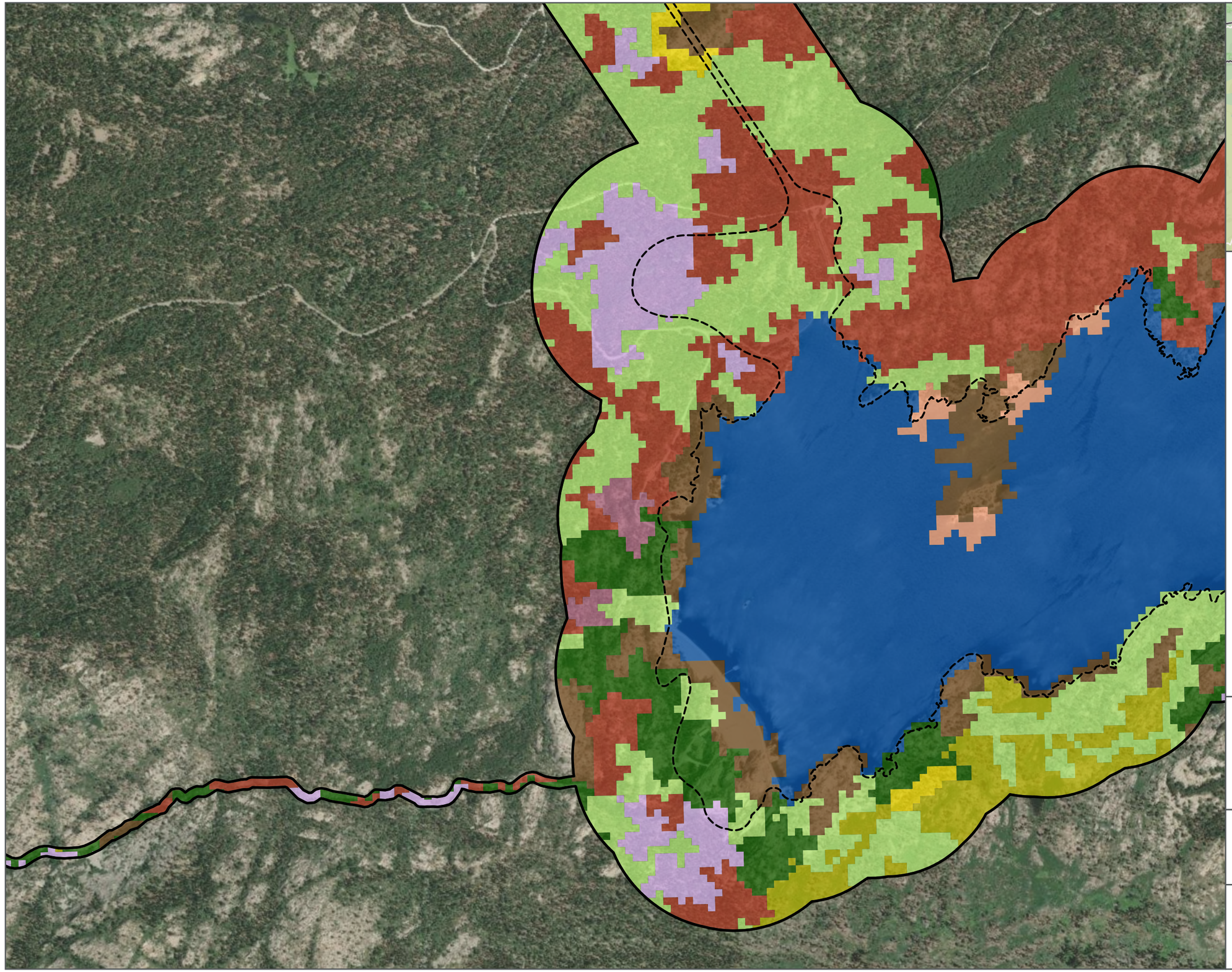
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P-2409 FERC Project Boundary

Assessment Area

Vegetation Type

- Annual Grassland
- Barren
- Juniper
- Lacustrine
- Lodgepole Pine
- Montane Chaparral
- Ponderosa Pine
- Red Fir
- Sierran Mixed Conifer
- White Fir

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DATA SOURCES: HDR, Inc. (2026); National Wetland Inventory (2026); ESRI World Imagery

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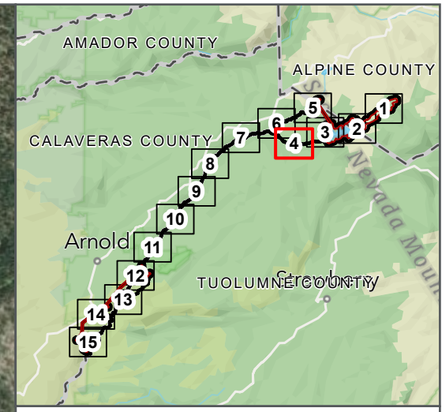
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Assessment Area

Vegetation Type

- Barren
- Juniper
- Lodgepole Pine
- Montane Chaparral
- Red Fir
- Sierran Mixed Conifer
- White Fir

DISCLAIMER: Map information was compiled from the best available sources.
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DATA SOURCES: HDR, Inc. (2026); National Wetland Inventory (2026); ESRI World Imagery

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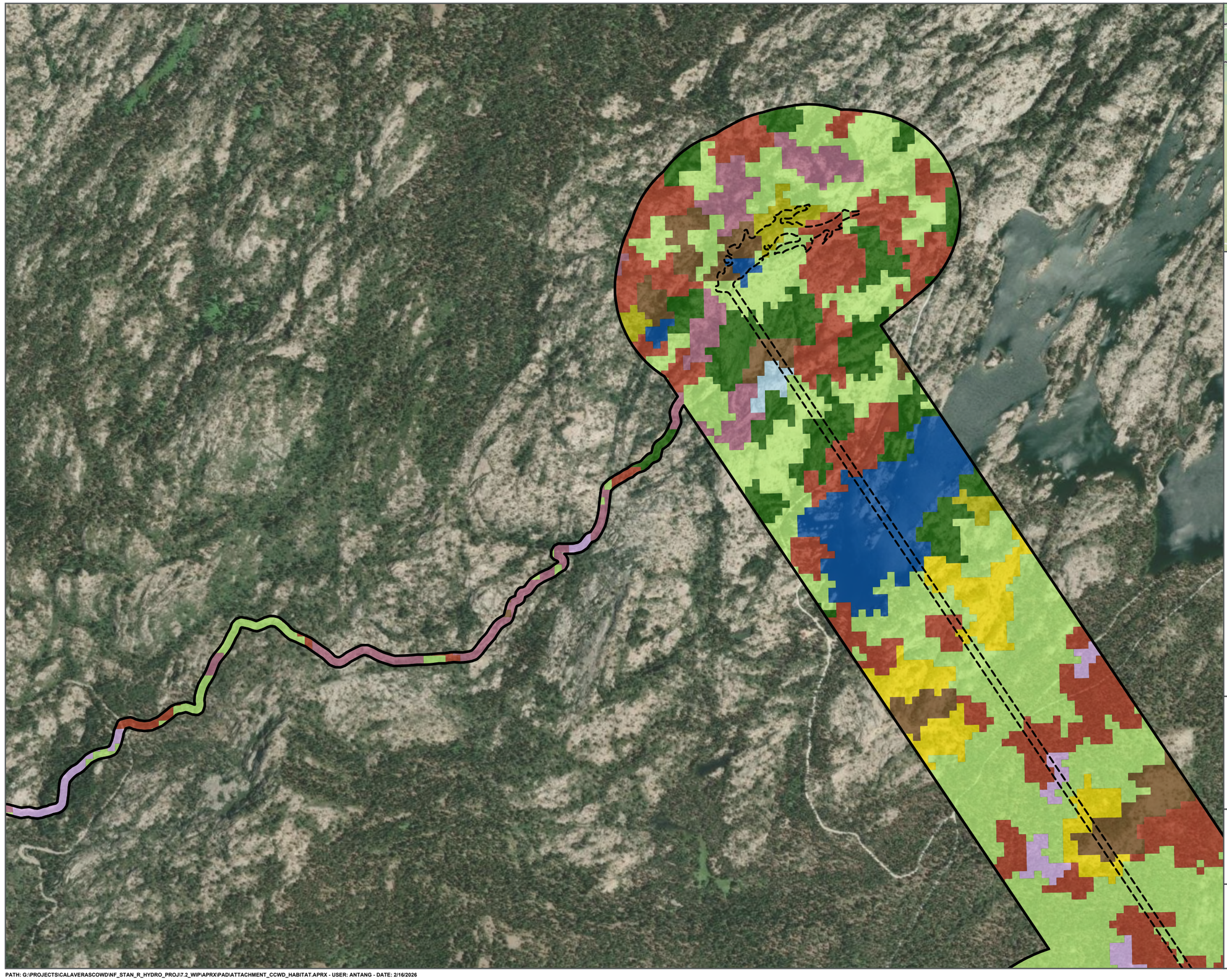
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P-2409 FERC Project Boundary

Assessment Area

Vegetation Type

- Barren
- Juniper
- Lacustrine
- Lodgepole Pine
- Montane Chaparral
- Ponderosa Pine
- Red Fir
- Sierran Mixed Conifer
- Subalpine Conifer
- White Fir

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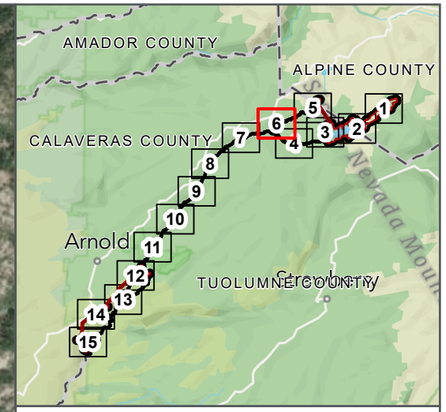
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Assessment Area

Vegetation Type

- Barren
- Montane Chaparral
- Ponderosa Pine
- Red Fir
- Sierran Mixed Conifer
- White Fir

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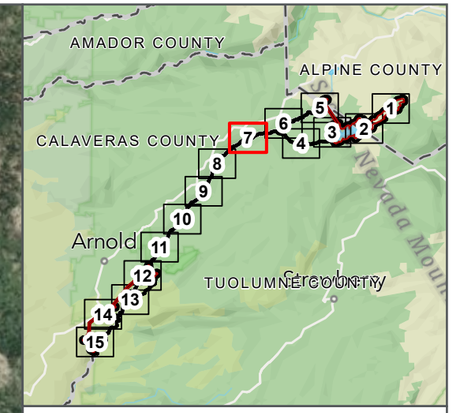
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Assessment Area

Vegetation Type

- Barren
- Montane Chaparral
- Montane Hardwood
- Montane Hardwood-Conifer
- Ponderosa Pine
- Red Fir
- Sierran Mixed Conifer
- White Fir

DISCLAIMER: Map information was compiled from the best available sources.
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DATA SOURCES: HDR, Inc. (2026); National Wetland Inventory (2026); ESRI World Imagery

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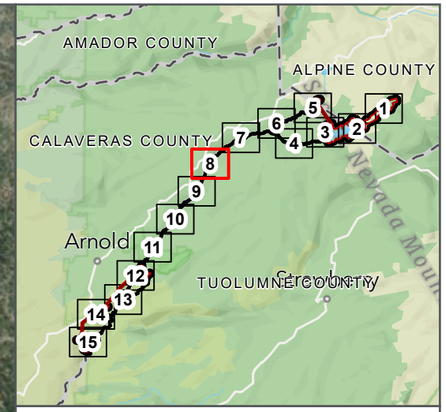
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Assessment Area

Vegetation Type

- Barren
- Montane Hardwood
- Ponderosa Pine
- Red Fir
- Sierran Mixed Conifer

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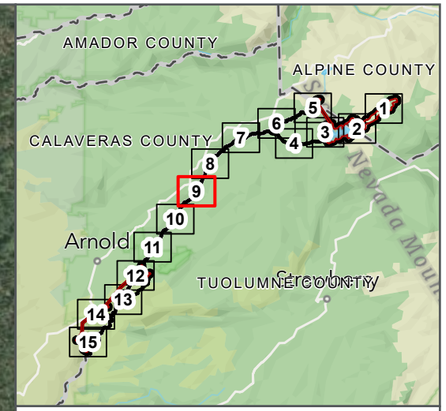
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Assessment Area

Vegetation Type

- Montane Hardwood
- Montane Hardwood-Conifer
- Ponderosa Pine
- Sierran Mixed Conifer

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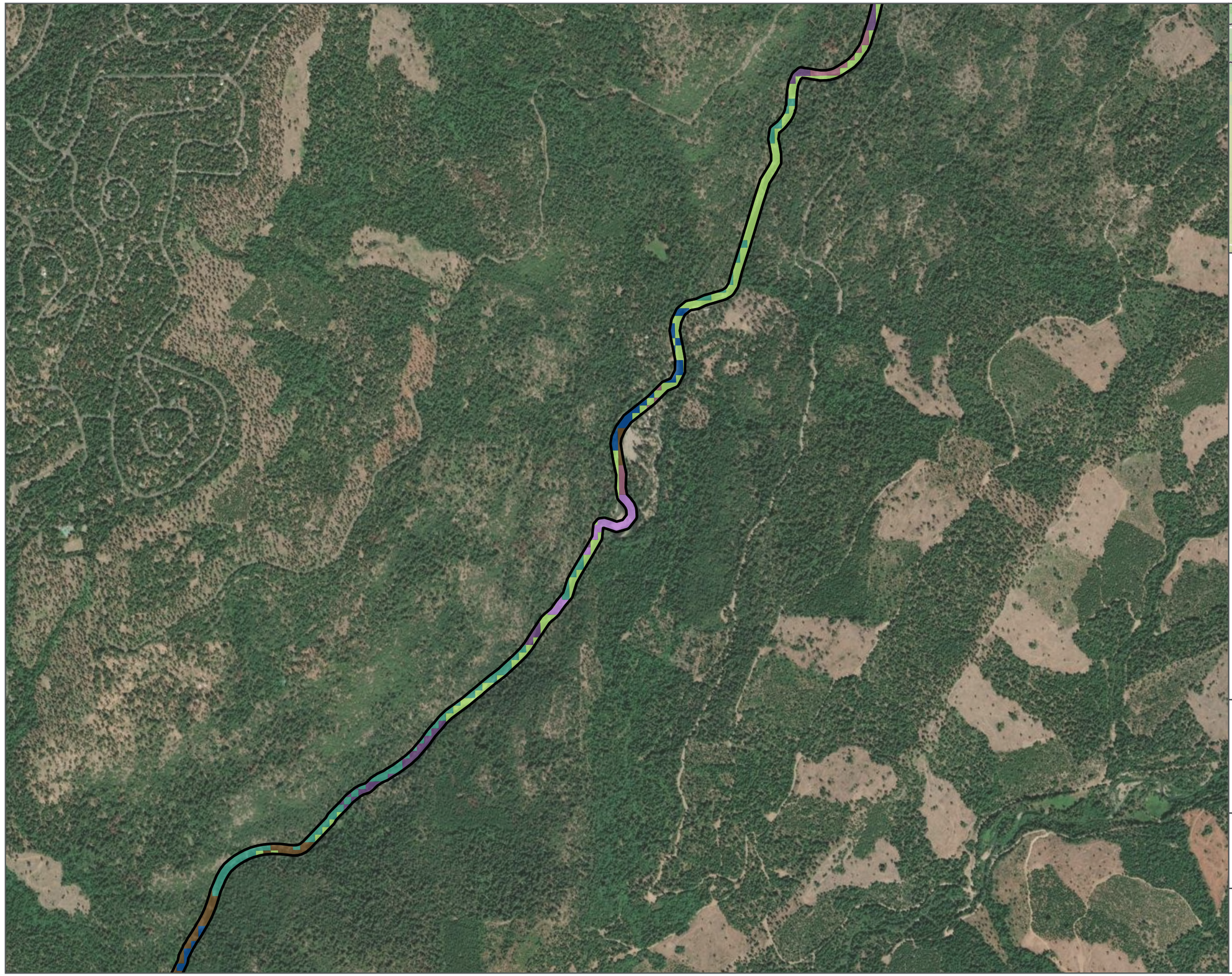
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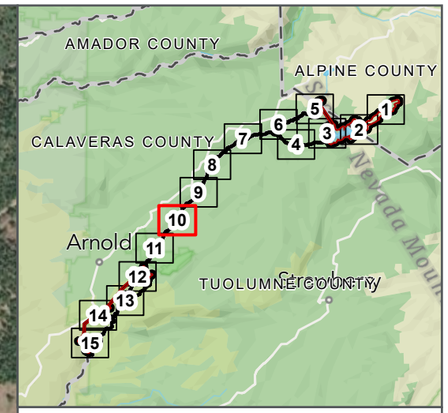
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Assessment Area

Vegetation Type

- Barren
- Lacustrine
- Montane Hardwood
- Montane Hardwood-Conifer
- Montane Riparian
- Ponderosa Pine
- Sierran Mixed Conifer

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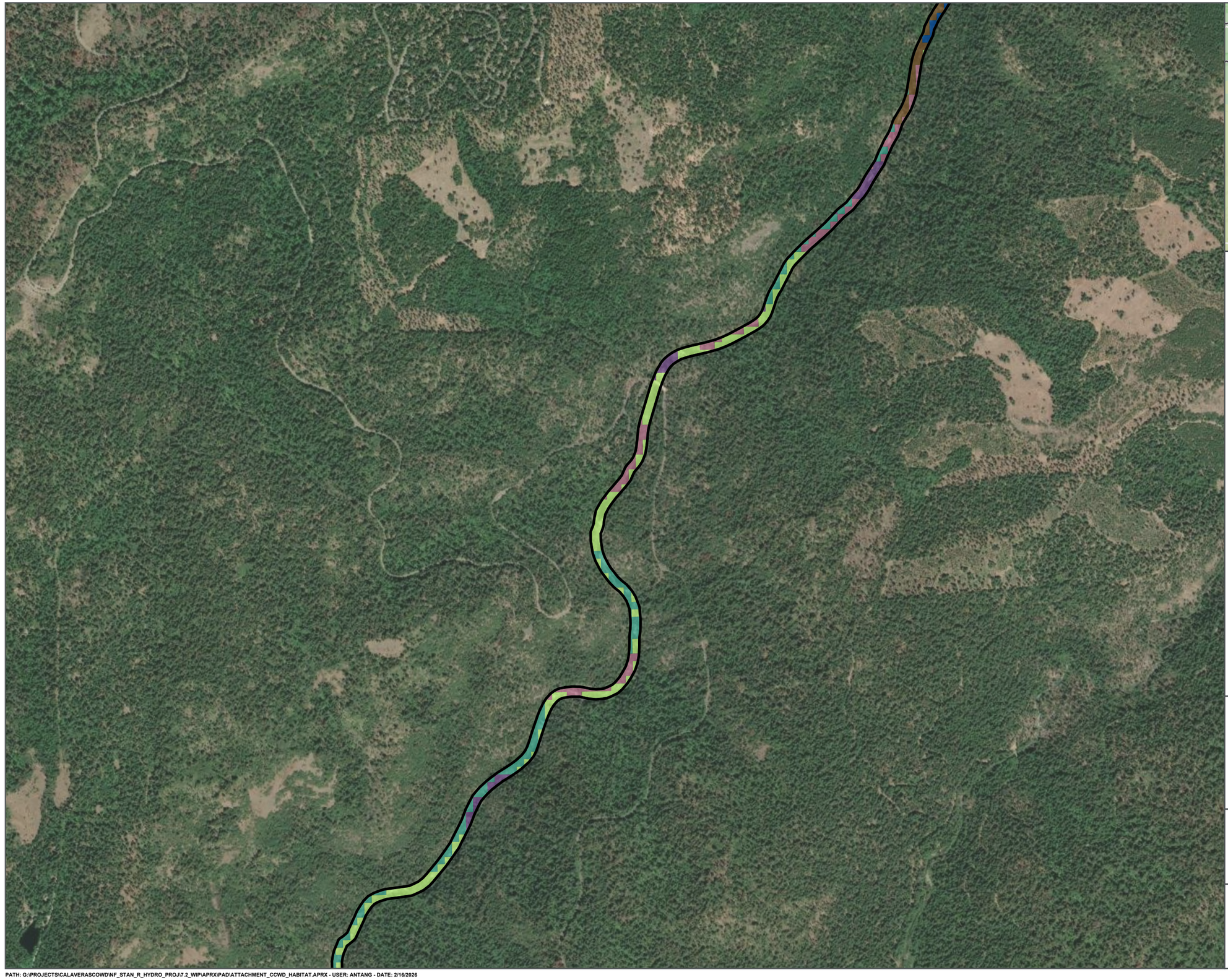
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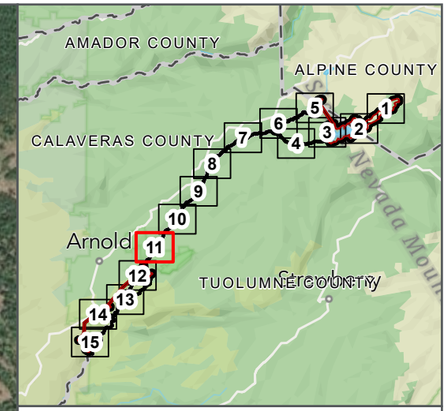
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Assessment Area

Vegetation Type

- Barren
- Lacustrine
- Montane Hardwood
- Montane Hardwood-Conifer
- Ponderosa Pine
- Sierran Mixed Conifer

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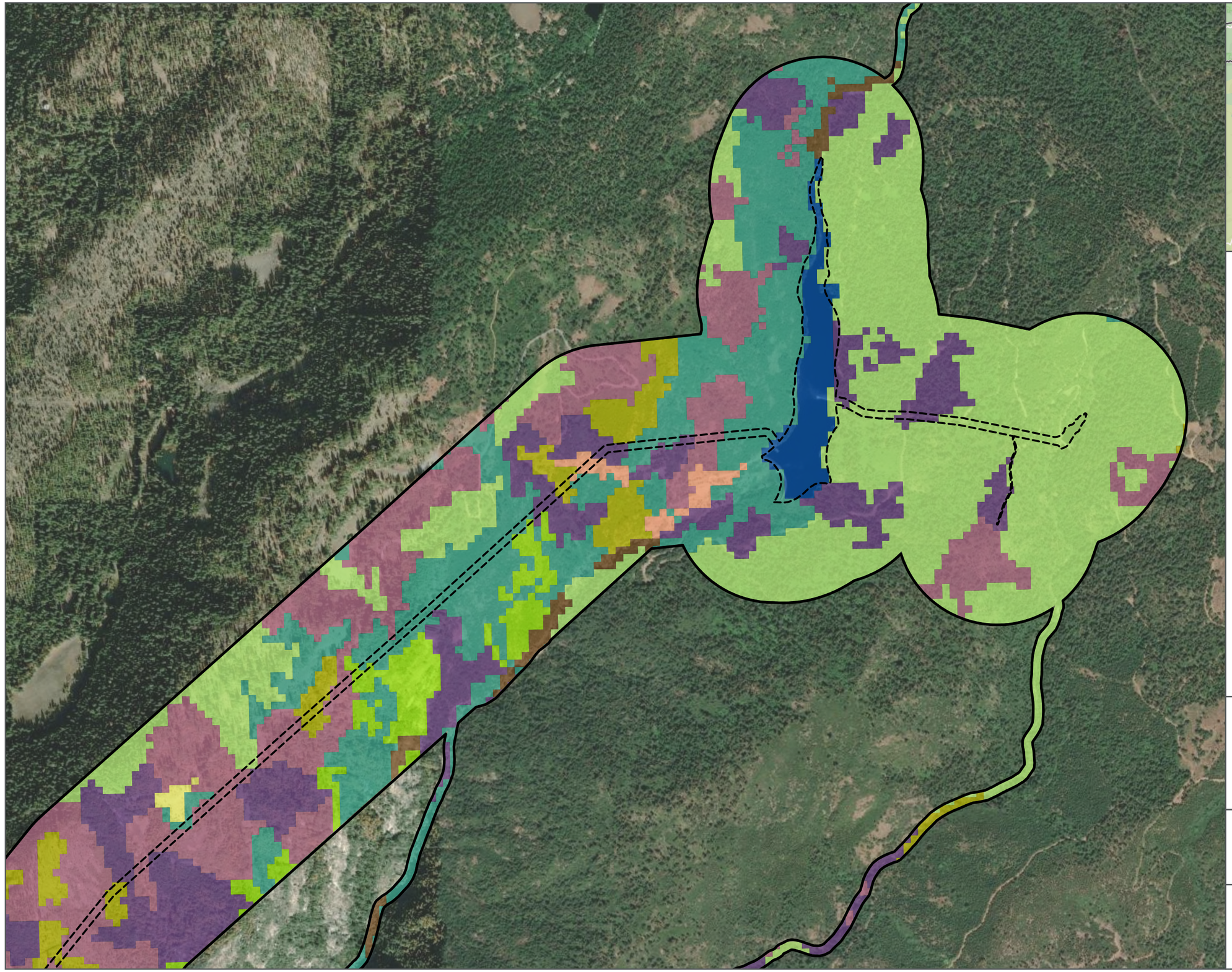
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P-2409 FERC Project Boundary

Assessment Area

Vegetation Type

- Annual Grassland
- Barren
- Lacustrine
- Mixed Chaparral
- Montane Chaparral
- Montane Hardwood
- Montane Hardwood-Conifer
- Perennial Grassland
- Ponderosa Pine
- Sierran Mixed Conifer

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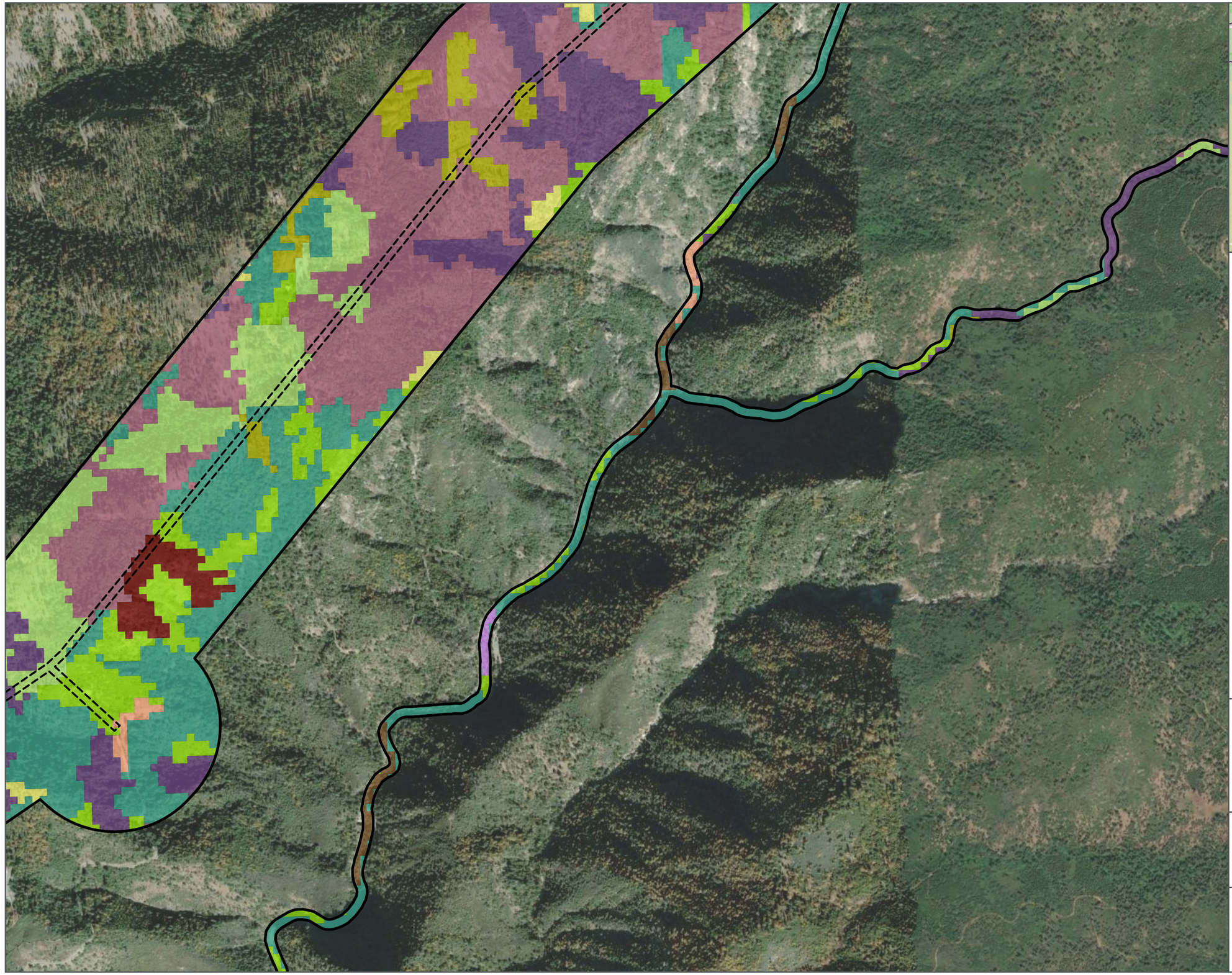
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P-2409 FERC Project Boundary

Assessment Area

Vegetation Type

- Annual Grassland
- Barren
- Chamise-Redshank Chaparral
- Mixed Chaparral
- Montane Chaparral
- Montane Hardwood
- Montane Hardwood-Conifer
- Montane Riparian
- Perennial Grassland
- Ponderosa Pine
- Sierran Mixed Conifer

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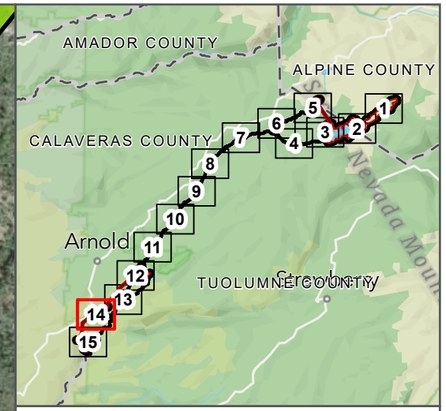
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P-2409 FERC Project Boundary

Assessment Area

Vegetation Type

- Annual Grassland
- Barren
- Blue Oak Woodland
- Blue Oak-Foothill Pine
- Chamise-Redshank Chaparral
- Douglas Fir
- Mixed Chaparral
- Montane Chaparral
- Montane Hardwood
- Montane Hardwood-Conifer
- Montane Riparian
- Perennial Grassland
- Ponderosa Pine
- Riverine
- Sierran Mixed Conifer
- Urban

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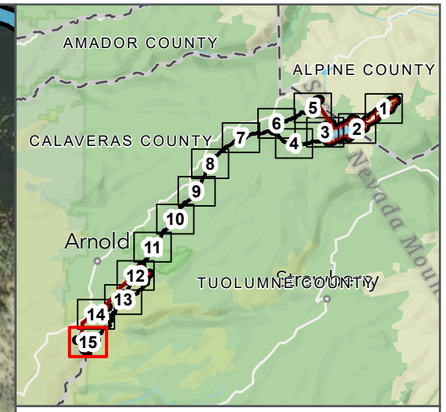
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P-2409 FERC Project Boundary

Assessment Area

Vegetation Type

- Annual Grassland
- Barren
- Blue Oak Woodland
- Blue Oak-Foothill Pine
- Douglas Fir
- Lacustrine
- Mixed Chaparral
- Montane Hardwood
- Montane Hardwood-Conifer
- Ponderosa Pine
- Riverine
- Sierran Mixed Conifer
- Urban

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Terrestrial Resources

Attachment 3.5B
Wetlands Maps

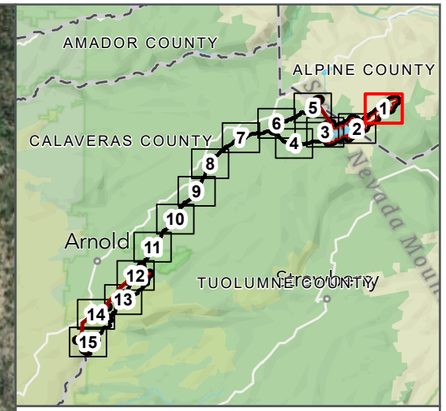
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FERC Project No. 2409

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P-2409 FERC Project Boundary

Assessment Area

Wetland Type

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

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WETLANDS

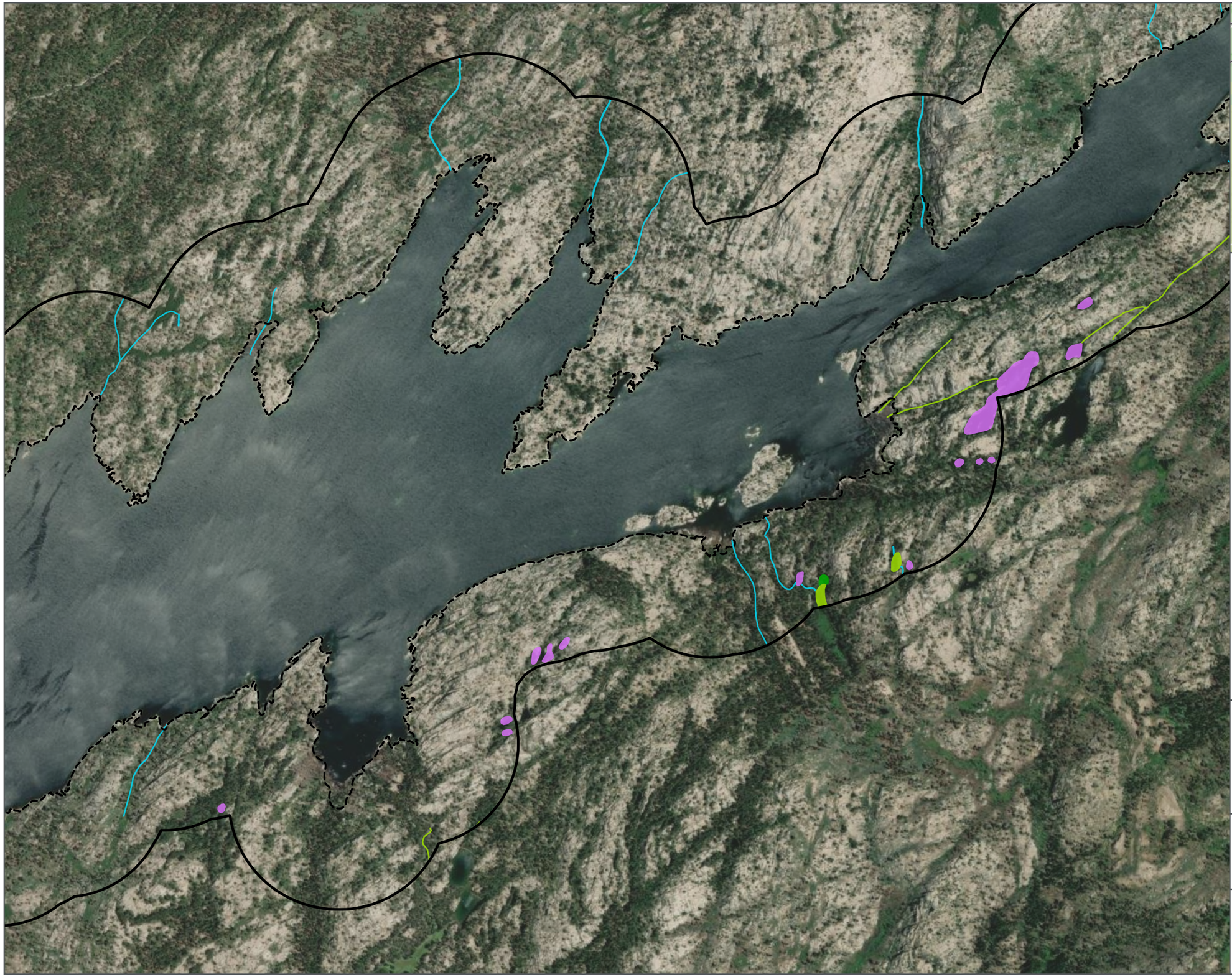
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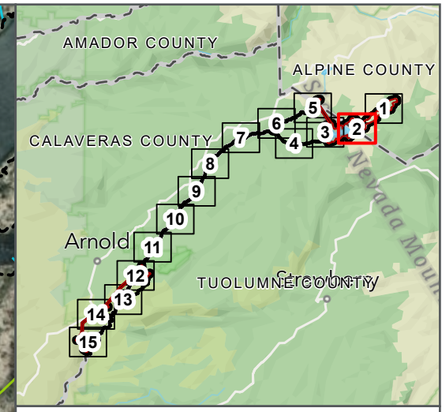
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P-2409 FERC Project Boundary

Assessment Area

Wetland Type

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

DISCLAIMER: Map information was compiled from the best available sources.
No warranty is made for its accuracy or completeness.

DATA SOURCES: HDR, Inc. (2026); National Wetland Inventory (2026); ESRI World Imagery

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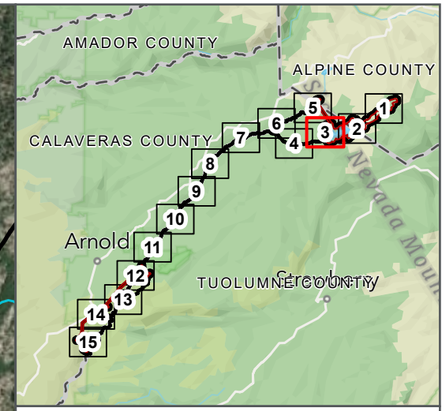
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CALAVERAS COUNTY WATER DISTRICT

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P-2409 FERC Project Boundary

Assessment Area

Wetland Type

Freshwater Pond

Riverine

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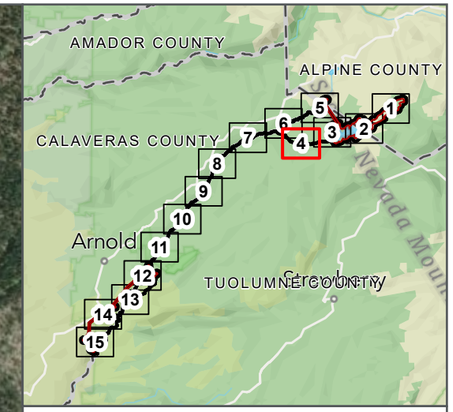
NORTH FORK STANISLAUS RIVER
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CALAVERAS COUNTY WATER DISTRICT

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Assessment Area

Wetland Type

Riverine

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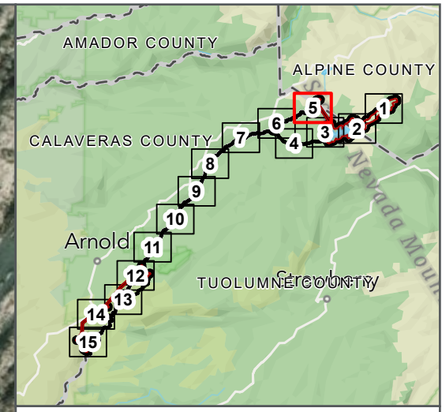
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P-2409 FERC Project Boundary

Assessment Area

Wetland Type

- Freshwater Emergent Wetland
- Freshwater Pond
- Lake
- Riverine

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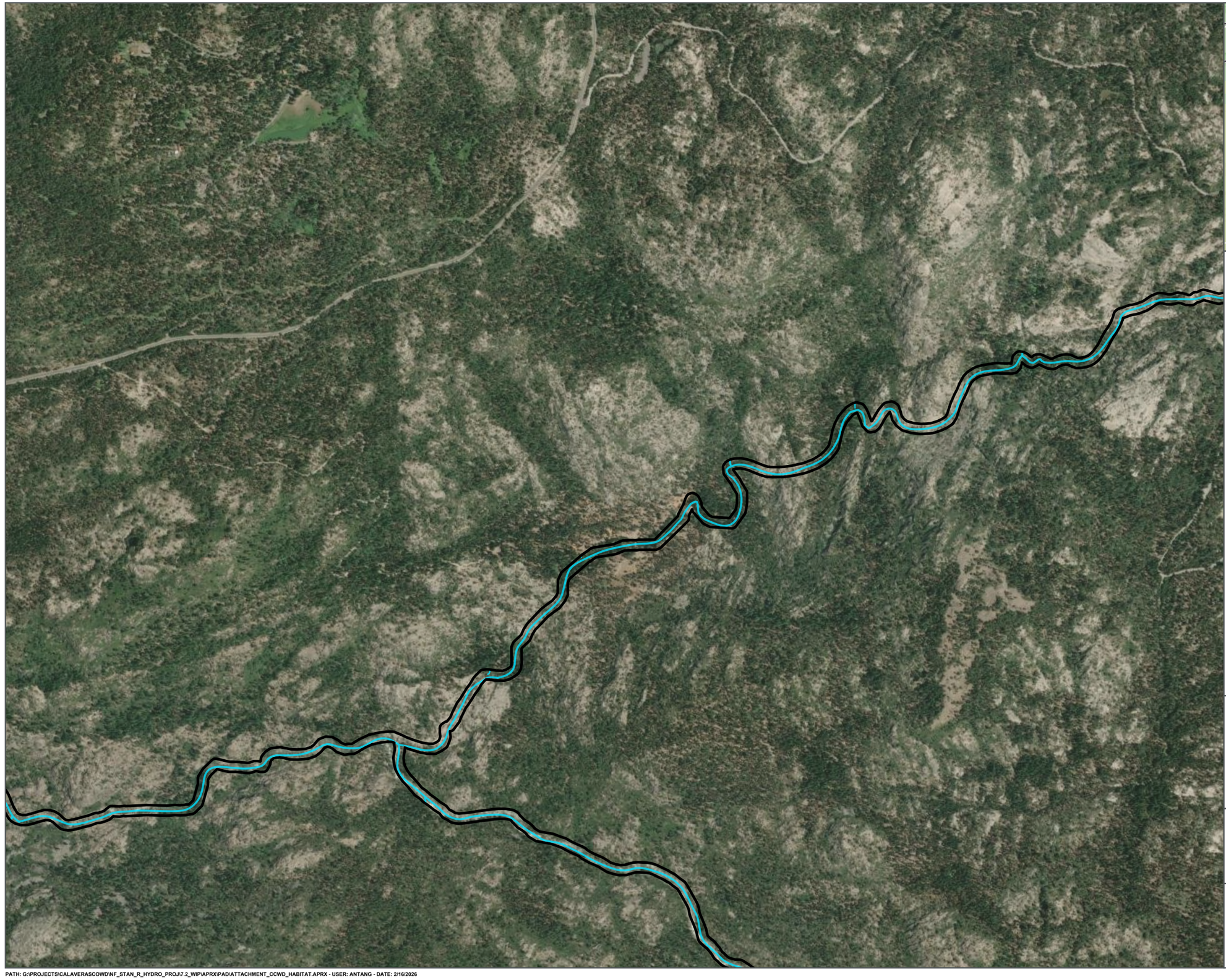
NORTH FORK STANISLAUS RIVER
HYDROELECTRIC PROJECT
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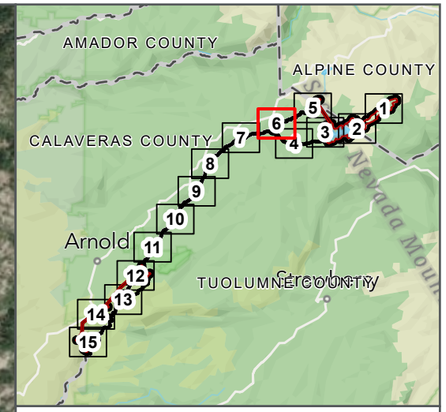
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Assessment Area

Wetland Type

Riverine

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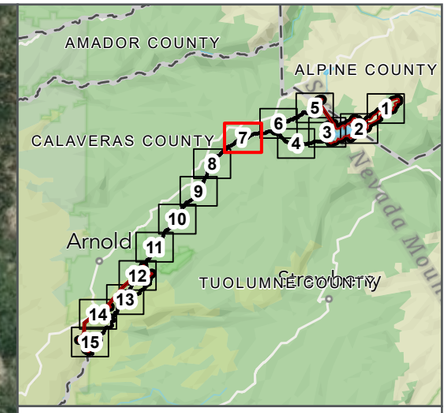
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CALAVERAS COUNTY WATER DISTRICT

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Assessment Area

Wetland Type

Riverine

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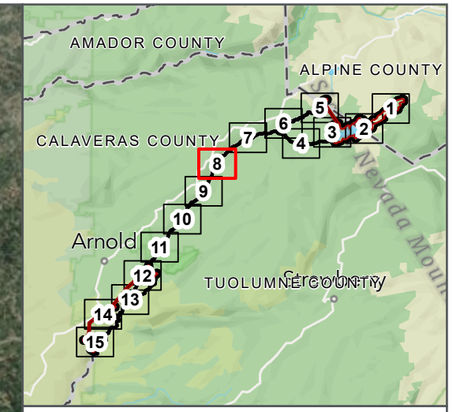
NORTH FORK STANISLAUS RIVER
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Assessment Area

Wetland Type

Riverine

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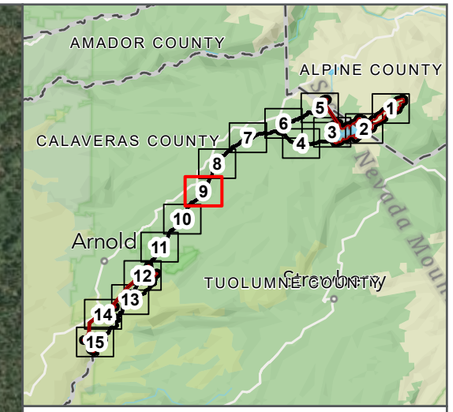
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CALAVERAS COUNTY WATER DISTRICT

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Assessment Area

Wetland Type

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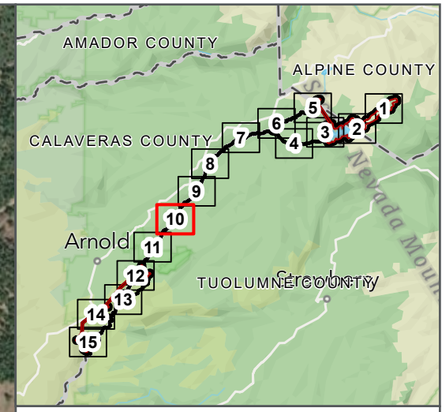
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CALAVERAS COUNTY WATER DISTRICT

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Assessment Area

Wetland Type

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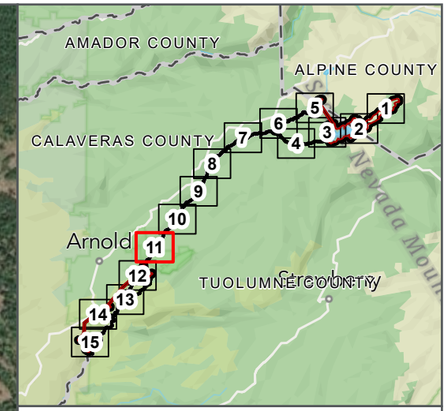
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CALAVERAS COUNTY WATER DISTRICT

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Assessment Area

Wetland Type

Riverine

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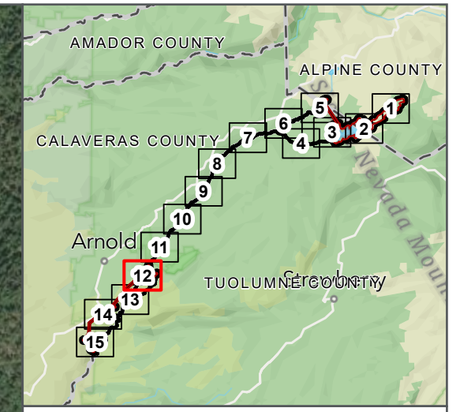
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P-2409 FERC Project Boundary

Assessment Area

Wetland Type

Riverine

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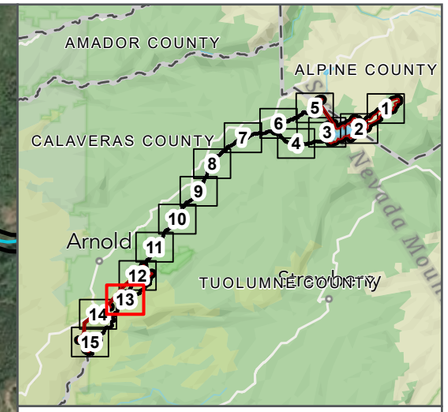
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HYDROELECTRIC PROJECT
CALAVERAS COUNTY WATER DISTRICT

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P-2409 FERC Project Boundary

Assessment Area

Wetland Type

Riverine

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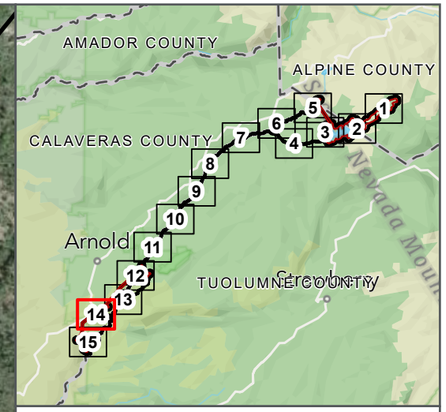
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HYDROELECTRIC PROJECT
CALAVERAS COUNTY WATER DISTRICT

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P-2409 FERC Project Boundary

Assessment Area

Wetland Type

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

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DATA SOURCES: HDR, Inc. (2026); National Wetland Inventory (2026); ESRI World Imagery

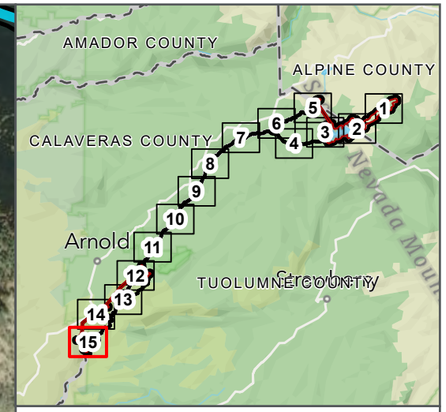
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NORTH FORK STANISLAUS RIVER
HYDROELECTRIC PROJECT
CALAVERAS COUNTY WATER DISTRICT

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P-2409 FERC Project Boundary

Assessment Area

Wetland Type

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

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WETLANDS

NORTH FORK STANISLAUS RIVER
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CALAVERAS COUNTY WATER DISTRICT

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Pre-Application Document

Terrestrial Resources

Attachment 3.5C
CNPS Rare Plant Inventory

North Fork Stanislaus River Hydroelectric Project
FERC Project No. 2409

Prepared by:
Calaveras County Water District

September 2026

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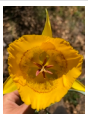
CNPS Rare Plant Inventory

Search Results

38 matches found. Click on scientific name for details

Search Criteria: , Quad is one of [3811948:3812041:3812042:3812032:3812033:3812023:3812024]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	DATE ADDED	PHOTO
Allium sanbornii var. *sanbornii*	Sanborn's onion	Alliaceae	perennial bulbiferous herb	May-Sep	None	None	G3T4?	S3S4	4.2		1994-01-01	 ©2018 Steven Perry
Allium tribracteatum	three-bracted onion	Alliaceae	perennial bulbiferous herb	Apr-Aug	None	None	G2	S2	1B.2	Yes	1988-01-01	 © 2018 Sierra Pacific Industries
Bolandra californica	Sierra bolandra	Saxifragaceae	perennial herb	Jun-Jul	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
Botrychium ascendens	upswept moonwort	Ophioglossaceae	perennial rhizomatous herb	(Jun)Jul-Aug	None	None	G4	S3	2B.2		1994-01-01	 © 2005 Steve Matson
Botrychium crenulatum	scalloped moonwort	Ophioglossaceae	perennial rhizomatous herb	Jun-Sep	None	None	G4	S3	2B.2		1984-01-01	 © 2016 Steve Matson
Botrychium minganense	Mingan moonwort	Ophioglossaceae	perennial rhizomatous herb	Jul-Sep(Oct)	None	None	G5	S4	4.2		1994-01-01	 © 2011 Aaron E. Sims

Botrychium montanum	western goblin	Ophioglossaceae	perennial rhizomatous herb	Jul-Sep	None	None	G3G4	S3	2B.1		1994-01-01	 ©2012 Belinda Lo
Brasenia schreberi	watershield	Cabombaceae	perennial rhizomatous herb (aquatic)	Jun-Sep	None	None	G5	S3	2B.3		2010-10-27	 ©2014 Kirsten Bovee
Bulbostylis capillaris	thread-leaved beakseed	Cyperaceae	annual herb	Jun-Aug	None	None	G5	S3	4.2		2001-01-01	 ©2016 Ryan Batten
Calochortus clavatus var. *avius*	Pleasant Valley mariposa-lily	Liliaceae	perennial bulbiferous herb	May-Jul	None	None	G4T2T3	S2S3	1B.2	Yes	1980-01-01	 © 2023 Sierra Pacific Industries
Ceanothus fresnensis	Fresno ceanothus	Rhamnaceae	perennial evergreen shrub	(Apr)May-Jul	None	None	G4	S4	4.3	Yes	1980-01-01	No Photo Available
Chlorogalum grandiflorum	Red Hills soaproot	Agavaceae	perennial bulbiferous herb	(Apr)May-Jun	None	None	G3	S3	4.2	Yes	1974-01-01	 © 2004 George W. Hartwell
Clarkia virgata	Sierra clarkia	Onagraceae	annual herb	May-Aug	None	None	G3	S3	4.3	Yes	1974-01-01	No Photo Available
Claytonia crawfordii	Crawford's spring beauty	Montiaceae	perennial herb	Apr-May	None	None	G1	S1	1B.2		2021-10-14	No Photo Available
Claytonia parviflora ssp. *grandiflora*	streambank spring beauty	Montiaceae	annual herb	Feb-May	None	None	G5T3	S3	4.2	Yes	2006-09-29	No Photo Available

Diplacus pulchellus	yellow-lip pansy monkeyflower	Phrymaceae	annual herb	Apr-Jul	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2018 Sierra Pacific Industries
Engellaria obtusa	obtuse starwort	Caryophyllaceae	perennial rhizomatous herb	May-Sep(Oct)	None	None	G5	S4	4.3		1988-01-01	 ©2014 Kirsten Bovee
Epilobium howellii	subalpine fireweed	Onagraceae	perennial stoloniferous herb	Jul-Aug	None	None	G4	S4	4.3	Yes	1994-01-01	No Photo Available
Eriophorum gracile	slender cottongrass	Cyperaceae	perennial rhizomatous herb (emergent)	May-Sep	None	None	G5	S4	4.3		2006-10-31	 ©2011 Steven Perry
Eriophyllum confertiflorum var. *tanacetiflorum*	tansy-flowered woolly sunflower	Asteraceae	perennial shrub	May-Jul	None	None	G5T2?Q	S2?	4.3	Yes	2001-01-01	No Photo Available
Erythranthe laciniata	cut-leaved monkeyflower	Phrymaceae	annual herb	Apr-Jul	None	None	G4	S4	4.3	Yes	1974-01-01	 © 2017 Steven Perry
Erythranthe marmorata	Stanislaus monkeyflower	Phrymaceae	annual herb	Mar-May	None	None	G2?	S2?	1B.1	Yes	1974-01-01	No Photo Available
Hackelia amethystina	amethyst stickseed	Boraginaceae	perennial herb	Jun-Jul(Aug)	None	None	G4	S4	4.3	Yes	1974-01-01	 © 2018 John Doyen
Hartmaniella sierrae	Sierra starwort	Caryophyllaceae	perennial rhizomatous herb	May-Aug	None	None	G3G4	S3S4	4.2	Yes	2004-01-01	 © 2017 John Doyen
Horkelia parryi	Parry's horkelia	Rosaceae	perennial herb	Apr-Sep	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2009 Barry Breckling

Hosackia oblongifolia var. *cuprea*	copper-flowered bird's-foot trefoil	Fabaceae	perennial rhizomatous herb	Jun-Aug	None	None	G5T2	S2	1B.3	Yes	1974-01-01	 © 2018 Mary Merriman
Jensia yosemitana	Yosemite tarplant	Asteraceae	annual herb	(Apr)May-Jul	None	None	G3	S3	3.2	Yes	1994-01-01	No Photo Available
Jepsonia heterandra	foothill jepsonia	Saxifragaceae	perennial herb	Aug-Dec	None	None	G3	S3	4.3	Yes	1994-01-01	 © 2014 Belinda Lo
Lewinskya holzingeri	Holzinger's bristle moss	Orthotrichaceae	moss		None	None	G3G4	S2	1B.3		2014-06-03	 © 2021 Scot Loring
Lewisia kelloggii ssp. *hutchisonii*	Hutchison's lewisia	Montiaceae	perennial herb	(Apr)May-Aug	None	None	G3G4T3Q	S3	3.2	Yes	2001-01-01	 Dean Wm. Taylor 2006
Lewisia kelloggii ssp. *kelloggii*	Kellogg's lewisia	Montiaceae	perennial herb	(Apr)May-Aug	None	None	G3G4T2T3Q	S2S3	3.2	Yes	2013-10-02	 © 2019 Barry Breckling
Lilium humboldtii ssp. *humboldtii*	Humboldt lily	Liliaceae	perennial bulbiferous herb	May-Jul(Aug)	None	None	G4T3	S3	4.2	Yes	1994-01-01	 © 2008 Sierra Pacific Industries
Lomatium stebbinsii	Stebbins' lomatium	Apiaceae	perennial herb	Mar-May	None	None	G2	S2	1B.1	Yes	1980-01-01	 © 2006 Dean Wm. Taylor, Ph.D.
Myrica hartwegii	Sierra sweet bay	Myricaceae	perennial deciduous shrub	May-Jun	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
Navarretia miwukensis	Mi-Wuk navarretia	Polemoniaceae	annual herb	May-Jun(Jul)	None	None	G1G2	S1S2	1B.2	Yes	2019-06-14	No Photo Available

Oreocarya crymophila	subalpine oreocarya	Boraginaceae	perennial herb	Jul-Aug	None	None	G3	S3	1B.3	Yes	1974-01-01	No Photo Available
Peltigera gowardii	western waterfan lichen	Peltigeraceae	foliose lichen (aquatic)		None	None	G3G4	S3	4.2		2014-03-01	 © 2021 Scot Loring
Piperia colemanii	Coleman's rein orchid	Orchidaceae	perennial herb	Jun-Aug	None	None	G4	S4	4.3	Yes	2001-01-01	 © 2005 Dean Wm. Taylor

Showing 1 to 38 of 38 entries

Go to top

Suggested Citation:
California Native Plant Society, Rare Plant Program. 2025. Rare Plant Inventory (online edition, v9.5.1). Website https://www.rareplants.cnps.org [accessed 30 December 2025].
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3.6 Endangered Species Act-listed Species

Per 18 C.F.R. § 5.6 (d)(3)(vii), this section includes a description of rare, threatened, and endangered species in the FERC Project Boundary or its Vicinity (Assessment Area),[1] including descriptions of listed rare, threatened, endangered, and candidate species; identification of habitat requirements; references to known biological opinions, status reports, or recovery plans pertaining to a listed species; extent and location of federally-designated critical habitat or other habitat for listed species; and temporal and spatial distribution of the listed species.

This section discusses species listed under the federal ESA as threatened (FT), endangered (FE), proposed or candidates for listing, and their critical habitats (designated and proposed) that could be affected by the Project. This section is divided into three subsections. Section 3.6.1 identifies ESA-listed, proposed, and candidate species, as well as their critical habitats, which could potentially be affected by the Project. Section 3.6.2 provides a general life history for each ESA-listed and proposed species, along with available information regarding the distribution, abundance, and condition of the ESA-listed species and their designated critical habitat in the areas described below.

This section assesses the existing FERC Project Boundary with a 0.25-mile buffer and each potentially Project-affected stream reach plus a 50-foot buffer, referred to as the "Assessment Area" (Figure 3.6-1).

[1] "Assessment Area" as referenced herein is defined as the existing FERC Project Boundary with a 0.25-mile buffer and each potentially Project-affected stream reach plus a 50-foot buffer.

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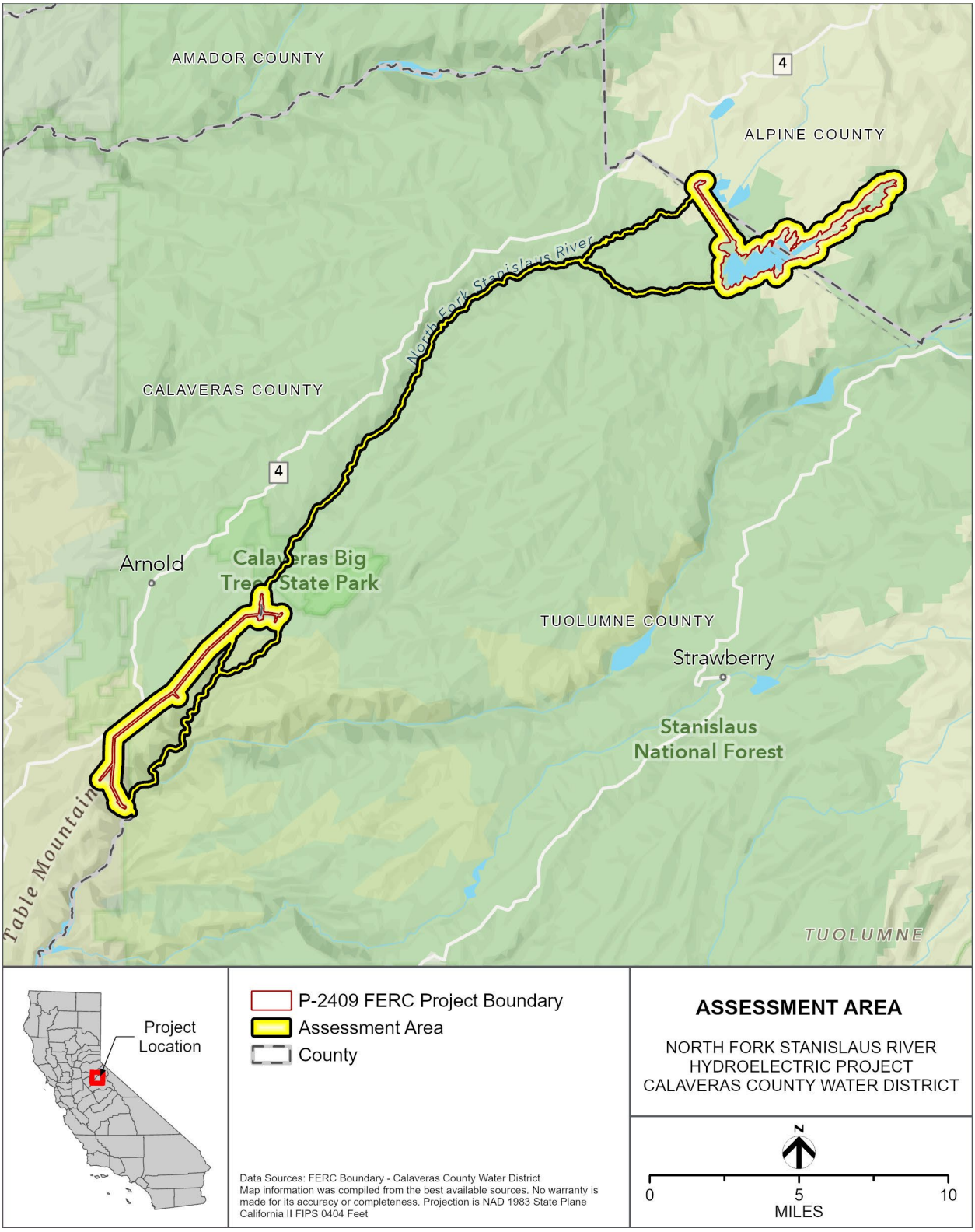


Figure 3.6-1. FERC Project Boundary and Assessment Area.

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3.6.1 Federal Endangered Species Act Listed and Proposed or Candidate Species

CCWD conducted an Information for Planning and Consultation (IPaC) search (USFWS 2026a) on February 27, 2026, to generate a list of ESA-listed and ESA-proposed species that might occur within the Assessment Area (Attachment 3.6-A, *Non-Consultation iPaC Review*). The list included the following 11 species:

- Endangered
    - Gray wolf (*Canis lupus*)
    - Foothill yellow-legged frog (FYLF) – South Sierra Distinct Population Segment (DPS) (*Rana boylii* pop. 5)
    - Sierra Nevada yellow-legged frog (SNYLF) (*Rana sierrae*)
    - Sierra Nevada red fox (SNRF) – Sierra Nevada DPS (*Vulpes vulpes necator* pop. 2)
- Threatened
    - Yosemite toad (*Anaxyrus canorus*)
    - North American wolverine – Contiguous U.S. DPS (*Gulo gulo luscus*)
    - Whitebark pine (*Pinus albicaulis*)
    - California red-legged frog (CRLF) (*Rana draytonii*)
- Proposed
    - Northwestern pond turtle (NWPT) (*Actinemys marmorata*)
    - Monarch butterfly (*Danaus plexippus*)
    - California spotted owl (CSO) – Sierra Nevada DPS (*Strix occidentalis occidentalis*)

On February 17, 2026, CCWD also queried the CNDDB for the species review area (CDFW 2026a), the FWS Critical Habitat Mapper (USFWS 2026b), and the CNPS for USGS quadrangles that intersect the FERC Project Boundary (CNPS 2026). Lastly, angler and general fish surveys were queried for New Spicer Reservoir (Ewing 2013, 2019); the reports indicated that Lahontan cutthroat trout (*Oncorhynchus clarkii hershawi*; federally threatened; [LCT]) are known to occur in New Spicer Meadow Reservoir and are therefore added to the list of species above.

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The Contiguous U.S. DPS of North American wolverine is not expected to occur within or near the FERC Project Boundary. While the FERC Project Boundary is within the approximate range of the wolverine and suitable habitat may exist where high-elevation rugged terrain with an adequate prey base can be found, wolverines have not been detected nearby despite ongoing monitoring efforts. Observations of wolverines in California have been exceedingly rare, with a single individual observed in Tahoe National Forest from 2008 to 2018 and another series of observations in Inyo National Forest and Yosemite National Park in 2023 (CDFW 2023a, FWS 2023a). Prior to these observations, the last recorded observations of wolverines in California are prior to the 1920s (FWS 2023a). Because there is a lack of verifiable observations in California, despite ongoing monitoring efforts, wolverines are not expected to occur within the FERC Project Boundary.

As a result, CCWD concluded that 11 species (whitebark pine, monarch butterfly, LCT, Yosemite toad, FYLF, CRLF, SNYLF, NWPT, CSO, gray wolf, and SNRF) have the potential to be affected by the Project. Information regarding ESA listings, suitable habitats, known occurrences, proximal reports of these species to the Project, and relevant status reports and recovery plans is shown in Table 3.6-1.

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Table 3.6-1. ESA-listed, proposed, and candidate species with potential to occur in the Assessment Area.

Species		Suitable Habitat Type	Known Occurrences in the Assessment Area	Status[1]	Status Reports and Recovery Plans Relevant to Assessment Area
Common Name	**Scientific Name**				
PLANTS					
Whitebark pine	*Pinus albicaulis*	Upper red-fir forest to timberline, especially subalpine forests. Elevation: 6,560–12,140 feet. Cone production: July–September (Jepson Flora Project 2025).	Nearest occurrence of individuals is approximately 5 miles from the Assessment Area at 8,760 feet in subalpine forest habitat (California Consortium of Herbaria 2026).	FT	Recovery Plan (FWS 2022a) Status Report (FWS 2018a, 2021a)
INVERTEBRATES					
Monarch butterfly	*Danaus plexippus*	In the larva stage monarch butterflies require milkweed host plants, primarily of the genus Asclepias. 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 (*Eucalyptus globulus*), Monterey pine (*Pinus radiata*), and Monterey cypress (*Hesperocyparis macrocarpa*), all of which act as roost trees.	Occurrences of individuals within the Assessment Area. Those within the boundary include eggs and larvae on milkweed near Red Apple (WMMOD 2025).	FPT	Status Report (FWS 2020, 2024)
FISH					
Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*	Lahontan cutthroat trout occupy a wide range of habitats from cold, high-elevation mountain streams in California to lower-elevation and highly alkaline desert lakes. The species can persist in streams where temperatures may exceed 27 degrees C for short periods and can fluctuate 14-20 degrees C in a day (Moyle 2002).	Lahontan cutthroat trout have been documented in New Spicer Meadow Reservoir by CDFW (Ewing 2013, 2019). It is noted that Lahontan cutthroat trout are not native to the watershed and it is unclear how it came to occur in the reservoir.	FT	Recovery Plan (FWS 1994) 5-Year Review (FWS 2009, 2023b)
AMPHIBIANS & AQUATIC REPTILES					
Yosemite toad	*Anaxyrus canorus*	Found exclusively in the high-elevation meadows and adjacent uplands in montane conifer forest and subalpine forest at elevations of 4,800–12,000 feet. This species breeds in shallow waters or pools formed in meadows ponds, springs, or lakes that have open areas with sun exposure for tadpole development. Post-metamorphic toads use adjacent upland habitat for refuge and subterranean habitat. The species can hybridize with California toad (*Anaxyrus boreas halophilus*) in the northern part of its range where they overlap.	Occurrences outside of the Assessment Area at Highland Lakes (and associated streams and meadows) in 2001, 2023, and 2024 (CDFW 2026a), approximately 5.5 to 8 miles northeast, and upstream (headwaters of Highland Creek which drains into New Spicer Meadow Reservoir) of New Spicer Meadow Reservoir. The species range includes the northeastern portion of AA near New Spicer Meadow Reservoir (Zeiner et al. 1988–1990, Nafis 2026). Designated critical habitat is not within the Assessment Area. The Assessment Area is within the zone of potential hybridization of California toad and Yosemite toad (Stebbins 2003).	FT	Habitat Conservation Plan (ICF 2020)
Foothill yellow-legged frog – South Sierra DPS	*Rana boylii* pop. 5	Primarily found in shallow tributaries and mainstems of perennial streams and rivers at elevations up to 5,000 feet. Breeding and oviposition typically occur in shallow, low-flow sections of streams with cobble/boulder substrate.	Occurrences within the Assessment Area, in the Mill Creek and Utica Ditch complex near Canyon View in 2024 (CDFW 2026b) and in Beaver Creek (downstream of Beaver Creek Diversion) in 2018. Additional occurrences within 3 miles of the Assessment Area are in the MFSR, the Stanislaus River, and connected tributaries (unnamed tributary, Beaver, Soap, Griswold, McCormick, and Rose creeks) (CDFW 2026a, 2026b). Proposed critical habitat for the species is within the southwestern portion of the Assessment Area from Calaveras Big Trees State Park southwest to the confluence of the Stanislaus River and the SFSR (CDFW 2025a).	FE	Status Report (FWS 2021b, 2023c) Conservation Assessment (Hayes et al. 2016)
California red-legged frog	*Rana draytonii*	Breeds in still or slow-moving water with emergent and overhanging vegetation, including wetlands, wet meadows, ponds, lakes, and low-gradient, slow-moving stream reaches with permanent pools at elevations up to 5,000 feet. The species uses adjacent uplands for dispersal and summer retreat.	Occurrences outside of the Assessment Area in Beaver Creek from 2022 (CDFW 2026b), approximately 1.5 miles upstream of the Beaver Creek Diversion Dam Impoundment. Designated critical habitat is not within the Assessment Area.	FT	Recovery Plan (FWS 2002) 5-Year Review (FWS 2022b)

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Table 3.6-1. (Continued).

Species		Suitable Habitat Type	Known Occurrences in the Assessment Area	Status[1]	Status Reports and Recovery Plans Relevant to Assessment Area
Common Name	**Scientific Name**				
Sierra Nevada yellow-legged frog	*Rana sierrae*	Inhabits lakes, ponds, meadow streams, isolated pools, and sunny riverbanks in the Sierra Nevada at elevations of 4,500–12,000 feet. Breeding mainly occurs in shallow waters or marshy areas (typically in fishless waterbodies) that are aquatically connected to deeper areas for overwintering tadpoles.	Occurrences within the Assessment Area in an unnamed tributary to the NFSR downstream of Bull Run Lake, 0.1 mile east of the confluence (CDFW 2026a) in 2015 and 2020. Designated critical habitat is within the northeastern portion of the AA, and includes Union Reservoir, Utica Reservoir, the North Fork Diversion Dam Impoundment, and approximately 0.5 mile of the NFSR downstream of the North Fork Diversion Dam (CDFW 2023b).	FE	Interagency Conservation Strategy for Mountain Yellow Legged Frogs in the Sierra Nevada (*Rana sierrae* and *Rana muscosa)* (CDFW, NPS, FWS, USFS 2018)
Northwestern pond turtle	*Actinemys marmorata*	Inhabits permanent, slow-moving fresh or brackish water with available basking sites and adjacent open terrestrial habitats or forest for nesting, typically at elevations up to 4,500 feet, although occurrences have been documented up to approximately 6,700 feet.	Occurrences in Rose Creek, 3 miles southeast of the Assessment Area (approximately 4 river miles upstream of its confluence with the Stanislaus River), in 2021 and 2023 (CDFW 2026b, iNaturalist 2026). An additional observation was noted in a pond in Lakemont Pines, approximately 2.5 miles outside of the Assessment Area (west of McKay's Reservoir) in 2022 (iNaturalist 2026). The southwest portion of the Assessment Area, including the southwest edge of New Spicer Meadow Reservoir, is in species' known range (Zeiner et al. 1988–1990, Nafis 2026).	FPT	Status Report (FWS 2023d) Western Pond Turtle Range-wide Management Strategy (Western Pond Turtle Range-wide Conservation Coalition 2020)
BIRDS					
California spotted owl – Sierra Nevada DPS	*Strix occidentalis occidentalis*	Ranges from the western side of the Sierra Nevada from Shasta County to Tehachapi Pass in Kern County and sparsely distributed along the eastern side of the Sierra Nevada into western Nevada. Breeding season begins in mid-February and adults typically do not shift territories unless the breeding pair was previously unsuccessful or habitat is altered. Nests in mature, multi-layer forest with complex structure, larger trees (greater than 24 inches diameter at breast height [dbh]), high canopy cover, and large amounts of woody debris. Typically occurs in mid-elevation ponderosa pine (*Pinus ponderosa*), mixed conifer, white fir (*Abies concolor*), and mixed-evergreen forest with few occurring in the oak woodlands of western foothills. Nests in large trees or snags with an average dbh of 49 inches and height of 103 feet. Areas with canopy cover greater than 70% are optimal for nest sites, but occupancy sharply declines when canopy cover is less than 40%. The presence of trees over 157 feet tall and high density of large trees are other good indicators of high-quality habitat. Above approximately 3,937 feet in coniferous forest, the primary prey is Humboldt's flying squirrel (*Glaucomys oregonensis*), but this species primarily eat woodrats (*Neotoma* spp.) at lower elevations (FWS 2022c).	Dozens of occurrences within 5 miles of the Assessment Area, with three occurrences documented within the Assessment Area (CDFW 2026a).	FPT	Status Report (FWS 2019, 2022c)
MAMMALS					
Gray wolf	*Canis lupus*	Was considered extirpated from California by the early 20th Century, but as of 2012 has begun re-establishing in the northeastern part of the state, from Siskiyou and Shasta counties south through Lassen and Plumas counties as well as in Tulare County (CDFW 2025b). Habitat preferences appear to be more prey dependent than cover dependent. Territories have a variety of topographic features. Forests, open meadows, rocky ridges, and lakes or rivers all comprise a pack's territory. In the American West, it has been known to follow the seasonal elevational movements of ungulate herds (Snyder 1991).	The closest known pack or area of activity is near Tahoe National Forest in Nevada County, approximately 70 miles north of the Assessment Area (CDFW 2026a).	FE	Recovery Plan (FWS 1987, 1992, 2025a) Status Report (FWS 2023e, 2025b) 5-year Reviews (FWS 2012) [85 FR 69778]
Sierra Nevada red fox – Sierra Nevada DPS	*Vulpes vulpes necator* pop. 2	Found in a variety of habitats, including alpine dwarf-shrub, wet meadow, subalpine conifer, lodgepole pine (*Pinus contorta* ssp. *murryana*), red fir (*Abies magnifica*), aspen, montane chaparral, montane riparian, mixed conifer, Jeffrey pine (*Pinus jeffreyi*), eastside pine, montane hardwood-conifer, and ponderosa pine. Most sightings have been above 7,000 feet in elevation but generally ranges from 3,900 to 11,900 feet. Dens in rocky outcrops, hollow logs and stumps, and burrows in friable soil (Johnson and Harris 2000).	Approximately 15 documented occurrences within 10 miles northeast and southeast of the Assessment Area, ranging from 1990 to 2011 (CDFW 2026a).	FE	Recovery Plan (FWS 2021c) Status Report (FWS 2018b)

[1] FE = Federal Endangered; FT = Federal Threatened; FPT = Federal Proposed Threatened

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3.6.2 Life Histories of ESA-Listed Species

A brief description of listing status and life history of each ESA-listed and proposed species in the Assessment Area that have the potential to be affected by the Project is provided below.

3.6.2.1 Whitebark Pine

The whitebark pine is a high-elevation tree species found across western North America. It is currently listed as threatened under the ESA. On December 15, 2022, the FWS published the final rule for this species, including the 4(d) rule, and the final determination of critical habitat [87 FR 76882]. Critical habitat for this species was not designated due to the nature of the threats. The main driver for whitebark pine decline is disease (white pine blister rust). Designation of critical habitat would not provide any additional protection that addresses this specific threat [87 FR 76916].

Life Cycle, Life Span and Reproduction

The whitebark pine has a long and complex life cycle adapted to harsh subalpine environments. Its seeds develop inside indehiscent cones that do not open naturally; instead, animals, especially Clark's nutcracker (*Nucifraga columbiana*), extract and disperse the wingless seeds, often caching them in soil where many germinate later (Tomback et al. 2001, McCaughey and Tomback 2001). Germination can be delayed for 2 to 11 years depending on conditions, and seedlings emerge with 7 to 9 cotyledons and a taproot about 5 to 7 inches long. After several years, seedlings grow into saplings, eventually reaching reproductive maturity. Whitebark pine is monoecious, producing both male pollen cones and female seed cones; cone production typically begins at 25 to 30 years, peaks between 60 to 80 years, and continues for centuries (Tomback et al. 2001). Pollination occurs via wind, and cones take about 2 years to mature before seeds are available (McCaughey and Tomback 2001).

The species relies heavily on Clark's nutcracker for seed dispersal, with birds caching thousands of seeds annually, some buried up to 6 miles away (Tomback 1982). Whitebark pine is exceptionally long-lived, often surviving 300 to 600 years, and some individuals exceed 1,000 years, forming krummholz (stunted and twisted tree growth) shapes near the tree line due to environmental stress (Arno and Hoff 1990). This life history strategy—slow growth, extended longevity, and animal-mediated reproduction—reflects adaptation to cold, windy, nutrient-poor habitats in high-elevation ecosystems.

Habitat and Range

The whitebark pine occupies harsh, high-elevation habitat across western North America, ranging from subalpine forests to timberline between 4,300 and 12,100 feet in elevation (Arno and Hoff 1990, Tomback et al. 2001). It thrives on exposed ridges, steep slopes, and rocky, well-draining soils with minimal shade competition, where cold, windy conditions and a short growing season limit other species (McCaughey and Tomback 2001). Its range is broadly divided into two main regions: British Columbia Coast Ranges, Cascade Range, and Sierra Nevada to the west, and the Rocky Mountains to the east (Arno and Hoff 1990, Tomback et al. 2001).

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In the Sierra Nevada, whitebark pine occupies the highest elevation forest zones between 7,280 and 12,000 feet. It reaches its southern limit near Mt. Whitney (Arno and Hoff 1990, Tomback et al. 2001). It grows along the Sierra Crest on both western and eastern slopes, often forming open stands or krummholz on exposed ridges and rocky soils where competition is minimal (McCaughey and Tomback 2001). These habitats are characterized by short growing seasons, strong winds, and nutrient-poor substrates that restrict other tree species (Arno and Hoff 1990). With favorable conditions, whitebark pines can grow 65 to 88 feet in height (McCaughey and Tomback 2001). Declines in populations of whitebark pine throughout its range are associated with bark beetle infestations and white pine blister rust, particularly in the central Sierra Nevada (Tomback et al. 2001, Arno and Hoff 1990).

Two whitebark pine occurrences are located north of the FERC Project Boundary. One occurrence is located near the upper tree line of Wheeler Peak, approximately 2.2 miles from river mile 40 of the NFSR. The other occurrence is located near Ebbetts Peak 4.4 miles from river mile 20 of Highland Creek. South of the FERC Project Boundary, a complex of nine scattered individuals is located in the Vicinity of Sonora Pass—approximately 12.8 miles from river mile 20 of Highland Creek.

3.6.2.2 Monarch Butterfly

The monarch butterfly has two distinct populations in North America: western and eastern. Appearance, behavior, and general ranges are described for both populations, although specific habitat requirements are only outlined for the western population.

The monarch butterfly is currently proposed to be listed as threatened under the ESA. On December 12, 2024, the FWS published the proposed rule for this species alongside the proposed 4(d) rule for the butterfly, and the proposed designation of critical habitat in California [89 FR 100662]. The FWS reopened public comment for the proposed listing and critical habitat designation on March 19, 2025, closing May 19, 2025 [90 FR 12694]. Recently, the final rule for the status of monarch was categorized as a long-term action by the Department of the Interior, indicating that the agency does not expect to produce any documentation regarding the listing within the next 12 months, pushing a final rule further into 2026 (Pelton et al. 2025; Reginfo 2026).

Appearance and Behavior

The monarch butterfly is a large and distinctive butterfly with bright orange wings that are bordered and interspersed with thick black veining. The black border has two rows of white spots, present on both the upper and lower sides of the forewings and hindwings (FWS 2024). The monarch is sexually dimorphic, and males have narrower veins throughout the wing membranes and androconial scent patches present on their hind wings. Adult female monarchs will lay eggs on milkweed (*Asclepias* spp.) plants, of which the leaves will serve as the exclusive food source for larvae as they grow and develop prior to pupating (Brower et al. 2012; FWS 2020, 2024). The larvae then pupates into a chrysalis and will remain as such for up to 2 weeks while the caterpillar undergoes metamorphosis, transforming into a butterfly (Brower et al. 2012; FWS 2020, 2024). The majority of adult butterflies will live from 2 to 5 weeks, although migratory populations show

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that overwintering adults will enter a suspended reproductive period, or diapause, and live up to 9 months (FWS 2024).

Migration and Overwintering

Monarch butterflies in temperate climates, such as eastern and western North America, undergo large-scale migrations in the fall towards their respective overwintering habitats; migrations can encompass distances of up to 1,864 miles, and can last up to 2 months (FWS 2024). Migrations in western North America are typically shorter than those in the east, where they fly south and westward towards overwintering sites in coastal regions in California and northern Baja California. In the spring, overwintering individuals will again become reproductive and mate at respective overwintering sites prior to dispersal; individuals who initially migrated south will then fly back to breeding grounds to lay eggs (Brower et al. 2012, FWS 2024).

Habitat and Range

Adult monarch butterflies require a diverse selection of nectar sources along their migration routes and within breeding grounds, with milkweed plants required for reproduction and early life stages (Flockhart et al. 2015, FWS 2024). Phenology and positioning of nectar sources is important for all life stages of the butterfly. In western North America, nectar sources are typically associated with riparian habitats, and milkweed may serve as the principal source in more arid environments (FWS 2024). Site characteristics for successful breeding habitat and reproduction are not well understood in the western population, although it is assumed that suitable sites include high humidity, dappled sunlight, a nearby water source, and protection from winds, storms, and fluctuating temperatures (Xerces 2017).

Proposed critical habitat for this species does not overlap with the FERC Project Boundary [89 FR 100662]. Suitable habitat within the FERC Project Boundary may occur wherever nectaring resources can be found, and especially where milkweed occurs.

There is a recorded occurrence of multiple adult monarchs, eggs, larvae, and narrow-leaf milkweed (*Asclepias fascicularis*) within the FERC Project Boundary near Red Apple south of Highway 4 and east of Darby Russel Road. An additional occurrence of a single individual monarch nectaring on milkweed was documented near the previous occurrence, but approximately 0.2 mile west of the FERC Project Boundary. Lastly, an occurrence of heartleaf milkweed (*A. cordifolia*) was recorded approximately 0.15-mile northwest of the FERC Project Boundary in Doud's Landing above the Stanislaus River (WMMOD 2025).

3.6.2.3 Lahontan Cutthroat Trout

LCT was listed as endangered under the Endangered Species Conservation Act of 1969 on October 13, 1970 [35 FR 16047]. On July 16, 1975, the LCT was reclassified as threatened to allow state management and regulated angling efforts [40 FR 29863]. No critical habitat has been designated for the species. Threats to LCT include competition with non-native trout and habitat loss, fragmentation, and degradation (FWS 2023b).

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Appearance and Behavior

The LCT is the largest cutthroat trout subspecies, with their namesake coming from the yellowish-red pigmentation under each side of the lower jaw and their geographic residence (Moyle 2002, FWS 2023b). Compared to rainbow trout, LCT have larger mouths and more slender bodies that are similar in color but tend to be darker olive to reddish-yellow in overall coloration, with numerous black body spots throughout (Moyle 2002). LCT can occur in both lake and stream habitats, with lake-dwelling individuals growing larger and showing pale gold coloration with pink or purple hues, while stream fish tend to be smaller with more purplish or bluish tones along their flanks (Moyle 2002). Their dorsal fin has 9-11 major rays, their pectoral fins have each 12-15 rays, the pelvic fin has 9-10 rays, and the anal fin has 8-12 rays. Their tail is forked, and they have 21-28 gill rakers on each arch (Moyle 2002, FWS 2023b).

Stream-dwelling LCT are predominantly opportunistic feeders, feeding mostly on what terrestrial and aquatic invertebrates are available in drift; lake-dwelling LCT feed on insects at the water's surface, zooplankton, and if needed small crustaceans, snails, and insect larvae. Larger LCT will feed on other fish (Moyle 2002). Maturity is reached somewhere between their second to fourth year and will begin to spawn between April and July (Moyle 2002). LCT will migrate upstream to spawning areas in gravel riffles, with spawning typically occurring at temperatures between 8 and 16°C. Females will lay between 400 and 8,000 eggs, and embryos will hatch in 6 to 8 weeks with fry emerging approximately 2 weeks after hatching (Moyle 2002).

Habitat and Range

The LCT is native to the Lahontan Basin, which extends from the northernmost portion of the eastern Sierra Nevada in California, into southeastern Oregon, and northern Nevada (FWS 2023b). Their current range encompasses their historic range minus the Susan River basin, although they inhabit approximately 10.5% of it (LCTCC 2019). Furthermore, approximately 68% of historic stream and lake habitat is considered to be potentially suitable today, including currently inhabited areas (LCTCC 2019). Within California, their distribution has contracted to less than 5% of their historical stream habitat (Moyle 2002). Their range is currently divided into 10 LCT Management Units (LMUs) that are defined by river basins and management needs, each containing their own conservation objectives. Five of these LMUs occur completely or cross into California: Independence, Pyramid/Truckee, Tahoe, Carson, and Walker (FWS 2023b).

Although highly adaptable across desert and alpine stream systems, LCT require cold, well-structured stream habitats with stable banks, deep pools, and abundant cover; they tolerate temperature fluctuations, but cease growing above 22–23°C (Moyle 2002). Spawning habitat occurs in streams only, with redds built in clean gravel (6–50 millimeters [mm]) and eggs requiring cold, oxygen-rich, low-silt stream environments. Fry may remain in these natal streams for up to 2 years before migrating (Peacock and Dochtermann 2012).

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Importantly, the Assessment Area does not fall into the Lahontan Basin, and the LCT was not picked up by database queries given the mapped Assessment Area (CDFW 2026a, FWS 2026a). However, the LCT has been documented in New Spicer Meadow Reservoir by CDFW (Ewing 2013, 2019), noting that the LCT is not native to the watershed and it is unclear how LCT came to be in the reservoir. Ewing (2013, 2019) suggests that the LCT could have been either illegally transplanted or unintentionally mixed with rainbow trout stocked by CDFW. Remaining populations, particularly in peripheral California drainages, are small, isolated, and vulnerable to continued decline, highlighting the need for habitat protection, restoration, and non-native species management.

3.6.2.4 Yosemite Toad

Yosemite toad was listed as threatened under the ESA on April 29, 2014 [79 FR 24256], and critical habitat was designated on August 26, 2016 [81 FR 59046]. Threats to Yosemite toad include habitat loss associated with degradation of meadow hydrology, anticipated hydrologic impacts on habitat resulting from climate change, and cumulative effects of other threats such as disease on small remnant populations [79 FR 24256].

Appearance and Behavior

Yosemite toad is a robust and stocky amphibian with dry, warty skin, with adults typically measuring 1.7 to 3.3 inches in snout to vent length (SVL) (Hansen and Shedd 2025). Adults of both sexes have large, round, or ovular parotoid glands; a pale throat and abdomen; closely set eyes with horizontal pupils; and a faint or absent dorsal stripe. Females are generally larger than males and exhibit black spots edged with white or cream set against their gray, tan, or brown bodies (Jennings and Hayes 1994, Nafis 2026). Males are generally smaller and have a uniformly colored yellow, green, olive, or brown dorsum with few or no dark blotches (Jennings and Hayes 1994, Nafis 2026). Juveniles appear similar to adult females, but are smaller and have bright orange or yellow coloration on the bottom of their feet (Nafis 2026). Tadpoles are dark brown with inset eyes and rounded tail tips, typically reaching approximately 1.0 to 1.2 inches in total length before metamorphosing (Hansen and Shedd 2025).

Yosemite toads are typically active between May and October and are usually found basking in sunny areas near water (Nafis 2026, Hansen and Shedd 2025, Zeiner et al. 1988–1990). They are primarily diurnal, but often nocturnal during the breeding season (Hansen and Shedd 2025). This species has a short, explosive breeding season (typically between May and July, dependent on snowmelt) (Nafis 2026). Male toads will usually arrive first to the shallow breeding pools, usually while snow is still covering the meadow edges, where they will call to attract females (Nafis 2026). Outside of the breeding season, individuals spend most of their lives in upland habitats near their breeding meadow, overwintering in rodent burrows; in clumps of grasses, sedges, or willows; structures created by root wads or large woody material; or other hibernacula (Nafis 2026, Jennings and Hayes 1994, Zeiner et al. 1988–1990, Stebbins 2003). Females do not breed every year, opting in some years to remain in the uplands, which may enhance overwinter survival by minimizing energy expenditure (Kagarise Sherman and Morton 1993, Morton 1981, as cited in [78 FR 24256]). When startled, toads may leap into water or retreat into nearby rodent burrows (Hansen and Shedd 2025).

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Habitat and Range

Yosemite toads typically occur in high-elevation meadows adjacent to montane conifer forest and subalpine forest habitats (Hansen and Shedd 2025). Suitable breeding sites are generally shallow, warm waters along the edges of meadows and ponds, slow-moving streams, and grassy areas adjacent to lakes, sloughs, and backwaters (Stebbins 2003, Martin 2008, as cited in Liang 2010, Jennings and Hayes 1994). These breeding sites are often dominated by short emergent sedges (*Carex* spp.) or rushes (*Juncus* spp.) (Jennings and Hayes 1994).

The species is found exclusively in the high elevations of the Sierra Nevada Range, from El Dorado County south to Fresno County at elevations of 4,800–12,000 feet (Stebbins and McGinnis 2003, Nafis 2026); however, recent data may suggest a more restricted elevation range for the species of 6,400–11,300 feet (Hansen and Shedd 2025). Currently, most of the Yosemite toad's range is within federally managed lands (Hansen and Shedd 2025).

The northeastern portion of the Assessment Area, near New Spicer Meadow Reservoir, is within the species' known range, while the southeastern portion of the Assessment Area is below 6,400 feet and thus outside of the species' lower elevational limit (Zeiner et al. 1998–1990, Hansen and Shedd 2025). The high-elevation portion of the Assessment Area is within the zone of potential hybridization of California toad and Yosemite toad, with hybrids documented approximately 5 miles outside of the Assessment Area in Frog Lake (Stebbins 2003, Hansen and Shedd 2025).

Yosemite toad occurrences have been documented outside of the Assessment Area at Highland Lakes and associated streams and meadows, approximately 5 miles northeast of New Spicer Meadow Reservoir, in 2024, 2023, and 2001 (CDFW 2026a). Yosemite toads were observed in Groundhog and Wire Corral meadows near Herring Creek, approximately 10 miles southeast of New Spicer Meadow Reservoir, during CSERC's 2014 and 2015 meadow condition and utilization surveys (CSERC 2014, 2015). Critical habitat for the species is not present in the Assessment Area. Suitable habitat within the FERC Project Boundary may occur in high-elevation (6,400–11,300 feet) ponds, wet meadows, and slow streams and nearby grasses, sedges, and high montane and subalpine vegetation/forests.

3.6.2.5 Foothill Yellow-legged Frog – South Sierra DPS

The South Sierra DPS of the FYLF was listed as endangered under the ESA on August 29, 2023 [88 FR 59698] and critical habitat was proposed on January 14, 2025 [90 FR 3412] but has not yet been designated. Primary threats to the South Sierra DPS include altered hydrology, agriculture, illegal cannabis cultivation, predation by non-native species (e.g., American bullfrog), disease and parasites, mining, urbanization, recreation, severe wildfire, drought, extreme flooding, and climate change [88 FR 59698].

Appearance and Behavior

The FYLF is a small- to medium-sized frog with a relatively slim waist, long legs, and webbed hind feet. Adults typically measure 38–82 mm in SVL (Hansen and Shedd 2025, Stebbins and McGinnis 2012, as cited in Nafis 2026). These amphibians have rough skin and variable dorsal

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coloration (appearing brown, gray, olive, and/or red) with varying degrees of mottling, and indistinct dorsolateral folds. Ventrally, their legs and lower abdomen are yellow, and their throat and chest typically have dark spotting (Stebbins and McGinnis 2012, as cited by Nafis 2026). Newly hatched tadpoles are brown or black, measuring 7–8 mm in total length; as they grow, they develop olive-gray coloration with brown spotting and can measure up to 56 mm in length (Stebbins and McGinnis 2012, as cited by Nafis 2026, Storer 1925, Zweifel 1955, as cited in Hayes et al. 2016). All DPSs of the species appear the same and are distinguished only by genetic analysis and geographic distribution.

FYLF are most active during daylight hours, usually found basking near the water's edge or seeking cover under instream substrates when threatened (Nafis 2026). Adult FYLF can travel to and from breeding areas annually, congregating in breeding habitats in late winter or spring, while others have been observed occupying breeding habitat year-round (Kupferberg 1996, GANDA 2008, Wheeler et al. 2006, Bourque 2008, all as cited by FWS 2023c). In the winter, FYLF may become inactive for a period, but if conditions are favorable, some individuals may remain active (FWS 2023c).

Habitat and Range

FYLF occupy shallow tributaries and mainstems of perennial streams and rivers with sunny banks, and a variety of substrates (typically boulder and cobble) and vegetation types (FWS 2023c, Hayes et al. 2016). Typical vegetation types for the species include valley-foothill hardwood, valley-foothill hardwood-conifer, valley foothill riparian, ponderosa pine, mixed conifer, mixed chaparral, and wet meadows (Hayes et al. 2016). Breeding and oviposition typically occurs in shallow, low-flow sections of streams with cobble/boulder substrate (Hayes et al. 2016). The South Sierra DPS's region is relatively dry and warm compared with that of other DPSs (FWS 2023c).

The South Sierra DPS of the FYLF ranges from the Sierra Nevada south of the American River sub-basin south to the Transverse Range in Kern County, from sea level to approximately 5,000 feet in elevation (FWS 2023c). This DPS's range is geographically contiguous, but overall connectivity is poor. Most currently occupied stream segments are in the northern third of the range, with a few isolated populations persisting south of Mariposa County (FWS 2023c). Since the 1960s, the South Sierra DPS has experienced dramatic occupancy declines and numerous documented extirpations concentrated in the southern two-thirds of the range (CDFW 2019, as cited in FWS 2023c). In Stanislaus National Forest, Lind et al. (2003) found that between 1993 and 2002, numbers of adults and juveniles at occupied sites on the Stanislaus River were low overall, and that successful reproduction was limited to 25% of occupied sites surveyed.

There are numerous occurrences documented within the Assessment Area, including in the Mill Creek and Utica Ditch complex near Canyon View in 2024 (less than 0.1 mile north of the [subterranean] Collierville Tunnel), Beaver Creek (downstream of the Beaver Creek Diversion) in 2018, the MFSR in 2001, and the mainstem Stanislaus River in 1998 (CDFW 2026a, b). There are additional occurrences documented outside of, but in the Vicinity of, the Assessment Area in Soap, Griswold, McCormick, Eagle, and Rose creeks and one unnamed tributary to the MFSR (CDFW 2026a). Perennial rivers and tributaries below 5,000 feet in elevation in the FERC Project Boundary likely provide suitable habitat for FYLF.

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Proposed critical habitat for this DPS partially overlaps the southwest portion of the FERC Project Boundary from the Beaver Creek Diversion Dam and Impoundment to the Collierville Tunnel near Douds Landing, including a small section of the mainstem Stanislaus River immediately downstream of the Collierville Powerhouse and excluding McKay's Point Reservoir (CDFW 2025a). Proposed critical habitat also includes reaches of streams or rivers within the Assessment Area, such as Beaver, Mill, and Griswold creeks, and the North Fork, Middle Fork, and mainstem of the Stanislaus River (CDFW 2025a).

3.6.2.6 California Red-legged Frog

CRLF was listed as threatened under the ESA on May 23, 1996 [61 FR 25813]. Primary threats to the species cited in the final rule include urban encroachment, construction of reservoirs, water diversions and well development, flood control maintenance, road maintenance, placer mining, livestock grazing and feral pigs, off-road vehicle use, and introduction or presence of exotic predators and competitors (e.g., American bullfrogs) [61 FR 25813].

Critical habitat for the CRLF was first designated March 13, 2001 [66 FR 14626] and after multiple revisions and considerations, the final designation of revised critical habitat for the species was published on March 17, 2010 [75 FR 12816].

Appearance and Behavior

CRLF is a moderately sized frog with a relatively slim waist, long legs, webbing on the hind feet, and prominent dorsolateral folds (Nafis 2026). Adult females are typically larger than males, reaching up to 138 mm SVL while males measure up to 116 mm SVL (Hansen and Shedd 2025). Dorsal coloration is variable between populations and individuals, but usually appears tan, light brown, gray-brown, or reddish orange with small black flecks and dark markings on the back, and dark bar markings on the legs (Hansen and Shedd 2025, Nafis 2026). In adults, the lower abdomen and ventral sides of the legs are red, whereas in juveniles this coloration may be absent, subdued, or appear yellowish (Hansen and Shedd 2025, Nafis 2026). Tadpoles measure 14–80 mm in total length and appear brown with dark spots, with two rows of small, light spots starting near the eyes and running along the dorsum (Nafis 2026).

CRLF are typically active year-round in areas with permanent aquatic features; if nearby water bodies become dry, individuals aestivate in moist refuges until fall rains (Nafis 2026). Breeding occurs between November and April depending on location (Hansen and Shedd 2025, Nafis 2026). Some individuals occupy breeding habitat year-round while others disperse, often traveling overland on rainy nights, and annually returning to breeding habitat (Nafis 2026). When threatened, they will typically remain still and rely on their cryptic coloration to avoid detection before jumping into water or swimming into deeper aquatic habitat (Hansen and Shedd 2025, Nafis 2026). Adults are primarily nocturnal and juveniles are primarily diurnal (Hansen and Shedd 2025).

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Habitat and Range

CRLF habitat includes wetlands, ponds, wet meadows, lakes, slow-moving stream reaches, and agricultural features including stock ponds. Breeding habitats are generally characterized by still or slow-moving water with deep pools (usually at least 2.3 feet, although frogs have occasionally been known to breed in shallower pools) (Jennings and Hayes 1994). Favored habitat sites have emergent, overhanging vegetation, undercut banks, exposed roots, riparian canopy, and/or dense tangles of thorny vines (Hansen and Shedd 2025). Breeding sites can be ephemeral or permanent; if ephemeral, inundation is usually necessary into the summer months (through July–August) for successful metamorphosis. Although some adults may remain resident year-round at favorable breeding sites, others may disperse overland up to 2 miles or more (Bulger et al. 2003). Movements may be along riparian corridors, but many individuals move directly from one site to another without apparent regard for topography or watershed corridors (Bulger et al. 2003).

The CRLF's range occurs from near the Navarro River in Mendocino County south to Baja California, with isolated remnant populations occurring in the Sierra Nevada foothills, south to Tulare County, and possibly Kern County at elevations from sea level to approximately 5,000 feet (Hansen and Shedd 2025, Nafis 2026). Most CRLF populations are currently largely restricted to coastal drainages on the central coast of California.

The species' known range encompasses the southwestern portion of the Assessment Area, while the higher elevation (above 5,000 feet), northeastern portion of the Assessment Area near New Spicer Meadow Reservoir is entirely excluded (CDFW 2026c, Nafis 2026).

Occurrences are documented approximately 1 mile outside of the Assessment Area in Beaver Creek, 1.5 miles upstream of the Beaver Creek Diversion Dam and Impoundment in 2022 (CDFW 2026b). Critical habitat for the species is not present in the Assessment Area. Suitable habitat within the FERC Project Boundary may occur in lower-elevation (below 5,000 feet) wetlands, ponds, wet meadows, lakes, slow-moving stream reaches with deep pools, and stock ponds with emergent and/or overhanging vegetation.

3.6.2.7 Sierra Nevada Yellow-legged Frog

SNYLF was listed as endangered under the ESA on April 29, 2014 [79 FR 24256], and the critical habitat designation was published on August 26, 2016 [81 FR 59046]. Primary threats to the species include habitat degradation and fragmentation, predation, disease, climate change, inadequate regulatory protections, and the interaction of these threats impacting small remnant populations [79 FR 24256].

Appearance and Behavior

SNYLF is a medium-sized frog with a relatively slim waist, long legs, and webbed hind feet. Adults measure 40–80 mm in SVL (Jennings and Hayes 1994, Nafis 2026). They have smooth skin and variable dorsal coloration, appearing brown, yellow, gray, olive, and/or red, patterned with dark spots of varying sizes, with indistinct dorsolateral folds (Jennings and Hayes 1994, Stebbins 2003, as cited in [78 FR 24256], Nafis 2026). The yellow or orange coloration on their

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legs and lower abdomen and the ventral dark spotting/mottling is generally more opaque or heavier compared with that of FYLF (Zweifel 1955 and Stebbins 2003, as cited in [78 FR 24256]). Tadpoles are brown with gold and dark spotting, reaching up to 50 mm in length (Nafis 2026).

SNYLF are often found basking along the edges of high-elevation water bodies (Nafis 2026). Adult and larval SNYLF overwinter in frozen-over high-elevation lakes and ponds (Nafis 2026). Breeding activity begins soon after ice-melt in spring and can range from April to June or July dependent on the elevation (Hansen and Shedd 2025). In high mountain lake habitats, adults may move less than a few hundred meters over the course of the year, while populations that utilize stream habitats tend to move between selected breeding, feeding, and overwintering habitats annually (Matthews and Pope 1999, Pope 1999, as cited in [78 FR 24256]).

Habitat and Range

SNYLF are highly aquatic frogs, found in deep, cold, and preferably fishless perennial lakes, ponds, isolated pools, streams, and riverbanks. They generally prefer open, gently sloping shorelines with shallow water (2–3 inches deep) (Brown et al. 2014). The species can be found on grassy or muddy bank substrates at high elevations, and on bedrock, fine sand, rock fragments, and boulders at lower elevations within its range (Zweifel 1955, as cited in [78 FR 24256]). Permanent lakes or ponds that are deep enough to not freeze to the bottom in winter or become anoxic (oxygen-depleted) may be required for breeding, since tadpoles require at least 2–3 years to reach metamorphosis (Matthews and Pope 1999). Typically, adults and larvae are found overwintering in lakes or ponds that are greater than 5 feet deep; however, they have been known to emerge from waters in shallower lakes that were assumed to have completely frozen (Matthews and Pope 1999).

SNYLF is found in the Sierra Nevada, ranging from Plumas County south to Inyo County, typically at elevations of approximately 4,000–12,000 feet (Brown et al. 2014, Hansen and Shedd 2025). Historically, this species was much more abundant and ubiquitous throughout its range but is now primarily restricted to high-elevation, publicly managed lands (Hansen and Shedd 2025).

The species' known range includes most of the Assessment Area, except the southwestern end west of Canyon View (Zeiner et al. 1988–1990). SNYLF were documented within the FERC Project Boundary in 1946 at Gabbott Meadow, which—along with a section of Highland Creek—was later inundated to form New Spicer Meadow Reservoir. Although the species is considered possibly extirpated in areas within and surrounding existing Project reservoirs, CDFW notes that more research in the area is needed (CDFW 2026a).

Occurrences within the Assessment Area that are thought to be extirpated include one from 1946 in what are now the Union and New Spicer reservoirs and another from 1954 along the NFSR, approximately 1 mile upstream of its confluence with Highland Creek (CDFW 2026a). There are, however, recent and historical occurrences within and near the Assessment Area where SNYLF is presumably extant. Within the Assessment Area, these include observations from 2015 and 2020 in an unnamed tributary to the NFSR downstream of Bull Run Lake, 0.1 mile east of the confluence, and from 1992 along Duck Creek upstream of its confluence with NFSR (CDFW 2026a). Stanislaus Meadow, located less than 1 mile north of the Assessment Area, supports more

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recently documented sightings from 2024, 2015, and 2014; this population was originally documented in 1943 (CDFW 2026a; CSERC 2014, 2015). The species was also documented along Pacific Creek between 0.6 and 2.4 miles north of Bull Run Peak in 2015 (less than 1.5 miles east of the Assessment Area), 0.6 mile west of Heiser Lake in 2020 (less than 0.25 mile outside of the Assessment Area), and in South Fork Griswold Creek approximately 1 mile upstream of the confluence of its north and south forks in 2021 (approximately 5 miles outside of the Assessment Area) (CDFW 2026a).

Critical habitat for the species partially overlaps the northeast portion of the FERC Project Boundary and includes Union Reservoir, Utica Reservoir, the North Fork Diversion Dam Impoundment, and approximately 0.5 mile of the NFSR downstream of the North Fork Diversion Dam (CDFW 2023b). Suitable habitat within the FERC Project Boundary may occur in fishless lakes, ponds, meadows, and/or streams above 4,000 feet in elevation.

3.6.2.8 Northwestern Pond Turtle

NWPT is proposed for listing as threatened under the ESA. On October 3, 2023, the FWS published the proposed rule for the species alongside the proposed 4(d) rule [88 FR 68370], citing primary threats to the species including anthropogenic impacts, predation by bullfrogs, and drought. Critical habitat for the species has not been proposed. The NWPT and the southwestern pond turtle (*Actinemys padilla*) were regarded as the same species and both referred to as the western pond turtle until 2017, when the scientific community recognized a taxonomic split resulting from recent genetic analyses (Crother 2017, Rhodin et al. 2017, as cited in [88 FR 68370]).

Appearance and Behavior

The NWPT is a small to medium-sized semi-aquatic freshwater turtle, with adults typically measuring 140–190 mm in length (Bury et al. 2012, Hansen and Shedd 2025). Coloration is variable but generally the carapace (topside of the shell) is dull yellow, olive, or dark brown, often with dark or light markings on the scutes (Bury et al. 2012, Hansen and Shedd 2025, Nafis 2026). The plastron (underside of the shell) is cream to pale yellow and unmarked or with dark gray or brown blotches (Hansen and Shedd 2025, Nafis 2026). The head typically has a mottled appearance made up of dark and light dashes and markings, and hind feet are webbed between their claws (Hansen and Shedd 2025). Juveniles appear similarly but are significantly smaller at emergence, hatching at approximately 25 mm in length (Bury et al. 2012, Nafis 2026).

NWPT are often found basking in or near bodies of water on logs, rocks, or other substrates, and they will quickly enter the water to seek cover in undercut banks, root wads, bottom litter, or under rocks, boulders, or logs when disturbed (Hansen and Shedd 2025, Nafis 2026). The species is most active in the spring and summer, but some populations are active year-round if conditions are favorable. Courtship behavior is sparsely documented but has been observed between April and November, and mating has been observed between May and September (Holland 1991, as cited by FWS 2023d), after which females will travel onto land where they dig a nest and lay their clutch(es) (Bury et al. 2012, Nafis 2026). Many NWPT overwinter on land in underground burrows

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or underwater, occasionally emerging to bask on sunny winter days (Bury et al. 2012, Hansen and Shedd 2025).

Habitat and Range

NWPT inhabit fresh or brackish water characterized by areas of deep water, low flow velocities, moderate amounts of riparian vegetation, warm water, underwater cover elements (such as large woody debris and rocks), and/or ample basking sites (Jennings and Hayes 1994). Along major rivers, NWPT are often concentrated in side channels and backwater areas. Hatchlings and juveniles require more specialized habitat for survival through their first few years and spend much of their time feeding in shallow water with dense submerged or short emergent vegetation (Jennings and Hayes 1994). Although an aquatic reptile, NWPT also require upland habitats—for basking, overwintering, and nesting—typically within 0.6 mile of aquatic habitats (Holland 1994). Upland habitats are typically characterized by dry, compact soils, sparse or minimal vegetation, and limited canopy cover to allow for direct solar exposure (Holland 1994, Rathbun et al. 2002, Rosenberg et al. 2009, and Riensche et al. 2019, all as cited in [88 FR 68370]).

The current range of the NWPT includes parts of Washington, Oregon, Nevada, and northern and central California from sea level to approximately 6,700 feet in elevation, but the species is typically found below Elevation 4,500 feet (Stebbins 2003, Hansen and Shedd 2025). In California, the species ranges from the Oregon-California border south to northern Monterey County and east into the Central Valley, Cascades, and Sierras [88 FR 68370].

The southwest portion of the Assessment Area and the southwest portion of New Spicer Meadow Reservoir are within the species' known range.

The nearest occurrences are in Rose Creek, 3 miles southeast of the Assessment Area (approximately 4 river miles upstream of its confluence with the Stanislaus River) in 2021 and 2023. An additional observation was noted in a pond in Lakemont Pines, approximately 2.5 miles from the Assessment Area (west of McKay's Reservoir) in 2022 (CDFW 2026b, iNaturalist 2026). Suitable habitat within the Assessment Area may occur in low-elevation (below 6,700 feet) ponds, lakes, and slow-moving stream reaches with deep pools or side channels with nearby basking sites and underwater refugia.

3.6.2.9 California Spotted Owl – Sierra Nevada DPS

The Sierra Nevada DPS of the CSO is currently proposed to be listed as threatened under the ESA. On February 23, 2023, the FWS published the proposed rule for the species alongside the proposed 4(d) rule [88 FR 11600]. Critical habitat for the species has not been proposed. Primary threats for the CSO include climate change and associated impacts (wildfire, drought), tree mortality, competition and hybridization with barred owls (*Strix varia*), and development [88 FR 11600].

Appearance and Behavior

The CSO is a medium-sized raptor in the Strigidae family, measuring up to approximately 19 inches at adulthood (FWS 2022c). There is some sexual dimorphism, where females are slightly

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larger in mass than males, with males ranging from 16.6 to 24.2 ounces and females from 18.9 to 27.3 ounces (FWS 2022c). Their common name comes from their mottled appearance, with a dark brown body that is dappled with white throughout. The owl lacks ear tufts, has a round face with two large light brown facial disks, and a distinctive white "x" across the face (FWS 2022c). The CSO is similar in appearance to two other spotted owl subspecies, Mexican spotted owl (*S. o. lucida*) and northern spotted owl (*S. o. caurina*) (Gutiérrez et al. 2017). Relative to the CSO, the Mexican spotted owl is lighter in color and has larger white spotting, while the northern spotted owl is the darkest of the three and has the smallest white spotting (Gutiérrez et al. 2017). The barred owl shares similar characteristics with the CSO, although it can be differentiated by its generally larger size and the barring patterns on the chest and belly (compared to the mottling or spotting of the CSO).

The CSO is primarily nocturnal, but will opportunistically hunt during the day (Gutiérrez et al. 2017). The species is highly territorial over its delineated home range's core area, where nest trees are typically located, and shows high site fidelity to these areas; CSOs will defend these core areas both from neighboring CSO pairs and individuals as well as other owls when necessary (Gutiérrez et al. 2017). Compared to all North American owls, the CSO has the lowest reproductive rate, with mean reproductive output varying across years. When nesting, a pair of CSOs will divide roles, with the female incubating and brooding and males increasing their hunting to provide food to the female and young once eggs hatch (Gutiérrez et al. 2017).

Habitat and Range

The Sierra Nevada DPS of CSO has a range within California that extends from the southern Cascade south along the Sierra Nevada; in the western Sierra Nevada, their distribution is continuous from Shasta County to the Tehachapi Pass, whereas they are sparser on the eastern Sierra Nevada (Davis and Gould Jr. 2008, FWS 2022c). The Coastal Southern California DPS of the species can be found from Monterey County south to San Diego County, although these populations are not contiguous and have large gaps in the range throughout (Davis and Gould Jr. 2008, FWS 2022c). There are some additional records of CSO occurring in Baja, California, although these are scattered and may be vagrant individuals (FWS 2022c).

The CSO nests in complex, mature forests that are multistoried and have multiple layers of canopy cover (Davis and Gould Jr. 2008, FWS 2022c). The species nests in cavities, snags, and occasionally in old nests in large conifers and oaks; however, studies show that in mixed-conifer forests of the Sierra Nevada, they have no clear preference for species in nest tree selection but do select trees that average 49 inches in dbh and 103 feet in total height (Roberts 2017). Nests are found in stands that have high canopy closure and cover, multiple canopy layers, and are abundant in suitable nest trees. They tend to have large home ranges, averaging up to 3,160 acres, with the majority of activity centralized around nests, delineating the core area (Roberts 2017).

Suitable habitat may be found within and adjacent to the FERC Project Boundary where complex, multistoried forested areas exist that provide suitable nest trees and adequate prey bases. Within the FERC Project Boundary south of Calaveras Big Trees State Park, there are three documented occurrences of CSO, with the most recent being from 2018 (CDFW 2026a). Beyond these, there are dozens of occurrences documented with a wide range of dates within 5 miles of the Project in

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any direction, along with several mapped core areas that indicate potential nesting behavior (CDFW 2026a). Six Protected Activity Centers (PAC) have also been established within the Assessment Area of the Project Boundary. These are generally located south of the Calaveras Big Trees State Park and the stretches of the NFSR immediately downstream of the park. The CSO PACs within the Assessment Area were established between 1990 and 2002 and four of the six were listed as active (although all are considered suitable habitat and usable) based upon their last visit in 2024. PACs are given an identifier by the Forest Service to distinguish from one another. The currently active PACs were TUO0267, TUO0266, and CAL0018 and the inactive were CAL0003 and CAL0045 (Forest Service 2026).

3.6.2.10 Gray Wolf

The gray wolf is currently listed as endangered under the ESA in all or portions of 44 of the contiguous U.S. states and Mexico and threatened in the state of Minnesota [43 FR 9607]. Gray wolves were initially listed as subspecies or regional populations under the Endangered Species Conservation Act of 1969, followed by listing under the ESA of 1973. On March 9, 1978, the FWS published the final rule for the gray wolf at the species level, listing the species as endangered in all contiguous states except for Minnesota, where it was listed as threatened [43 FR 9607]. This final rule also included critical habitat designations in Minnesota and Michigan [43 FR 9607].

Several revisions of the 1978 listing occurred between 2003 and 2009, although court challenges resulted in no change to the status except for the addition of three experimental populations (FWS 2012). In 2011, a final rule was reissued identifying the Northern Rocky Mountain population as a DPS and resulted in delisting wolves in Montana, Idaho, eastern Washington, eastern Oregon, and north central Utah [76 FR 25590]. While this DPS also included Wyoming, it was not until the 2015 reissuance of the 2009 final rule that the population in Wyoming were also delisted [80 FR 9218]. In 2020, the gray wolf was determined to not warrant listing under the ESA, and a final rule became effective in 2021 delisting the species within the entire United States [85 FR 69778]. However, in 2023, the FWS reinstated protections for the gray wolf as they were prior to the 2020 final rule due to court order [88 FR 75506].

Appearance and Behavior

The gray wolf is the largest member of the Canidae family, reaching up to 175 pounds and 6.5 feet in length for males and 120 pounds and 6 feet for females (Kovacs et al. 2016). Coloration is typically gray, but can vary from a white to deep black, and may lighten over time (Kovacs et al. 2016). In some areas of their range, the gray wolf can be confused for the coyote (*Canis latrans*) due to overlap in size; they can be differentiated by the wolf's generally more broad facial features and shorter, more rounded ears (Kovacs et al. 2016).

Gray wolves are highly territorial and social animals, typically living in packs of three to 11 individuals on average that are comprised of a mated pair and one or more generations of their offspring (Kovacs et al. 2016). While hunting, wolves will patrol the boundaries of their territory and maintain the boundaries of their territory by scent-marking (Kovacs et al. 2016). Gray wolves are considered generalist carnivores and will hunt prey of varying sizes depending on season and

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location. The dominant food source for gray wolves tends to be ungulates, but they will consume beavers, squirrels, coyotes, salmon, and seldomly insects and plant matter (Kovacs et al. 2016).

Most gray wolf packs produce one litter per year. Mating occurs in mid to late winter, with litters born between April and May. Litters generally have five to six pups, but can range anywhere from one to 11 pups; pups will drink their mother's milk for the first month of their life but will graduate to eat regurgitated meat by pack members (Kovacs et al. 2016, FWS 2023e). Around 6 months of age, pups will begin patrolling the territory with adults on hunts. Dispersal typically occurs anywhere between 9 and 36 months of age (Kovacs et al. 2016). However, dispersal does not always occur, and pups may stay with their natal pack for years or leave temporarily to return later (Kovacs et al. 2016).

Habitat and Range

The historic range of gray wolf encompassed most of North America except for the southeasternmost United States; in the western United States, populations were distributed widely and abundant, although were essentially extirpated by the 1930s due to trapping, poisoning, and extermination efforts (FWS 2023e). Following the reintroduction of gray wolves to central Idaho and Yellowstone National Park in the 1990s and natural recolonization of northern Montana around the same time, wolves have slowly expanded their range in the western United States, establishing packs in the pacific northwest, California, and Colorado. As of December 2025, eight established packs in California range from Siskiyou County, south into Shasta, Tehama, Lassen, and Plumas counties, with areas of wolf activity documented in Modoc, Sierra, and Nevada counties (CDFW 2025b). A disjunct pack of wolves, the Yowlumni Pack, occupies northern Kern and southern Tulare counties in the Sequoia National Forest (CDFW 2025b). Throughout their range, habitat for the gray wolf is highly variable, although populations may become specialized to specific areas over time (Kovacs et al. 2016). Major factors that can affect habitat suitability include prey availability (predominantly ungulates), density of protected and public lands, roads, human activity, availability of livestock, and human conflict (Kovacs et al 2016, FWS 2023e). Pack territories do not necessarily correlate with an individual's home range, and both may shift as competition occurs at territory or home range borders. The territory of a pack typically ranges between 200 and 400 square miles, and depends on pack size, prey abundance, habitat type, and latitude (Kovacs et al. 2016).

Suitable habitat for the gray wolf may occur within the Assessment Area in areas that have little to no human activity, host an adequate prey base, and have a suitable topography. While there are no recorded occurrences near the FERC Project Boundary or Assessment Area, and no documented pack or individual activity in the area (CDFW 2025b), the gray wolf can disperse over large distances and may pass through or establish a pack within the Vicinity of the Assessment Area.

3.6.2.11 Sierra Nevada Red Fox – Sierra Nevada DPS

The Sierra Nevada DPS of SNRF is currently listed as endangered under the ESA [88 FR 41743]. On August 3, 2021, the FWS published the final rule for the Sierra Nevada DPS, and in the same

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year published the recovery outline for the species [88 FR 41743] (FWS 2021c). Critical habitat for the DPS was not designated.

Appearance and Behavior

The SNRF is a small and slender carnivore in the Canidae family, weighing up to an average of 9.3 pounds for males and 7.3 pounds for females (FWS 2018b). The subspecies is smaller than the parent species (red fox, *Vulpes vulpes*), but shares similar diagnostic features such as long, bushy, white-tipped tails, black markings on the back of their ears, and black shins. Fur color can vary from the hallmark red phase pattern, where foxes are yellowish to reddish, to a pattern that is grayish-brown with dark lines along the back and shoulders (cross fur pattern), or to a pattern that is black with sparse silver guard hairs throughout (black fur pattern). The cross and black fur patterns tend to be rare, but are more common in populations inhabiting mountainous regions. The subspecies also has long hind feet and small toe pads relative to the parent species that are likely adaptations to living in high-elevation, cold areas (FWS 2018b).

The Sierra Nevada DPS of SNRF is an opportunistic hunter that preys on invertebrates, waterfowl, rodents, and more specifically snowshoe hare (*Lepus americanus*) and white-tailed jackrabbit (*Lepus townsendii*) in the winter and early spring months (FWS 2018b). The seeds of whitebark pine (*Pinus albicaulis*) are another important winter food source. The subspecies' reproductive biology is not well studied, but likely coincides with that of the parent species with a slight delay to ensure pups are born when food sources are most abundant in high-elevation habitats (Johnson and Harris 2000, FWS 2018b). Mating takes place in the late winter, and pups are born in sheltered dens in the early spring with litter sizes averaging around five, although those of the SNRF tend to have two to three pups (Johnson and Harris 2000, FWS 2018b). Den sites include rock piles at cliff and slope bases. Pups are weaned by 10 weeks and will disperse in the early fall of the same year; some individuals have been observed remaining with their parents and will help with the next litter (FWS 2018b).

Habitat and Range

The historic range of SNRF includes high-elevation areas of the Sierra Nevada from Tulare County north to Sierra County and may include some areas of Nevada near Lake Tahoe (FWS 2018b). There has been a significant contraction in range and overall decline in population due to trapping in the early- to mid-1900s; the range now covers from the Sierra Crest near Arnot Peak south into Yosemite National Park. Throughout their current range, the Sierra Nevada DPS of SNRF occurs primarily in subalpine habitat that consists of high-elevation meadows, rocky areas, and woodlands comprised of mountain hemlock (*Tsuga mertensiana*), whitebark pine, and lodgepole pine (*Pinus contorta*). The SNRF is highly associated with lands under federal jurisdiction such as National Forest and National Park systems. Breeding SNRF have home ranges that average around 2,249 acres, while nonbreeding individuals have displayed average home ranges of up to about 7,370 acres. The species typically occurs in elevations ranging from approximately 8,530 to 11,480 feet, but have been observed in habitats as low as Elevation 6,000 feet (FWS 2018b, 2026c). The SNRF may also utilize higher elevation forested habitats (above 11,480 feet) as movement and dispersal corridors (FWS 2018b).

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Suitable habitat for the SNRF may occur within the FERC Project Boundary at higher elevation reaches near New Spicer Meadow Reservoir where suitable subalpine woodlands are present. While the FERC Project Boundary is not wholly within the delineated elevation range of the SNRF, parts of the Project that are above Elevation 5,900 feet and near suitable habitat may be within the home range of individuals and be used as movement corridors.

There are approximately 15 documented occurrences of SNRF within 10 miles of the FERC Project Boundary to the northeast and southeast, which all lie within the home range potential (CDFW 2026a). These occurrences are all presumed extant with one dated 1990 and the remainer from 2011. Within 15 miles south of the Project, there is an additional occurrence that is presumed to be SNRF recorded at approximately 6,600 feet in elevation (CDFW 2026a).

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Pre-Application Document

Endangered Species Act-Listed Species

Attachment 3.6A IPaC Resource List

North Fork Stanislaus River Hydroelectric Project
FERC Project No. 2409

Prepared by:
Calaveras County Water District

September 2026

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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

Alpine , Calaveras , and Tuolumne counties, 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 species[1] 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 Fisheries[2]).

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.

---

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
Gray Wolf Canis lupus There is **final** critical habitat for this species. https://ecos.fws.gov/ecp/species/4488	Endangered
North American Wolverine Gulo gulo luscus Wherever found This species only needs to be considered if the following condition applies: • Species may be present based on transient occurrence as it moves through or too suitable habitat. Effects should be considered to species and projects should consult with the Service, however, depending on the project, consultation may not be necessary. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5123	Threatened
Sierra Nevada Red Fox Vulpes vulpes necator No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4252	Endangered

Birds

NAME	STATUS
California Spotted Owl Strix occidentalis occidentalis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7266	Proposed Threatened

NOT FOR CONSULTATION

Reptiles

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

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened
Foothill Yellow-legged Frog Rana boylii There is **proposed** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/5133	Endangered
Sierra Nevada Yellow-legged Frog Rana sierrae Wherever found There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/9529	Endangered
Yosemite Toad Anaxyrus canorus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7255	Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

Conifers and Cycads

NAME	STATUS
Whitebark Pine Pinus albicaulis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1748	Threatened

Critical habitats

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

This location overlaps the critical habitat for the following species:

NAME	TYPE
Foothill Yellow-legged Frog Rana boylii https://ecos.fws.gov/ecp/species/5133#crithab	Proposed
Sierra Nevada Yellow-legged Frog Rana sierrae https://ecos.fws.gov/ecp/species/9529#crithab	Final

NOT FOR CONSULTATION

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

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 avoidance and minimization 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 Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

Review the FAQs
The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus 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 Aquila chrysaetos 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 Dec 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 (■)

NOT FOR CONSULTATION

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.

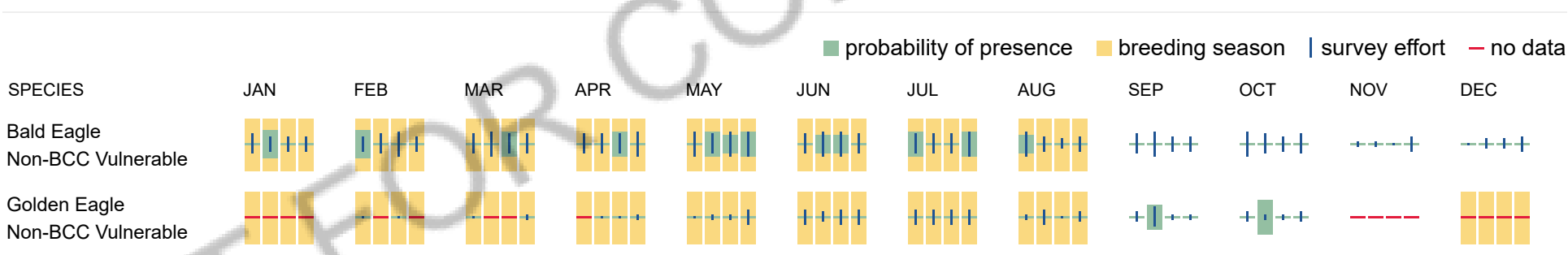
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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.



Bald & Golden Eagles FAQs

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 an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report
On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). 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 line or no data line (red horizontal) 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 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 and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are 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 resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), 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.

Interpreting the Probability of Presence Graphs

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 taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

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

NOT FOR CONSULTATION

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.

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.

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.

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.

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.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

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 avoidance and minimization measures for birds
- 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

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases birds of concern, including Birds of Conservation Concern (BCC), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the Nationwide avoidance and minimization measures for birds document, and any other project-specific avoidance and minimization measures suggested at the link Measures for avoiding and minimizing impacts to birds for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles document, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

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.

Review the FAQs
The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
American Dipper Cinclus mexicanus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Aug 21

NOT FOR CONSULTATION

Bald Eagle Haliaeetus leucocephalus — 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.

Black-throated Gray Warbler Setophaga nigrescens — Breeds May 1 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

California Gull Larus californicus — Breeds Mar 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

California Thrasher Toxostoma redivivum — Breeds Jan 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Calliope Hummingbird Selasphorus calliope — Breeds May 1 to Aug 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9526

Cassin's Finch Haemorhous cassinii — Breeds May 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/9462

Evening Grosbeak Coccothraustes vespertinus — Breeds May 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Golden Eagle Aquila chrysaetos — Breeds Dec 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

Hermit Warbler Setophaga occidentalis — Breeds May 5 to Jul 15

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Lewis's Woodpecker Melanerpes lewis — Breeds Apr 20 to Sep 30

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9408

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

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

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

NOT FOR CONSULTATION

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.

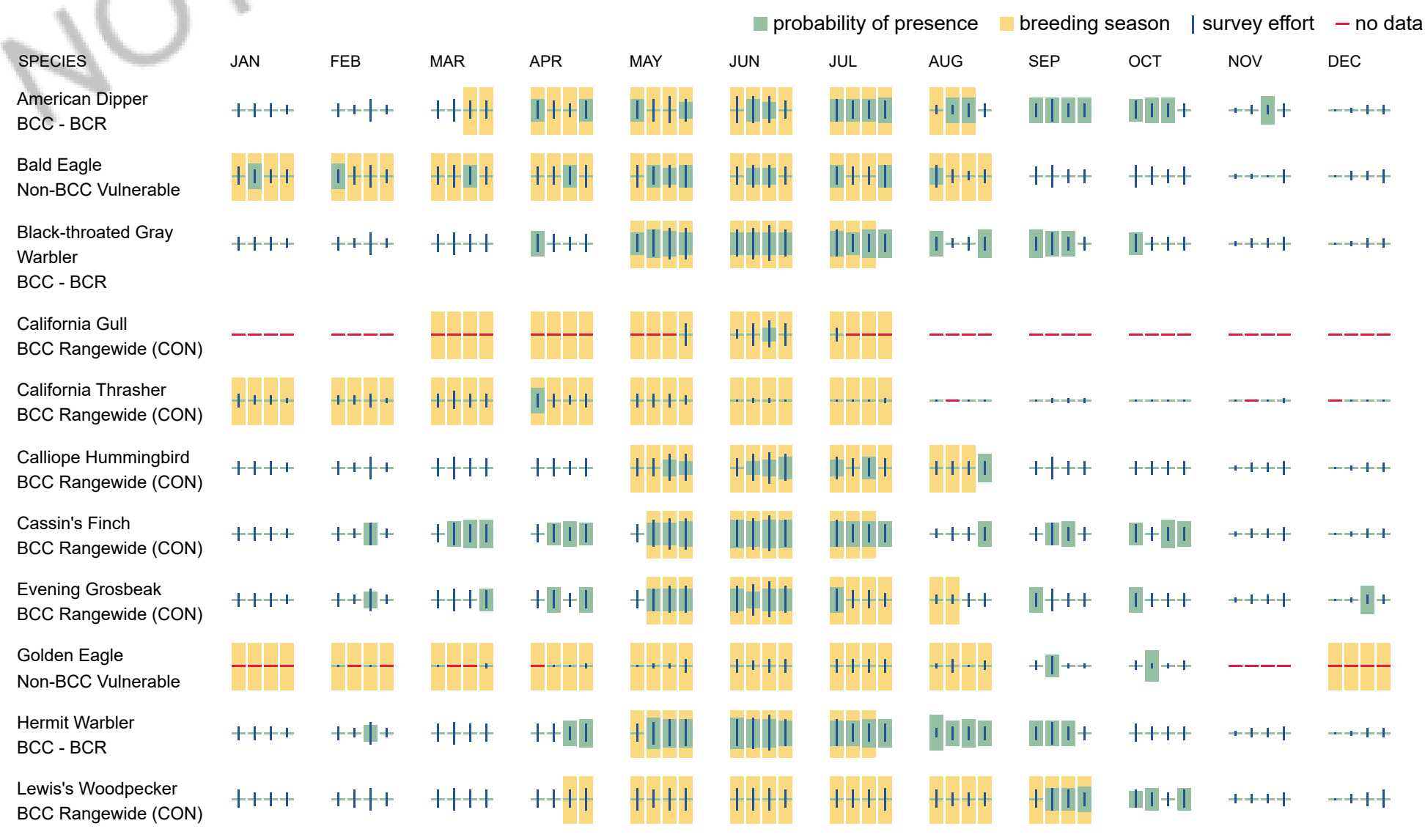
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

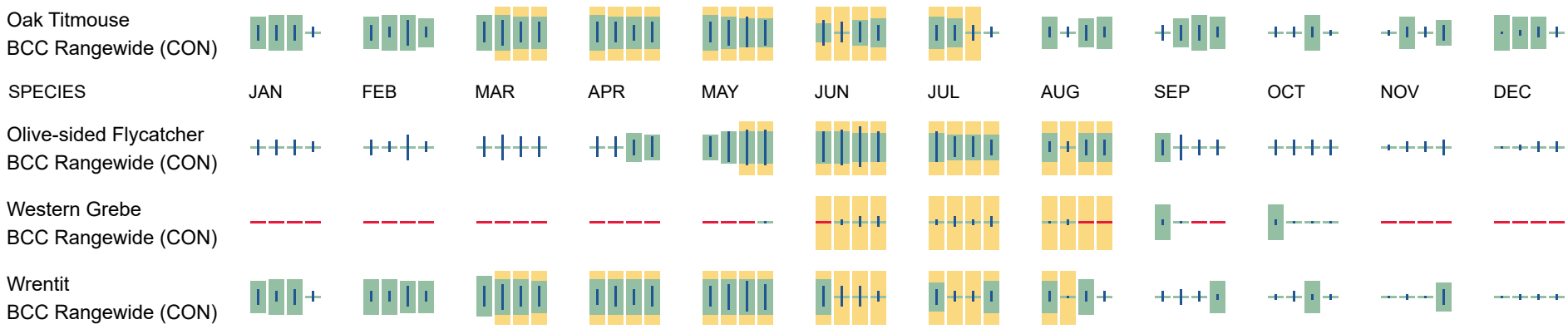
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

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.

NOT FOR CONSULTATION





Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed 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 Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as “Vulnerable”. See the FAQ “What are the levels of concern for migratory birds?” for more information on the levels of concern covered in the IPaC migratory bird species list.

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) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection 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, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

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 to 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 resident), you may query your location using the RAIL Tool and view 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 IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), 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 Bald and Golden Eagle Protection 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 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 BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ “Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds”.

Details about birds that are potentially affected by offshore projects

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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.

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 look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). 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 does not represent all birds present in your project area. 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 and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
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 taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

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

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.

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.

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.

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.

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.

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For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

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 tuberficid 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.

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3.7 Recreation

Per 18 C.F.R. Section § 5.6(d)(viii), this section discusses recreational resources that could be affected by the Project. This section includes text description illustrated by maps of existing recreational facilities, type of activity supported, location, capacity, ownership and management; current recreational use of project lands and waters compared to facility or resource capacity; existing shoreline buffer zones within the Project Boundary; and current and future recreation needs identified in current State Comprehensive Outdoor Recreation Plans, other applicable plans on file with the Commission, or other relevant local, state, or regional conservation and recreation plans.

This section describes the existing recreational opportunities, resources, and uses within the FERC Project Boundary and Vicinity. This section is divided into nine subsections. Section 3.7.1 details existing Project and non-Project recreation facilities within the FERC Project Boundary. Section 3.7.2 discusses current recreational use of Project lands and waters. Section 3.7.3 includes information on whitewater boating. Section 3.7.4 discusses shoreline buffer zones. Section 3.7.5 details recreational goals and needs. Section 3.7.6 outlines the Shoreline Management Plan and policy. Section 3.7.7 details the designated scenic and protected river segments. Section 3.7.8 discusses regional recreation areas near the Project.

The Project is located on the west slope of the Sierra Nevada in California in the NFSR basin in Calaveras, Tuolumne, and Alpine counties with portions on federal lands. The federal lands are managed by the Forest Service as part of the STF; the BLM as part of the Sierra Resource Management Area; and the BOR as part of the New Melones Reservoir Area. Regionally, the California State Parks and the Forest Service provide recreational opportunities.

3.7.1 Existing Recreation Facilities

This section details the Project and non-Project recreation facilities located within the FERC Project Boundary.

3.7.1.1 Project Recreation Facilities

As a requirement of the FERC Project license, CCWD developed three recreation facilities on the western and northwestern shore of New Spicer Meadow Reservoir at the New Spicer Meadow Reservoir Recreation Area. These facilities are the New Spicer Meadow Reservoir Campground, Boat Launch, and Group Campground. The Project recreation facilities are located on National Forest System (NFS) land; however, CCWD owns all the improvements (i.e., constructed facilities) at each Project recreation facility.

New Spicer Meadow Reservoir

New Spicer Meadow Reservoir and New Spicer Meadow Reservoir Recreation Area are located approximately 9 miles east of Highway 4. Vehicle access to the reservoir occurs via the paved Spicer Meadow Reservoir Road (Forest Service Route 7N01), which provides access to the

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western shoreline of the reservoir near the dam. Access to the rest of the reservoir shoreline occurs via the reservoir (motorized and non-motorized boating) and non-project Forest Service trails. New Spicer Meadow Reservoir provides a variety of recreational opportunities, including camping, hiking, fishing, boating, swimming, and wildlife viewing/sightseeing. The reservoir supports motorized and non-motorized boating. However, motorized boating is restricted in the Highland Creek arm approximately 3 miles upstream from the dam where the Carson-Iceberg Wilderness approaches the reservoir shoreline. Camping in the New Spicer Meadow Reservoir Recreation Area is allowed in designated sites only.

In general, New Spicer Meadow Reservoir is accessible from early June through early October depending on the snowpack, weather, and road access conditions. The public recreation facilities are generally open during this period, although the opening dates have the most variability.

In 2026, CCWD conducted an inventory of the recreation facilities at New Spicer Meadow Reservoir, which included an evaluation of the facilities' condition and compliance with current accessibility standards.[1] CCWD has included a summary of the inventory, condition, and accessibility evaluations in the following sections (Table 3.7-1).

New Spicer Meadow Reservoir Campground

The campground consists of 60 campsites, including 52 single campsites and 4 double campsites. Each campsite consists of a campfire ring, picnic table, and a paved vehicle parking spur. Nearly half of the campsites also include a food storage locker. The facility also includes paved circulation roads, four vault restrooms (2 stalls each), drinking water hydrants, dumpsters, site signage, and an entrance station with an information kiosk. A paved pathway connects to the New Spicer Meadow Boat Launch and provides access to the shoreline. The campground is available for reservation on the Recreation.gov website for a fee ($30/night for a single site, $60/night for a double site in 2026).

Overall, based on CCWD's site inventory in 2026, the facility is in fair-to-good condition and does not meet current FSORAG/ABAAS accessibility standards. Refer to Table 3.7-1 for a detailed summary of CCWD's 2026 inventory, condition, and accessibility compliance evaluation at this facility. Figure 3.7-1 provides representative photographs of the facility's primary facilities and amenities.

[1] The Project recreation facilities are all located on National Forest System lands managed by the STF. As such, the applicable accessibility standards are the Forest Service Outdoor Recreation Accessibility Guidelines or FSORAG (Forest Service 2013) and the United States Architectural Barriers Act Accessibility Standards or ABAAS (U.S. Access Board 2015) for features that are not covered in the FSORAG.

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Table 3.7-1. North Fork Stanislaus River Project recreation facility inventory, condition, and accessibility evaluation summary, 2026.

Facility	Inventory			Condition[1]	Accessibility[2]
New Spicer Meadow Campground	Campsites	Summary	60 campsites (52 single sites, 4 double sites); each with table, fire ring and 1-2 tent pads; 32 sites with food storage lockers	Good	Inaccessible
		Tables	1 wood table per site	Fair (most), Poor (some)	Inaccessible
		Fire Ring	1 steel fire ring per site, models vary from rectangular models to circular (most low to ground)	Good	Inaccessible
		Food Locker	1 metal locker at 32 campsites	Fair-Poor	Inaccessible
		Vehicle Spur	Paved asphalt spur per site (28-48 feet long, 9-12 feet wide), wood post and/or rock vehicle barriers	Good (most), Fair (some)	Inaccessible
		Site Sign	1 wood sign per site, single wood post	Good	N/A
	Roads		Paved asphalt; one, 2-way entrance segment (24 feet wide), two, 1-way loop segments (10-12 feet wide); wood/rock barriers	Good	--
	Restrooms		4 vault buildings (2 stalls each), concrete block construction, asphalt shingle roof, information board at each	Fair-Good	Inaccessible
	Signs		1 entrance sign, 4 road/directional signs	Good	Inaccessible
	Drinking Water		9 hydrants, hand pump-style lever, low to ground	Fair	Inaccessible
	Dumpsters		5 dumpsters (5 cubic yards), animal-resistant latch, asphalt approach	Excellent	Accessible
	Entrance Station		Paved parking spur, 2-panel information kiosk on wood posts, fee tube	Good	Inaccessible
	Overall		**--**	**Fair-Good**	**Inaccessible**
New Spicer Meadow Group Campground	Campsites	Summary	1 group campsite with group living space/shelter (tables, barbecue grill, food lockers) with group fire ring area, campsite parking spurs, and overflow parking	Good	Inaccessible
		Table	5 total, all wood and wood top/metal base models	Fair-Good	Inaccessible
		Fire Ring	1 large, rock fire ring, 5 wood benches	Poor	Inaccessible
		Food Locker	2 metal lockers at group living area/shelter	Fair	Inaccessible
		Vehicle Spur	5 camping spurs, paved asphalt, 4 spurs for 1 vehicle, 1 spur for 3 vehicles	Good	Inaccessible
		Site Sign	None	N/A	N/A
	Parking Area		Paved asphalt, overflow parking for 16 single vehicles	Good	Inaccessible
	Roads		Paved asphalt; one, 2-way entrance segment (24 feet wide), two, 1-way loop segments (10-12 feet wide); wood/rock barriers	Good	--
	Restroom		1 vault buildings (2 stalls), concrete block construction, asphalt shingle roof, information board	Good	Inaccessible
	Sign		1 information board, 1 road sign	Good	Inaccessible
	Drinking Water		3 hydrants, hand pump-style lever, low to ground; 1 water fountain	Fair (hydrants), Good (fountain)	Inaccessible
	Dumpster		1 dumpster (5 cubic yards), animal-resistant latch, asphalt approach	Excellent	Accessible
	Entrance Station		None	N/A	N/A
	Overall		**--**	**Good**	**Inaccessible**

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Table 3.7-1. (Continued).

Facility	Inventory		Condition[1]	Accessibility[2]
New Spicer Meadow Boat Launch	Parking Area	Paved asphalt, 3 lots, 2 lots for vehicles with trailers (52 spaces), 1 lot for single vehicles (20 spaces including 2 accessible spaces)	Good	Inaccessible
	Road	Paved asphalt, 2-way entrance road (24 ft. wide) from Spicer Reservoir Road, 1-way circulation loop road (20 ft. wide)	Good	Inaccessible
	Boat Ramp	2-lane (28 ft. wide) concrete ramp with grooves	Good	N/A
	Boat Dock	Floating courtesy dock (60 ft. long, 6 ft. wide) with gangway (10 ft. long, 3 ft wide with railings)	Good	Inaccessible
	Picnic Area	2 picnic sites; 1 site with asphalt path, asphalt picnic site surface, and pedestal grill; 1 site with wood table only (access via dirt surface trail)	Fair	Inaccessible
	Restroom	1 vault buildings (2 stalls), concrete block construction, asphalt shingle roof, information board	N/A	N/A
	Entrance Station	1 large single-panel information board with aquatic invasive information and regulations, 4 smaller single-panel information boards with regulations, map, and site information	Good	Inaccessible
	Signs	1 entrance sign, 4 road/traffic signs	Good	N/A
	Trash	2 dumpsters (5 cubic yards), animal-resistant latch, asphalt approach	Excellent	Accessible
	Other	1 fish cleaning station with concrete base, metal sinks and hardware, concrete access path to station	Good	Inaccessible
		Paved asphalt trail from vehicle with trailer parking area to the campground, 3-4 ft. wide	Fair-Good	Inaccessible
	Overall	**--**	**Good**	**Inaccessible**

1 Facility Condition definitions: Poor = needs Immediate Rehabilitation; Fair = rehabilitation required within 5 years; Good = no rehabilitation required within the next 5-10 years; and Excellent = rehabilitation required beyond 10 years.

2 Facility Accessibility definitions: Inaccessible = little or no consideration for accessibility; clearly not in compliance with current FSORAG/ABAAS standards. Partially Accessible = some accessible facilities, but in disrepair or not up to current FSORAG/ABAAS standards; Accessible = high quality of accessibility; facilities appear fully consistent with current FSORAG/ABAAS standards.

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Typical Campsite



Restroom



Vehicle Spur



Table



Water Hydrant



Food Storage Locker



Information Board



Fire Rings

Figure 3.7-1. Representative photographs of New Spicer Meadow Campground.

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New Spicer Meadow Reservoir Group Campground

The group campground is located approximately 0.5 mile south of the main campground along Forest Service Route 7N01. The campground consists of a single group campsite for up to 60 people. The facility includes five camping parking spurs (7 vehicles), an overflow parking area (16 single vehicles), a vault restroom (2 stalls), drinking water hydrants, dumpster, site signs/visitor information, and a one-way paved circulation loop road. The group living area includes a large rock fire ring with benches, five picnic tables, and a barbecue. The campground is available for reservation on the Recreation.gov website for a fee ($200 per night in 2026).

Overall, based on CCWD's site inventory in 2026, the facility is in good condition and does not meet current FSORAG/ABAAS accessibility standards. Refer to Table 3.7-1 for a summary of CCWD's 2026 inventory, condition, and accessibility compliance evaluation at this facility. Figure 3.7-2 provides representative photographs of the facility's primary facilities and amenities.

New Spicer Meadow Reservoir Boat Launch

The facility consists of a launch ramp, picnic area, parking areas, and restroom. The launch ramp is a two-lane, concrete ramp with a floating courtesy dock. The paved parking area consists of 52 spaces for vehicles with a trailer and 20 spaces for single vehicles. The facility also includes a vault restroom (2 stalls), two dumpsters, site signage, and an entrance station with a visitor information kiosk at the top of the ramp. The picnic area is adjacent to the single vehicle parking area along the reservoir shoreline and includes two picnic tables along the shoreline.

Overall, based on CCWD's site inventory in 2026, the facility is in good condition and does not meet current FSORAG/ABAAS accessibility standards. Refer to Table 3.7-1 for a summary of CCWD's 2026 inventory, condition, and accessibility compliance evaluation at this facility. Figure 3.7-3 provides representative photographs of the facility's primary facilities and amenities.

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Group Campfire Area



Group Living Area / Shelter



Barbecue



Food Storage Lockers



Campsite



Dumpster



Restroom



Water Hydrant



Water Fountain

Figure 3.7-2. Representative photographs of New Spicer Meadow Reservoir Group Campground.

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Parking Areas (vehicle with trailer spaces)



Day-use Parking Area (single vehicles)



Launch Ramp

Figure 3.7-3. Representative photographs of New Spicer Meadow Boat Launch.

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Fish Cleaning Station



Picnic Site



Information Boards



Restroom



Entrance Sign

Figure 3.7-3. (Continued).

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3.7.1.2 Non-Project Recreation Facilities

There are two short segments of non-Project recreation trails within the FERC Project Boundary: Highland Creek and Dardanelle Creek Trails, both located at the upstream end of New Spicer Meadow Reservoir on the Highland Creek arm.

Highland Creek Trail

The Highland Creek Trail (Forest Service Trail # 20E04) is a 17-mile-long trail for non-motorized uses from the Silver Valley Trailhead at Lake Alpine that traverses the Highland Creek arm of New Spicer Meadow Reservoir. Beyond New Spicer Meadow Reservoir, the trail follows the Highland Creek canyon before terminating at the Highland Creek Trailhead at Highland Lakes (Forest Service 2026a).

Dardanelle Creek Trail

The Dardanelle Creek Trail (Forest Service Trail # 91E05) is a 3-mile-long trail for non-motorized uses that connects the Highland Creek Trail to the Sword Lake Trail on the south side of the Highland Creek arm of the New Spicer Meadow Reservoir on federal land managed by the STF (Forest Service 2026a).

3.7.2 Current Recreational Use of Project Lands and Waters

This section describes recreational use within the FERC Project Boundary.

3.7.2.1 Overall Use and Site Occupancy

The Northern California Power Association (NCPA) has recorded data for the New Spicer Meadow Recreation Area from 2014 through 2025 for the New Spicer Meadow Reservoir Family Campground, Group Campground and Boat Launch. Table 3.7-2 summarizes the site occupancy (% capacity) and total users for this time period. For the 12-year time period, on average, the family campground (60 sites) occupancy was 37 percent (maximum of 59%) and 9,045 total users (maximum of 14,219 users). On average, the group campground (1 site) occupancy was 72 percent (maximum of 98%) and 2,164 total users (maximum of 3,270 users). The boat launch parking area (52 spaces) average occupancy was 36 percent (maximum of 62%) and 9,330 total users (maximum of 14,727 users).

Tables 3.7-3 through 3.7-5 provide a detailed summary of the percent capacity at each of the Project recreation sites (family campground, group campground, and boat launch) for the same time period (2014–2025). The use is summarized by weekday, weekend days, and overall as well as the number of days the site was at 90 percent or higher capacity. Notably, the weekend day-use recorded by the NCPA includes holiday weekend days.

When examining site occupancy by month, all three recreation sites show a typical bell-shaped curve of recreation use with use highest in the month of July, lowest in the shoulder months of May and October and tapering off in the summer months before and after July.

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Table 3.7-2. Summary of recreation site occupancy and use at Project recreation sites at New Spicer Meadow Reservoir, 2014–2025.

Year	Family Campground (60 sites)		Group Campground (1 site)		Boat Launch (52 spaces)		Total	
	Occupancy (%)	Total Users	Occupancy (%)	Total Users	Occupancy (%)	Total Users	Occupancy (%)	Total Users
2014	28	9,519	58	3,205	26	9,759	n/a	22,483
2015	27	9,788	61	3,270	15	4,878	n/a	17,936
2016	34	10,012	61	2,731	32	10,278	n/a	23,021
2017	59	6,416	68	1,352	39	9,066	n/a	16,834
2018	38	9,216	74	1,937	27	6,789	n/a	17,942
2019	46	8,955	90	2,537	42	10,710	n/a	22,202
2020	53	14,219	73	2,984	62	14,727	n/a	31,930
2021	30	7,544	98	2,031	36	8,247	n/a	17,822
2022	33	9,306	78	2,197	29	8,409	n/a	19,912
2023	41	8,898	74	1,667	47	10,434	n/a	20,999
2024	25	3,712	69	1,700	no data	no data	n/a	5,412
2025	29	10,956	62	354	no data	no data	n/a	11,310
Average	37	9,045	72	2,164	36	9,330	n/a	18,984
Maximum	59	14,219	98	3,270	62	14,727	n/a	31,930

Source: NCPA 2014-2025

3.7.2.2 Individual Site Occupancy

For 12-year period (2014-2025), the New Spicer Meadow Reservoir Campground average occupancy was 36 percent overall, 55 percent on weekend days with an average of 9.6 days at 90 percent occupancy or higher. NCPA records site occupancy at these facilities and provides the data to CCWD. NCPA's occupancy data includes holiday weekend occupancy with the "weekend" occupancy (i.e., holiday occupancy is not separated out). Overall, there is no trend in site occupancy since 2014; annual occupancy has increased and decreased over the 12-year period; the highest annual occupancy was in 2020 (53%) during the pandemic.

Table 3.7-3. Occupancy by month and day type for New Spicer Meadow Reservoir Family Campground, 2014–2025.

Year (Open Season)	Occupancy Type	AVERAGE OCCUPANCY (%)						
		May	June	July	August	September	October	Total
2014 (5/2–10/14)	Overall	20%	39%	54%	32%	10%	8%	**29%**
	Weekend[1]	24%	61%	90%	44%	19%	12%	**44%**
	Days at or above 90%	0	0	6	0	0	0	**6**
2015 (5/18–10/13)	Overall	19%	41%	47%	32%	14%	8%	**32%**
	Weekend[1]	34%	58%	90%	47%	17%	8%	**49%**
	Days at or above 90%	0	1	5	2	0	0	**8**
2016 (5/18–10/13)	Overall	32%	63%	63%	31%	22%	2%	**39%**
	Weekend[1]	47%	86%	83%	54%	29%	5%	**59%**
	Days at or above 90%	0	5	5	0	0	0	**10**

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Table 3.7-3. (Continued).

2017 (6/29–10/9)	Overall	0%	27%	59%	47%	22%	10%	**41%**
	Weekend[1]	0%	31%	86%	76%	29%	24%	**61%**
	Days at or above 90%	0	0	10	2	0	0	**12**
2018 (5/25–10/7)	Overall	20%	56%	69%	19%	15%	5%	**39%**
	Weekend[1]	29%	81%	88%	32%	20%	12%	**53%**
	Days at or above 90%	0	2	7	0	0	0	**9**
2019 (6/7–9/27)	Overall	closed	54%	76%	27%	15%	closed	**46%**
	Weekend[1]	closed	71%	93%	53%	20%	closed	**61%**
	Days at or above 90%	closed	3	12	0	0	closed	**15**
2020 (6/14–10/11)	Overall	closed	66%	78%	47%	36%	8%	**53%**
	Weekend[1]	closed	76%	93%	80%	63%	N/A	**61%**
	Days at or above 90%	closed	2	8	4	2	0	**16**
2021 (5/25–9/26)	Overall	24%	29%	47%	20%	7%	closed	**31%**
	Weekend[1]	37%	53%	69%	36%	12%	closed	**47%**
	Days at or above 90%	1	4	7	4	0	closed	**16**
2022 (5/27–10/3)	Overall	20%	36%	49%	22%	25%	7%	**32%**
	Weekend[1]	29%	63%	71%	47%	32%	0%	**51%**
	Days at or above 90%	0	0	1	0	0	0	**1**
2023 (6/27–9/30)	Overall	0%	56%	64%	32%	17%	closed	**41%**
	Weekend[1]	0%	88%	85%	51%	31%	closed	**59%**
	Days at or above 90%	0	0	3	0	0	closed	**3**
2024 (no dates)	Overall	closed	22%	38%	26%	15%	0%	**25%**
	Weekend[1]	closed	no data	no data	no data	no data	no data	**no data**
	Days at or above 90%	closed	no data	no data	no data	no data	no data	**no data**
2025 (no dates)	Overall	6%	37%	59%	38%	21%	1%	**29%**
	Weekend[1]	no data	no data	no data	no data	no data	no data	**no data**
	Days at or above 90%	no data	no data	no data	no data	no data	no data	**no data**
Period Average	Overall	20%	44%	59%	31%	18%	6%	**36%**
	Weekend[1]	33%	67%	85%	52%	27%	10%	**55%**
	Days at or above 90%	0.2	1.7	6.4	1.2	0.2	0.0	**9.6**

Source: NCPA 2014-2025
[1] The NCPA recreation use data includes holiday weekends in the "weekend" day data.

From 2014 through 2025, the New Spicer Meadow Reservoir Group Campground (1 group campsite) average occupancy was 74 percent overall. Occupancy levels were highest during the peak summer months of June through August when average occupancy ranged between 84 and 94 percent.

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Table 3.7-4. Occupancy by month for New Spicer Meadow Reservoir Group Campground, 2014–2025.

Year (Open Season)	Parameter	SITE OCCUPANCY DATA						
		May	June	July	August	September	October	Total
2014 (5/2–10/14)	Days Occupied	5	17	26	26	17	6	**97**
	Occupancy (%)	17%	57%	84%	84%	57%	43%	**58%**
2015 (5/18–10/13)	Days Occupied	6	29	29	28	9	1	**102**
	Occupancy (%)	46%	83%	88%	80%	33%	14%	**68%**
2016 (5/18–10/13)	Days Occupied	7	24	35	28	7	0	**101**
	Occupancy (%)	39%	86%	100%	100%	25%	0%	**67%**
2017 (6/29–10/9)	Days Occupied	closed	3	32	24	8	3	**70**
	Occupancy (%)	closed	100%	91%	86%	29%	38%	**69%**
2018 (5/25–10/7)	Days Occupied	2	28	33	23	13	1	**100**
	Occupancy (%)	22%	100%	94%	82%	46%	13%	**74%**
2019 (6/7–9/27)	Days Occupied	closed	23	31	28	19	closed	**101**
	Occupancy (%)	closed	100%	100%	90%	70%	closed	**90%**
2020 (6/14–10/11)	Days Occupied	closed	11	34	28	4	0	**77**
	Occupancy (%)	closed	79%	100%	97%	31%	0%	**73%**
2021 (5/25–9/26)	Days Occupied	9	28	28	28	7	closed	**100**
	Occupancy (%)	75%	100%	100%	97%	88%	closed	**95%**
2022 (5/27–10/3)	Days Occupied	5	19	35	28	15	0	**102**
	Occupancy (%)	50%	68%	100%	100%	54%	0%	**78%**
2023 (6/27–9/30)	Days Occupied	closed	5	35	20	11	closed	**71**
	Occupancy (%)	closed	100%	100%	71%	39%	closed	**74%**
2024 (no dates)	Days Occupied	closed	13	23	27	22	closed	**85**
	Occupancy (%)	closed	43%	74%	87%	71%	closed	**69%**
2025 (no dates)	Days Occupied	2	26	30	28	21	closed	**79**
	Occupancy (%)	6%	87%	97%	90%	70%	closed	**69%**
Period Average	**Days Occupied**	5	19	31	26	13	2	**93**
	Occupancy (%)	36%	84%	94%	89%	51%	15%	**74%**

Source: NCPA 2014-2025
[1] The NCPA recreation use data includes holiday weekends in the "weekend" day data.

The average occupancy at the New Spicer Meadow Reservoir Boat Launch parking area was 30 percent overall, 39 percent on weekend days, and averaged 5.6 days at 90 percent occupancy or higher over the time period. There is no clear trend of site occupancy at the boat launch parking area since 2014 as the average annual occupancy has increased and decreased repeatedly over the period. The highest average annual occupancy occurred in 2020 (62%) during the pandemic.

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Table 3.7-5. Occupancy by month and day type for New Spicer Meadow Reservoir Boat Launch Parking, 2014–2025.

Year (Open Season)	Occupancy Type	OCCUPANCY DATA						
		May	June	July	August	September	October	Total
2014 (5/2–10/14)	Overall	24%	32%	42%	26%	14%	12%	**26%**
	Weekend[1]	40%	54%	66%	28%	16%	16%	**38%**
	Days at or above 90%	1	1	1	0	0	0	**3**
2015 (5/18–10/13)	Overall	16%	14%	26%	16%	6%	6%	**14%**
	Weekend[1]	22%	24%	34%	22%	8%	6%	**22%**
	Days at or above 90%	0	0	0	0	0	0	**0**
2016 (5/18–10/13)	Overall	44%	46%	42%	26%	20%	10%	**32%**
	Weekend[1]	52%	66%	46%	30%	20%	26%	**40%**
	Days at or above 90%	0	2	0	0	0	0	**2**
2017 (6/29–10/9)	Overall	0%	52%	60%	38%	20%	18%	**40%**
	Weekend[1]	0%	68%	76%	52%	26%	38%	**54%**
	Days at or above 90%	0	0	3	0	0	0	**3**
2018 (5/25–10/7)	Overall	24%	38%	40%	16%	8%	4%	**28%**
	Weekend[1]	30%	40%	54%	0%	14%	6%	**34%**
	Days at or above 90%	0	0	1	0	0	0	**1**
2019 (6/7–9/27)	Overall	0%	38%	50%	36%	38%	0%	**42%**
	Weekend[1]	0%	50%	64%	52%	30%	0%	**54%**
	Days at or above 90%	0	0	1	3	1	0	**5**
2020 (6/14–10/11)	Overall	0%	74%	92%	56%	34%	16%	**62%**
	Weekend[1]	0%	86%	124%	64%	56%	30%	**80%**
	Days at or above 90%	0	4	10	7	1	0	**22**
2021 (5/25–9/26)	Overall	46%	38%	40%	30%	16%	0%	**36%**
	Weekend[1]	68%	60%	50%	38%	40%	0%	**52%**
	Days at or above 90%	0	1	2	0	0	0	**3**
2022 (5/27–10/3)	Overall	28%	32%	36%	20%	28%	8%	**28%**
	Weekend[1]	26%	34%	48%	30%	34%	8%	**36%**
	Days at or above 90%	0	0	0	0	0	0	**0**
2023 (6/27–9/30)	Overall	0%	88%	82%	26%	22%	8%	**48%**
	Weekend[1]	0%	196%	92%	28%	28%	8%	**56%**
	Days at or above 90%	0	2	15	0	0	0	**17**
2024	Overall	no data						
	Weekend[1]							
	Days at or above 90%							
2025	Overall	no data						
	Weekend[1]							
	Days at or above 90%							
Period Average	Overall	15%	38%	43%	24%	17%	7%	**30%**
	Weekend[1]	20%	57%	55%	29%	23%	12%	**39%**
	Days at or above 90%	0.1	1.0	3.3	1.0	0.2	0.0	**5.6**

Source: NCPA 2014-2025

[1] The NCPA recreation use data includes holiday weekends in the "weekend" day data.

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3.7.3 Whitewater Boating

The NFSR downstream of the Project dams includes two whitewater boating runs: the Hell's Kitchen and McKay's Point runs. Each of these is described below.

3.7.3.1 Hell's Kitchen Run

The Hell's Kitchen run is an 11.3-mile-long run with a Class V+ whitewater difficulty rating and a boatable flow range of 300 to 600 cubic feet per second (cfs), primarily for kayaks (Holbeck and Stanley 1998). The run consists of several large drops, waterfalls, and up to five portages depending on flow levels.

The put-in for the run is at the confluence of Highland Creek and the NFSR near Camp Wolfeboro. River access occurs at a turnoff of Highway 49 followed by a one-mile hike down to the river/confluence. Take-out is located at Sourgrass Bridge and leads to the Sourgrass Recreation Area Campground via a short hike (American Whitewater [AW] 2026).

3.7.3.2 McKay's Point Run (Sourgrass Bridge to Calaveras Big Trees State Park)

The McKay's Point run is a 5-mile-long run with a Class III/IV whitewater difficulty rating (AW 2026). The boatable flow range for kayaks and small rafts is 400 to 2,000 cfs and down to 300 cfs for inflatable kayaks (AW 2026, California Creeks 2026). Three commercial rafting outfitters are currently permitted by the STF to run this river (Forest Service 2026b). The reach consists of stepped waterfalls through large granite boulders.

The put-in for this run is located off Highway 4 via Board's Crossing Road and Forest Service Route 5N02 (AW 2026). The put-in is downstream of the first rapid below Sourgrass Bridge. The take-out is located at Calaveras Big Trees State Park, which is accessed off Highway 4 at Avery via Moran Road and Forest Service Route 5N35 (AW 2026).

In addition to whitewater boating, other river recreation occurs on the NFSR in Calaveras Big Trees State Park, including swimming, wading, and fishing. Access to the NFSR in Calaveras Big Trees State Park occurs via the River Canyon Trail, a very strenuous 8-mile-long hike (roundtrip) into and out of the river canyon with an elevation change of over 1,000 feet (CDPR 2026).

3.7.4 Shoreline Buffer Zones

There are no designated shoreline buffer zones for the Project reservoirs.

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

This section summarizes the recreation-related goals and needs identified across agency management plans.

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3.7.5.1 Statewide Comprehensive Outdoor Recreation Plan

California's 2021–2025 Statewide Comprehensive Outdoor Recreation Plan (SCORP) 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 (CDPR 2020).

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. Four of the top 15 recreation activities (picnicking, wildlife viewing, swimming, and day hiking) are available within or immediately adjacent to the FERC Project Boundary. Additionally, freshwater fishing is available at the Project and ranks 17 on the list of top recreational activities in California with the highest latent demand.

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3.7.5.2 Stanislaus National Forest Land and Resource Management Plan

The STF manages public lands and opportunities in the Project Vicinity in accordance with the 1991 STF Land and Resource Management Plan (LRMP). The 1991 STF LRMP assigns a Roaded Natural, Semi-Primitive Motorized, and Semi-Primitive Non-Motorized Recreation Opportunity Spectrum (ROS) classification to the public lands managed by the STF within the FERC Project Boundary in the New Spicer Meadow Reservoir Recreation Area. Furthermore, the 1991 STF LRMP provides overall recreation guidance as part of Management Area 2 (Wild and Scenic Rivers) along the NFSR and Management Area 5 (Special Interest Areas) in Calaveras Big Trees State Park. Direction for these management areas is provided below.

Wild and Scenic Rivers

Wild and Scenic River Management Areas are preserved for their notable values and features as part of the National Wild and Scenic Rivers System. This federal classification is discussed in depth in Section 3.7.6 Shoreline Management Plan/Policy. Recreation within this Management Area follows the ordinary ROS classifications, restricting certain types or motorized vehicles for interaction with visitors. The recreation goals of the Management Area are to retain the exceptional value of the river segments and allow for public access for recreator enjoyment (Forest Service 1991).

Special Interest Areas

Special Interest Areas provide unique geologic, scenic, historical, archeological, botanic, and memorial features and are preserved to maintain the integrity of these features for their unique value and/or educational opportunities. Calaveras Big Trees State Park is a named Special Interest Area within the Project Vicinity and is preserved for its mature conifer forests. The ROS classes follow their ordinary guidelines for implementation, with an emphasis on maintaining a range of recreational experiences throughout Special Interest Areas (Forest Service 1991).

3.7.5.3 Alpine County General Plan

Alpine County is a largely seasonally reliant county, based heavily around recreation and tourism. However, there are no goals or objectives specifically guiding the county's land use regarding recreation resources.

3.7.5.4 Calaveras County General Plan

Calaveras County benefits from a wide variety of local, state, federal, public, and privately owned park and recreational facilities ranging from regional hiking, biking, and equestrian trails in the wilderness to individual playgrounds for local residents. Recreation-related goals are designated by the 2019 General Plan (Calaveras County 2019), specifically within the Land Use and Conservation and Open Space Elements. The following goals have been identified by the General Plan in order to maintain and enhance recreation resources.

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- **LU 1.7:** Future specific plans are expected to include open space, buffers, and other measures to preserve and protect biological and cultural resources, enhance public access to recreational assets, and include a diverse range of housing types including multi-family housing where appropriate.

- **LU 5.3:** Recognize the county's unique recreational, scenic, cultural, historic, and agricultural resources as strong economic generators and encourage their retention and expansion.

- **COS 6.1:** Work with the Calaveras County Parks & Recreation Committee, community organizations, and special districts to develop park and active recreation facilities, striving to provide a minimum of 3 acres of local park land for every 1,000 County residents.

- **COS 6.2:** Establish recreational facility development standards for new development.

- **COS 6.3:** Pursue partnerships with public and private entities that make the most of limited funding, share maintenance costs, provide important linkages between recreational facilities, and generally expand the quality and quantity of recreational opportunities countywide.

- **COS 6.4:** Facilitate the provision of and access to local and regional trail systems.

3.7.5.5 Tuolumne County General Plan

Tuolumne County's General Plan seeks to provide adequate, accessible recreational facilities as they are important to the social, psychological, and physical well-being of its residents, provide economic opportunities for business, and further the goals of other elements of the General Plan (Tuolumne County 2018). To achieve these goals, the General Plan has laid out policies and programs in order to preserve and expand the recreational resources available in the County. The most relevant of those policies are described below.

- **11.A.a:** Maintain and update the Recreation Master Plan, which describes the general location for regional recreation facilities, provides conceptual designs for future parks and recreational facilities, identifies desired recreational trails, estimates costs of construction, identifies potential funding sources, identifies potential management agencies, and provides the rationale establishing the need for recreational facilities in Tuolumne County.

- **11.A.e:** Maintain the amount of acreage devoted to the County of Tuolumne's regional recreational facilities by establishing a program for replacing any regional parkland that may be eliminated in the future. Such a program should establish guidelines for selecting sites for relocation of the facilities, setting time frames for replacement. and identifying possible funding mechanisms for such relocation and replacement.

- **11.A.f:** Address recreational needs of new identified communities and community plans through a recreation plan to be approved in conjunction with approvals for new communities and community plans, which includes the following:

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  - Recommendations for the amount of acreage needed to serve the population of the new community or within the community plan's boundaries using a minimum standard of 5 acres/1,000 population.

  - Recommendations for the locations and alternative locations for park sites within the boundaries based on projected acreage needs.

  - Appropriate zoning to facilitate future dedication/development of identified park sites.

  - Recommendations for maintaining proposed recreation facilities, including maintenance districts.

  - Identification of potential routes for trails to link new towns or communities into the County-wide trail system.

- **11.B.3:** Create convenient and safe opportunities for physical activity for residents of all ages and income levels.

- **11.B.8:** Provide reasonable public access to public waterways, lakes, and reservoirs in compliance with State statutes while protecting private property rights and maintaining the biological, scenic, and historical integrity of these features and lands adjacent to these features.

3.7.6 Shoreline Management Plan/Policy

There is no designated shoreline management plan included in the FERC Project license.

3.7.7 Designated Scenic and Protected River Segments

The NFSR is classified within the Nationwide Rivers Inventory (NRI). The NRI is a listing of more than 4,500 free-flowing river segments in the United States that have been identified as eligible or potentially eligible for inclusion in the National Wild and Scenic Rivers System. NRI river segments possess one or more regionally or nationally significant "outstandingly remarkable" natural or cultural values (NPS 2026). As of 2026, the NFSR has not been designated within the National Wild and Scenic Rivers System.

The nearest designated river segment is the Tuolumne Wild and Scenic River, located roughly 20 miles south of the Project. On September 27, 1984, Congress designated the Tuolumne River as Wild and Scenic due to its outstandingly remarkable values. Originating high in the Sierra Nevada on the eastern side of Yosemite National Park, the river flows westward for 62 miles before it continues into the STF. The Tuolumne River meanders through Tuolumne Meadows and then cascades through the Grand Canyon of the Tuolumne before it enters the eastern end of Hetch Hetchy Reservoir. Below O'Shaughnessy Dam, the river again is included in the National Wild and Scenic Rivers System as it continues through a low-elevation meadow and rocky gorge

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(NWSRS 2026). The designated sections of the Tuolumne River include 13 miles classified as recreational, 23 miles classified as scenic, and 47 miles classified as wild.

3.7.8 Regional Recreation Areas

Many recreation sites are located throughout the Vicinity of the NFSR, including campgrounds, parks, reservoirs, and fishing sites. The recreation sites within the STF are mostly owned and maintained by the Forest Service, except for several privately owned facilities and the Calaveras Big Trees State Park, which is owned and operated by California State Parks.

Union and Utica Reservoirs

Union and Utica reservoirs are located within the STF in Alpine County, California. The reservoirs are formed by impoundments of the NFSR and are owned and operated by the NCPA as part of the non-Project Upper Utica Project. Union Reservoir is approximately 1.25 miles long and 0.5 mile wide, and Utica Reservoir is approximately 1.5 miles long and 0.5 mile wide (NCPA 2026).

Union Reservoir East and West Campgrounds

The campgrounds on Union Reservoir are located along the southern shore of the lake in the STF. The East Campground has 12 campsites and a dirt boat launch. The West Campground has 18 campsites; however, access requires high clearance vehicles. Recreational activities at these campgrounds and Union Reservoir include non-motorized boating, canoeing, kayaking, fishing, swimming, hiking, mountain biking, hunting, and wildlife viewing (Forest Service 2026c).

Sandy Flat Campground and Rocky Point Campground

Located along the southern shore of Utica Reservoir in the STF, two campgrounds provide camping and reservoir recreation opportunities. Sandy Flat Campground has 9 campsites and Rocky Point Campground has 10 campsites. Vault restrooms and trash collection are available; however, there is no potable water at either location. Motorized boating is not available in Utica Reservoir; however, non-motorized launching is available at the Union Reservoir East Campground boat launch (Forest Service 2026c).

Spicer Sno-Park

Spicer Sno-Park is located off Highway 4 and Spicer Meadow Reservoir Road in the STF. The park provides off-road winter recreation at a trailhead parking area (60 spaces) with a vault restroom. Permits are required for snow-park recreation. Recreation activities include cross-country skiing, dog sledding, snow-play, and snowmobiling (Forest Service 2026d).

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Big Meadow Campground

This campground, located off Highway 4 in the STF, offers 68 family campsites and a group campsite. All campsites are hike-in from the designated parking areas. Common recreation activities in the Vicinity of this campground include hiking, mountain biking, horseback riding, hunting, picnicking, and wildlife viewing (Forest Service 2026e).

Sourgrass/Wa Ka Luu Hep Yoo Recreation Area

Located approximately 5 miles from Big Trees Village off Highway 4 in the STF, this recreation area provides 49 campsites including RV/trailer and walk-in tent campsites. The campground also has potable water, vault and flush toilets, showers, and trash facilities. The day-use area provides a variety of picnicking, hiking and river shore trails, and a whitewater boat launch for kayaking. Recreation available in the surrounding area includes whitewater rafting, kayaking, fishing, hiking, mountain biking, picnicking, wildlife viewing, and stargazing (Forest Service 2026f).

Golden Pines Campground

This RV resort and campground is located just off Highway 4 in Arnold, California. Overnight accommodations include RV and tent sites as well as cabins. The RV sites include full hookups (water, power, and sewer connections). All sites are available for reservation. The campground also provides laundry facilities, a general store, community hall, potable water, showers, and a pool (Golden Pines Resort 2026).

Calaveras Big Trees State Park

This park is located in Arnold, California, and is bordered on either side by the STF. Calaveras Big Trees State Park is most well-known for its groves of giant sequoia trees, offering both recreational and educational opportunities for visitors. Within the park, a visitor center and museum are available for information on the park and its history, as well as a souvenir bookstore. Picnic areas, hiking and biking trails, and general outdoor recreation are available at the park. The park includes two campgrounds (Oak Hollow and North Grove) as well as cabin rentals offering a basic kitchen, two bedrooms, and one bathroom (CDPR 2026). As noted above, river recreation opportunities also exist along the NFSR and Beaver Creek via hiking trails.

Oak Hollow Campground

Oak Hollow Campground is located approximately 4 miles into the park along the main park road. The campground consists of 55 campsites and provides RV/trailer and tent camping opportunities for a nightly fee. The campground also includes flush restrooms, showers, and potable water. Each campsite includes a picnic table, fire ring, and bear locker for a nightly fee (CDPR 2026).

North Grove Campground

This campground is located in the heart of Calaveras Big Trees, near the park entrance and within walking distance of the North Grove of giant sequoias, the Visitor Center, and the Campfire Center.

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This campground consists of 74 campsites in a forested setting encircling the North Grove Meadow. The campground provides RV/trailer and tent camping opportunities for a nightly fee. Additional facilities include flush restrooms, showers, and potable water. Each campsite includes a picnic table, fire ring, and bear locker (CDPR 2026).

New Melones Reservoir

Owned and operated by the BOR, New Melones Reservoir is an impoundment of the Stanislaus River providing 2.4 million acre-feet of water for irrigation, flood control, power generation, and recreation. Located approximately 8 miles north of Sonora, California and via Highway 49, the reservoir provides outdoor and aquatic recreation for over 600,000 visitors each year (BOR 2026). Common recreation activities on the lake include motorized and non-motorized boating, water sports, and fishing. Campgrounds at the reservoir provide overnight camping opportunities at more than 300 campsites (BOR 2026).

Carson-Iceberg Wilderness

The Carson-Iceberg Wilderness, established in 1984, is a federally designated wilderness area located along the crest of the Sierra Nevada. The wilderness spans roughly 160,000 acres and contains lands managed by both the STF and the Humboldt-Toiyabe National Forest. The area features numerous trails for recreators to explore, both on foot or horseback, as well as pristine stretches of the Carson, Stanislaus, and Mokelumne rivers. Twenty-six (26) miles of the Pacific Crest National Scenic Trail run through the wilderness, making it popular for backpackers and hikers alike. A federal wilderness permit is required for overnight stays within the wilderness, which can be obtained from any one of the ranger stations throughout the STF.

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3.8 Land Use

Per 18 C.F.R. § 5.6 (d)(3)(viii), this section includes a description of the existing land uses and opportunities within the Project Boundary. The components of this description include non-recreational land use and management within the Project Boundary and non-recreational land use and management adjacent to the Project Boundary.

This section is divided into six subsections. Section 3.8.1 identifies land ownership within the FERC Project Boundary. Section 3.8.2 details existing land use in the FERC Project Boundary. Section 3.8.3 outlines non-Project existing land use. Section 3.8.4 provides information on FERC Project-related land use permits and easements. Section 3.8.5 discusses future land use. Section 3.8.6 discusses land use-related goals and needs identified in agency management plans.

The Project is a major hydroelectric and water resource development located on the west slope of the Sierra Nevada in the NFSR Basin in Calaveras, Tuolumne, and Alpine counties, California with portions on lands of the United States managed by the Forest Service as part of the STF, the BLM as part of the Sierra Resource Management Area, and the BOR as part of the New Melones Reservoir Area. The existing FERC Project Boundary encompasses 2,376.9 acres.

The Project facilities are described in Section 1.3 and Attachment 2A, Preliminary Draft Exhibit A, *Existing Project Facilities and Features*.

3.8.1 Land Ownership within the FERC Project Boundary

The Project extends over nearly 40 miles of varied land uses and terrain, from high-elevation watersheds in Alpine County to foothill regions near Clark's Flat in Calaveras County, encompassing both public and private lands and including multiple dams, tunnels, reservoirs, and access roads. The Project is owned by CCWD and currently operated in partnership with the NCPA. This section describes existing land ownership within the FERC Project Boundary.

Large portions of the Project are located on federal lands administered by the Forest Service within the STF, where high-elevation watersheds, diversion facilities, tunnels, reservoirs, and access roads occupy National Forest System lands. Additional Project features occur on lands administered by the BLM within the Sierra Resource Management Area, which includes scattered public land parcels in the central Sierra Nevada foothills and mountains that support infrastructure, access corridors, and natural resource protection. Portions of the FERC Project Boundary also encompass lands administered by the BOR, particularly in the lower reaches of the Project near the Stanislaus River upstream of New Melones Reservoir, a component of the Central Valley Project (BOR 2023). A summary of ownership by acreage and agency is provided in Tables 3.8-1 and 3.8-2.

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CCWD, as Licensee, holds primary control of the lands necessary for Project operation and maintenance under the current FERC license. Lands within the FERC Project Boundary include facilities essential to hydropower generation and water conveyance, such as dams, reservoirs, tunnels, powerhouses, access roads, and related infrastructure. The FERC Project Boundary is intended to consist of all lands necessary for the safe operation and maintenance of the Project and other Project purposes, such as recreation, shoreline control, and protection of environmental resources. As part of relicensing, CCWD digitized the current FERC Project maps using GIS to define the FERC Project Boundary. The existing FERC Project Boundary encompasses 2,376.9 acres, of which 2,307.8 acres are federal lands and 69.1 acres are privately held lands.

Table 3.8-1. FERC Project Boundary Land Ownership (in acres).

Managing Agency	Managing Area	Area within FERC Project Boundary (acres)
Federal Lands Total		**2,307.8**
Forest Service	STF	2,289.3
BLM	Sierra Resource Management Area	8.6
BOR	New Melones Reservoir Area	9.9
Private Lands		**69.1**

Table 3.8-2. Facilities Land Use and Ownership within the FERC Project Boundary.

Facilities	Land Owner / Managing Agency
North Fork Diversion Dam Impoundment	Forest Service
North Fork Diversion Tunnel & Outlet Channel	Forest Service
New Spicer Meadow Reservoir	Forest Service
New Spicer Meadow Intake	Forest Service
New Spicer Meadow Powerhouse	Forest Service
Beaver Creek Diversion Dam Impoundment	Forest Service
Beaver Creek Diversion Tunnel & Penstock	Forest Service
McKays Point Reservoir	Forest Service
Collierville Intake & Tunnel	Forest Service, BLM, BOR
McKays Point Microturbine	Forest Service
Collierville Powerhouse	BOR
Collierville Tailrace	BOR
Recreation Facilities (Campgrounds, Boat Launch, Day Use)	Forest Service

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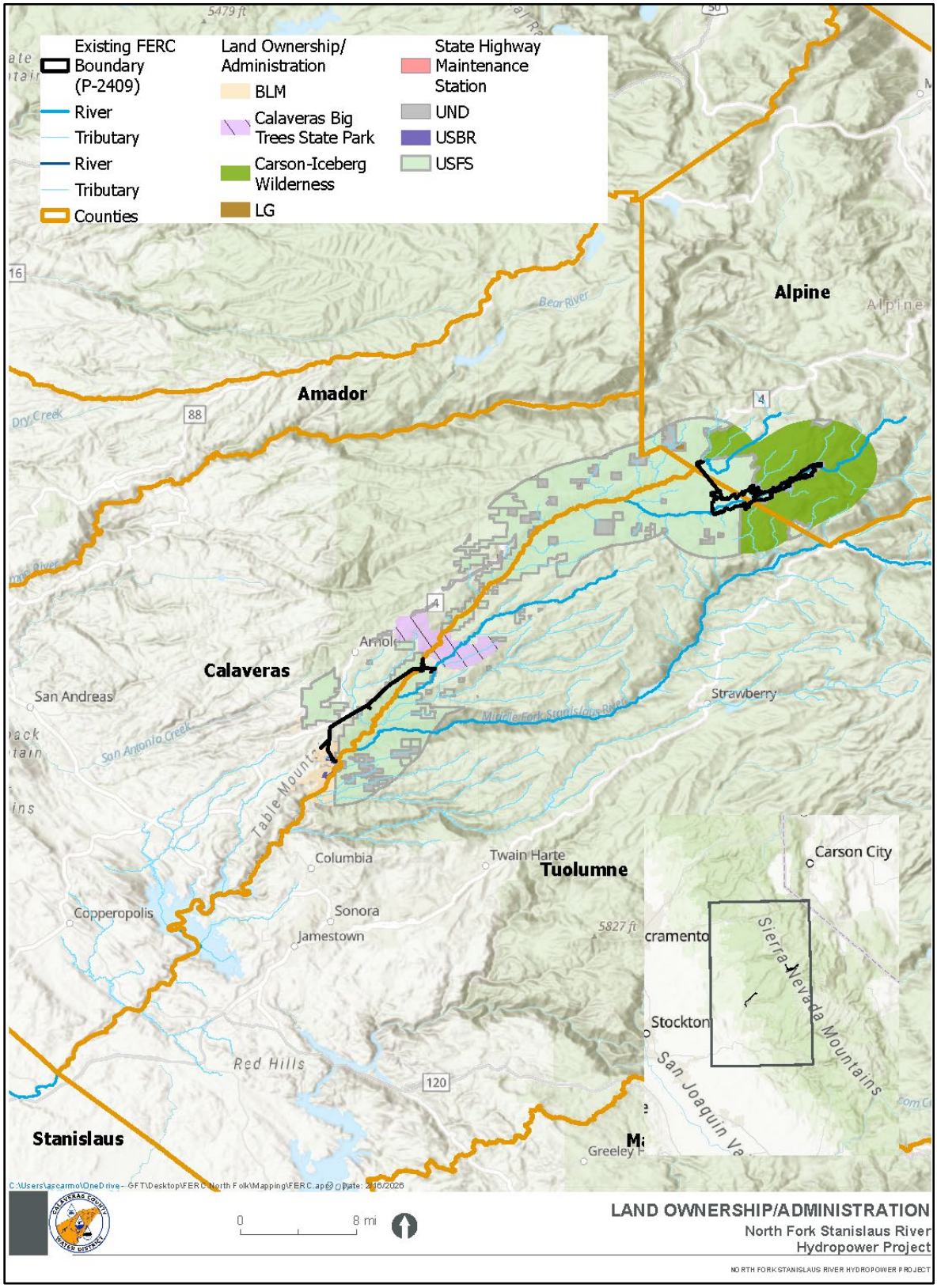


Figure 3.8-1. Land Ownership/Administration - Source: CCWD 2025.

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3.8.1.1 Forest Service Managed Lands

Forest Service managed lands in the Sierra Nevada and across California are administered as part of the National Forest System. These lands are managed under a multiple-use and sustained-yield mandate, which requires the Forest Service to balance a variety of land uses, including watershed protection, hydropower infrastructure, timber production, grazing, wildlife habitat conservation, recreation, and cultural resource protection (Forest Service 2023).

National Forest System lands are governed by Land and Resource Management Plans (Forest Plans) that establish land use allocations, management standards, and allowable activities for each national forest. These plans are prepared in accordance with the National Forest Management Act and the Forest Service Planning Rule, which require integration of ecological sustainability, public access, and economic uses into federal land management decisions (Forest Service 2012 2023).

In the Project Region, the Forest Service administers the STF, which includes extensive public land within the central Sierra Nevada that overlaps the region of the NFSR and adjacent watersheds. STF encompasses about 898,000 acres of diverse terrain across Alpine, Calaveras, Tuolumne, and Mariposa counties and supports multiple uses such as forest resource management, watershed protection, habitat conservation, and recreation (Forest Service, n.d.). Within the STF, recreation, trail systems, and resource stewardship activities are conducted under federal land management policies designed to balance public access with ecological protection and sustainable use. These Forest Service lands include numerous streams, lakes, and backcountry areas that are proximate to or intersect the Project's features.

Additionally, parts of the FERC Project Boundary are adjacent to (but not within) Carson-Iceberg Wilderness, a federally designated wilderness area in the central Sierra Nevada of California, established in 1984 and encompassing approximately 108,000 acres across Alpine and Tuolumne counties. The landscape is characterized by rugged volcanic formations, alpine meadows, conifer forests, and important river headwaters. All land within the Wilderness Boundary is publicly owned by the United States federal government and is managed by Forest Service, primarily as part of the STF, with a smaller portion administered by the Humboldt-Toiyabe National Forest. As a unit protected under the Wilderness Act of 1964, the area is managed to preserve natural conditions and ecological processes, prohibiting private ownership, development, roads, motorized equipment, logging, and mining, while allowing only low-impact recreational uses such as hiking, backpacking, horseback riding, fishing, and hunting where permitted by law (Forest Service 2025a).

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3.8.1.2 Bureau of Land Management Managed Lands

In the Project region, lands administered by the BLM are managed under the Sierra Resource Management Plan (RMP) and overseen locally by the Mother Lode Field Office. These BLM lands form a dispersed but important component of the land ownership mosaic in the central Sierra Nevada and Sierra foothills, including within Calaveras, Tuolumne, and Alpine counties where the Project is located. The Mother Lode Field Office is responsible for managing more than 230,000 acres of public land across central California, including lands that support recreation, wildlife habitat, grazing, cultural resource protection, and limited mineral and energy development (BLM, n.d).

The Sierra RMP provides the formal land-use planning framework for these BLM-administered lands. The Federal Register Record of Decision for the Sierra RMP states that the planning area covers portions of 15 counties and governs the management of approximately 230,000 acres of BLM lands within this region (BLM 2008). The RMP establishes land-use allocations, management prescriptions, and allowable uses that guide how BLM lands are administered, including designations for recreation management areas, special-status species habitat, areas of critical environmental concern, and lands available for rights-of-way and infrastructure (BLM 2008).

Within the NFSR watershed and surrounding Project Vicinity, BLM lands provide public access corridors, dispersed recreation opportunities, and habitat connectivity between larger blocks of Forest Service and state-managed lands. Management under the Sierra RMP ensures that any use of these lands, whether for recreation, utilities, or access to hydropower facilities, must be consistent with federal land use designations and environmental protection objectives established through the RMP process (BLM 2008).

3.8.1.3 Bureau of Reclamation Managed Lands

Downstream of the Project, the Stanislaus River flows into the BOR's New Melones unit of the Central Valley Project, a major federal water storage and multi-purpose reservoir system in the Sierra Nevada foothills. New Melones Reservoir is located along Highway 49 between Sonora and Angels Camp in Calaveras and Tuolumne counties and is operated by the BOR for a combination of flood control, irrigation water supply, hydropower generation, environmental flows, and recreation (BOR, n.d.). As a result, BOR administers extensive shoreline and adjacent public lands surrounding the reservoir, which form a key component of public land ownership in the lower reaches of the Stanislaus River system.

The BOR's planning information for New Melones indicates that the reservoir supports a wide range of public recreation facilities and land uses, including day-use picnic areas, multiple boat launch ramps, over 300 developed campsites, hiking and equestrian trails, and a visitor center and museum that provide interpretation and public services for visitors (BOR, n.d.). These facilities are distributed around the reservoir and along the river corridor, and they are managed to accommodate boating, fishing, swimming, camping, hiking, and wildlife viewing, which represent major land-use activities on BOR-managed lands in the region.

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Because the Collierville Powerhouse and tailrace of the Project discharge into the Stanislaus River immediately upstream of New Melones Reservoir, BOR-managed lands and waters form the downstream land-use and management context for the Project. Coordination between CCWD, BOR, and FERC therefore plays an important role in ensuring that Project operations, river flows, and shoreline uses remain compatible with the recreational, environmental, and water-supply purposes at New Melones (BOR, n.d.).

3.8.1.4 Private Lands

Approximately 69.1 acres of the FERC Project Boundary are located on privately owned lands. These lands are not under federal or state ownership. Within the FERC Project Boundary, non-federal lands necessary for the construction, operation, and maintenance of Project facilities are primarily under the control of the CCWD through fee ownership or perpetual rights of use, such as easements, rights-of-way, or land use agreements (CCWD 2025).

As documented in the Project's Annotated License Article 5, CCWD is required to acquire and maintain sufficient legal interest in all lands and waters necessary to support Project purposes (CCWD 2025). This requirement ensures that, where Project facilities are located on non-federal lands, CCWD holds either title in fee or long-term land use rights that provide continuing authority to operate and maintain Project features in accordance with the FERC license.

While private or non-federal ownership may exist within the FERC Project Boundary, these lands are generally subject to CCWD's control for Project purposes. This arrangement limits the potential for land use conflicts, supports consistent Project operations, and ensures long-term compliance with license requirements across all ownership types within the Project Area.

3.8.2 Existing Land Use – FERC Project Boundary

Land use within the FERC Project Boundary is predominantly public and resource oriented. As shown on Figure 3.8-2, the majority of lands are designated for General Forest/Timber Production and Public uses, reflecting extensive National Forest System lands and managed forest areas within Alpine, Calaveras, and Tuolumne counties. These areas support forestry, watershed protection, recreation, and other low-intensity resource management activities.

Additional portions of the FERC Project Boundary include Agricultural and Land Preserve designations, which emphasize open space, grazing, and long-term conservation of natural resources. Residential land uses are limited and occur only in small, localized areas, representing a minor component of the overall boundary. Existing land use within the FERC Project Boundary is characterized by low-density, resource management and conservation uses, with minimal urban development.

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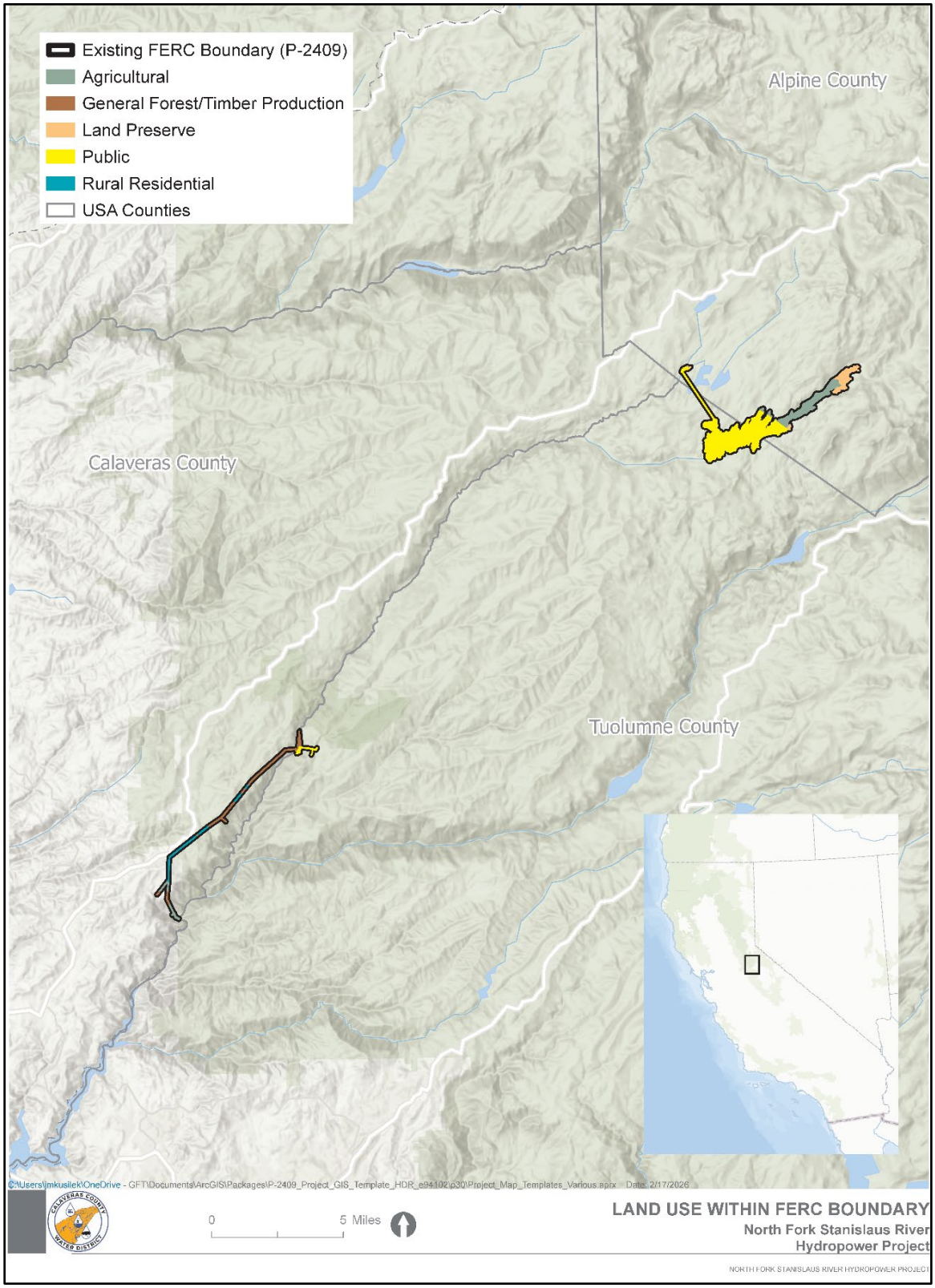


Figure 3.8-2. Existing Land Use within FERC Project Boundary - Source: Alpine County n.d.; Calaveras County 2020; Tuolumne County 2018.

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3.8.2.1 Alpine County

Approximately 1,090 acres of the existing FERC Project Boundary are located in Alpine County. Alpine County does not provide a publicly accessible, parcel-level General Plan Land Use Map that identifies specific land use designations. Accordingly, land use conditions within the Alpine County portion of the FERC Project Boundary were evaluated using the County's official zoning map and zoning code.

As shown in Figure 3.8-2, zoning within the FERC Project Boundary in Alpine County is predominantly Agricultural and Land Preserve (Alpine County, n.d.). The Agricultural districts are intended to preserve lands suitable for agricultural production, grazing, open space, and resource-based uses while limiting incompatible development. These districts typically allow low-density residential uses in conjunction with agricultural operations and emphasize the protection of natural resources and rural character (Alpine County 2024). The Land Preserve designation applies to lands intended for specific public or quasi-public uses or for limited development consistent with environmental constraints.

Although parcel-level General Plan land use designations are not publicly mapped, the zoning classifications within the FERC Project Boundary are consistent with the policy direction described in the Alpine County General Plan Land Use Element, which emphasizes conservation of natural resources, protection of watershed and open space lands, maintenance of rural character, and limited development in environmentally sensitive areas (Alpine County 2009).

3.8.2.2 Calaveras County

Approximately 140 acres of the FERC Project Boundary are located in Calaveras County. The majority of lands within the Calaveras County portion of the boundary are designated General Forest/Timber Production, reflecting managed forest lands that support timber harvesting, watershed protection, habitat conservation, and dispersed recreation (Calaveras County 2020). These areas occupy much of the upland terrain surrounding the river canyon and are consistent with the County's emphasis on long-term forest resource management.

Limited portions of the boundary intersect public land use designations, corresponding to publicly managed lands. Rural Residential land uses are minimal within the mapped FERC Project Boundary in Calaveras County and occur only in small, localized areas near existing roadways or community edges (Calaveras County 2020).

Land use within the Calaveras County portion of the FERC Project Boundary is characterized by forest management, open space conservation, and low-density rural uses, with very limited residential development. As shown in Figure 3.8-2, land use patterns within the Calaveras County portion of the Project are well established and consistent with General Plan policies emphasizing resource conservation, rural character, and focused development within existing communities.

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3.8.2.3 Tuolumne County

Approximately 1,144 acres of the FERC Project Boundary are located in Tuolumne County. Land use designations within the FERC Project Boundary include Public and Timber Production (Tuolumne County 2018).

The Public land use designation applies to land owned and managed by public agencies and recognizes that these lands are generally exempt from County land use regulations. This includes federal, state, and local agency lands such as national forests, parks, schools, utilities, and other publicly owned properties. The designation allows a broad range of public uses, including utilities, government facilities, schools, airports, libraries, recreation facilities, and resource management activities. There is no minimum parcel size or building intensity restriction under this designation (Tuolumne County 2018).

The Timber Production land use designation supports long-term timber production and forest resource management, while allowing limited, low-intensity recreational and resource-related uses. It is primarily located in eastern Tuolumne County at elevations above 3,000 feet. Permitted uses include timber operations, agriculture, mineral extraction, recreation, and public facilities. Residential development is limited to one dwelling per parcel, with a maximum density of one dwelling per 37 acres (Tuolumne County 2018).

As shown in Figure 3.8-2, land use patterns within the Tuolumne County portion of the Project are well established and consistent with General Plan policies emphasizing resource conservation, rural character, and focused development within existing communities (Tuolumne County 2018).

3.8.3 Existing Land Use – Non-Project

Non-Project land uses encompass portions of Alpine, Tuolumne, and Calaveras counties outside of the FERC Project Boundary and are generally shaped by mountainous topography and general plan policies that emphasize rural character, natural resource protection, and limited growth outside established communities. As shown in Figure 3.8-3, the Project region is characterized primarily by forested and open space lands, with limited developed areas concentrated near established communities and transportation corridors (Alpine County n.d.; Calaveras County 2020; Tuolumne County 2018).

The dominant land use designation in the Project region is General Forest/Timber Production, which occupies a substantial portion of the mapped area across all three counties. These lands reflect managed forest landscapes that support timber production, watershed protection, and related resource uses. Large areas of Open Space and Land Preserve are also present, particularly along the river corridor and in higher elevation areas, indicating lands prioritized for conservation and long-term resource management (Alpine County n.d.; Calaveras County 2020; Tuolumne County 2018).

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In the eastern portion of the Project region, Public and Recreation designations are more prominent, corresponding to publicly managed lands and reservoir-related recreational areas (Alpine County n.d.; Calaveras County 2020; Tuolumne County 2018).

More developed land use patterns occur primarily in the western and southwestern portions of the Project region, especially within Calaveras County. Here, Rural Residential areas are interspersed with smaller pockets of Commercial, Highway Services, and Industrial designations, generally clustered near established communities and transportation corridors. Agricultural lands appear in scattered locations, typically in lower-gradient foothill areas. Right-of-Way designations follow major transportation and utility corridors that traverse the region (Alpine County n.d.; Calaveras County 2020; Tuolumne County 2018).

Land use within the Project region is dominated by forest management, open space, and conservation-oriented uses, with rural residential and limited commercial development concentrated near existing community centers.

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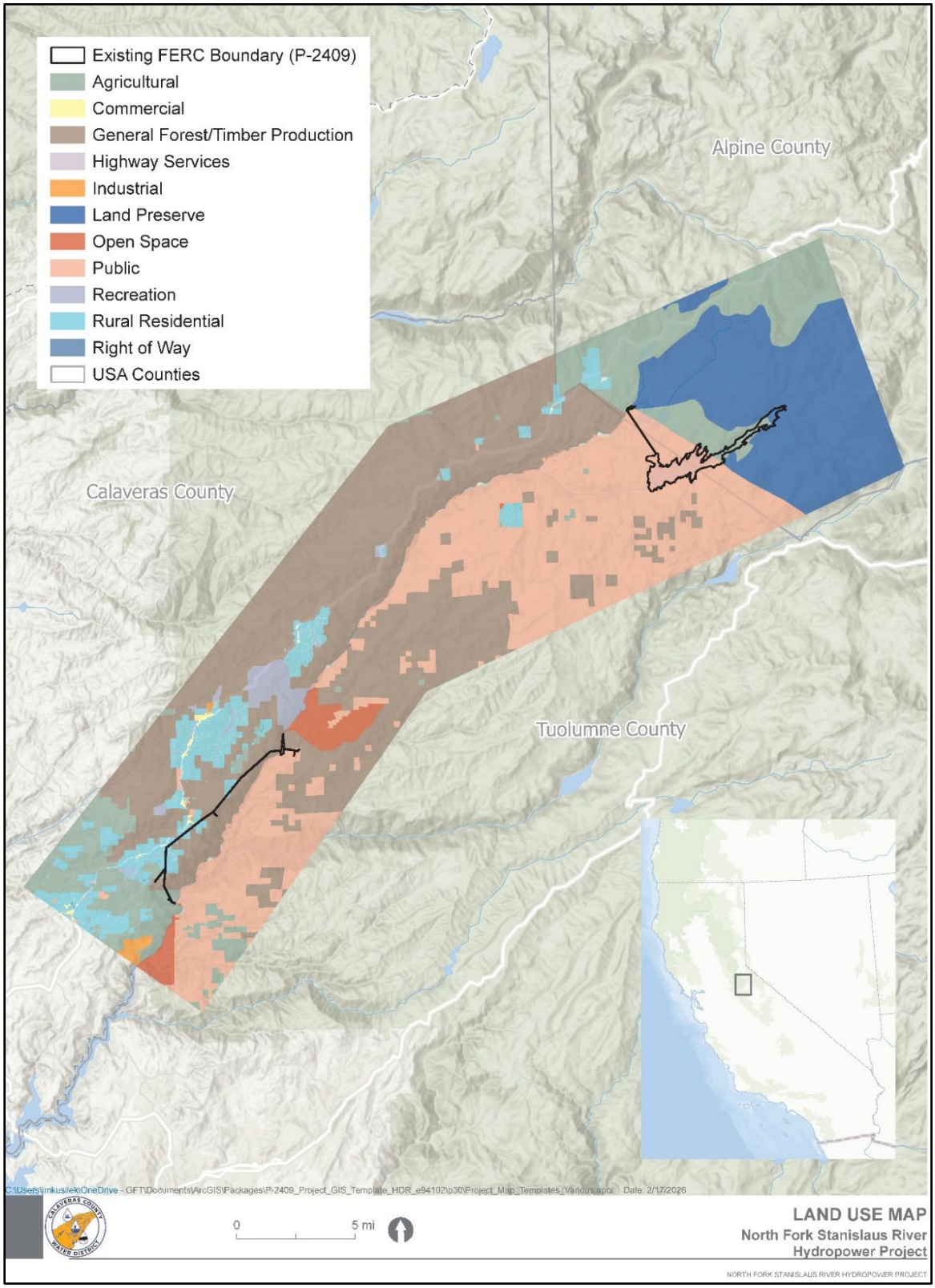


Figure 3.8-3. Existing Land Use Non-Project - Source: Alpine County n.d.; Calaveras County 2020; Tuolumne County 2018.

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3.8.3.1 Other Public Managed Lands/State Park Lands

Other public lands and facilities in the broader region include units of the California State Park System, most notably Calaveras Big Trees State Park. The Park is a regionally and nationally significant public resource established for the long-term preservation of giant sequoia groves, mixed-conifer forest ecosystems, riparian corridors, and associated wildlife habitat. The Park protects both the North Grove and South Grove of giant sequoias, which are among the most iconic natural features in the Sierra Nevada and serve as important educational, scientific, and recreational assets. Management objectives emphasize ecosystem stewardship, protection of sensitive biological and cultural resources, and maintenance of scenic and wilderness character, while allowing for compatible public use. The Park provides a wide range of recreational and visitor facilities, including developed campgrounds, day-use areas, hiking trails, interpretive exhibits, and visitor centers. Interpretive programs focus on forest ecology, fire history, climate, and cultural history, enhancing public understanding of the region's natural and cultural resources. These recreational and educational opportunities support tourism and contribute to the local and regional economy, while also promoting environmental awareness and conservation values. Through these functions, Calaveras Big Trees State Park plays a key role in the broader public land network by balancing resource protection with public enjoyment and access (CDPR., n.d.).

3.8.3.2 Private Land

Within the broader region adjacent to the FERC Project Boundary, private lands are primarily associated with residential and recreation-oriented uses located near established communities and regional transportation corridors. The Golden Pines Campground, a privately owned RV resort and campground located near Arnold, California, is one private recreation facility within the regional setting. This facility provides RV sites, tent camping, and cabin accommodations and operates independently of the Project, offering recreational lodging that complements nearby public recreation opportunities on federal and state lands (Golden Pines Resort, n.d.).

In addition to Golden Pines Campground, Sierra Pacific Industries owns the lands underlying the Beaver Creek Diversion Dam and adjacent areas near McKays Dam, in Tuolumne County. These lands are managed as private industrial timberlands and are generally used for commercial forestry and related resource management activities.

Other private lands in the Project Vicinity include privately owned residential and resort properties associated with communities such as Arnold and other foothill settlements. These lands support rural residential development, visitor services, and limited commercial uses, and are regulated under applicable county land use plans and zoning ordinances.

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3.8.4 FERC Project-Related Land Use Permits and Easements

The Federal Energy Regulatory Commission (FERC) license for the Project[1] authorized the construction, operation, and maintenance of the Project, including those portions located on Federal lands. Project-related land use authorizations are also established through a series of authorizations and interagency agreements that govern the occupancy, operation, and management of the Project, including a Forest Service Special Use Permit granting CCWD the right to occupy and use approximately 2,294 acres of National Forest System lands on a non-exclusive basis for the construction, operation, and maintenance of hydroelectric facilities, including dams, reservoirs, tunnels, penstocks, powerhouses, access roads, and associated recreation facilities approved under the FERC license (CCWD 2025).

Within the FERC Project Boundary, non-federal lands are primarily under the control of CCWD through fee ownership or perpetual rights of use. Under Article 5 of the FERC license, CCWD is required to acquire and retain all land rights, easements, and rights-of-way necessary to construct, operate, and maintain the Project for the entire license term, and may not transfer or dispose of those property interests without Commission approval (CCWD 2025). These property interests include dam sites, reservoirs, tunnels, powerhouses, access roads, and recreation areas, ensuring that CCWD maintains continuous legal control over lands and facilities essential to Project operations.

Public access and land use within the FERC Project Boundary are also governed by the FERC license. Article 18 requires CCWD to allow reasonable public access to Project waters and adjacent Project lands owned by the licensee for navigation and recreation, while reserving the right to restrict access where necessary to protect public safety, project works, or environmental resources (CCWD 2025). As a result, the FERC Project Boundary includes areas of both operational control and public recreational use, particularly around New Spicer Meadow Reservoir and associated campgrounds and boat launch facilities.

3.8.4.1 FERC License for the North Fork Stanislaus River Hydroelectric Project (Project No. 2409)

The Project License is the federal authorization granted to the CCWD to construct, operate, and maintain the Project and associated lands and facilities. The Project License, originally issued in 1982, contains 35 active articles defining requirements for Project work and the use of Project-related lands and waters. It establishes CCWD's obligations for managing lands and waters within the Project boundary, balancing energy production, water resource use, recreation, environmental protection, and public access (CCWD 2025).

The Project License requires CCWD to acquire and hold title or perpetual rights to use all lands necessary for Project operation, and to maintain access, easements, and occupancy rights throughout the license term. All such lands are to be managed in accordance with federal

[1] Order Issuing License (Major) and Denying Motions, 18 FERC ¶ 61,124 (Feb. 8, 1982) [hereinafter, Project License].

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requirements, and rights to these lands revert at the end of the license unless a new license is issued (CCWD 2025).

Project Lands and Waters: These are the lands where dams, reservoirs, tunnels, powerhouses, conduits, and associated facilities are located. CCWD must acquire fee title or perpetual use rights for all non-federal lands within the FERC Project Boundary and retain them for the life of the license. This designation encompasses infrastructure, rights-of-way, and the immediate area necessary for operation and maintenance (CCWD 2025).

Public Access Areas: The Project License directs that, *"so far as is consistent with proper operation of the project,"* CCWD allow public free access to Project waters and adjacent lands for recreation such as fishing, hunting, boating, and hiking. Portions of land and water may be excluded from access for safety or property protection. This designation ensures that recreation and public use are integrated into land management while maintaining Project integrity (CCWD 2025).

Environmental and Scenic Protection Zones: Articles in the Project License require CCWD to take reasonable measures to prevent soil erosion, stream sedimentation, water, and air pollution, and to minimize disturbance to natural, scenic, historical, and recreational values. Project lands must be managed to protect these values, maintaining landscape character and resource quality (CCWD 2025).

Clearing and Maintenance Areas: CCWD must develop and implement plans for clearing reservoir areas and maintaining land around open conduits and facilities to reduce hazards and maintain operational effectiveness. This includes timber clearing, disposal of debris, and maintenance of buffer zones (CCWD 2025).

Utility and Conveyance Easements: The Project License allows, and sometimes requires, that CCWD permit other governmental agencies to construct and maintain transportation, utility, and communication facilities (roads, power and telephone lines, water pipelines, etc.) across Project lands, provided they do not conflict with Project purposes. This facilitates coordinated land use with other public needs (CCWD 2025).

3.8.4.2 CCWD's Vehicular Access to Project Facilities for Routine Operation and Maintenance

CCWD and the current Project operator use federal, State, and county roads to access Project facilities. Roads used by CCWD and its operator to access the Project are generally categorized as "Primary Project Roads" or "Shared Use Roads."

Primary Project Roads are those roads used primarily or exclusively for Project purposes (for example, CCWD access for Project operations and maintenance or public access to Project recreation facilities). Although not specifically identified in the 1982 Project License, FERC typically includes Primary Project Roads in the project boundary and requires the licensee to maintain them.

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Shared Use Roads are those roads outside the Project Boundary that incidentally provide access to the Project but primarily serve other purposes (for example, Forest Service and county roads). Because FERC has no authority to require a party other than the licensee to take an action, such as maintaining a road, the licensee's use and maintenance obligations of Shared Use roads are normally covered under an agreement (e.g., a SUP or road use agreement on NFS lands) with the landowner and outside of the license.

Article 25 of the existing license grants the licensee the obligation to allow any agency of the United States, at its own expense and without charge by the licensee, to construct on, through, and across Project lands, roads, trails, and other routes or means of transportation provided such access by the agency is "not inconsistent with the enjoyment of said lands by the Licensee for the purposes of the license" (CCWD 2025). This article effectively ensures that roads and similar infrastructure necessary for moving equipment, personnel, and materials can be established and used by federal agencies and, implicitly, by the licensee to support ongoing Project operations and maintenance. Article 25 does not require the licensee to maintain an agency-constructed access route or improvements to a Project road an agency put in place.

Article 26 in the existing license reinforces this access requirement by specifying that the location and standards of roads and trails on lands of the United States used by the Project are subject to the approval of the supervising federal land management agency (CCWD 2025). Together, these provisions embed within the FERC existing license provide a framework for maintaining vehicular access that is essential for CCWD to carry out operational and maintenance responsibilities for the Project while coordinating with federal land agencies on the design and condition of access routes.

3.8.4.3 CCWD's Policies Regarding Fire Prevention and Suppression

The Project operates under a FERC license that includes several articles specifically addressing wildfire prevention, preparation, and suppression on Project lands. According to the *Annotated License* (CCWD 2025), Article 22 requires the licensee to take all reasonable measures to "prevent, make advance preparations for suppression of, and to suppress fires on the lands to be occupied or used under the license." This article further states that the licensee must be liable for and pay the costs incurred by the United States in suppressing fires that are caused by the construction, operation, or maintenance of the Project works or related facilities (CCWD 2025). Additionally, Article 23 obligates the licensee to not interfere with the use of water from Project streams, conduits, or bodies of water for wildfire suppression by relevant agencies; this ensures that available water resources may be used to support firefighting efforts without obstruction from the Project's operations (CCWD 2025). These provisions highlight that although the Project is not itself documented as the origin point of significant wildfires in the public licensing record, its regulatory framework explicitly integrates wildfire risk management, preparedness, and collaboration with firefighting agencies as part of its operational responsibilities (CCWD 2025).

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3.8.4.4 Forest Service Amended Memorandum of Agreement (AMOA) (Expired After Project Initial Construction) and Summary of Agreements

Resolution 85-31 (CCWD 1985) approved an Amended Memorandum of Agreement (AMOA) between CCWD and the Forest Service for administration of the Project within the STF during initial project construction. The agreement defined during the Project's initial construction the respective responsibilities of CCWD and the Forest Service for managing National Forest System lands occupied or affected by the Project, including New Spicer Meadow Dam and Reservoir, Highland Creek facilities, diversion dams, tunnels, power plants, and related structures (CCWD 1985).

The AMOA established requirements for fisheries protection, including downstream temperature studies and potential installation of a multilevel outlet structure; development, construction, and maintenance of recreation facilities at Utica and Union reservoirs, which are part of NCPA's Upper Utica Project (FERC Project No. 11563); preparation and implementation of a wildlife mitigation plan in coordination with federal and state resource agencies; road construction and maintenance standards with provisions for managed public access; and resource protection measures such as timber clearing and disposal, erosion control planning, hazardous materials management, and mitigation for timber production losses (CCWD 1985)

The AMOA also required Forest Service approval for construction activities, transmission lines, and special use permits on National Forest System lands and establishes cost responsibilities, schedules, and coordination procedures. Overall, the AMOA formalized environmental mitigation, recreation development, land management oversight, and interagency coordination for Project facilities located within the STF. The 1985 AMOA required execution of a new Memorandum of Agreement between CCWD and USFS six months prior to completion of Project construction to address operation and maintenance and required resource monitoring activities during post-construction Project operation (CCWD 1985).

As required by the AMOA, in March 1990, CCWD and USFS executed the February 1990 Summary of Agreements between the USFS and CCWD addressing post-construction responsibilities associated with the Project, including Project facilities located on USFS lands. The agreement provided for issuance of a single USFS Special Use Permit covering Project facilities on USFS lands and established responsibilities for recreation facilities and studies; periodic review and upgrading of recreation facilities; maintenance and improvement of trails and Project access roads; wildlife mitigation and management; restoration of the North Fork Tunnel outlet channel; hazardous-substance spill contingency planning; and assistance through a collection agreement for outstanding license-related measures. The agreement further specified that its provisions do not modify FERC License No. 2409 and that the FERC license controls in the event of a conflict (CCWD 1990).

3.8.4.5 Forest Service Special Use Permit (Expires 2/11/32)

Under the Forest Service Special Use Permit (USDA Forest Service Special Use Permit – Licensed Project, Stanislaus National Forest, Region 5, User No. 1013-27, Kind of Use 611), CCWD is

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authorized to occupy and use National Forest System lands for the facilities of the Project. The permit requires CCWD to obtain Forest Service approval for all construction, reconstruction, substantial modification, or alteration of Project facilities on National Forest System lands. It establishes detailed operating conditions addressing facility maintenance, sanitation, public safety, erosion control, water quality protection, scenic resource protection, and vegetation management, ensuring that Project land uses remain consistent with Forest Service land management objectives (Forest Service 1991).

The permit further requires CCWD to repair any damage to National Forest System lands, roads, or trails resulting from Project activities and to indemnify the United States against liabilities arising from its use and occupancy of federal lands. It also includes fire prevention and suppression requirements, obligating CCWD to take all reasonable precautions to prevent wildfires and to pay suppression costs or damages caused by Project-related activities (Forest Service 1991). The Forest Service retains unrestricted access to Project lands and facilities for administrative purposes and may require relocation or modification of facilities if needed for federal uses such as road or infrastructure development. The permit remains valid only so long as CCWD holds a current FERC license for the Project, and becomes void on February 1, 2032, making federal land occupancy directly dependent on continued hydropower authorization (Forest Service 1991).

3.8.4.6 PG&E - Operations Agreement for the North Fork Stanislaus River Hydroelectric Project

The Project also relies on legally binding private-land access and utility corridor rights established through an Operations Agreement between PG&E, NCPA, and CCWD (CCWD Resolution No. 89-97, September 14, 1989, Agreement). Under this agreement, PG&E granted CCWD and NCPA the right to use, improve, and maintain the non-Project Camp Nine Road and Candy Rock Road for construction, operation, and maintenance of the hydroelectric facilities, with NCPA responsible for road maintenance and liability for damage caused by Project traffic (PG&E 1989).

The agreement further authorized CCWD and NCPA to construct NCPA's 230 kV transmission line (NCPA's FERC Project No. 11197) within PG&E's existing transmission line right-of-way, creating a shared utility corridor governed by detailed spacing, clearance, and coordination requirements designed to prevent interference with PG&E's facilities (PG&E 1989). As discussed in Section 3.8.4.7, after construction, the 230 kV transmission line was transferred to NCPA, who now owns, operates, maintains and holds the license for the line (CCWD has no responsibilities for the line). The parties also granted one another mutual rights of entry and access to affected lands, diversion works, powerhouses, and transmission facilities for inspection, operation, and maintenance, which function as license-type easements over PG&E-owned property. Together, these provisions establish enforceable access, road-use, and transmission corridor rights essential to long-term Project operations.

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3.8.4.7 NCPA - Transmission Assignment Agreement for the North Fork Stanislaus River Hydroelectric Project

The 1991 Transmission Assignment Agreement between CCWD and NCPA transferred ownership and operational control of the Project's transmission system to NCPA. Under this agreement, CCWD assigned to NCPA all rights, title, and interest in the Collierville Transmission Line and the Spicer Meadow Transmission Facilities, including towers, conductors, insulators, and related equipment extending from the Collierville Switchyard to PG&E's Bellota Substation, subject to FERC approval (CCWD and NCPA 1991). FERC approved the assignment, and the generation tie-lines were subsequently designated as FERC Project No. 11197.

NCPA accepted responsibility for operation and maintenance of these facilities, while CCWD maintained responsibility for the associated rights-of-way and easements required to operate the transmission system across federal, state, and private lands within the FERC Project Boundary (CCWD and NCPA 1991).

3.8.5 Future Land Use

3.8.5.1 Project-Specific Future Land Use Information

The Project involves the continued operation and maintenance of existing, previously authorized facilities within the established FERC Project Boundary and does not include construction of new facilities, expansion of existing infrastructure, or changes in Project operations that would alter land use patterns.

Because Project facilities are already in place and land use within the FERC Project Boundary is governed by the existing FERC license, federal land management authorizations, and applicable interagency agreements, future land use conditions are expected to remain consistent with existing conditions. Ongoing operation and maintenance activities would continue to occur within previously disturbed or authorized areas and would not result in new or intensified land use.

3.8.5.2 Non-Project-Related Future Land Use Information

Alpine County

Alpine County's General Plan, originally adopted in 1999 with the Land Use Element last updated in 2009, establishes long-range policies governing population density, conservation priorities, and development potential (Alpine County 2009). The plan emphasizes maintaining consistency between zoning regulations and General Plan land-use designations to guide future development as the county approaches anticipated buildout conditions.

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The Land Use Element prioritizes conservation, open-space preservation, limited growth, and careful environmental review. Given Alpine County's rural character and environmentally sensitive landscape, future land use is expected to remain low-density and closely aligned with General Plan goals, supporting environmentally compatible uses near existing hydropower infrastructure (Alpine County 2009).

Calaveras County

Calaveras County's General Plan is designed to guide growth and development through 2035 and includes eight plan elements, a countywide land-use map, and buildout projections encompassing a range of development types occurring near major waterways, including the NFSR associated with the Project (Calaveras County 2020). While parcel-specific future land-use designations are not detailed in publicly accessible documents, the plan establishes policies addressing population growth, land-use distribution, environmental impacts, and infrastructure needs over the planning horizon. The General Plan was supported by a program-level Environmental Impact Report, indicating that anticipated future land uses include residential, commercial, agricultural, open space, and related development types typical of rural Sierra counties (Calaveras County 2020).

Subsequent updates, including the 2019 General Plan adoption, continue to emphasize community-centered planning, infill development near existing population centers, and coordination among land use, water resources, and transportation planning to limit sprawl and preserve open-space values.

Tuolumne County

Tuolumne County's General Plan Update provides a comprehensive framework guiding development through 2040, including both a countywide plan and community-specific plans for Jamestown, Columbia, East Sonora, Tuolumne, and Mountain Springs (Tuolumne County 2018). The plan directs future residential, commercial, recreational, agricultural, and conservation-oriented land uses throughout the county.

The General Plan documents existing land-use patterns, noting that approximately 77 percent of county land is classified as Public Space and is predominantly managed by federal and state agencies. This indicates that future development is expected to remain concentrated in limited areas outside major public land holdings (Tuolumne County 2018). This land-use structure is relevant to the Project because the Project intersects with public lands and resource-management jurisdictions where future uses must remain compatible with recreation, watershed protection, and environmental standards.

Tuolumne County also maintains a General Plan Land Use Designation Map, updated in 2023, which reflects allowable future land uses and zoning categories consistent with the General Plan's Land Use Element and provides insight into long-term development patterns that may interact with hydropower infrastructure (Tuolumne County 2018).

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3.8.6 Land Use-Related Goals and Needs Identified in Agency Management Plans

This section summarizes land use–related goals and needs identified in federal, state, and local agency management plans applicable to lands within and adjacent to the Project. These plans provide guidance for the management of public and private lands influenced by Project facilities and operations and identify objectives related to land use compatibility, resource protection, recreation, and public access. State and local land-use planning regulations impacting the Project may be preempted by the Federal Power Act, but CCWD is committed to working cooperatively with state and local land-use agencies to achieve their land-use planning goals consistent with FERC's "good neighbor" policies.

3.8.6.1 Bureau of Land Management – Resource Management Plan

BLM administers a small portion of land within the FERC Project Boundary as part of the Sierra Resource Management Area (BLM 2008). Land use planning for these lands is guided by applicable Resource Management Plans. Land use-related goals and needs applicable to the Project include:

- Managing public lands for multiple uses, including utility and infrastructure facilities, while protecting natural and cultural resources.
- Ensuring that authorized rights-of-way and facilities are compatible with surrounding land uses and land allocations.
- Minimizing surface disturbance and encouraging reclamation or restoration of disturbed areas where feasible.
- Maintaining public access and recreational opportunities consistent with safety and resource protection.

3.8.6.2 Federal Wildland Fire Management Policy

Federal fire and wildfire management within the Project Area is governed primarily by policies implemented by the Forest Service and other federal land management agencies. The Federal Wildland Fire Management Policy establishes firefighter and public safety as the highest priority and promotes a risk-based approach to wildfire response, fuels management, and interagency coordination (USDOI and USDA 2001).

On National Forest System lands, including portions of the Project Area within the STF, fire management activities are implemented pursuant to the Forest Service's Land and Resource Management Plan and associated fire management strategies. These policies emphasize wildfire prevention, suppression preparedness, protection of infrastructure, and fuels reduction treatments designed to reduce wildfire intensity and severity while maintaining ecosystem health.

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3.8.6.3 Forest Service – Stanislaus National Forest Land and Resource Management Plan

The Forest Plan (Forest Service 1991) establishes land use goals that prioritize multiple-use management, including hydroelectric generation, while protecting scenic quality, recreation opportunities, watershed health, and natural resources. Land use–related goals applicable to the Project include:

- Ensuring that special-use facilities, including hydroelectric infrastructure, are compatible with surrounding forest land allocations and do not preclude other authorized uses.
- Protecting scenic integrity along river corridors, reservoirs, and recreation sites.
- Maintaining public access to National Forest System lands for recreation consistent with safety and resource protection.
- Limiting surface disturbance and ensuring that long-term land occupancy is minimized where feasible.

3.8.6.4 Stanislaus National Forest Travel Management

STF is managed by the Forest Service in accordance with federal land and resource management planning requirements, including the Travel Management Rule (36 C.F.R. Part 212). This rule requires the designation of National Forest System roads, trails, and areas open to motorized vehicle use and the publication of Motor Vehicle Use Maps (MVUMs) to guide public access and protect natural resources (Forest Service 2005).

The use of roads and trails on National Forest System lands is managed in accordance with Forest Service road and travel management policies and was analyzed and documented in the *Stanislaus National Forest Motorized Travel Management Final Environmental Impact Statement* (STF FEIS), completed in 2009. The FEIS evaluated the environmental effects of designating motorized routes and supported the Forest Service's Record of Decision establishing the authorized motorized transportation system (Forest Service 2009).

Within and adjacent to the FERC Project Boundary, motorized vehicle use is restricted to routes designated on the STF MVUMs. Cross-country motorized travel outside designated routes is prohibited. Designated routes primarily support administrative access, dispersed recreation, and natural resource management, while minimizing impacts on soils, water resources, wildlife habitat, and other sensitive environmental features.

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Project facilities and operations are consistent with STF travel management objectives. Project-related access relies on existing Forest Service roads, and no new permanent motorized routes are required. Any future temporary access or changes to access conditions would require coordination with the Forest Service and compliance with applicable travel management designations.

3.8.6.5 California Department of Fish and Wildlife

CDFW's land use goals focus on conserving fish and wildlife resources while allowing land uses that are compatible with long-term ecological sustainability (CDFW 2015). Key land use-related goals include:

- **Conserve Fish and Wildlife Habitat:** Protect, enhance, and manage terrestrial, riparian, wetland, and aquatic habitats from degradation caused by incompatible land uses or excessive disturbance.
- **Protect Riparian and River Corridor Resources:** Maintain the ecological function of river corridors, shorelines, and floodplains by limiting land use activities that could disrupt habitat connectivity, natural hydrologic processes, or water quality.
- **Minimize Land Disturbance and Habitat Fragmentation:** Reduce ground disturbance, vegetation removal, and land use practices that fragment habitat or interfere with wildlife movement and species life cycles.
- **Ensure Compatibility of Infrastructure and Utility Uses:** Allow infrastructure and utility facilities, including hydroelectric projects, to operate where impacts to fish and wildlife resources are avoided, minimized, or mitigated to the extent feasible.
- **Protect Sensitive, Special-Status, and Migratory Species:** Manage land uses to avoid adverse effects on special-status species, migratory corridors, spawning areas, and breeding habitat.
- **Support Long-Term Ecological Sustainability:** Encourage land management practices that maintain ecosystem function, biodiversity, and resilience over time, including adaptive management and habitat restoration where appropriate.
- **Integrate Wildlife Conservation into Land Use Planning:** Promote coordination with federal, state, and local agencies to incorporate fish and wildlife conservation objectives into land use planning and project design.

3.8.6.6 California Department of Parks and Recreation

California State Parks' land use goals focus on the long-term stewardship of public lands while allowing for compatible public use (CDPR 2021). Key land use-related goals include the following:

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- **Preserve Outstanding Natural and Scenic Resources:** Protect significant natural features, scenic landscapes, forests, watersheds, and ecological systems, including rare and sensitive habitats, from incompatible land uses or development.

- **Protect Cultural and Historic Resources:** Preserve archaeological sites, historic structures, cultural landscapes, and traditional cultural resources, and manage surrounding land uses to prevent degradation of these resources.

- **Maintain Scenic Integrity and Viewsheds:** Protect views, vistas, and the visual character of park landscapes, particularly those visible from trails, campgrounds, roads, and day-use areas, and limit visual intrusion from adjacent development or infrastructure.

- **Provide Compatible Public Recreation and Access:** Allow and manage recreational activities, such as hiking, camping, wildlife viewing, and environmental education, which are compatible with resource protection, public safety, and carrying capacity of park lands.

- **Ensure Compatibility of Adjacent Land Uses:** Encourage surrounding land uses and infrastructure operations to be compatible with park purposes and visitor experience, and avoid land use conflicts that could adversely affect park resources, safety, or recreational values.

- **Protect Visitor Experience and Public Safety:** Manage land uses within and adjacent to park boundaries to maintain a high-quality visitor experience, including minimizing noise, visual impacts, and safety hazards associated with nearby land uses.

- **Promote Environmental Stewardship and Education:** Support land use practices that enhance environmental awareness, interpretation, and education, and demonstrate sustainable land management principles.

3.8.6.7 Alpine County General Plan

The Alpine County General Plan Land Use Element establishes a balanced framework intended to accommodate limited growth while preserving the County's scenic, environmental, and cultural resources. The Land Use Element emphasizes protection of community character, careful management of the rate and location of development, and conservation of open space and natural resources (Alpine County 2009). Key land use goals and policies guiding development in Alpine County include the following:

- **Policy 25.5a / 25.5i:** New development must be compatible with existing community character and must not result in a significant adverse effect on the County's rural, scenic, and small-community character.

- **Policy 25.5b:** The rate of new development is to be controlled to ensure compatibility with community character and to maintain adequate levels of public services as growth occurs.

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- **Policy 25.5c:** Wildlife habitat quality must not be significantly diminished by new development.

- **Policy 25.5d:** Scenic quality along designated scenic highway corridors must be protected from significant degradation.

- **Open Space Policies:** Lands designated Open Space are to be retained for natural resource protection, agriculture, grazing, recreation, and conservation, with residential development limited to very low densities and encouraged to utilize conservation subdivision techniques where appropriate.

3.8.6.8 Calaveras County General Plan

The Calaveras County General Plan identifies the need to direct development to appropriate locations, minimize conflicts between existing and proposed land uses, and protect environmental and cultural resources while allowing for orderly and sustainable growth (Calaveras County 2020). Specific goals and policies guiding land use planning and development throughout Calaveras County include the following:

- **LU 1.7:** Future specific plans are required to incorporate open space, buffers, and other measures to preserve biological and cultural resources, enhance recreational access, and ensure compatibility between proposed development and surrounding land uses.

- **LU 2.1:** Growth is directed toward existing communities and areas with available or planned infrastructure in order to reduce dispersed rural development and promote efficient public service delivery.

- **LU 2.2:** Agricultural lands, timberlands, and mineral resource areas are to be protected through continued use of Williamson Act contracts and other regulatory mechanisms that support long-term resource productivity.

- **LU 4.3:** New development must be designed to be compatible with surrounding land uses through appropriate site design, buffering, and mitigation of potential impacts such as noise, lighting, and traffic.

- **LU 5.3:** The County's recreational, scenic, cultural, historic, and agricultural resources are recognized as important economic assets, and land use patterns are encouraged that support their long-term retention and contribution to the local economy.

3.8.6.9 Tuolumne County General Plan

The Tuolumne County General Plan identifies the need to direct development to appropriate locations, encourage compatible land use patterns, protect agricultural and natural resource lands, and preserve the scenic and historical character of the County (Tuolumne County 2018). The following goals and policies, drawn directly from the adopted General Plan, guide land use planning and development throughout Tuolumne County:

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- **Policy 1.A.13:** Encourage the extension and upgrading of services to Disadvantaged Legacy Communities to support safe, orderly development in areas identified as underserved.

- **Policy 1.B.b:** Designate land around existing residential neighborhoods for land uses that are compatible with residences and locate new urban residential uses away from potentially incompatible uses such as mining, industrial operations, airports, and solid waste facilities.

- **Policy 1.B.c:** Separate new urban residential development from land uses that could conflict with housing, such as agriculture, mining, industry, airports, and sewage treatment facilities.

- **Policy 1.B.2:** Protect public facilities from the encroachment of incompatible uses by appropriate designation on the General Plan Land Use Diagrams.

- **Policy 1.B.3:** Require new commercial development to be designed to minimize visual impacts, including through screening, building orientation, and parking area design standards.

- **Policy 1.C.2:** Encourage a countywide jobs-housing balance by designating adequate land for commercial, industrial, mixed-use, and business park development within and near identified communities with appropriate infrastructure.

- **Policy 1.D.1:** Encourage pedestrian-oriented development to reduce reliance on motor vehicles and enhance connectivity within communities.

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3.9 Aesthetics Resources

Per 18 C.F.R. Section § 5.6 (d)(3)(ix), this section includes a description of the visual characteristics of the lands and waters affected by the Project. Components of this description include a description of the dam, natural water features, and other scenic attractions of the Project and surrounding Vicinity.

This section provides an overview of aesthetic resources associated with the Project. Section 3.9.1 describes the visual setting, Section 3.9.2 describes designated scenic corridors, Section 3.9.3 describes visual resource management plans, and Section 3.9.4 describes visual objectives at Project facilities.

3.9.1 Visual Setting

The Project is in the NFSR Basin in Calaveras, Tuolumne, and Alpine, California counties. Portions of the Project are on lands of the United States managed by the Forest Service as part of the STF, the BLM as part of the Sierra Resource Management Area, and the BOR as part of the New Melones Reservoir Area.

The upper portion of the Project is located at an elevation of approximately 6,700 feet, on the western slope of the Sierra Nevada within the STF. The lower end of the Project lies at an elevation of approximately 1,100 feet, largely within the western boundary of the STF. The Collierville Powerhouse lies on federal land managed by the BOR and the area south of the Collierville Powerhouse to New Melones Lake lies on federal land managed by the BLM. Overall, the upper portion of the Project consists of steep river valleys, dense forests, and granite outcrops and canyons. The lower portion of the Project is more sparsely vegetated and consists of lower elevation rolling grass and forested hills.

3.9.2 Designated Scenic Corridors

Scenic corridors are lands comprised of scenic and natural features visible from designated highway rights-of-way. Boundaries of a scenic corridor are determined by the visible landscape as defined by topography, vegetation, viewing distance, and/or jurisdictional lines. A search of the Caltrans Scenic Highway Mapping System indicates that no designated or eligible National Scenic Byways occur in the FERC Project Boundary (Caltrans 2026). West of the FERC Project Boundary there is one state scenic highway, State Highway 4, from Arnold, California, to its terminus at the Ebbetts Pass Scenic Byway (Caltrans 2026).

There are no National or State Wild and Scenic Rivers within the FERC Project Boundary (NPS 2026). However, two segments of the NFSR are listed under the National Park Service's Nationwide Rivers Inventory for potential classification. These are the 19-mile-long segment from Highland Creek to McKays Point Reservoir with a potential Wild and Recreational classification and the 8-mile-long segment from McKays Point Reservoir to the confluence with the MFSR with a potential Wild classification (NPS 2026).

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3.9.3 Visual Resource Management Plans

3.9.3.1 Stanislaus National Forest Land and Resource Management Plans

Approximately 2,289.3 acres of the area within the FERC Project Boundary are located on Forest Service lands managed by the STF according to the 1991 STF Land and Resource Management Plan (LRMP). Visual quality on these lands was guided by the Visual Management System (VMS), which established visual quality objectives (VQO) to manage the degree of change to natural landscapes based on aesthetics caused by management activities (Forest Service 1991). The discussion below uses the VQO terminology to be consistent with the current 1991 STF LRMP. The STF's 2017 Forest Plan Direction provides the current LRMP management direction based on the original LRMP as modified through the LRMP amendment process.

The STF LRMP and 2017 Forest Plan Direction use VQO as a general direction and standard guideline for resource management and permissible development and activities. The Forest Service designated approximately 158,500 acres as VQO of Retention; outside of the Calaveras Big Trees State Park approximately 256,000 acres are classified as Partial Retention (Forest Service 1991). Overall the Project area is located in a VQO of Retention until the lower Project area, which becomes BLM and BOR lands. A section of the Project runs through Calaveras Big Trees State Park and is not assigned a VQO.

Table 3.9-1. Stanislaus National Forest visual quality objectives, definitions, and acreages.

Visual Quality Objective (VQO)	Definition	Acreage
Preservation	Preservation allows only for ecological changes to occur with the exception of low visual impact recreation facilities.	211,800 acres (23.7%)
Retention	Provides for management activities that are not visually evident. Under Retention, activities may only repeat form, line, color, and texture, which are frequently found in the characteristic landscape.	158,500 acres (17.7%)
Partial Retention	Retention management activities must remain visually subordinate to the characteristic landscape, but management activities may be noticeable.	256,300 acres (28.6%)
Modification	Management activities may visually dominate the original characteristic landscape. However, activities of vegetative and landform alteration must borrow from naturally established form, line, color, or texture so completely and at such a scale that its visual characteristics are those of natural occurrences within the surrounding area or character type.	252,500 acres (28.2%)
Maximum Modification	Management activities may dominate the original characteristic landscape but should appear to blend with the background as a natural occurrence.	16,400 acres (1.8%)

Source: Forest Service 1974, Forest Service 1991

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Notably, the 2017 Forest Plan Direction did not change the allocation of VQOs on the STF from the 1991 LRMP. Rather, the Forest Plan Direction provides updated forest-wide and management area visual resource general direction and management emphasis. Table 3.9-2 summarizes the visual resource direction and management emphasis relevant to the Project area.

Table 3.9-2. Stanislaus National Forest visual resource direction and management emphasis.

Area/Focus		Direction / Emphasis
Forest Wide		Manage areas to provide a characteristic natural appearing landscape commensurate with the description stated for each VQO practice. Resource management activities will be guided by the appropriate Landscape Management handbooks and Forest Landscape Architects' recommendations.
Management Area	Scenic Corridor	Maintain the visual character of foreground areas for the pleasure of the viewing public in Retention VQO areas. Design land and vegetation disturbance projects to meet the Retention VQO in middle ground distance zones where Retention is the VQO.
	Developed Recreation Sites	Provide a natural appearing forest setting within the constraints of existing site character and it's kind of use.
	Near Natural	Provide a high quality visual setting where changes are not readily evident.

Source: Forest Service 2017

3.9.3.2 Bureau of Land Management Sierra Resource Management Plan

The federal lands in the FERC Project Boundary are managed by the BLM according to the 2008 Sierra Resource Management Plan. The BLM quantifies aesthetic resources by a Visual Resource Classes (VRC) system, in which each class has a visual objective pertaining to the amount of change allowed (BLM 1984). The federal lands managed by the BLM in the FERC Project Boundary are designated as a VRC III Objective (BLM 2008). VRC III Objective areas require partially retaining the existing character of the landscape, whereas activities may attract attention but not block the view (BLM 1986).

3.9.3.3 Bureau of Reclamation

The BOR primarily manages water resources and does not manage land-based resources. As a result, the BOR does not have visual objectives or management guidelines.

3.9.3.4 Alpine County General Plan[1]

The 2003 Alpine County General Plan includes the following goals and policies applicable to the protection of scenic resources in the county (Alpine County 2003):

[1] See Section 3.8.6.

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- **Policy 19b:** Protect steep slopes from grading, vegetation removal, road construction, or other development or activities that may impact the viewshed from any designated scenic routes.

- **Policy 19c:** Protect open areas, ridges, peaks, and other skyline features from structures that may impact the viewshed from any designated County or State scenic route.

3.9.3.5 Calaveras County General Plan[2]

The 2019 Calaveras County General Plan includes the following goals and policies applicable to the protection of scenic resources in the county (Calaveras County 2019):

- **COS 5.2:** Maintain scenic resources along designated scenic highways in the county.

- **COS 5.3:** Encourage the inclusion of design features in new development that enhance and complement the scenic qualities of the natural resources of the site and the surrounding area in the design of the project.

- **COS 6B:** Formulate guidelines for hillside and hilltop development facilitating landscape-compatible project design. Guidelines should address minimizing grading and the topographical alteration it necessitates; provide fire-safe construction techniques, vegetation retention, retaining wall enhancement, and alternative road construction techniques to reduce cuts and fills; and illustrate techniques for blending new construction with the surrounding hillsides and hilltops.

3.9.3.6 Tuolumne County General Plan[3]

The 2018 Tuolumne County General Plan includes the following goals and policies applicable to the protection of scenic resources in the county on lands in the county (Tuolumne County 2018):

- **Policy 16.A.3:** Conserve the natural scenic quality of hillsides and hilltops throughout Tuolumne County.

- **Policy 16.A.5:** Conserve scenic resources, landmarks, and the natural landscape.

- **Policy 16.B.0:** Within identified communities, retain oak woodland habitat as much as practical, such as incorporating oak woodland into landscaped or public spaces to enhance project site aesthetics, using oak woodland as visual buffers between land uses, and using oak woodland habitat to maintain slopes and reduce on-site runoff.

[2] See Section 3.8.6.
[3] See Section 3.8.6.

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- **Policy 17.E.12:** Acknowledge that wildland areas provide natural resource values to the citizens of the County visitors and other persons throughout the State, including watershed resources, timber sources, visual resources, carbon sequestration, wildlife habitat and special status species habitat.

3.9.4 Visual Objectives at Project Facilities

The following section describes the existing visual condition as well as specific visual objectives for the Project facilities by development.

3.9.4.1 New Spicer Meadow Development

North Fork Facilities

The North Fork facilities include the North Fork Diversion Dam, Spillway, Intake and Tunnel, Sluiceway, Low Flow Outlet, Tunnel Outlet Channel, and the Impoundment (Figure 3.9-1). Aboveground North Fork facilities potentially in the viewshed include the North Fork Diversion Dam and Spillway, Impoundment, Low Level Outlet, and Tunnel Outlet Channel (Figure 3.9-1). The North Fork Diversion Tunnel is belowground and is not visible to the public. The North Fork Diversion Dam is a 53-foot-high, 218-foot-long concrete gravity dam with the concrete Diversion Intake structure along the left abutment. The North Fork Diversion Dam Impoundment has a surface area of approximately 13 acres. The Low Flow Outlet is a notch in the lower portion of the downstream face of the diversion dam. The North Fork Diversion Tunnel Outlet Channel is a rock-banked channel upstream of New Spicer Meadow Reservoir adjacent to the New Spicer Meadow Reservoir Campground. The North Fork facilities are located on NFS land designated with a Retention VQO (Forest Service 1991).

Due to the remote and recessed setting of the North Fork Diversion Dam and moderate vegetation, the North Fork facilities are not visible to the public unless in the direct Vicinity. The visual contrast between the surrounding exposed rock and the concrete structures is low as the concrete structures are similar in color to the surrounding granite rock. There are no recreational facilities at North Fork Diversion Dam Impoundment and access primarily occurs via a gated road, Forest Route 7N17B. As a result, public views are limited.

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Figure 3.9-1. North Fork Diversion Dam, Spillway, Low Flow Outlet, and Impoundment.

New Spicer Meadow Reservoir Facilities

Aboveground New Spicer Meadow Reservoir facilities potentially in the viewshed include the New Spicer Meadow Reservoir, Dam, Saddle Dam, Spillway, Power Intake, Switchyard, and Powerhouse (Figure 3.9-2). The New Spicer Meadow Power Tunnel and Penstock are belowground facilities and not in the viewshed. The New Spicer Meadow facilities are located on NFS land designated with a Retention VQO (Forest Service 1991).

New Spicer Meadow Reservoir has a surface area of approximately 2,000 acres and a shoreline of approximately 21 miles. The New Spicer Meadow Dam is 240-foot-high rock-filled dam with a concrete face that extends 1,250 feet. New Spicer Meadow Spillway is a 370-foot-long, 30-foot-high concrete structure. New Spicer Meadow Power Intake is a concrete and metal tower located on the upstream side of the dam. Located downstream of the dam, the New Spicer Meadow Powerhouse is a concrete structure measuring approximately 40 feet by 134 feet. The New Spicer Meadow Switchyard is located adjacent to the powerhouse in a fenced enclosure with transformers and associated equipment located aboveground.

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Figure 3.9-2. New Spicer Meadow Reservoir, Dam, Multiport Intake, Spillway and Powerhouse.

These facilities are generally only visible to those who are using recreational facilities such as New Spicer Meadow Reservoir Campground, New Spicer Meadow Reservoir Group Campground, New Spicer Meadow Reservoir Boat Launch and Day Use Area, or participating in recreational activities on the reservoir – all of which are upstream views of the reservoir typically with much of the dam, intake structure, and spillway covered by waters impounded by the dam. The powerhouse and spillway are not readily visible by most viewers, as the facilities are located immediately downstream and at the base of the dam. Access to these facilities is restricted and gated at the right edge of the dam. The New Spicer Meadow Reservoir viewshed consists of steep and large granitic canyons and outcrops interspersed with a predominantly forested setting. Prominent views of the dam and associated structures are limited to recreationists in the foreground utilizing the reservoir, land-based visitors primarily at the New Spicer Meadow Reservoir Campground, or visitors traveling on Forest Road 7N01 as they approach the dam in the immediate foreground.

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3.9.4.2 Collierville Development

Beaver Creek Facilities

Aboveground Beaver Creek facilities potentially in the viewshed include the Beaver Creek Diversion Dam, Spillway, Impoundment, Intake, Tunnel, and Low Flow Outlet (Figure 3.9-3). Beaver Creek Diversion Dam is 53-foot-high, 167-foot-long concrete structure. The spillway is 115-foot-wide, 100-foot-long concrete structure. The sluiceway is adjacent to the intake structure and is controlled by a 3-foot by 3-foot slide gate. The diversion dam impoundment is a man-made impoundment on Beaver Creek. The intake is a concrete and metal structure located upstream of the dam that diverts water from the Beaver Creek Diversion Dam to McKays Point Diversion Dam. The Beaver Creek facilities are located on NFS land designated with a Partial Retention VQO (Forest Service 1991).

Due to the remote setting and limited access, the viewing population at the Beaver Creek facilities is limited. An informal overlook off Forest Road 4N38D provides the most likely viewpoint of the Beaver Creek facilities. Given the lack of recreational facilities and uses at this location, the viewing duration is likely short either from a vehicle in passing or during a stop at the informal overlook area.



Figure 3.9-3. Beaver Creek Diversion Dam and Spillway, Impoundment, Intake, and Low Flow Outlet.

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McKays Point Diversion Dam Facilities

Aboveground McKays Point Diversion Dam facilities potentially in the viewshed include the McKays Point Diversion Dam, Spillway, Reservoir, Collierville Power Intake, and Beaver Creek Outlet (Figure 3.9-4). McKays Point Diversion Dam is a 246-foot-high, 800-foot-long, thin arch, concrete dam along with the Spillway. McKays Point Reservoir has a surface area of approximately 100 acres. Collierville Tunnel is a subsurface feature that diverts from the McKays Point Diversion Dam to the powerhouse that would not be visible to the public. The low flow outlet is located near the base of the dam and contains a microturbine, which is a subsurface feature and not visible to the public. The Collierville Tunnel Intake is a 150-foot-high concrete intake structure located on the right bank of NFSR approximately 100 feet upstream of McKays Point Diversion Dam. A 40-foot-long access bridge connects the tower to the right reservoir bank. The McKays Point facilities are located on NFS land designated with a Partial Retention VQO (Forest Service 1991).

There is one access road to the facilities, New McKays Dam Road (Forest Road 4N38). The dam, spillway, and impoundment are visible to the public along New McKays Dam Road, which crosses the NFSR downstream of New McKays Point Diversion Dam. The McKays Point Diversion Dam, Spillway, and Reservoir are briefly in view of the public in vehicles and for a longer duration for the public on foot in the Vicinity of the dam. The area lacks recreational facilities and access to the reservoir is limited by the surrounding geography consisting of steep canyons, dense forests, and a lack of access roads. A nearby trailhead, South Grove, could provide a brief view from land for a short duration. The concrete construction of the dam also provides a low visual contrast compared to the surrounding exposed rock whereas the linear elements of the structure have a more moderate contrast compared to the surrounding, non-linear natural environment.

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Figure 3.9-4. McKays Point Diversion Dam, Spillway, Impoundment, Low Flow Outlet, Tunnel Intake, and Beaver Creek Tunnel Outlet.

Collierville Powerhouse Area Facilities

The predominant aboveground Collierville Powerhouse area facilities potentially in the viewshed include Collierville Powerhouse, Switchyard, and Powerhouse Tailrace (Figure 3.9-5). Other facilities at the site include the Collierville Power Intake and Power Tunnel, although these facilities are mostly belowground and subordinate to the larger powerhouse, switchyard, and tailrace features. The Collierville Powerhouse, located on BOR land, is approximately 155-feet long and 56-feet wide within a fenced yard. The Collierville Switchyard is located approximately 300 feet west of Collierville Powerhouse. The switchyard is a 126-foot by 164-foot fenced area containing structural towers, disconnect switches, circuit breakers, and telemetry and associated protection equipment. The switchyard surface is covered with a layer of crushed rock. The Collierville Powerhouse Tailrace is approximately 1,450 feet long and 92 feet wide, and runs from the downstream face of Collierville Powerhouse to the Stanislaus River. A pedestrian foot bridge crosses the tailrace. The facilities in this area are located on BOR land, and thus, there is no assigned visual quality objective.

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The powerhouse, switchyard, and tailrace are visible to the public from Camp 9 Road, the primary access to the facility. The powerhouse is nestled at the base of a steep hill within a river channel, leaving it nearly flush with the ground and reducing its overall contrast with the surrounding landscape. This area does not have any developed recreation facilities or public destinations so the viewing population is limited. Visitors driving to the end of Camp 9 Road would have views of these facilities in the immediate foreground. From this viewpoint, the facilities would have moderate to high contrast given the size, scale and extent of features and buildings, coloration of the facilities (gray and white), and type of materials (metal and concrete) compared to the grassy and forested natural surroundings which are green and brown in color and lack linear features.



Figure 3.9-5. Collierville Powerhouse, Switchyard, and Powerhouse Tailrace.

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3.10 Socioeconomic Resources

Per 18 C.F.R. § 5.6 (d)(3)(xi), this section includes a description of the existing socioeconomic conditions of the three counties in the existing FERC Project Boundary including, general land use patterns, population patterns, and sources of employment in the Project Vicinity.

This section is divided into the following four subsections: Sections 3.10.1 to 3.10.3 include existing socioeconomic information in Calaveras, Tuolumne, and Alpine counties, California, the counties in which the Project is located. Section 3.10.4 details project-specific socioeconomic information.

3.10.1 Calaveras County Socioeconomic Information

The population of Calaveras County, in which 139.86 acres of the existing FERC Project Boundary is located, was estimated at 44,722 people in January 2025 (California Department of Finance 2025). Between 2010 and 2024, Calaveras County's population decreased by 1.71 percent from 45,602 to 44,824, which is much lower than the State's approximate increase in population of 5.9 percent over the same 14 years (California Department of Finance 2012, California Department of Finance 2025). Calaveras County's population decreased each year from 2020 to 2025, from 45,292 in 2020 to 44,722 in 2025 (California Department of Finance 2025).

With a population of 44,722 residents and 27,925 housing units, Calaveras County has an estimated 2.32 persons per household and a vacancy rate of 31.6 percent (California Department of Finance 2025). The 2020 population density of Calaveras County is an estimated 44.40 persons per square mile (United States Census Bureau 2025a). From 1990 to 2000, 2000 to 2010, and 2010 to 2020, the population of Calaveras County increased by 26.46 percent, 12.69 percent, and decreased by 0.68 percent, respectively. During those same periods, the number of housing units increased at a rate of 9.77 percent, 12.78 percent, and 1.32 percent, respectively. For comparison, the population of the State of California, during the same time periods, increased by 13.32 percent, 10.48 percent, and 6.13 percent, and the number of housing units increased by 8.97 percent, 12.18 percent, and 5.28 percent, respectively (Table 3.10-1).

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

Area		2025	2022	2020	2010	2000	1990
Calaveras County	Population	44,722	45,012	45,292	45,602	40,465	31,998
	Housing Units	27,925	27,632	27,422	27,898	22,868	19,153
State of California	Population	39,529,101	39,185,605	39,538,223	37,253,956	33,721,583	29,758,213
	Housing Units	14,949,001	14,583,998	14,392,140	13,670,304	12,186,125	11,182,513

Source: California Department of Finance 2007, 2012, 2025

Table 3.10-2 shows that the minority of Calaveras County residents fall outside of the working age range of 18 to 65 years old (20,988 or 46.9%). The majority, 23,734 or 53.1 percent, of the Calaveras County population, falls between the ages of 18 and 65 years old. The State of California

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has a higher percentage between the ages of 18 and 65 years old (62.2%) (United States Census Bureau 2025a, 2025b).

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

Population: Age	Calaveras County	California
Persons under 5 years old	1,850	2,083,154
Persons under 5 years old, percent[1]	4.1%	5.3%
Persons under 18 years old	7,768	8,411,338
Persons under 18 years old, percent[1]	17.4%	21.3%
Persons 65 years old and over	13,220	6,524,861
Persons 65 years old and over, percent [1]	29.6%	16.5%

Source: United States Census Bureau 2025a, 2025b

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

Calaveras County has one incorporated area, Angels City. In 2024, the estimated population in Angels City was 3,585. In 2025, it fell to 3,570, decreasing by 0.42 percent (California Department of Finance 2025). Angels City has 1,920 households, resulting in 2.14 persons per household and a vacancy rate of approximately 14.2 percent (California Department of Finance 2025). Major population centers near Calaveras County are Sacramento, located 67 miles northwest, and Stockton, located 43 miles west.

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 Calaveras County and the State of California. The median value of owner-occupied housing and median household income in Calaveras County are lower than that of the State of California. Also, the percentage of people in poverty within Calaveras County (13.4 %) is higher than that of the State of California (11.8 percent).

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

Household Information	Calaveras County	California
Housing units, 2025	27,925	14,949,001
Homeownership rate, 2023, percent	84.4%	55.8%
Median value of owner-occupied housing units, 2023	$441,800	$759,500
Households, 2023	17,897	13,797,638
Persons per household, 2025	2.32	2.79
Median household income, 2023	$79,877	$100,149
Persons in poverty, 2023, percent	13.4%	11.8%

Source: United States Census Bureau 2025a, 2025b; California Department of Finance 2025

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Table 3.10-4 provides a summary of population estimates by race for Calaveras County and the State of California for the year 2020.

Table 3.10-4. Population Estimates by Gender and Race in Calaveras County and the State of California in 2020.

Population: Gender/Race	Calaveras County	California
POPULATION		
Female persons	23,131	19,636,903
White persons[1]	36,315	16,296,122
White alone, not Hispanic or Latino	34,668	13,714,587
Black or African American persons[1]	364	2,237,044
American Indian and Alaska Native persons[1]	747	631,016
Asian persons[1]	743	6,085,947
Native Hawaiian and Other Pacific Islander persons[1]	100	157,263
Persons reporting two or more races	5,028	5,760,235
Persons of Hispanic or Latino origin	5,865	15,579,652
PERCENT OF POPULATION		
Female persons, percent	50.3%	50.0%
White persons, percent[1]	79.0%	41.5%
White alone, not Hispanic or Latino	75.4%	34.9%
Black or African American persons, percent[1]	0.8%	5.7%
American Indian and Alaska Native persons, percent[1]	1.6%	1.6%
Asian persons, percent[1]	1.6%	15.5%
Native Hawaiian and Other Pacific Islander, percent[1]	0.2%	0.4%
Persons reporting two or more races, percent	10.9%	14.7%
Persons of Hispanic or Latino origin	12.8%	39.7%

Source: United States Census Bureau 2025a, 2025b

[1] Includes persons reporting only one race.

When compared to the State of California, Calaveras County has a higher percentage of high school graduates, but fewer individuals with a bachelor's degree or higher (United States Census Bureau 2025a, 2025b). The Census Bureau estimates that 93.3 percent of Calaveras County's population, 25 years or older, is educated through high school and 22.2 percent have obtained a bachelor's degree or higher. An estimated 84.8 percent of California's population, 25 years or older, has a high school education or higher and 38.1 percent have obtained a bachelor's degree or higher.

According to the California Employment Development Department (EDD), in 2024 the annual average unemployment rate was 6.0 percent for Calaveras County (EDD 2025a). Comparatively, the average unemployment rates for 2010 and 2015 were, respectively, 14.6 percent and 6.4 percent (EDD 2025a). These rates are higher compared to those for the State of California, which had an unemployment rate of approximately 5.2 percent in 2024 and approximately 12.2 percent and 6.2 percent in 2010 and 2015 (EDD 2025a, 2025b).

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Based on data from August 2025, government (27.10%), trade, transportation, and utilities (16.98%), and private education and health services (14.79%) are the three largest industry types in Calaveras County. Leisure and hospitality accounts for 11.64 percent of employment in Calaveras County and mining, logging, and construction make up 10.59 percent of the employees in the county (Table 3.10-5). These percentages are similar to the State of California, except for government, which accounts for 12.91 percent more employment in Calaveras County when compared to the State (EDD 2025b, 2025c).

Table 3.10-5. Industry Statistics for Calaveras County and State of California for August 2025.

Industry Type	Calaveras County		State of California	
	Employees	Percent Total	Employees	Percent Total
Farming	130	1.24%	473,700	2.57%
Mining, Logging, and Construction	1,110	10.59%	930,600	5.05%
Manufacturing	300	2.86%	1,222,000	6.63%
Trade, Transportation, and Utilities	1,780	16.98%	3,055,200	16.58%
Information	80	0.76%	530,200	2.88%
Financial Activities	150	1.43%	784,000	4.25%
Professional and Business Services	880	8.40%	2,732,300	14.83%
Private Education and Health Services	1,550	14.79%	3,446,100	18.70%
Leisure and Hospitality	1,220	11.64%	2,040,500	11.07%
Other Services	420	4.01%	600,500	3.26%
Government	2,840	27.10%	2,614,400	14.19%
Total	**10,480**	**100%**	**18,429,500**	**100%**

Source: EDD 2025b, 2025c

3.10.2 Tuolumne County Socioeconomic Information

The population of Tuolumne County, in which approximately 1,144 acres of the existing FERC Project Boundary is located, was estimated at 54,357 people in January 2025 (California Department of Finance 2025). Between 2010 and 2024, Tuolumne County's population decreased by 1.65 percent from 55,291 to 54,376, which is much lower than the State's approximate increase in population of 5.9 percent over the same 14 years (California Department of Finance 2012, California Department of Finance 2025). Tuolumne County's population decreased each year between 2020 and 2022, from 55,620 to 54,484. The population increased in 2023 to 54,610, but decreased in 2024 and 2025 to 54,376 and 54,357, respectively (California Department of Finance 2025).

With a population of 54,357 residents and 31,685 housing units, Tuolumne County has an estimated 2.22 persons per household and a vacancy rate of 27.7 percent (California Department of Finance 2025). The 2020 population density of Tuolumne County is an estimated 25.0 persons per square mile (United States Census Bureau 2025c). From 1990 to 2000, 2000 to 2010, and 2010 to 2020, the population of Tuolumne County increased by 12.21 percent, 1.69 percent, and 0.60 percent, respectively. During those same periods, the number of housing units increased at a rate of 12.33 percent, 10.38 percent, and 0.64 percent, respectively. For comparison, the population of the State of California, during the same time periods, increased by 13.32 percent, 10.48 percent,

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and 6.13 percent, and the number of housing units increased by 8.97 percent, 12.18 percent, and 5.28 percent, respectively (Table 3.10-6).

Table 3.10-6. Population and Housing Units in Tuolumne County and the State of California.

Area		2025	2022	2020	2010	2000	1990
Tuolumne County	Population	54,357	54,484	55,620	55,291	54,374	48,456
	Housing Units	31,685	31,522	31,415	31,215	28,279	25,175
State of California	Population	39,529,101	39,185,605	39,538,223	37,253,956	33,721,583	29,758,213
	Housing Units	14,949,001	14,583,998	14,392,140	13,670,304	12,186,125	11,182,513

Source: California Department of Finance 2007, 2012, 2025

Table 3.10-7 shows that the minority of Tuolumne County residents fall outside of the working age range of 18 to 65 years old (24,627 or 45.3%). The majority, 29,730 or 54.7 percent, of the Tuolumne County population, falls between the ages of 18 and 65 years old. The State of California has a higher percentage between the ages of 18 and 65 years old (62.2%) (United States Census Bureau 2025b, 2025c).

Table 3.10-7. Population Age in Tuolumne County and the State of California.

Population: Age	Tuolumne County	California
Population under 5 years old	2,414	2,083,154
Persons under 5 years old, percent[1]	4.4%	5.3%
Persons under 18 years old	9,428	8,411,338
Persons under 18 years old, percent[1]	17.3%	21.3%
Persons 65 years old and over	15,199	6,524,861
Persons 65 years old and over, percent [1]	28.0%	16.5%

Source: United States Census Bureau 2025b, 2025c

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

Tuolumne County has one incorporated area, Sonora. In 2024, the estimated population in Sonora was 5,154. In 2025, it fell to 5,116, decreasing by 0.74 percent (California Department of Finance 2025). Sonora has 2,528 housing units, resulting in 2.08 persons per household and a vacancy rate of approximately 8.5 percent (California Department of Finance 2025). Major population centers near Tuolumne County are Modesto, located 50 miles southwest, Stockton, located 65 miles west, and Sacramento, located 95 miles northwest.

Table 3.10-8 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 Tuolumne County and the State of California. The median value of owner-occupied housing and median household income in Tuolumne County are lower than that of the State of California. Also, the percentage of people in poverty within Tuolumne County (10.7%) is lower than that of the State of California (11.8%).

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Table 3.10-8. Households, Homeownership, Home Value, and Income in Tuolumne County and the State of California.

Household Information	Tuolumne County	California
Housing units, 2025	31,685	14,949,001
Homeownership rate, 2023, percent	74.1%	55.8%
Median value of owner-occupied housing units, 2023	$406,200	$759,500
Households, 2023	22,809	13,797,638
Persons per household, 2025	2.22	2.79
Median household income, 2023	$72,259	$100,149
Persons in poverty, 2023, percent	10.7%	11.8%

Source: United States Census Bureau 2025b, 2025c; California Department of Finance 2025

Table 3.10-9 provides a summary of population estimates by race for Tuolumne County and the State of California for the year 2020.

Table 3.10-9. Population Estimates by Gender and Race in Tuolumne County and the State of California in 2020.

Population: Gender/Race	Tuolumne County	California
POPULATION		
Female persons	26,619	19,636,903
White persons[1]	44,207	16,296,122
White alone, not Hispanic or Latino	42,254	13,714,587
Black or African American persons[1]	1,009	2,237,044
American Indian and Alaska Native persons[1]	984	631,016
Asian persons[1]	816	6,085,947
Native Hawaiian and Other Pacific Islander persons[1]	123	157,263
Persons reporting two or more races	5,673	5,760,235
Persons of Hispanic or Latino origin	7,124	15,579,652
PERCENT OF POPULATION		
Female persons, percent	48.5%	50.0%
White persons, percent[1]	80.6%	41.5%
White alone, not Hispanic or Latino	77.0%	34.9%
Black or African American persons, percent[1]	1.8%	5.7%
American Indian and Alaska Native persons, percent[1]	1.8%	1.6%
Asian persons, percent[1]	1.5%	15.5%
Native Hawaiian and Other Pacific Islander, percent[1]	0.2%	0.4%
Persons reporting two or more races, percent	10.3%	14.7%
Persons of Hispanic or Latino origin	13.0%	39.7%

Source: United States Census Bureau 2025b, 2025c

[1] Includes persons reporting only one race.

When compared to the State of California, Tuolumne County has a higher percentage of high school graduates, but fewer individuals with a bachelor's degree or higher (United States Census Bureau 2025b, 2025c).The Census Bureau estimates that 93.5 percent of Tuolumne County's population, 25 years or older, is educated through high school and 23.9 percent have obtained a bachelor's degree or higher. An estimated 84.8 percent of California's population, 25 years or older, has a high school education or higher and 38.1 percent have obtained a bachelor's degree or higher.

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According to the California EDD, in 2024 the annual average unemployment rate was 5.2 percent for Tuolumne County (EDD 2025d). Comparatively, the average unemployment rates for 2010 and 2015 were, respectively, 15.4 percent and 7.1 percent (EDD 2025d). These rates are similar compared to those for the State of California, which had the same unemployment rate of approximately 5.2 percent in 2024 and a higher unemployment rate of approximately 12.2 percent and 6.2 percent in 2010 and 2015 (EDD 2025b, 2025d).

Based on data from August 2025, government (31.03%), private education and health services (16.62%), and leisure and hospitality (15.75%) are the three largest industry types in Tuolumne County. Trade, transportation, and utilities accounts for 13.91 percent of employment in Tuolumne County and professional and business services make up 6.85 percent of the employees in the county (Table 3.10-10). These percentages are similar to the State of California, except for government, which accounts for 16.84 percent more employment in Tuolumne County when compared to the State (EDD 2025b, 2025e).

Table 3.10-10. Industry Statistics for Tuolumne County and State of California for August 2025.

Industry Type	Tuolumne County		State of California	
	Employees	**Percent Total**	**Employees**	**Percent Total**
Farming	110	0.56%	473,700	2.57%
Mining, Logging, and Construction	1,180	6.03%	930,600	5.05%
Manufacturing	770	3.94%	1,222,000	6.63%
Trade, Transportation, and Utilities	2,720	13.91%	3,055,200	16.58%
Information	130	0.66%	530,200	2.88%
Financial Activities	430	2.20%	784,000	4.25%
Professional and Business Services	1,340	6.85%	2,732,300	14.83%
Private Education and Health Services	3,250	16.62%	3,446,100	18.70%
Leisure and Hospitality	3,080	15.75%	2,040,500	11.07%
Other Services	480	2.45%	600,500	3.26%
Government	6,070	31.03%	2,614,400	14.19%
Total	**19,560**	**100%**	**18,429,500**	**100%**

Source: EDD 2025b, 2025e

3.10.3 Alpine County Socioeconomic Information

The population of Alpine County, in which approximately 1,090 acres of the existing FERC Project Boundary is located, was estimated at 1,177 people in January 2025 (California Department of Finance 2025). Between 2010 and 2024, Alpine County's population increased by 0.34 percent from 1,178 to 1,182, which is much lower than the State's approximate increase in population of 5.9 percent over the same 14 years (California Department of Finance 2012, California Department of Finance 2025). Alpine County's population decreased each year between 2020 and 2025, from 1,204 to 1,177 (California Department of Finance 2025).

With a population of 1,177 residents and 1,563 housing units, Alpine County has an estimated 2.15 persons per household and a vacancy rate of 66.7 percent (California Department of Finance 2025). The 2020 population density of Alpine County is an estimated 1.63 persons per square mile (United States Census Bureau 2025d). From 1990 to 2000, 2000 to 2010, and 2010 to 2020, the population

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of Alpine County increased by 7.48 percent, decreased by 1.51 percent, and increased by 2.21 percent, respectively. During those same periods, the number of housing units increased at a rate of 14.18 percent, 17.00 percent, and decreased by 12.60 percent, respectively. For comparison, the population of the State of California, during the same time periods, increased by 13.32 percent, 10.48 percent, and 6.13 percent, and the number of housing units increased by 8.97 percent, 12.18 percent, and 5.28 percent, respectively (Table 3.10-11).

Table 3.10-11. Population and Housing Units in Alpine County and the State of California.

Area		2025	2022	2020	2010	2000	1990
Alpine County	Population	1,177	1,191	1,204	1,178	1,196	1,113
	Housing Units	1,563	1,544	1,540	1,762	1,506	1,319
State of California	Population	39,529,101	39,185,605	39,538,223	37,253,956	33,721,583	29,758,213
	Housing Units	14,949,001	14,583,998	14,392,140	13,670,304	12,186,125	11,182,513

Source: California Department of Finance 2007, 2012, 2025

Table 3.10-12 shows that the majority of Alpine County residents fall outside of the working age range of 18 to 65 years old (752 or 63.9%). Only 425 or 36.1 percent of the Alpine County population falls between the ages of 18 and 65 years old. The State of California has a higher percentage between the ages of 18 and 65 years old (62.2%) (United States Census Bureau 2025b, 2025d).

Table 3.10-12. Population Age in Alpine County and the State of California.

Population: Age	Alpine County	California
Population under 5 years old	161	2,083,154
Persons under 5 years old, percent[1]	13.7%	5.3%
Persons under 18 years old	383	8,411,338
Persons under 18 years old, percent[1]	32.5%	21.3%
Persons 65 years old and over	369	6,524,861
Persons 65 years old and over, percent [1]	31.4%	16.5%

Source: United States Census Bureau 2025b, 2025d

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

Alpine County does not have any incorporated areas. Most of the population is concentrated around a few mountain communities: Markleeville, Woodfords, Bear Valley, and Kirkwood (California Department of Finance 2025). Major population centers near Alpine County are Reno, Nevada, located 69 miles north, and Sacramento, located 119 miles west.

Table 3.10-13 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 Alpine County and the State of California. The median value of owner-occupied housing is lower in Alpine County, but the median household income is higher than that of the State of California. Also, the percentage of people in poverty within Alpine County (12.3%) is higher than that of the State of California (11.8%).

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Table 3.10-13. Households, Homeownership, Home Value, and Income in Alpine County and the State of California.

Household Information	Alpine County	California
Housing units, 2025	1,563	14,949,001
Homeownership rate, 2023, percent	81.0%	55.8%
Median value of owner-occupied housing units, 2023	523,300	$759,500
Households, 2023	473	13,797,638
Persons per household, 2025	2.15	2.79
Median household income, 2023	$110,781	$100,149
Persons in poverty, 2023, percent	12.3%	11.8%

Source: United States Census Bureau 2025b, 2025d; California Department of Finance 2025

Alpine County is similar to the State of California in respect to ethnic diversity, with a higher percentage of white individuals and slightly less of all other races when compared to the state average. Table 3.10-14 provides a summary of population estimates by race for Alpine County and the State of California for the year 2020.

Table 3.10-14. Population Estimates by Gender and Race in Alpine County and the State of California in 2020.

Population: Gender/Race	Alpine County	California
POPULATION		
Female persons	574	19,636,903
White persons[1]	814	16,296,122
White alone, not Hispanic or Latino	801	13,714,587
Black or African American persons[1]	10	2,237,044
American Indian and Alaska Native persons[1]	236	631,016
Asian persons[1]	12	6,085,947
Native Hawaiian and Other Pacific Islander persons[1]	0	157,263
Persons reporting two or more races	119	5,760,235
Persons of Hispanic or Latino origin	84	15,579,652
PERCENT OF POPULATION		
Female persons, percent	47.7%	50.0%
White persons, percent[1]	67.6%	41.5%
White alone, not Hispanic or Latino	66.5%	34.9%
Black or African American persons, percent[1]	0.8%	5.7%
American Indian and Alaska Native persons, percent[1]	19.6%	1.6%
Asian persons, percent[1]	1.0%	15.5%
Native Hawaiian and Other Pacific Islander, percent[1]	0.0%	0.4%
Persons reporting two or more races, percent	9.9%	14.7%
Persons of Hispanic or Latino origin	7.0%	39.7%

Source: United States Census Bureau 2025b, 2025d

[1] Includes persons reporting only one race.

When compared to the State of California, Alpine County has a higher percentage of both high school graduates and individuals with a bachelor's degree or higher (United States Census Bureau 2025b, 2025d). The Census Bureau estimates that 96.3 percent of Alpine County's population, 25 years or older, is educated through high school and 42.1 percent have obtained a bachelor's degree

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or higher. An estimated 84.8 percent of California's population, 25 years or older, has a high school education or higher and 38.1 percent have obtained a bachelor's degree or higher.

According to the California EDD, in 2024 the annual average unemployment rate was 7.8 percent for Alpine County (EDD 2025f). Comparatively, the average unemployment rates for 2010 and 2015 were, respectively, 12.9 percent and 7.3 percent (EDD 2024b). These rates are higher compared to those for the State of California, which had an unemployment rate of approximately 5.2 percent in 2024 and approximately 12.2 percent and 6.2 percent in 2010 and 2015 (EDD 2025b, 2025f).

Based on data from August 2025, Alpine County has 750 employed residents. 300 of these employees work in state and local government (40.00%), 440 work in unspecified private service providing (58.67%), and 10 work in goods producing (1.33%). These percentages are difficult to compare to the State of California, as the industries are general and unspecified due to the incredibly small population size. However, government positions account for 25.81 percent more employment in Alpine County when compared to the State (EDD 2025b, 2025g).

3.10.4 Project Socioeconomic Information

CCWD employs approximately 80 staff and approximately 3 of these individuals work on the Project on a regular basis. Most of these staff are based out of CCWD's office in San Andreas, California. In addition, NCPA has upwards of 20 staff who support Project operations and maintenance mostly from NCPA's office in Murphys, California.

CCWD was formed in California in 1946 with the goal of providing water and sewer services to residents throughout Calaveras County. CCWD spans approximately 1,037 square miles (640,000 acres), covering the entire Calaveras County from the San Joaquin Valley in the west to the Sierra Nevada in the east. CCWD provides water service to approximately 13,500 connections across six service areas and sewer service to about 5,500 connections in 12 service areas. In addition to its core services, CCWD is involved in hydroelectric power development to support financial sustainability and water resources. CCWD operates on a $39 million annual budget for the 2025–2026 fiscal year (CCWD 2025).

CCWD pays approximately $552,020 each year to FERC in fees, including $480,520 in administrative expenses, and $71,500 for use of federal lands.

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

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3.11 Cultural Resources

Per 18 C.F.R. § 5.6 (d)(3)(x), this section provides a description of the known cultural or historical resources of the proposed Project and the surrounding area. Components of this description include identification of any historic or archaeological site in the proposed Project Vicinity; existing discovery measures such as surveys, inventories, and limited subsurface testing work; identification of Tribes that may attach religious and cultural significance to historic properties within the Project Boundary or in the Vicinity.

This section details information regarding cultural resources[1] within the Project's proposed area of potential effects (APE) and a surrounding 0.5-mile search radius. Under Section 106 of the National Historic Preservation Act (NHPA), and its implementing regulations at 36 C.F.R. § 800.16(d), federal agencies are required to consider the effects of their undertakings on historic properties (i.e., cultural resources eligible for or listed on the National Register of Historic Places [NRHP]).[2] In this case, FERC's issuance of a new license for the continued operations and maintenance of the Project is a federal undertaking that must comply with Section 106 (per 36 C.F.R. § 800.16[y]). FERC, or CCWD if designated by FERC as the non-federal representative for day-to-day NHPA Section 106 consultation, will consult with potentially affected Native American Tribes and agencies during the Project relicensing regarding Section 106 compliance efforts. Under the current NHPA Section 106 implementing regulations at 36 C.F.R. § 800.16(d), the APE is defined as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." Based on this regulatory definition, the APE for the Project relicensing has been initially identified by CCWD as including all lands within the FERC Project Boundary. This is the area identified by CCWD where Project operations or Project-related activities may cause changes in the character or use of historic properties, if any such properties exist. Pursuant to 36 C.F.R. § 800.4(a)(1), CCWD, once designated by FERC as the non-federal representative for day-to-day NHPA Section 106 consultation, will consult with the California State Historic Preservation Officer (SHPO) regarding the determination of the APE.[3]

This section describes CCWD's efforts, to date, to identify cultural resources in the APE based on reasonably available information. This includes researching the archaeological, ethnographic, and historic contexts of the Project (i.e., the Project Setting) in order to identify the range of potential cultural resources in the APE and their potential significance under the National Register of Historic Places (NRHP). The Project Setting is described in Section 3.11.1. CCWD has also

[1] For this section, a cultural resource is any precontact or historic district, site, building, structure, or object, regardless of its eligibility for listing in the National Register of Historic Places. Tribal resources are discussed in Section 3.12 of this PAD.

[2] "Historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian Tribe or Native Hawaiian organization and that meet the National Register criteria" (36 C.F.R. § 800.16(l)(1).

[3] Please note that the Advisory Council on Historic Preservation (ACHP) is proposing amendments to the NHPA section 106 consultation regulations (36 C.F.R. Part 800). As of the date of this PAD, ACHP has not yet issued its proposed rules via a Notie of Proposed Rulemaking. If final rules are adopted, they will likely influence the scope and requirements for the section 106 consultation process for Project relicensing.

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requested of the California Historical Resources Information System's (CHRIS) Central California Information Center (CCIC) a records search of previous cultural resources investigations and previously recorded cultural resources which intersect APE and a 0.5-mile buffer around the APE. The results of the records search are described in Section 3.11.2. Section 3.11.3 describes known Project-related effects to cultural resources and additional data needs.

3.11.1 Setting

The Project APE is located on the west slope of the Sierra Nevada in the NFSR Basin in Calaveras, Tuolumne, and Alpine counties, California. This section provides an overview of the relevant precontact archaeological, ethnographic, and historic contexts relevant for understanding the range of cultural resources that may be present in the APE.

3.11.1.1 Precontact Era Context

Archaeological studies have focused on various areas of the Sierra Nevada since the mid-1860s, when human remains of purported great antiquity were discovered as a result of mining activities (Brewer 1866; Putnam 1879; Taylor et al. 1992). Archaeological research in the central Sierra Nevada began with studies sponsored by the University of California Archaeological Survey (UCAS) established by Robert F. Heizer in 1948. While most of these early investigations were descriptive in nature, they were important for providing the first detailed documentation of cultural variation in the central Sierra Nevada (Davis 1953; Fredrickson 1949; Johnson 1967; Payen 1959).

A greater number of cultural resources studies were undertaken in the Sierra Nevada after national laws and policies related to the preservation of cultural resources were passed. These included the Reservoir Salvage Act of 1960, the National Historic Preservation Act of 1966, the National Environmental Policy Act of 1969, and Executive Order 11593. Building upon the archaeological and ethnographic work of previous decades and supported by the environmental legislation of the 1960s, cultural resources management studies constitute most of the archaeological research within the APE. Important research relevant to the APE includes studies conducted as part of the New Melones Archaeological Project (NMAP) as well as data recovery studies conducted on behalf of land managing agencies and FERC hydroelectric developments along the Stanislaus River (see Section 3.11.2.). Data from this body of work were utilized to compare archaeological trends across the Sierra Nevada and California (Hull and Moratto 1999; Hull 2007).

The earliest archaeological evidence for human occupation in North America dates to the Terminal Pleistocene epoch, which ended approximately 10,000 years ago. During that time North America experienced a cool and wet climate, and human expansion into the continent was marked by the widespread adoption of large, fluted points thought to be used to bring down big game, including now-extinct megafauna. People may have settled in the Sierra Nevada as early as 12,000 years ago (Davis and Shutler 1969; Price and Johnston 2002; Pryor and Weisman 1991). Some isolated fluted points have been found at higher elevations, but the archaeological data suggest that Terminal Pleistocene occupations across the central Sierra Nevada were relatively sparse compared to settlements found around the pluvial lakes closer to the Great Basin to the east, or to the west in the Central Valley.

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The transition from the Terminal Pleistocene to the Early Holocene is generally marked by warmer, drier conditions and the extinction of the Pleistocene megafauna. Across California, populations began diversifying their subsistence strategies evinced by more diverse toolkits for vegetal and animal resources. As a result, populations began expanding across California. Early Holocene sites dating from ca. 10,000 to 7,500 years before present (B.P.) are present along the Stanislaus River watershed, which may represent initial, though sporadic, occupation of the central Sierra Nevada shortly after retreat of the Sierran glaciers. Early Holocene toolkits at these sites contain large, stemmed points and other large bifaces, a variety of formalized scrapers and flake tools, and a diverse lithic assemblage with large proportions of non-obsidian debitage. However, they generally lack milling equipment associated with processing hard seeds and/or other materials. Early central Sierra Nevada assemblages are otherwise comparable to the earliest components at the C. W. Harris Site, Buena Vista Lake, the Borax Lake Site, and other sites from that period in California and the Far West (Hull and Moratto 1999; Moratto and Davis 1988; Willig et al. 1988; Peak and Crew 1989; Peak and Neuenschwander 1990:212).

Sites representing occupation of the central Sierra Nevada between ca. 7,500 and 5000 B.P. are relatively rare, and little is known about lifeways during this interval (Hull and Moratto 1999). However, Peak and Crew (1989) identified a component at site CA-CAL-S342 along the Stanislaus River dating between 6,800 and 6,400 B.P. Toolkits associated with this component build on earlier artifact forms and includes stemmed, leaf-shaped, lanceolate, and other projectile points and bifaces, variously formed scrapers, gravers, discoidals, and other flaked-stone tools of obsidian, crypto-crystalline silicate (CCS), and siliceous metavolcanics. Other artifacts identified with this component include net weights, mesh gauges, atlatl weights, and steatite artifacts. Peak and Crew (1989) identified an increase in the number of ground stone artifacts at CA-CAL-S342 between 6,400 and 6,000 B.P., which may indicate higher reliance on vegetal processing during a potential environmental shift in the locality, though earlier tool forms continue to be utilized. This may indicate a shift in use of the site from being focused on hunting from 6,800 to 6,400 B.P., to one where hunting and other activities took place from 6,400 to 6,000 B.P. (Peak and Crew 1990:229).

There is less evidence for intensive occupation of the Stanislaus River area during the Middle Holocene between 6,000 and 3,200 B.P., though Peak and Crew (1989:Table 4.5) found some evidence for continued and adapting use of CA-CAL-S342 during this period. Overall, sites in the area during this period are marked by mixed assemblages reflecting brief visits by diverse, small groups. Activities such as hunting, flaked-stone tool production and maintenance, and food/material processing with hand stones and grinding slabs occurred, as inferred by the available evidence (Hull and Moratto 1999:89). The NMAP identified sites with Humboldt and Pinto series points, which indicates occupation of the Stanislaus at New Melones between 5,500 and 3,000 B.P. (Hull and Moratto 1999:89; Moratto, Tordoff, and Shoup 1988; Moratto et al. 1984). At CA-CAL-S286, the NMAP studies identified an advanced CCS and greenstone flaked tool industry by 5,500 B.P. that does not appear in subsequent components (Moratto et al. 1984: 102-103). Overall, more data are needed about the economy and land-use strategies of the evidently small, mobile groups who inhabited the Stanislaus River locality at various times during the Middle Holocene (Hull and Moratto 1999:91).

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There is strong evidence for increased technological and social complexity across California at various times during the Late Holocene (after ca. 3,000 B.P.). This period witnessed the development of stratified societies that contained political and social elites who gained status via both their deeds and their birth. Technological advancements, such as the bow and arrow, acorn-based economy, and improved food storage techniques, also emerged during the Late Holocene. Arrow points and small, triangular and parallel-sided bifaces, bedrock mortars, stone hullers, and a variety of small, expedient flake tools mark late prehistoric assemblages. Trade networks and other mechanisms provided for the movement of local goods over long distances in exchange for exotic products.

Intensive and long-term use of the Stanislaus River is evident after 3,000 B.P. (Hull and Moratto 1999:91-93). By this time, there are "larger populations, more sedentism, tighter spatial clustering of settlements, and higher levels of both intra- and inter-site organization than in any earlier period" (Hull and Moratto 1999:92). Between 3,000 and 1,450 B.P., intensively occupied sites used for long-term habitation in the NMAP study area were excavated containing " brown midden soils… buried earthen house floors (sic); numerous millingslabs and manos; infrequent cobble mortars and shaped pestles; conical pipes; (*Haliotis* and *Olivella*) beads; atlatl weights; medium-to-large bifaces of Elko Eared, Elko Comer-notched, Sierra Concave Base, Triangular Contracting Stem, Medium Triangular Contracting Stem, Medium Comer-notched, Bipoint, and Sierra Side-notched types; abundant debitage, of which obsidian is the predominant material; and flexed burials, often under stone cairns and sometimes furnished with *Olivella* and/or *Haliotis* ornaments" (Hull and Moratto 1999:90-91). Trade relationships with peoples to the east and west are reflected by the large quantities of shell beads, ornaments, and obsidian acquired from both the North Coast Ranges and the Bodie Hills Vicinity.

The NMAP studies show a discontinuity in the occupation of the area between 1,450 B.P and 650 B.P., picking up again after 650 B.P., which may reflect population replacement and expansion in the region. After this period and during the time of non-Native contact, the Stanislaus River was heavily and intensively occupied, with sites such as CA-TUO-S449 representing the appearance of large "village communities" where complex activities occurred. Such sites contain one or more large communal structures, smaller habitation structures, cemeteries, and an abundance of "socioethnic" artifacts (Hull and Moratto 1999:93). Desert Side-notched, Cottonwood Triangular, and Tuluwat (Gunther barbed) points are found at these late period sites along the Stanislaus, which indicate the switch from atlatl to bow-and-arrow technology by about 1,100 B.P. (Stevens et al. 2019). Bedrock mortars become common in the area by 610 B.P., a technology and land use pattern which may have been adopted into the Stanislaus River area from groups to the west of the central Sierra Nevada (Whitaker and Parker 2020:160).

By 1848, named villages are identified at Horseshoe Bend (*Tipotoya*), Robinsons Ferry/Melones (*Wiiyii*), Mormon Creek (*Pokto-no*), and on Bear Creek (*Suchumumu*) (Kroeber 1925). The similarities between archaeological assemblages identified by the NMAP and the ethnographic data and linguistic models indicate that the occupation of the Stanislaus River at New Melones after 1300 were, predominantly, the ancestors of the Central Sierra Miwok (Hull and Moratto 1999:93).

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3.11.1.2 Ethnography

Based largely on the ethnographic research of Kroeber (1925), Levy (1978), and Merriam (1907, 1955), the Project Area lies within the lands of the Sierra Miwok. Ethnographic accounts regarding the territorial boundaries of Native American groups in the Sierra Nevada are not always consistent with one another. According to Levy's (1978) research, the Central Sierra Miwok, who occupied the foothill and higher elevation portions of the Tuolumne and Stanislaus river drainages, clearly would have been the most likely inhabitants of the Project Area and Vicinity during the late precontact and early historic periods. Several known ethnographic sites lie along the Stanislaus and Tuolumne rivers (Levy 1978:400). Given the proximity of traditional Northern Sierra Miwok lands to the Project Vicinity, however, one cannot rule out the possibility that there was a certain degree of cultural interaction between these two groups. While the ancestors of the Sierra Miwok may have been resident in the central California delta region for several millennia, occupation of the Sierra Nevada foothills is a more recent event, occurring 800–500 years ago (Hull and Moratto 1999; Levy 1978).

Goldbern and Moratto (1983) emphasized that land occupation constantly shifted. For example, Washoe tribes would seasonally arrive at parts of the Stanislaus River as far downstream as Big Trees, which is considered to be a part of Miwok lands (Barrett 1917; Kroeber 1925). Evidence of at least occasional Paiute occupation can be found on the western slopes of the central Sierra Nevada, in the form of petroglyphs and ethnographic testimony (Theodoratus 1976; Merriam 1955).

Linguistically, Central Sierra Miwok is subsumed under the Eastern Miwok language, which represents one of two major branches of the Miwokan subgroup of the Utian language family (see Levy 1978:398). Evidence indicates that the Eastern Miwok separated from the Western Miwok branch some 2,500 years ago and suggests that the Miwok have resided in the central California region for at least several thousand years.

Central Sierra Miwok settlement and subsistence systems were suited to the diverse natural resources present in the lower and middle elevations of their territory. In general, Sierra Miwok technology was typical of the region, and few material elements of their daily lives stand out as unique. Like other peoples in the area, the Miwok utilized a mixed approach that involved both hunting and gathering. They subsisted mainly on wild plant foods and mammals. Acorns were the primary vegetal food; animal resources included large and small game such as deer, pronghorn, tule elk, birds, and fish (Levy 1978:402). The Central Sierra Miwok moved to higher and lower elevations at various times of the year to procure foods not found near their permanent settlements. Main settlements were situated near staple food sources, such as acorn-bearing oak groves, while the location of smaller campsites depended on the spatial distribution and availability of seasonal resources. At lower elevations, the Central Sierra Miwok lived in conical houses made of tule matting tied to a framework of poles. Semisubterranean shelters were sometimes used as winter dwellings. Flaked and ground stone tools used by the Miwok included knives, arrow and spear points, rough cobble and shaped pestles, bedrock mortars, and grinding stones. Coiled and twined basketry was manufactured for storage, cooking, serving, and processing foods (Miksicek et al. 1996:2 11).

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Socially, the Miwok were organized in extended family groups with multiple household units composing the more substantial villages. The tribelet was the primary sociopolitical unit for the Miwok. A tribelet consisted of multiple villages within a given area and a chief whose degree of influence varied, in part according to elements of heredity and lineage. Tribelets were independent and sovereign nations with bounded territories, thus exerting control over natural resources contained therein (Miksicek et al. 1996:2 8). Within each tribelet there were several permanently inhabited settlements and seasonally occupied campsites used at various times during the annual round of hunting, fishing, and gathering activities. Lineages were of primary importance politically, and their members cooperated in the exploitation of economic resources.

The Washoe also inhabited portions of the Project Vicinity, but their territory was largely situated in the higher elevations near Relief Reservoir. Historically, the Washoe did not have any permanent settlements west of the Sierra Nevada, although they still maintained amiable relations with the Sierra Miwok. The Central Sierra Miwok apparently shared portions of their territory with the Washoe for the purposes of hunting and other resource procurement tasks (Jackson et. al 1994:7 3). Washoe economic and technological systems varied from those of their Miwok neighbors due in large part to variation in elevation and available resources. Politically and socially, however, the Washoe and Central Sierra Miwok shared very similar social and political foundations.

Non-Native contact with the Miwok first occurred during Spanish exploratory expeditions to the Sacramento-San Joaquin Valley in the second part of the eighteenth century. The Sierra Miwok are noted in the neophyte registers at Mission San Juan Bautista late in the Mission Period. An estimated 50 percent of the Miwok population was devastated between 1830 and 1833 by a severe epidemic (possibly malaria) that swept through the Sacramento and San Joaquin valleys. The discovery of gold in the late 1840s brought people from around the world into the foothills and introduced new diseases to the Miwok populations. Following treaty negotiations with the federal government in 1850, the Miwok were forced to give up their rights to their homeland and were placed under government control. By the late nineteenth and early twentieth centuries, most of the Miwok population lived on rancherias scattered throughout the Sierra Nevada foothills, although some were relocated to the Fresno area (Miksicek et al. 1996:2 18).

3.11.1.3 History

The Project is situated in parts of Calaveras, Tuolumne, and Alpine counties, within the region historically known as Gold Country (or Mother Lode Country). Gold Country gained notoriety for its gold, silver, and mineral deposits sought by waves of immigrants beginning with the 1849 California gold rush. The arrival of miners prompted development of the region, and settlements were established around the most productive mining areas, along with transportation networks, water systems, and supporting industries. Historical themes associated with the region include mining, agriculture, settlement, lumber, transportation, communication, water storage, and hydroelectric development.

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Tuolumne County

Tuolumne County, is one of the State of California's original counties, established in 1850 when California entered the Union. In the summer of 1848, gold was discovered in present-day Tuolumne County, attracting immigrants of European, Mexican, and Chinese ancestry and making the county one of the state's primary mining districts. Those early miners also established the area's timber and lumber industry, which was necessary for construction of flumes that conveyed water to the mines, used to build gold-mining devices, and enabled construction of commercial and residential buildings. Timber demand further increased as large, industrial-scale hard-rock mining expanded (Tuolumne County Historical Society n.d.).

Increased settlement during the late nineteenth and early twentieth centuries coincided with expansion of the county's important agricultural industry, which relied in large part on large stock ranches. The Sierra Railway, incorporated in 1897, linked to the transcontinental railroads in Oakdale, bringing the county's agricultural products, lumber, and ore to national markets (Tuolumne County CA GenWeb Project 2011 rev. 2017). During the early twentieth century, gold mining declined as the lumber industry became a prominent employer in Tuolumne County. The agricultural industry remained strong in cultivation of fruit, hay, and grain, and in stock raising (Tuolumne County Historical Society n.d.).

In recent years, the largest employers in Tuolumne County have been the healthcare, retail, and hospitality industries (Statistical Atlas 2018). The county provides several recreational opportunities, including whitewater rafting, fishing, skiing, heritage travel, and visiting Yosemite National Park, more than half of which is located within the county's eastern section (Visit California 2026).

Calaveras County

Until the discovery of gold, Calaveras County had few non-Native settlers. Like Tuolumne County, Calaveras County was one of California's original counties and included present-day Amador County (established in 1854) and portions of Mono County (established in 1861) and Alpine County (established in 1864). Calaveras County gained fame for the biggest gold nugget found in the United States, a 195-pound nugget found in Carson Hill. The county was also famous for Copperopolis, which produced copper valued at $72 million, the Mitchler Hotel (California Historical Landmark) where the notorious outlaw Black Bart often stayed, and as the setting for Mark Twain's story "The Celebrated Jumping Frog of Calaveras County" (Calaveras History 2026b).

Circa 1860, following the decline of the region's placer deposits, some of the county's Gold Rush settlements evolved into towns, attracting farmers and stock-raisers. In the 1920s, hydroelectric power and water storage began to play increasingly important roles in economic development. From its establishment in 1927 until the late 1960s, the Calaveras Cement Company plant in the county seat of San Andreas was the county's largest employer. As with other areas in the Sierra Nevada foothills, Calaveras County has experienced rapid population growth and the expansion of its economy based on the growth of government, service industries, construction, tourism, recreation, and agriculture (Calaveras History 2026a, 2026b).

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Alpine County

Alpine County was created in 1864 from parts of El Dorado, Amador, Calaveras, Tuolumne, and Mono counties following the discovery of silver ore deposits during the late 1850s and early 1860s (Calaveras History 2026a). The location of Alpine County's major mining activity and agricultural areas influenced the development of communities and supply centers. As the population of the mining camps declined, the economies of local communities turned to industries such as ranching and lumber. Many settlements in the defunct mining districts became ghost towns (Alpine County 2026).

With a population of approximately 1,140 as of July 2024, Alpine is California's least populated county, with nearly all its land (96%) in public ownership. Most income is derived from tourism and recreation associated with visitors to Lake Tahoe and Western Nevada, including fishing, camping, hiking, rafting, and skiing (Alpine County 2026).

3.11.1.4 Development of the North Fork Stanislaus River Hydroelectric Project

During the 1960s, Calaveras County began seeking financing for construction of a hydroelectric project in which the financier would purchase power generated by the project, and the county would store water in project reservoirs for irrigation and domestic use in the foothill towns. The project involved the construction of dams and associated facilities in the high Sierra Nevada of Tuolumne, Calaveras, and Alpine counties, upstream of the New Melones reservoir (Garretson 1975).

In 1966, the State Water Rights Board (later merged into the State Water Resources Board) approved the initial plan for Calaveras County to develop hydroelectric power along the North Fork of the Stanislaus River; however, the project stalled during the late 1960s. According to state officials, California power companies and agencies preferred to generate electricity using oil plants near large cities rather than buying power from remote hydroelectric developments. This preference changed in the early 1970s following conflict in the Middle East that resulted in an international oil shortage (Garretson 1975).

By 1976, the Calaveras County Water District's (CCWD's) plan was for CCWD to construct the project and for the Sacramento Municipal Utility District (SMUD) to provide financing, with increased investment by SMUD following anticipated approval by the Federal Power Commission (predecessor to FERC). The total cost of the agreement was $425 million, not including interest paid on the bond sales and any escalation of monthly payments to CCWD after 10 years. Environmental concerns were related to, among other things, inundation of forested canyon and wilderness areas, impacts to water quality of streams, and loss of recreational use of streams by visitors to Calaveras Big Trees State Park (Noffsinger 1976).

Although SMUD had expressed interest in funding the project, the Northern California Power Agency (NCPA), formed in 1968, paid $10,000 to acquire an option from CCWD to develop a scaled-down version of the project. NCPA is a collective municipally owned electrical distribution system which, at that time, included the cities of Roseville, Lodi, Gridley, Biggs, Redding,

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Healdsburg, Ukiah, Palo Alto, Santa Clara, and Lompoc, and the rural Plumas-Sierra Electric Cooperative (Dempster 1977).

By 1977, NCPA's members served a total of 400,000 customers in Northern California (White 1977). That year, NCPA members agreed to pursue financing for construction of the hydroelectric project. The scaled-down project involved enlarging PG&E's New Spicer Meadows Reservoir and constructing two additional powerplants. The project would reduce NCPA's dependence on PG&E and, in return for sharing its Stanislaus River water rights, Calaveras County would receive approximately $15 million worth of water supply facilities on other streams from NCPA to help meet its growing population of "second-home" residents (Gray 1978; *Modesto Bee* 1977).

In June 1978, Calaveras County voters approved a $350 million revenue bond issue to finance the North Fork Stanislaus River Hydroelectric Project, with power contracted to NCPA, which had its own power distribution facilities. Construction was anticipated to be completed by 1984. Calaveras County would receive water from the enlarged reservoir, and project revenue would finance water delivery systems to other areas of the county yet to be developed. NCPA would receive nearly all power generated at the project powerplants (Gray 1978).

In January 1982, three years after Calaveras County residents approved the revenue bond issue, FERC issued a license to CCWD for the project. The final engineering design work was contracted to Bechtel Corporation and Tudor Engineering of San Francisco for the dams, powerhouses, diversion tunnels and access roads (*Fresno Bee* 1982). Sierra Constructors, a joint venture of Guy F. Atkinson Company (San Francisco) and Harrison Western Corporation (Denver), won the construction contract. Reportedly the nation's largest fixed-price hydroelectric contract, it required that the contractors absorb any cost overruns and pay penalties to NCPA if the work was not completed on time (Hoye 1986; *San Francisco Chronicle* 1985).

Construction was scheduled to begin in summer 1985, and commercial operations were anticipated to begin in February 1990 (*Biggs News* 1985). In return for funding construction, NCPA was exclusively entitled to project output for the following 46 years "to meet peak electrical requirements on demand and to reduce energy purchases from other utilities and power authorities" (*Sacramento Bee* 1985). Upon completion, CCWD owned the facilities, and NCPA was responsible for operations and maintenance (*Biggs News* 1985; Hoye 1986).

Project operations began in February 1990. The facilities encompassed four dams, 10 miles of underground tunnels, two powerhouses, over 50 miles of overhead and underground lines, camp sites, and boating facilities. Four months after operations began, in June 1990, Guy F. Atkinson Construction Company was honored at the annual Associated General Contractors of California Constructor Awards for its work on the North Fork Stanislaus River project (*San Francisco Chronicle* 1990).

3.11.2 Existing Cultural Resources

On January 9, 2026, CCWD received from the CCIC the results of a records search for previous cultural resources investigations and previously recorded cultural resources which intersect the APE and a surrounding 0.5-mile buffer. The results are summarized in the subsections below.

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3.11.2.1 Previous Cultural Resources Investigations

A total of 160 cultural resources studies intersect portions of the APE. The records search results provided by CCIC included a total of 175 listed reports; however, 15 of these are duplicate studies for the New Melones Archaeological Project (NMAP) for Alpine, Calaveras, and Tuolumne counties (Table 3.11-1). The records search revealed an archaeological inventory conducted for the initial Project licensing by California State University Sacramento (CSUS). An Historic Properties Management Plan (HPMP) was subsequently developed for the Project. Additional intensive cultural resources studies were conducted in the 1980s for the Project by Peak and Associates, Inc. Multiple reports were published for the NMAP between the 1970s to late 1980s. Work at New Melones is first identified in the records search with an early 1949 archaeological appraisal conducted by the Smithsonian Institute, and continuing with intensive cultural resources studies at New Melones conducted and published in the 1970s and 1980s. Other cultural resources studies conducted in the APE since the 1970s and into 2025 include compliance studies conducted by or on behalf of federal land-management agencies including STF, BLM, and USACE, as well as for CAL FIRE, and other utility companies including NCPA, the Utica Power and Water Authority, and PG&E.

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Table 3.11-1. Previous cultural resources studies within the Project APE.

Count	Report No.	Year	Author(s)	Title
1.	AP-00032	1977	Madsen, M.	Part I: Addendum Report to An Intensive Archaeological and Historical Survey of Portions of the North Fork Stanislaus River Hydroelectric Development
2.	AP-00040	1981	Peak & Associates, Inc.	Report on the Evaluation of Significance of Cultural Resources Within the Impact Zones of the Proposed North Fork Stanislaus River Hydroelectric Development Project
3.	AP-00041	1986	Peak & Associates, Inc.	Resurvey of the Highland Creek Arm of Spicer Meadow Reservoir, Alpine County, California
4.	AP-00042	1986	Peak & Associates, Inc.	Preliminary Report on the Test Excavation at GM-2, a Prehistoric Site in Gabbott Meadow, Alpine County, California
5.	AP-00211	1991	Peak, A. S., N. J. Neuenschwander, M. F. Rondeau, V. L. Rondeau, and D. L. True	Cultural Resource Studies, North Fork Stanislaus River Hydroelectric Development Project; Volume V; Part 1; Archeological Data Recovery of ... Upper Mountain Locale, Alpine and Tuolumne Counties, California
6.	AP-00371	1980	Theodoratus, D. J. et al.	Historic and Ethnographic Overview, North Fork Stanislaus River Hydroelectric Development Project
7.	AP-01486	1977	Madsen, J. H., J., Seldomridge, and M. Rondeau	An Intensive Archaeological and Historical Survey of Portions of the North Fork Stanislaus River Hydroelectric Development
8.	AP-01728	1987	Peters, M. P.	Draft: Cultural Resource Studies North Fork Stanislaus River Hydroelectric Development Project Volume I: Ethnohistory, Part II: Upper Mountain Locale Alpine and Tuolumne Counties, California
9.	AP-03932	1999	Montgomery, B.	Stanislaus National Forest, Heritage Resources 1996 Sierra Nevada Programmatic Agreement Project Certification, Spicy Sap Restoration (2151), Report 05-16-2151
10.	AP-04277	1980	Rondeau, M. F.	North Fork Stanislaus Archaeological Project, Alpine, Calaveras and Tuolumne Counties, Phase I
11.	AP-04544	1988	Peak & Associates, Inc.	Preliminary Report on the 1988 Excavations at CA-ALP-149
12.	AP-04553	1988	Peters, M. P.	Clarks Flat and Upper Mountain Locale, Alpine and Calaveras Counties, California (Cultural Resource Studies, North Fork Stanislaus River Hydroelectric Project, Volume I: Ethnohistory)
13.	CA-00095	1990	Colston D.	USDA Forest Service, Stanislaus National Forest, Short Form 1989 Insect/Drought Salvage Cultural Resource Inventory Report CRIR #05-16-320, Name of Project: Mesothorax Insect Salvage
14.	CA-00096	1979	Comptroller Generals Office of the United States	Report of the Comptroller General of the United States, Uncertainties Over Federal Requirements for Archeological Preservation at New Melones Dam in California
15.	CA-00114	1989	Danielson, R. T.	United States Department of Agriculture, Forest Service, Cultural Resource Inventory Report, CRIR #05-16-362, Project: Candy Rock Road
16.	CA-00154	1949	Fredrickson, D. A.	Appraisal of the Archaeological Resources of New Melones Reservoir, Calaveras and Tuolumne Counties, California
17.	CA-00198	1976	Moratto, M. J.	Supplement to Part 5: New Melones Archaeological Project--Stanislaus River, Calaveras and Tuolumne Counties, California: Phase VII. Appendix 16: Recommendations for Mitigation, New Melones Archaeological Project, Phases VII-XII
18.	CA-00200	1976	Moratto, M. J. and A. Hall	New Melones Archaeological Project --Stanislaus River, Calaveras and Tuolumne Counties, California: Phase VI; Part 2: Ethnography and Ethnohistory
19.	CA-00202	1974	Moratto, M. J. and L. M. Riley	An Archaeological Overview of the New Melones Reservoir Project Area, Calaveras and Tuolumne Counties, California
20.	CA-00272	1988	Napton, L. K.	A Cultural Resource Sensitivity Study of the 1028-Acre David G. De Mera Property, Murphys, Calaveras County, California
21.	CA-00288	1977	Napton, L. K. and E. A. Greathouse	Archaeological Reconnaissance of the Love Timber Sale, Stanislaus National Forest
22.	CA-00288A	2016	Berlin, K.	Stanislaus National Forest, Heritage Resources, 2013 Regional Programmatic Agreement Project Certification, Encore Rx Project, CRMR 05-16-2327
23.	CA-00324	1986	Peak & Associates, Inc.	Cultural Resource Assessment of the Hunter Dam Road, Calaveras County, California
24.	CA-00325	1986	Peak & Associates, Inc.	Cultural Resource Assessment of the Hunter Dam Road (Private Land), Calaveras County, California
25.	CA-00335	1990	Peak, A. S., H. L. Crew, D. L. True, D. R. Touhy, G. J. West, and C. V. Haynes	Cultural Resource Studies, North Fork Stanislaus River Hydroelectric Development Project. Volume II, Part II: An Archaeological Data Recovery Project at CA-CAL-S342, Clarks Flat, Calaveras County, California
26.	CA-00337	1990	Peak, M. A.	Cultural Resource Studies, North Fork Stanislaus River Hydroelectric Development Project: The History of Clarks Flat, Calaveras County, California
27.	CA-00370	1976	Theodoratus, D. J.	An Ethnographic Study of the New Melones Lake Project
28.	CA-00371	1980	Theodoratus, D. J., H. McCarthy, J. V. Siry, and C. M. Blount	Historic and Ethnographic Overview North Fork Stanislaus River Hydroelectric Development Project
29.	CA-00393	1989	Whitesell, C. E.	1989 Insect/Drought Salvage. Cultural Resource Inventory Report CRIR #05-16-396. MISUCA Helicopter Insect Salvage Sale (I.S.S.)
30.	CA-01146	1978	Iroquois Research Institute	Cultural Resources Management Plan for New Melones Project Area California. REPORT MISSING
31.	CA-01177	1976	Moratto, M. J.	New Melones Archaeological Project--Stanislaus River, Calaveras and Tuolumne Counties, California: Phase VI; Part 1 Introduction and Environment

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Table 3.11-1. (Continued).

Count	Report No.	Year	Author(s)	Title
32.	CA-01178	1976	Moratto, M. J.	New Melones Archaeological Project-- Stanislaus River, Calaveras and Tuolumne Counties, California: Phase VI; Part 3 Archaeological Inventory
33.	CA-01185	1976	Moratto, M. J. and L. M. Riley	New Melones Archaeological Project-- Stanislaus River, Calaveras and Tuolumne Counties, California: Phase VI; Part 4, Archaeological Sampling
34.	CA-01420	1976	Moratto, M. J.	New Melones Archaeological Project--Stanislaus River, Calaveras and Tuolumne Counties, California: Phase VI; Part 5 Resources Management
35.	CA-01421	1978	Moratto, M. J.	New Melones Archaeological Project --Stanislaus River, Calaveras and Tuolumne Counties, California: Phase VI (Abstract)
36.	CA-01485	1981	Peak, A. S. and H. L. Crew	North Fork Stanislaus River Hydro-Electric Development Project Proposed Plan for Determination of Effect on Clarks Flat Locale Cultural Resources
37.	CA-01486	1977	Madsen, J., J. Seldomridge, and M. Rondeau	An Intensive Archaeological and Historical Survey of Portions of the North Fork Stanislaus River Hydroelectric Development
38.	CA-01487	1978	Greenway, G.	An Archaeological Survey of the Proposed Collierville Power Plant, Penstock, and Access Road Locations
39.	CA-01500	1985	Decker, D.	Department of the Interior, Bureau of Land Management, Cultural Resource Inventory Report, Report Name: McLaren Engineering Use Permit
40.	CA-01645	1979	Fitting, J., H. Crew, and J. Costello	Cultural Resources Mitigation Program; New Melones Lake Project; Phase I Draft Report; Volume I, Appendix A: Consultants Reports
41.	CA-01648	1979	Fitting, J. E., H. L. Crew, and J. G. Costello	Cultural Resources Mitigation Program, New Melones Lake Project, Phase I Draft Report Volume III, (Part 2 of 2), Historic Descriptive Site Reports
42.	CA-01651	1979	Fitting, J. E., J. G. Costello, and J. L. Crew	Cultural Resources Mitigation Program; New Melones Lake Project; Phase I; Draft Report Volume IV (Part 2 of 2); Prehistoric Artifact Inventory (Contract Number DACW05-78-C-0074)
43.	CA-01652	1979	Fitting, J. E., H. L. Crew, and J. G. Costello	Cultural Resources Mitigation Program; New Melones Lake Project; Phase I Draft Report; Volume IV, Addendum to Book 1, Historic Artifact Chronology Chart (Contract Number DACW05-78-C-0074)
44.	CA-01653	1983	Moratto, M., R. S. Greenwood, and L. H. Shoup	New Melones Archaeological Project, California: Review and Synthesis of Research at Historical Sites; Final Report of the New Melones Archaeological Project, Vol. VII
45.	CA-01654	1976	Jackson, W. T., S. D. Mikesell, and H. Schwartz.	Historical Survey of the New Melones Reservoir Project Area (Contract Number DACW05-76-C-0032)
46.	CA-01655	1982	Moratto, M. J. and R. S. Greenwood	New Melones Archaeological Project, California: Research Background; Final Report of the New Melones Archaeological Project, Vol. III
47.	CA-01656	1974	Moratto, M. J. and L. M. Riley	An Archaeological Overview of the New Melones Reservoir Project Area, Calaveras and Tuolumne Counties, California
48.	CA-01658	1979	Fitting, J. E., H. L. Crews, and J. G. Costello	Cultural Resources Mitigation Program: New Melones Lake Project; Phase I Draft Report; Volume I; Project Background and Research Design (Contract DACW05-78-C-0074)
49.	CA-01659	1979	Fitting, J. E., H. L. Crew, and J. G. Costello	Cultural Resources Mitigation Program; New Melones Lake Project; Phase I Draft Report; Volume II, (Part 1 of 2); Prehistoric Descriptive Site Reports
50.	CA-01660	1979	Fitting, J. E., H. L. Crew, and J. G. Costello	Cultural Resources Mitigation Program, New Melones Lake Project, Phase I Draft Report, Volume II (Part 2 of 2), Prehistoric Descriptive Site Reports
51.	CA-01661	1979	Fitting, J., H. Crew, and J. Costello	Cultural Resources Mitigation Program; New Melones Lake Project; Phase I Draft Report; Volume III (Part 1 of 2); Historic Descriptive Site Reports
52.	CA-01660	1979	Fitting, J. E., H. L. Crew, and J. G. Costello	Cultural Resources Mitigation Program, New Melones Lake Project, Phase I Draft Report, Volume II (Part 2 of 2), Prehistoric Descriptive Site Reports
53.	CA-01661	1979	Fitting, J., H. Crew, and J. Costello	Cultural Resources Mitigation Program; New Melones Lake Project; Phase I Draft Report; Volume III (Part 1 of 2); Historic Descriptive Site Reports
54.	CA-01665	1985	Goldberg, S. K., A. L. Hall, M. J. Moratto, D. J. Theodoratus, T. M. Van Buren, and T. L. Brejla	DRAFT: Final Report of the New Melones Archaeological Project; Volume II: Cultural Background: Regional Archaeology, Ethnography, and History
55.	CA-01666	1981	Moratto, M. and R. S. Greenwood	Draft: Research Background: New Melones Archaeological Project, California
56.	CA-01667	1969	Payen, L. A. and L. R. Scott	Archaeological Reconnaissance in the
57.	CA-01668	1979	Fitting, J. E., H. L. Crew, and J. G. Costello	Cultural Resources Mitigation Program, New Melones Lake Project, Phase I Draft Report, Volume IV (Part 1 of 2), Historic Artifact Inventory
58.	CA-01698	1982	Moratto, M. J. and S. K. Goldberg	New Melones Archaeological Project, California: Natural History, Final Report of the New Melones Archaeological Project, Vol. I
59.	CA-01855	1991	Marvin, J. and J. M. McEachern	Union Water Company Dam and Ditch Near Sourgrass on the North Fork of the Stanislaus River, Calaveras County, 05-16-52-716 and 05-16-52-717 Melones Reservoir, Calaveras and Tuolumne Counties, California: 1968 Season
60.	CA-02026	1993	Anderson, P.	Cultural Resource Survey of the Proposed Broken Heart Insect Salvage Timber Sale; Cultural Resource Management Report 05-16-0616 in Calaveras County, California
61.	CA-02198	1988	Moratto, M. J., J. D. Tordoff, and L. Shoup	Culture Change in the Central Sierra Nevada, 8000 BC-AD 1950; Final Report of the New Melones Archaeological Project, Volume IX
62.	CA-02280	1994	Francis, C. M.	An Archaeological and Historical Study of the Davies Timber Harvesting Plan Near Avery, Calaveras County, California
63.	CA-02314	1994	Tate, T., RPF	Archaeological and Historical Resources Survey and Impact Assessment, A Supplemental Report for a Timber Harvesting Plan, Project Name: Davies Sale, THP #4-94-153/CAL-25
64.	CA-02374	1994	Gilbert, C.	Memorandum: Subject 5000: Forest Management, 5180: Archaeology - Archaeological Clearance of the Davies Plan, THP 4-94-153/CAL-25 (Pre Harvest Inspection)

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Table 3.11-1. (Continued).

Count	Report No.	Year	Author(s)	Title
65.	CA-02647	1995	Tate, T. M., RPF	Archaeological and Historical Resources Survey and Impact Assessment, A Supplemental Report for a Timber Harvesting Plan, Project Name: Kaar Timber Harvest Plan, THP #4-95-73-CAL-11
66.	CA-02668	1995	Farber, A.	Archaeological Survey of the Proposed 139-Acre Red Apple Ranch Subdivision, Calaveras County, California
67.	CA-03418	1997	Tolmie, C., RPF	Confidential Archaeological Addendum for Timber Operations on Non-Federal Lands in California, Project Name: Davies NTMP, Project # N-4-97-1
68.	CA-03462	1996	Biggs, V.	Cultural Resource Survey of the Proposed Cupid Timber Sale, Cultural Resource Management Report 05-16-2101, in Calaveras County, California
69.	CA-03556	1989	Peak, A. S. and H. L. Crew	Cultural Resource Studies, North Fork Stanislaus River, Hydroelectric Development Project, Volume II, Part 1: Archaeological Data Recovery of CA-CAL-S342, Clarks Flat, Calaveras County, California
70.	CA-03556B	1989	Peak, A. S. and H. L. Crew	Cultural Resource Studies North Fork Stanislaus River Hydroelectric Development Project, Volume II, Part 2: Archaeological Data Recovery of CA-CAL-S342, Clarks Flat, Calaveras County, California
71.	CA-03830	1996	Robinson, M. G.	4N38 Hazard Tree Removal, CRMR 05-16-2091, Stanislaus National Forest, Calaveras Ranger District, Name of Project: Hazard Tree Removal along 4N38
72.	CA-03844	1983	Greenwood, R. S. and L. H. Shoup	Final Report of the New Melones Archeological Project, California, Volume VII: Review and Synthesis of Research at Historical Sites
73.	CA-03958	1985	Peak & Associates, Inc.	Addendum to the Proposal to Conduct Data Recovery on the Cultural Resources of the North Fork Stanislaus River Hydroelectric Development Project
74.	CA-04108	1998	Montgomery, B.	Stanislaus National Forest, Heritage Resources 1996 Sierra Nevada Programmatic Agreement Project Certification, Project Name: Encore Prescribed Burn (A Love/Hungry Fuels Project), CRMR 05-16-2118
75.	CA-04417	2001	Bevan, M. F., RPF	Confidential Archaeological Addendum for Timber Operations on Non-Federal Lands in California, Project Name: Davies 2 Emergency Timber Operations, THP #4-01EM-025-CAL-4
76.	CA-04458	1993	Davis-King, S., J. Marvin, D. Theodoratus, T. Brejla, and D. Hay	Waterscapes in the Sierra: Cultural Resources Investigation for the Utica Project (FERC 2019), Volume I, Calaveras, Tuolumne, and Alpine Counties, California
77.	CA-04477	2001	Bevan, M., RFP	Confidential Archaeological Addendum for Timber Operations on Non-Federal Lands in California, Project Name: Peters Emergency Timber Operations, Project Number: 4-01EM-041/CAL-4
78.	CA-04613	2002	Lowry, T., RPF	Good Emergency Confidential Archaeological Letter for Timber Operations on Non-Federal Lands in CA, Project Name: Good Emergency THP, Project #4-02EM-015, Calaveras County, California
79.	CA-04674	1987	Peak, M. A.	Cultural Resource Studies, North Fork Stanislaus River Hydroelectric Development Project Volume I: The History of Clarks Flat, Calaveras County, California
80.	CA-04721	2001	Bevan, M., RPF	Confidential Archaeological Addendum for Timber Operations on Non-Federal Lands in California, Project Name: Davies 2 NTMP Notice of Timber Operations, Project # N-4-97-1
81.	CA-04887	1998	Miller, B. (ed.)	Clarks Flat, Las Calaveras, Quarterly Bulletin of the Calaveras County Historical Society, Vol. XLVI, No. 4, July 1998, pages 1-14
82.	CA-06165	2006	Albrecht, M. H., RPF	An Archaeological Survey Report for the Red Apple Ranch Subdivision Timber Harvesting Plan, Calaveras County, California, Report Number: 4-06-14/CAL-3
83.	CA-06827	2008	Barnes, J.	Memorandum: U.S. Department of the Interior, Bureau of Land Management, Folsom Field Office, Section 106 Compliance for the Darby Knob Fuel Break, Calaveras County (Case # CA-018-S-AC-08/08)
84.	CA-06887	2008	Bureau of Reclamation and Pacific Legacy, Inc.	New Melones Reservoir Cultural Resource Overview, Calaveras & Tuolumne Counties, California: Resource Management Plan/ Environmental Impact Statement/ Final Cultural Survey Report
85.	CA-07016	2009	Napton, L. K. and E. A. Greathouse	Archaeological Investigations of the CAL FIRE Lei Fuel Reduction Project, Calaveras County, California
86.	CA-07102	1970	Johns, D. R.	The New Melones Archaeological Project, A Preliminary Report
87.	CA-07103	1969	Gage, R. L.	Summary of Archeological Reconnaissance of the Proposed New Melones Reservoir
88.	CA-07104	1969	Tucker, D. A.	The New Melones Reservoir, A Historical Study
89.	CA-07105	1973	Johnson, P.	New Melones Reservoir Archeological Project, Calaveras and Tuolumne Counties, California: Phase IV
90.	CA-07107	1973	Kenton, S.	Survey of Historical Resources, New Melones Archeological Project
91.	CA-07108	1982	Greenwood, R. S., et al.	New Melones Archeological Project, California: Data Recovery from Historical Sites. Final Report of the New Melones Archeological Project, Vol. V
92.	CA-07109	1986	Moratto, M. J. and W. L. Singleton	Final Report of the New Melones Archeological Project, Volume VI: Archeological Investigations, 1968-1980, at 62 Indian Activity Sites near the Stanislaus River, Calaveras and Tuolumne Counties, California
93.	CA-07109A	1986	Singleton, W. L.	Appendix 2: Flaked Stone Tools
94.	CA-07109B	1986	Van Bueren, T. M.	Appendix 7: Non-Traditional Historic Artifacts
95.	CA-07109C	1986	Lee, G., D. McCarthy, and M. Morrato	Appendix 16: Stanislaus River Rock Art
96.	CA-07109D	1986	Singleton, W. L.	Appendix 20: New Melones Archaeological Project, Phases I - IX, Artifact Catalogue

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Table 3.11-1. (Continued).

Count	Report No.	Year	Author(s)	Title
97.	CA-08343	2008	Davis-King, S. and J. Marvin	Historic Properties Management Plan for the Utica Project (FERC 2019), Calaveras County, California
98.	CA-08343B	2006	David-King, S.	Historic Properties Management Plan for the Utica Project (FERC 20199), Calaveras County, California, Volume 1
99.	CA-08343C	2005	Davis-King, S.	Historic Properties Management Plan Exhibit 2/Volume 2 - Request for Determination of Eligibility for the Utica Project (FERC 2019), Calaveras County, California
100.	CA-08767	2017	Strain, K.	Stanislaus National Forest, Heritage Resources 2013 Regional Programmatic Agreement Project Certification, McKays Hazard Tree Removal Project, Cultural Resource Management Report 05-16-2343
101.	CA-08923	2017	Walker, J., RPF	An Archaeological Survey Report for the Davies Property, Calaveras County, California (CFIP)
102.	CA-09335	2009	Bladel, K. and K. Strain	Evaluation of Union Ditch, FS 05-16-52-717 Segment 2091/D, CA-CAL-1368H; Stanislaus National Forest, Calaveras Ranger District
103.	CA-09335	2009	Bladel, K. and S. Strain	Evaluation of Union Ditch, FS 05-16-52-717 Segment 2091/B & C, CA-CAL-1368H; Stanislaus National Forest, Calaveras Ranger District 10/16/2009
104.	CA-09626	2022	Starke, Z. and K. Larsen	PG&E Cultural Constraints Summary, Project Name: CWSP - Stanislaus 1702 CB PH 1.1 CCWD, Order Number: 35250577
105.	CA-09626A	2022	Starke, Z. and K. Larsen	PG&E Cultural Constraints Summary, CWSP - Stanislaus 1701 CB PH1.1
106.	CA-09631	2022	Starke, Z. and K. Larsen	PG&E Cultural Constraints Summary, Project Name: CWSP - Stanislaus 1701 CB PH1.1, Order Number: 35250578
107.	CA-09631A	2022	Starke, Z. and K. Larsen	PG&E Cultural Constraints Summary, Project Name: CWSP - Stanislaus 1702 CB PH 1.1, Order Number: 35250577
108.	CA-09827	2022	Schwennesen, T.	PG&E Cultural Field Survey Report, Project Name: Undergrounding and System Hardening, Work Order Name: CWSP-Stanislaus 1701 CB PH1,1 35250578, Locations 38-45 (CCWD)
109.	CA-09827A	2022	Schwennesen, T.	PG&E Cultural Field Survey Report: Undergrounding and System Hardening; CWSP-Stanislaus 1701 CB PH1,1 35250578; Locations 32-37, 47-49, and 51-57
110.	CA-09828	2022	Schrader III, L.	PG&E Cultural Field Survey Report, Project Name: U03-179 Undergrounding, Work Order Name: Stanislaus 1701 CB PH1.6 (PM# 35338384)
111.	CA-09863	2024	Amaki, A	PG&E Heritage Resource Screening Form, Electric Facilities on National Forest System Lands - Pacific Southwest Region, Project Name: Stanislaus 1701 17kV Routine STF 2023, 024995 Electric Distribution
112.	CA-09863	2024	Whaley, K.	PG&E Heritage Resource Inventory Summary, Stanislaus 1701 17kV Routine STF 2023 024995 Electric Distribution
113.	CA-09952	2025	McIntyre, M.	Letter Report to PG&E: Re: Cultural Resources Survey Report for PG&E's 35493212 CWSP – STANISLAUS 17011812 PH 1.2 (100% Private)
114.	CA-09953	2025	Starke, Z.	Letter Report to PG&E: Cultural Resources Survey Report for PG&E's 35493214_CWSP - STANISLAUS 17011812 PH 1.4 (100% Private)
115.	CA-09999	2025	Starke, Z.	Letter Report: Cultural Resources Survey Report for PG&E's CWSP – Stanislaus 17011812 PH 1.5 (PM# 35493215)
116.	TO-00001	2004	Archaeological Consulting and Research Services, Inc.	Report of the Sapps Project Area Archaeological Survey
117.	TO-00040	1981	Peak & Associates, Inc.	Report on the Evaluation of Cultural Resources Within the Impact Zone of the Proposed North Fork Stanislaus River Hydroelectric Development Project
118.	TO-00200	1976	Moratto, M. J. and A. Hall	New Melones Archaeological Project, Stanislaus River, Calaveras and Tuolumne Counties, California: Phase VI; Part 2: Ethnography and Ethnohistory
119.	TO-00202	1974	Moratto, M. J. and L. M. Riley	An Archaeological Overview of the New Melones Reservoir Project Area, Calaveras and Tuolumne Counties, California
120.	TO-00211	1991	Peak, A. S., N. J. Neuenschwander, M. F. Rondeau, V. L. Rondeau, and D. L. True	Cultural Resource Studies, North Fork Stanislaus River Hydroelectric Development Project, Volume 5, Part 1: Archaeological Data Recovery of … Upper Mountain Local, Alpine and Tuolumne Counties, California
121.	TO-00370	1976	Theodoratus, D. J.	An Ethnographic Study of the New Melones Lake Project
122.	TO-00371	1980	Theodoratus, D. J. et al.	Historic and Ethnographic Overview, North Fork Stanislaus River Hydroelectric Development Project
123.	TO-00393	1989	Whitesell, C. E.	1989 Insect/Drought Salvage, Cultural Resource Inventory Report CRIR #05-16-396; MISUCA Helicopter Insect Salvage Sale (I.S.S.)
124.	TO-01146	1978	Iroquois Research Institute	Cultural Resources Management Plan for New Melones Project Area California. REPORT MISSING
125.	TO-01177	1976	Moratto, M. J.	New Melones Archaeological Project-Stanislaus River, Calaveras and Tuolumne Counties, California: Phase 6; Part 1: Introduction and Environment
126.	TO-01178	1976	Moratto, M. J.	New Melones Archaeological Project-- Stanislaus River, Calaveras and Tuolumne Counties, California: Phase 6; Part 3: Archaeological Inventory
127.	TO-01185	1976	Moratto, M. J. and L. M. Riley	New Melones Archaeological Project-- Stanislaus River, Calaveras and Tuolumne Counties, California: Phase VI; Part 4, Archaeological Sampling
128.	TO-01420	1976	Moratto, M. J.	New Melones Archaeological Project-Stanislaus River, Calaveras and Tuolumne Counties, California: Phase 6; Part 5: Resources Management
129.	TO-01421	1978	Moratto, M. J.	New Melones Archaeological Project Stanislaus River, Calaveras and Tuolumne Counties, California: Phase VI (Abstract)
130.	TO-01469	1982	Peak & Associates, Inc.	Test Excavation of Archaeological Site 05-16-52-414, Tuolumne County, California
131.	TO-01470	1986	Peak & Associates, Inc.	Addendum to the 1981 Test Excavations of CA-TUO-1607 (USFS Site 05-16-52-414)
132.	TO-01486	1977	Madsen, J., J. Seldomridge, and M. Rondeau	An Intensive Archaeological and Historical Survey of Portions of the North Fork Stanislaus River Hydroelectric Development

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Table 3.11-1. (Continued).

Count	Report No.	Year	Author(s)	Title
133.	TO-01645	1979	Fitting, J. E., H. L. Crew, and J. G. Costello	Cultural Resources Mitigation Program, New Melones Lake Project, Phase I Draft Report, Volume I, Appendix A, Consultants Report
134.	TO-01648	1979	Fitting, J. E., H. L. Crew, and J. G. Costello	Cultural Resource Mitigation Program New Melones Lake Project, Phase I Draft Report Volume III, (Part 2 of 2), Historic Descriptive Site Reports
135.	TO-01651	1979	Fitting, J. E., H. L. Crew, and J. G. Costello	Cultural Resources Mitigation Program, New Melones Lake Project, Phase I Draft Report Volume IV (Part 2 of 2), Prehistoric Artifact Inventory (Contract Number DACW05-78-C-0074)
136.	TO-01652	1979	Fitting, J. E., H. L. Crew, and J. G. Costello	Cultural Resources Mitigation Program, New Melones Lake Project, Phase I Draft Report, Volume IV, Addendum to Book 1, Historic Artifact Chronology Chart (Contract Number DACW05-78-C-00074)
137.	TO-01653	1983	Moratto, M., R. S. Greenwood, and L. H. Shoup	News Melones Archaeological Project, California: Review and Synthesis of Research at Historical Sites; Final Report of the New Melones Archaeological Project, Vol. VII
138.	TO-01654	1976	Jackson, W. T., S. D. Mikesell, and H. Schwartz	Historical Survey of the New Melones Reservoir Project Area (Contract Number DACW05-76-C-0032)
139.	TO-01655	1982	Moratto, M. J. and R. S. Greenwood	New Melones Archaeological Project, California: Research Background; Final Report of the New Melones Archaeological Project, Vol. III
140.	TO-01656	1974	Moratto, M. J. and L. M. Riley	An Archaeological Overview of the New Melones Reservoir Project Area, Calaveras and Tuolumne Counties, California
141.	TO-01658	1979	Fitting, J. E., H. L. Crew, and J. G. Costello	Cultural Resources Mitigation Program: New Melones Lake Project; Phase 1 Draft Report Volume 1; Project Background and Research Design (Contract Number DACW05-C-78-0074)
142.	TO-01659	1979	Fitting, J. E., H. L. Crew, and J. G. Costello	Cultural Resources Mitigation Program; New Melones Lake Project; Phase 1; Draft Report; Volume 2, (Part 1 of 2); Prehistoric Descriptive Site Reports
143.	TO-01660	1979	Fitting, J. E., H. L. Crew, and J. G Costello	Cultural Resources Mitigation Program, New Melones Lake Project, Phase I Draft Report, Volume II, (Part 2 of 2), Prehistoric
144.	TO-01661	1979	Fitting, J. E., H. L. Crew, and J. G. Costello	Cultural Resources Mitigation Program; New Melones Lake Project; Phase 1 Draft Report; Volume III, (Part 1 of 2); Historic Descriptive Site Reports
145.	TO-01665	1985	Goldberg, S. K., A. L. Hall, M. J. Moratto, D. J. Theodoratus, T. M. Van Bueren, and T. L. Brejla	Draft: Final Report of the New Melones Archaeological Project, Volume II, Cultural Background: Regional Archaeology, Ethnography, and History (Tuolumne County, CA)
146.	TO-01666	1981	Moratto, M. and R. S. Greenwood	Draft: Research Background: New Melones Archaeological Project, California
147.	TO-01667	1969	Payen, L. A., L. R. Scott, and J. M. McEachern	Archaeological Reconnaissance in the Melones Reservoir, Calaveras and Tuolumne Counties, California: 1968 Season
148.	TO-01668	1979	Fitting, J. E., H. L. Crew, and J. G. Costello	Cultural Resources Mitigation Program, New Melones Lake Project, Phase I Draft Report, Volume IV (Park 1 of 2), Historic Artifact Inventory
149.	TO-01692	1992	Kopf, A.	Cultural Resource Survey of the Proposed Syrup Insect Salvage Timber Sale, Cultural Resource Management Report 05-16-617 in Alpine and Tuolumne Counties, California
150.	TO-01698	1982	Moratto, M. J. and S. K. Goldberg	New Melones Archaeological Project, California: Natural History, Final Report of the New Melones Archaeological Project, Vol. I
151.	TO-01712	1977	Greenwood, R. S. and V. G. Bente	Evaluation of Historical Resources: New Melones Lake Project, California
152.	TO-01924	1993	Deis, R. W.	Cultural Resource Survey of the Proposed Spicer Boat Ramp Day Use; Cultural Resource Management Report 05-16-2016 in Tuolumne County, California
153.	TO-02198	1988	Moratto, M. J., J. D. Tordoff, and L. Shoup	Culture Change in the Central Sierra Nevada, 8000 BC-AD 1950; Final Report of the New Melones Archaeological Project, Volume IX
154.	TO-02285	1994	Snyder, W. E.	Archaeological and Historical Resources Survey and Impact Assessment, a Supplemental Report for a Timber Harvesting Plan: Project Stanislaus
155.	TO-02400	1994	Abernathie, J.	Cultural Resource Survey of the Proposed 1993 Hazzard Tree Removal Sales CRMR 05-16-2053 in Alpine, Calaveras and Tuolumne Counties, California
156.	TO-02405	1994	Abernathie, J.	Short Form CRMR Harold Fuelwood Timber Sale CRMR 05-16-2050, Stanislaus National Forest, Calaveras Road
157.	TO-02416	1994	Abernathie, J.	Short Form Cultural Resource Management Report, Spicer Dam Horse and Cattle Camp, CRMR 05-16-2073
158.	TO-03512	1997	Biggs, V.	05-16-2089, Short Form Cultural Resource Management Report, Beaver Creek Prescribed Underburn, Stanislaus National Forest, Calaveras Ranger District
159.	TO-03844	1983	Greenwood, R. S. and L. H. Shoup	Final Report of The New Melones Archaeological Project, California, Volume VII: Review and Synthesis of Research at Historical Sites
160.	TO-03925	1997	Montgomery, B.	Stanislaus National Forest, Heritage Resources 1996 Sierra Nevada Programmatic Agreement Project Certification, Project Name: Trails Repairs
161.	TO-03932	1999	Montgomery, B.	Stanislaus National Forest, Heritage Resource 1996 Sierra Nevada Programmatic Agreement Project Certification, Spicy Sap Restoration (2151), Report 05-16-2151
162.	TO-04458	1993	Davis-King, S. J. Marvin, D. Theodoratus, T. Brejia, and D. Hay	Waterscapes in the Sierra: Cultural Resource Investigations for the Utica Project (FERC 2019), Volume I, Calaveras, Alpine, and Tuolumne Counties, California
163.	TO-06887	2008	Bureau of Reclamation and Pacific Legacy, Inc.	New Melones Reservoir Cultural Resource Overview, Calaveras & Tuolumne Counties, California
164.	TO-07103	1969	Gage, R. L.	Summary of Archeological Reconnaissance of the Proposed New Melones Reservoir
165.	TO-07104	1969	Tucker, D. A.	The New Melones Reservoir, A Historical Study
166.	TO-07105	1973	Johnson, P.	New Melones Reservoir Archeological Project, Calaveras and Tuolumne Counties, California: Phase IV
167.	TO-07107	1973	Kenton, S.	Survey of Historical Resources, New Melones Archeological Project
168.	TO-07108	1982	Greenwood, R. S., et al.	New Melones Archeological Project, California: Data Recovery from Historical Sites. Final Report of the New Melones Archeological Project, Vol. V

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Table 3.11-1. (Continued).

Count	Report No.	Year	Author(s)	Title
169.	TO-07109	1986	Moratto, M. J. and W. L. Singleton	Final Report of the New Melones Archeological Project, Volume VI: Archeological Investigations, 1968-1980, at 62 Indian Activity Sites near the Stanislaus River, Calaveras and Tuolumne Counties, California
170.	TO-07291	2009	Northern California Power Agency	2009 Annual Report on Cultural Resources for the Upper Utica Project (FERC 11563-CA), Alpine and Tuolumne Counties (Draft)
171.	TO-07561	2010	Fascilla, M. J., RPF	An Archaeological Survey Report for the South Park Timber Harvesting Plan, Tuolumne County, California; THP #4-11-006/TUO-1
172.	TO-08042	2013	Bowersox, R.	2013 Annual Report on Cultural/ Historical Resources For The FERC Project No. 11563, Upper Utica Project
173.	TO-08964	2018	Northern California Power Agency	2018 Report on Cultural/Historical Resources for FERC Project 11563, Upper Utica Project
174.	TO-08967	2008	Davis-King, S.	Historic Properties Management Plan for the Upper Utica Project (FERC 11563), Alpine and Tuolumne Counties, California, Volume 1 and Volume 2
175.	TO-09083	2018	Whitson, G., RPF	An Archaeological Survey Report for the South Park VMP, Tuolumne County, California

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An additional 135 cultural resources studies were identified from the records search outside of the APE, but within the 0.5-mile buffer (Table 3.11-2). These studies consist largely of cultural resources studies that were conducted by and on behalf of various federal and state agencies and utility companies. Also included are various documents including SHPO correspondences, FERC HPMPs, and ethnographic reports.

Table 3.11-2. Previous cultural resources studies within 0.5-mile of the APE.

Count	Report No.	Year	Author(s)	Title
1.	AP-00001	1980	Archaeological Consulting and Research Services, Inc.	Report of the Sapps Project Area Archaeological Survey
2.	AP-01692	1992	Kopf, A.	Cultural Resource Survey of the Proposed Syrup Insect Salvage Timber Sale, Cultural Resource Management Report 05-16-617 in Alpine and Tuolumne Counties, California
3.	AP-02168	1992	Deis, R. W.	Cultural Resource Management Report 05-16-0530; Countyline Trail Project, Stanislaus National Forest
4.	AP-02449	1994	Abernathie, J.	Short Form Cultural Resource Management Report, Slick Rock Road Bridge Replacement, CRMR 05-16-2063. Stanislaus National Forest, Calaveras Ranger District
5.	AP-04458	1993	Davis-King, S., J. Marvin, D. Theodoratus, T. Brejla, and D. Hay	Waterscapes in the Sierra: Cultural Resources Investigations for the Utica Project (FERC 2019), Volume I, Calaveras, Alpine, and Tuolumne Counties, California
6.	AP-07291	2009	Northern California Power Agency	2009 Annual Report on Cultural Resources for the Upper Utica Project (FERC 11563-CA), Alpine and Tuolumne Counties (Draft)
7.	AP-08042	2013	Bowersox, R.	2013 Annual Report on Cultural/ Historical Resources For The FERC Project No. 11563, Upper Utica Project
8.	AP-08964	2018	Northern California Power Agency	2018 Report on Cultural/Historical Resources for FERC Project 11563, Upper Utica Project
9.	AP-08967	2008	Davis-King, S.	Historic Properties Management Plan for the Upper Utica Project (FERC 11563), Alpine and Tuolumne Counties, California, Volume 1 and Volume 2
10.	CA-00040	1981	Peak and Associates, Inc.	Report on the Evaluation of Significance of Cultural Resources Within the Impact Zones of the Proposed North Fork Stanislaus River Hydroelectric Development Project
11.	CA-00080	1980	Colston, D.	Archaeological Reconnaissance Report, Manuel Compartment, Calaveras District Stanislaus National Forest, ARR No. 05-16-209
12.	CA-00125	1984	Decater, E. H. L.	Archaeological Study Center, Survey Report, Project Title: PG&E Hunter Reservoir Timber Sale

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Table 3.11-2. (Continued).

Count	Report No.	Year	Author(s)	Title
13.	CA-00137	1986	Department of Parks & Recreation	Calaveras Big Trees State Park, Inventory of Features, Cultural Resources
14.	CA-00139	1981	Derr, E. H.	An Archaeological Survey of Highways 4 and 49, Angels Camp to Arnold Via Murphys, Calaveras County, California. (P.M. 12.0 to 12.14/21.44 to 41.04)
15.	CA-00152	1990	Foster, D., RPF	California Department of Forestry and Fire Protection, Archaeological Survey Field Report, Project Name: Alford Property, Project Number: THP 4-90-97/CAL-16
16.	CA-00156	1973	Gage, R. and W. E. Pritchard (Editor)	Archaeological Excavations in the New Melones Reservoir Project: 1969 Season
17.	CA-00208	1978	Motz, L.	An Archaeological Survey of the Proposed Collierville Transmission Line
18.	CA-00257	1975	Napton, L. K.	Calaveras County Sewer Project - Arnold Area
19.	CA-00298	1987	Peak, A. S.	Cultural Resources Studies, North Fork Stanislaus River Hydroelectric Development Project, Volume III: Archaeological Data Recovery of CA-CAL-(S275) 000327, Clarks Flat, Calaveras County, California
20.	CA-00299	1987	Neuenschwander, N. J.	Cultural Resource Studies, North Fork Stanislaus River Hydroelectric Development Project Volume IV: Archaeological Data Recovery of CA-CAL-(S343) 000671, Clarks Flat, Calaveras County, California
21.	CA-00310	1973	Peak, A. S.	New Melones Reservoir Archaeological Project, Calaveras and Tuolumne Counties, California: Phase III
22.	CA-00322	1986	Peak & Associates, Inc. and M. P. Peters	Cultural Resource Assessment of the McKays Point Dam Access Road, Calaveras County, California
23.	CA-00323	1986	Peak & Associates, Inc.	Test Excavation of Archaeological Site CA-CAL-1050, Calaveras County, California
24.	CA-00326	1986	Peak & Associates, Inc.	Cultural Resource Assessment of the McKays Point Dam 17.3kV Distribution Line, Calaveras County, California
25.	CA-00327	1986	Peak & Associates, Inc.	Cultural Resource Survey of the BLM Land Parcel, Darby Knob, Calaveras County, California
26.	CA-00329	1987	Peak & Associates, Inc.	The Resurvey of the Collierville Transmission Line, Calaveras, Stanislaus, and San Joaquin Counties, California
27.	CA-01489	1978	Decker, D.	Cultural Resource Inventory Report, Collierville Transmission Line R/W
28.	CA-01650	1979	Kaufman, T. S.	New Melones Project: Preliminary Report on Obsidian Hydration Dating and Source Characterization Analysis

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Table 3.11-2. (Continued).

Count	Report No.	Year	Author(s)	Title
29.	CA-01671	1992	Davy, D. M.	Cultural Resources Survey of Geological Test Drilling Sites for the Ramsey-French Meadow Project
30.	CA-01728	1987	Peters, M. P.	Draft: Cultural Resource Studies North Fork Stanislaus River Hydroelectric Development Project Volume I: Ethnohistory, Part II: Upper Mountain Locale Alpine and Tuolumne Counties, California
31.	CA-01788	1992	Asquith, H.	Cultural Resource Survey of the Proposed Pacific Gas and Electric Cable Projects Cultural Resource Management Report 05-16-0784 in Calaveras County, California
32.	CA-01792	1992	Dreyer, C.	Cultural Resource Survey of the Proposed Ixion Insect Salvage Sale; Cultural Resource Management Report 05-16-0505 in Calaveras County, California
33.	CA-01855	1991	Marvin, J.	Union Water Company Dam and Ditch Near Sourgrass on the North Fork of the Stanislaus River, Calaveras County, 05-16-52-716 and 05-16-52-717
34.	CA-02015	1992	Asquith, H. E.	Cultural Resource Survey of the Proposed Carbaryl Silviculture Projects; Cultural Resource Management Report 05-16-0793 in Calaveras and Tuolumne Counties, California
35.	CA-02025	1993	Deis, R. W.	Cultural Resource Survey of the Proposed Hackit Brush Removal Project in Stanislaus National Forest, Calaveras and Tuolumne Counties, California; Cultural Resource Management Report 05-16-2011
36.	CA-02039	1993	Gilbert, C., CDF Archaeologist	Memorandum: Subject 5100: Rural Forest Improvement, 5180: Archaeology - Archaeological Review of the Phillips CFIP
37.	CA-02040	1993	Gilbert, C., CDF Archaeologist	Memorandum: Subject 5100: Forest Improvement, 5180: Archaeology - Phillips Emergency THP and VFIP
38.	CA-02048	1993	Gilbert, C., CDF Archaeologist	Memorandum: Subject 5100: Rural Forest Improvement, 5180: Archaeology - Archaeological Review of the Siebert CFIP
39.	CA-02051	1993	Gilbert, C., CDF Archaeologist	Memorandum: Subject 5100: Rural Forest Improvement Program, 5180: Archaeology - Archaeological Review of the White Oak CFIP 4-CAL-492
40.	CA-02061	1993	Snyder, W. E.	Archaeological and Historical Resources Survey and Impact Assessment, A Supplemental Report for a Timber Harvesting Plan, Project Name: Doud Hill
41.	CA-02346	1994	Wadsworth, T. B., RPF	Archaeological and Historical Resources Survey and Impact Assessment, A Supplemental Report for a Timber Harvesting Plan, Project Name: Lauterback THP, THP #4-93-107/CAL

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Table 3.11-2. (Continued).

Count	Report No.	Year	Author(s)	Title
42.	CA-02417	1994	Abernathie, J.	Cultural Resource Survey of the Proposed McKays Ridge Biomass Sale, Cultural Resource Management Report 05-16-2071
43.	CA-02622	1995	Snyder, W. E.	Archaeological and Historical Resources Survey and Impact Assessment, A Supplemental Report For a Timber Harvesting Plan, Project Name: Love Creek, THP Number: 4-95-85/CAL-15
44.	CA-02821	1996	Tate, T., RPF	Archaeological and Historical Resources Survey and Impact Assessment, A Supplemental Report for a Timber Harvesting Plan, Project Name: Smith NTMP, THP # N-4-96-2
45.	CA-02896	1996	Biggs, V.	Short Form Cultural Resource Management Report, Hathaway Helispot (05-16- 2094), Stanislaus National Forest, Calaveras Ranger District
46.	CA-03024	1997	Stikkers, D., RPF	Confidential Archaeological Addendum for Timber Operations on Non-Federal Lands in California, Project Name: Hoxie THP, Project #4-97-56/CAL-9
47.	CA-03324	1995	Goldsmith, E.	Cultural Resource Management Report, Highway 4 Projects, 1995, Highway 4 Hazard Tree Removal, Daylighting, CAL/PG&E Settlement Sale, Cultural Resource Management Report 05-16-2084 in Calaveras and Alpine Counties, California
48.	CA-03907	1983	Woolfenden, W. B.	White Oak Land Exchange Cultural Resources Inventory; Archaeological Reconnaissance Report No. 05-16-181 [contains 1981 ARR (Summary) by D. Colston]
49.	CA-03925	1997	Montgomery, B.	Stanislaus National Forest, Heritage Resources 1996 Sierra Nevada Programmatic Agreement Project Certification, Project Name: Trails Repairs
50.	CA-03932	1999	Montgomery, B.	Stanislaus National Forest, Heritage Resource 1996 Sierra Nevada Programmatic Agreement Project Certification, Spicy Sap restoration (2151), Report 05-16-2151
51.	CA-03939	1999	Montgomery, B.	Stanislaus National Forest, Heritage Resources 1996 Sierra Nevada Programmatic Agreement Project Certification, Project Name: Candy Rock Fire Salvage (05-16-21-2149)
52.	CA-04004	2000	Hibbard, C.	Negative Archaeological Survey Report 10-CAL-4/49, PM Various, 10-170, EA 10-0E7801, Replace and Upgrade Culverts (SR 49 PM 7.2, SR 4 PM 41.2, 41.5, 43.2, 43.3)
53.	CA-04233	2000	Montgomery, B.	Stanislaus National Forest, Heritage Resources 1996 Sierra Nevada Programmatic Agreement Project Certification, Project Name: Domingo Mechanical Fuels Treatment, CRMR #05-16-2159, Calaveras Ranger District

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Table 3.11-2. (Continued).

Count	Report No.	Year	Author(s)	Title
54.	CA-04244	2000	Montgomery, B.	Stanislaus National Forest, Heritage Resources 1996 Sierra Nevada Programmatic Agreement Project Certification, Project Name: Small Thinning for Fuels Reduction, CRMR 05-16-2156
55.	CA-04438	2001	Fascilla, M. J., RPF	Confidential Archaeological Letter for Emergency Notice Dated 11/5/01- Darby Fire Salvage Operations - Portion of Section 9, T4N,R15E MDBM (Love Creek Emergency Notice, #4-01EM-035-TUO4)
56.	CA-04450	2001	Tate, T. M., RPF	Confidential Archaeological Letter for Emergency Notice: "Darby Fire" Timber Salvage Operations - DeMera Sale
57.	CA-04467	2001	Albrecht, M., RPF	Confidential Archaeological Letter for Emergency Notice Dated 11/12/01- Darby Fire Salvage Operations - Pors. Section 4, T4N, R15E: MDM - (Love Creek Ranch Emergency), Emergency Number 4-01EM-037-CAL4
58.	CA-04553	1988	Peters, M. P.	Clarks Flat and Upper Mountain Locale, Alpine and Calaveras Counties California (Cultural Resource Studies, North Fork Stanislaus River Hydroelectric Project, Volume I: Ethnohistory)
59.	CA-04609	2002	Bevan, M. F., RPF	Confidential Archaeological Addendum for Timber Operations on Non-Federal Lands, Project Name: Hersek Emergency Timber Operations, Project Number: 4-02EM-2, Mariposa County, California
60.	CA-04610	2002	Lowry, T., RPF	Reeves Emergency Confidential Archaeological Letter for Timber Operations on Non-Federal Lands in California, Project Name: Reeves Emergency Timber Harvest, Project # 4-02EM-9
61.	CA-04612	2002	Lowry, T. W., RPF	Barrient Emergency Confidential Archaeological Letter for Timber Operations on Non-Federal Lands in California, Project: Barrient Emergency Timber Harvest, Project #4-02EM-12, Calaveras County, California
62.	CA-04998	2001	Ludwig, B. and R. Deis	Cultural Resources Inventory of the Stanislaus River Hydroelectric Relicensing Projects, Beardsley/Donnells (FERC Project No. 2005), Spring Gap-Stanislaus (FERC Project No. 2130), Donnells-Curtis (FERC Project No. 2118)
63.	CA-05278	2003	Stewart, M., RPF	An Archaeological Survey Report for the Elmer Timber Harvesting Plan, Calaveras County, California, THP Number: 4-03-51/Cal-11
64.	CA-05501	2004	Rosenthal, J. S. and J. Meyer	Cultural Resources Inventory of Caltrans District 10 Rural Conventional Highways; Volume lll: Geoarchaeological Study
65.	CA-05506	2004	Leach-Palm, L., J. King, J. Hatch, and B. Larson	Cultural Resources Inventory of Caltrans District 10 Rural Conventional Highways; Volume II C: Calaveras County

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Table 3.11-2. (Continued).

Count	Report No.	Year	Author(s)	Title
66.	CA-05938	2005	Werner, R. H. and R. P. Hampson	Letter Report: Red Apple Ranch Subdivision: Extended Survey at CA-CAL-1620 (Prehistoric Site R.A.-1)
67.	CA-06164	2005	Werner, R. H.	Letter Report: Red Apple Ranch Subdivision, Extended Survey at CA-CAL-1620 (Prehistoric site R.A.-1)
68.	CA-06731	2008	Barnes, A. J.	Reclamation Managing Water in the West, Archaeological Investigation of the Camp Nine Bridge Removal Project, Calaveras and Tuolumne Counties, California
69.	CA-07357	2010	Waechter, S. A.	Cultural Resources Monitoring for the Spring Gap-Stanislaus Project, Calaveras and Tuolumne Counties, California Year 1: Baseline Monitoring FERC (Project No. 2130)
70.	CA-07742	2010	Waechter, S.	Draft: Cultural Resources Monitoring for the Spring Gap-Stanislaus Project, Calaveras and Tuolumne Counties, California; Year 1: Baseline Monitoring; (FERC Project No. 2130)
71.	CA-08019	2012	Kellawan, R. and S. A. Waechter	Year 3: Cultural Resources Monitoring for the PG&E Spring-Gap Stanislaus Hydroelectric Project, (FERC Project 2130), Calaveras and Tuolumne Counties, California
72.	CA-08019A	2013	Taggart, M.	2013 Historic Properties Management Plan Progress Report: Spring Gap - Stanislaus Hydroelectric Project, (FERC No. 2130), Tuolumne & Calaveras Counties, California
73.	CA-08019B	2012	Taggart, M.	2012 Historic Properties Management Plan Progress Report: Spring Gap – Stanislaus Hydroelectric Project, (FERC No. 2130), Tuolumne & Calaveras Counties, California
74.	CA-08019C	2019	Taggart, M.	2019 Historic Properties Management Plan Progress Report: Spring Gap - Stanislaus Hydroelectric Project, (FERC No. 2130), Tuolumne & Calaveras Counties, CA
75.	CA-08083	2014	Waechter, S. and Kellawan, R.	Year 5 Summary Cultural Resource Monitoring for the PG&E Spring Gap-Stanislaus Hydroelectric Project
76.	CA-08369	2013	Kellawan, R. and S. Waechter	Year 4 Cultural Resources Monitoring for the PG&E Spring Gap-Stanislaus Hydroelectric Project, (FERC Project 2130) (Calaveras and Tuolumne Counties, CA)
77.	CA-08553	2015	Roland, J.	Phase I Investigation for the Verizon Wireless Forest Meadows Tank Tower Installation Project, Murphys, Calaveras County, California
78.	CA-08747	2017	Hildebrandt, T. and R. A. Whitaker	Director's Orders Tree Removal Survey and Site Assessment along State Route 4, Caltrans District 10, Calaveras County, California

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Table 3.11-2. (Continued).

Count	Report No.	Year	Author(s)	Title
79.	CA-08765	2016	Berlin, K. and K. Strain	Stanislaus National Forest, Heritage Resources 2013 Regional Programmatic Agreement Project Certification, Last Chance Project, Cultural Resource Management Report 05-15-2326
80.	CA-08891	2018	Fuerstenberg, T.	Cultural Resources Inventory and Evaluation, Calaveras County Water District, Ebbetts Pass Reach 1 Water Transmission Pipeline, Capital Improvements Project, USDA Forest Service Report #05-16-2350, Calaveras County, California
81.	CA-08891A	2019	Polanco, J., SHPO	Letter: Department of Parks and Recreation, Office of Historic Preservation, In Reply Reference No: COE_2019_0101_001, Section 106 Consultation for the Ebbets Pass Reach 1 Water Pipeline Project in Calaveras County, California (SPK-2018-00556)
82.	CA-08927	2018	Strain, K.	Stanislaus National Forest, Heritage Resources, 2013 Regional Programmatic Agreement Project Certification, Arnold/Avery Farm Bill CE, Cultural Resource Management Report 05-16-2360
83.	CA-09034	2018	Strain, K.	Stanislaus National Forest, Heritage Resources, 2013 Regional Programmatic Agreement Project certification, Calaveras County Roads HTR, CRMR 05-16-2373
84.	CA-09080	2018	Strain, K.	Stanislaus National Forest, Heritage Resources, 2013 Regional Programmatic Agreement Project Certification, Irish- O'Manuel Prescribed Burn, Cultural Resource Management Report 05-16-2271C
85.	CA-09146	2019	Waechter, S.	Archaeological Survey Report, 2018 Hazard Tree Removal Project, State Routes 4, 26, 88, 89, and 207, Caltrans District 10, Alpine, Amador and Calaveras Counties, California
86.	CA-09272	2020	Bray, J., RPF	An Archaeological Survey Report for the Arnold-Avery HFR Fuelbreak, Calaveras County, California
87.	CA-09480	2020	Felt, C. and E. Niles	Heritage Resource Screening Process -Summary Form, Project Name: USFS Stanislaus Pinecrest 0401-Calaveras, for Stanislaus National Forest, Calaveras Ranger District
88.	CA-09481	2020	Felt, C.	PG&E Heritage Resource Screening Process - Summary Form, Electric Facilities on National Forest System Lands - Pacific Southwest Region, Project Name: USFS Stanislaus 1702-Collierville [Calaveras and Tuolumne counties]

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Table 3.11-2. (Continued).

Count	Report No.	Year	Author(s)	Title
89.	CA-09484	2016	Goodsell, J.	Reclamation Managing Water in the West, Project Tracking No: 15-CCAO-142, Cultural Resources Survey for the Camp Nine Commercial Whitewater Permitting, Calaveras and Tuolumne Counties, California
90.	CA-09493	2020	Polanco, J.	SHPO Package: Letter to Allessandro Amaglio, FEMA from J. Polanco, State Historic Preservation Officer; RE FEMA Hazard Mitigation Grant Program, Project FEMA-HMGP-DR-4344-119-074, Calaveras County, Ebbetts Pass Redwood Tanks Wildfire Hazard Mitigation Project; see also reports CA-9493A and B
91.	CA-09493A	2020	McMorris, C.	Letter Report to Allessandro Amaglio, FEMA: Historical Resources Study for FEMA Hazard Mitigation Grant Program, Project FEMA-HMGP-DR-4344-119-074, Calaveras County, Ebbetts Pass Redwood Tanks Wildfire Hazard Mitigation Project
92.	CA-09493B	2020	Holm. L.	Archaeological Investigation for the Calaveras County Water District Ebbetts Pass Redwood Tanks Hardening Project, Calaveras County, California (FEMA-HMGP 4344-119-074)
93.	CA-09582	2020	Keesey, T. C.	An Archaeological Survey Report for the Love Creek Ranch NTMP, Calaveras County, California
94.	CA-09628	2022	Larsen, K.	PG&E Cultural Constraints Summary, Project Name: CWSP - Stanislaus 1701 CB PH1.3, Order Number: 35279120
95.	CA-09634	2022	Larsen, K.	PG&E Cultural Constraints Report, Project Name: Stanislaus 1701 CB PH 1.3, Order Number: 35279120
96.	CA-09846	2024	Wood, J. and M. P. Patrick	Archaeological Survey and Extended Phase I Report for the Middle-Mile Broadband Initiative Project, State Route 4, Calaveras County, California; 10-CAL-4 PM 25.572-1.1; Project ID 1022000241, EA 10-1Q120
97.	CA-09947	2024	Starke, Z.	Letter Report: to PG&E: Re: Cultural Resources Survey Report for PG&E's CWSP - Stanislaus 17011812 Ph 1.1 (PM#35425879) (System Hardening and Undergrounding Activities)
98.	CA-09955	2025	Larsen, K.	Letter Report to PG&E: Cultural Resources Survey Report for PG&E's CWSP -STANISLAUS 17011812 PH 1.6 (PM# 35493216)
99.	CA-09955A	2025	Larsen, K.	Cultural Resources Survey Report for PG&E's CWSP - STANISLAUS 17011812 PH 1.6 (PM# 35493216)
100.	CA-09998	2025	McIntyre, M.	Letter Report: Cultural Resources Survey Report for PG&E's 35493213 CWSP - Stanislaus 17011812 PH 1.3 (100% Design Private)

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Table 3.11-2. (Continued).

Count	Report No.	Year	Author(s)	Title
101.	TO-00137	1986	Department of Parks & Recreation	Calaveras Big Trees State Park, Inventory of Features, Cultural Resources
102.	TO-00198	1976	Moratto, M. J.	Supplement to Part 5: New Melones Archaeological Project--Stanislaus River, Calaveras and Tuolumne Counties, California: Phase VII. Appendix 16: Recommendations for Mitigation, New Melones Archaeological Project, Phases VII - XII
103.	TO-00208	1978	Motz, L.	An Archaeological Survey of the Proposed Collierville Transmission Line
104.	TO-01156	1979	Lee, G. and D. McCarthy	Stanislaus River Rock Art
105.	TO-01295	1986	Peak and Associates, Inc.	Cultural Resource Assessment of the Proposed Griswold Creek Hydroelectric Project, Tuolumne County, California
106.	TO-01485	1981	Peak, A. S. and H. L. Crew	North Fork Stanislaus River Hydro-Electric Development Project Proposed Plan for Determination of Effect on Clarks Flat Locale Cultural Resources
107.	TO-01671	1992	Davy, D. M.	Cultural Resources Survey of Geological Test Drilling Sites for the Ramsey-French Meadow Project
108.	TO-01786	1991	Peak and Associates, Inc.	Final Addendum to: Cultural Resource Assessment of the Proposed Griswold Creek Hydroelectric Project, Tuolumne County, California
109.	TO-02406	1994	Abernathie, J.	Short Form CRMR 05-16-2049, Soil Studies Pits (Ecological Unit Inventory)
110.	TO-02449	1994	Abernathie, J.	Short Form Cultural Resource Management Report, Slick Rock Road Bridge Replacement, CRMR 05-16-2063. Stanislaus National Forest, Calaveras Ranger District
111.	TO-02993	1995	Wold, J. L.	Letter to Ms. Cherilyn Widell, State Historic Preservation Officer, Concerning Section 106 (NHPA) Compliance Requirement for the Stanislaus Underburn (Cultural Resource Project #05-16-1103)
112.	TO-03466	1996	Keefe, T.	Cultural Resource Survey of the Proposed Stanislaus River Underburn Project, Cultural Resource Management Report 05-16-1103, in Tuolumne County, California
113.	TO-04256	2001	Ludwig, B. and R. Deis	Cultural Resources Inventory of the Stanislaus River Hydroelectric Relicensing Projects. Beardsley/Donnells (FERC Project No. 2005), Spring Gap-Stanislaus (FERC Project No. 2130), Donnells-Curtis (FERC Project No. 2118).; Draft
114.	TO-04415	2001	Vroman, M., RPF	Confidential Archaeological Letter for Emergency Notice Dated 9/08/01 - Darby Fire Salvage Operations - Pors. Sections 5,6,8; T4N, R16E; 31, T5N, R16E; 1, T4N, R15E; MDM (Park Firebreak Emergency)
115.	TO-04887	1998	Miller, B. (ed.)	Clarks Flat, Las Calaveras, Quarterly Bulletin of the Calaveras County Historical Society, Vol. XLVI, No. 4; July 1998, pages 1-14

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Table 3.11-2. (Continued).

Count	Report No.	Year	Author(s)	Title
116.	TO-04998	2001	Ludwig, B. and R. Deis	Cultural Resources Inventory of the Stanislaus River Hydroelectric Relicensing Projects, Beardsley/Donnells (FERC Project No. 2005), Spring Gap-Stanislaus (FERC Project No. 2130), Donnells-Curtis (FERC Project No. 2118)
117.	TO-05306	1996	Manich, L.	Archaeological and Historical Resources Survey and Impact Assessment: A Supplemental Report for a Timber Harvesting Plan; Stanislaus, 4-96-178/TUO-25
118.	TO-06497	2007	Trumbly, M. and L. Compas	Cultural Resources Survey Report for Pacific Gas and Electric Company's Demolition of Stanislaus Afterbay Dam, Spring Gap-Stanislaus Hydroelectric Project (FERC No. 2130), Tuolumne County, California
119.	TO-06731	2008	Barnes, A.	Reclamation Managing Water in the West, Archaeological Investigation of the Camp Nine Bridge Removal Project, Calaveras and Tuolumne Counties, California
120.	TO-07102	1970	Johns, D. R.	The New Melones Archaeological Project, A Preliminary Report
121.	TO-07357	2010	Waechter, S. A.	Cultural Resources Monitoring for Spring Gap- Stanislaus Project Calaveras and Tuolumne Counites, California Year 1: Baseline Monitoring FERC (Project No. 2130)
122.	TO-07742	2010	Waechter, S.	Draft: Cultural Resources Monitoring for the Spring Gap-Stanislaus Project, Calaveras and Tuolumne Counties, California: Year 1: Baseline Monitoring; FERC Project No. 2130
123.	TO-08019	2012	Kellawan, R. and S. A. Waechter	Year 3: Cultural Resources Monitoring for the PG&E Spring-Gap Stanislaus Hydroelectric Project, (FERC Project 2130), Calaveras and Tuolumne Counties, California
124.	TO-08019A	2013	Taggart, M.	Historic Properties Management Plan Progress Report: Spring Gap - Stanislaus Hydroelectric Project, (FERC No. 2130), Tuolumne & Calaveras Counties, California
125.	TO-08019B	2012	Taggart, M.	Historic Properties Management Plan Progress Report: Spring Gap - Stanislaus Hydroelectric Project, (FERC No. 2130), Tuolumne & Calaveras Counties, California
126.	TO-08019C	2019	Taggart, M.	2019 Historic Properties Management Plan Progress Report: Spring Gap - Stanislaus Hydroelectric Project, (FERC 2130), Tuolumne & Calaveras Counties, California
127.	TO-08083	2014	Waechter, S. and Kellawan, R.	Year 5 Summary Cultural Resources Monitoring for the PG&E Spring Gap- Stanislaus Hydroelectric Project, (FERC Project 2130)

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Table 3.11-2. (Continued).

Count	Report No.	Year	Author(s)	Title
128.	TO-08369	2013	Kellawan, R. and S. Waechter	Year 4 Cultural Resources Monitoring for the PG&E Spring Gap-Stanislaus Hydroelectric Project, (FERC Project 2130) (Calaveras and Tuolumne Counties, CA)
129.	TO-08369A	2014	Taggart, M.	2014 Historic Properties Management Plan Progress Report: Spring Gap - Stanislaus Hydroelectric Project, (FERC No. 2130), Tuolumne & Calaveras Counties, California
130.	TO-08507	2016	PAR Environmental Services, Inc.	National Register of Historic Places Evaluation of Five Archaeological Sites Associated With the Spring Gap Stanislaus Hydroelectric System Tuolumne County, California (FERC #2130)
131.	TO-08832	2015	Smith, A.	An Archaeological Survey Report for the Moody Lynx Timber Harvest Plan (THP), Tuolumne Country, California
132.	TO-08932	2018	Swearinger, M.	Pacific Gas and Electric Company, Cultural Resources Constraints Report, Work Name: Stanislaus 1701 & 1702 17kV Routine Stanislaus NF EP 2018-158566, Order Number: 2044329 (90%) and 8182185 (10%)
133.	TO-09481	2020	Felt, C.	PG&E Heritage Resource Screening Process - Summary Form, Electric Facilities on National Forest System Lands - Pacific Southwest Region, Project Name: USFS Stanislaus 1702-Collierville [Calaveras and Tuolumne counties]
134.	TO-09777	2023	McKeand, T.	An Archaeological Survey Report for the Wild West Timber Harvest Plan (THP) Tuolumne County, California (4-23-00136-TUO)
135.	TO-09873	2018	Scher, N., M. Darcangelo, S. Waechter, and L. Engbring	2018 Annual Archaeological Survey and Site Condition Assessment Report for 25 PG&E Hazard Tree Felling Projects for Electrical Power Transmission and Distribution Lines, Bureau of Land Management Mother Lode Office, Amador, Calaveras, El Dorado, Mariposa, Nevada, Placer, and Tuolumne Counties

3.11.2.2 Previously Recorded Cultural Resources

Cultural Resources within the APE

The CCIC records search identified 23 cultural resources within the APE (Table 3.11-3). These include 16 precontact archaeological sites, three historic era sites, three multicomponent sites, and one historic district, the New Melones Archaeological/Historic District, which was found eligible for listing in the NRHP with SHPO concurrence. The precontact sites consist of lithic scatters, bedrock milling features, and/or habitation debris. Many of these precontact sites were recorded in 1977 as part of the initial licensing of the Project, and they were identified as being at risk of inundation by the raising of New Spicer Meadow Reservoir. Historic era sites include the Utica

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Ditch, the Utica Dam system, and the collapsed remains of a habitation and ranching area. The multicomponent sites similarly consist of historic era habitation debris with lithic scatters and/or bedrock milling features. The Utica Ditch (P-05-001679 / CA-CAL-001368H) was found eligible for NRHP listing with SHPO concurrence, although certain previously recorded segments of that ditch have been recommended as non-contributing elements to the NRHP-eligibility of the entire resource. One precontact site, P-05-000988 / CA-CAL-000670, was recommended eligible for NRHP listing, but no SHPO concurrence was attached to that recommendation. One historic era site consisting of habitation remains, P-02-000235 / CA-ALP-000154H, was recommended ineligible for the NRHP, but no SHPO concurrence was attached to that recommendation. The remaining 19 sites have not been evaluated for NRHP eligibility.

Table 3.11-3. Previously recorded cultural resources within the APE.

Count	Resource Designation(s)	Type	Resource Description / Attributes	NRHP Evaluation Status
1.	P-02-000189 / CA-ALP-000108	Precontact site	Bedrock milling feature(s)	Unevaluated
2.	P-02-000190 / CA-ALP-000109	Precontact site	Lithic scatter, bedrock milling feature(s), habitation debris	Unevaluated
3.	P-02-000230 / CA-ALP-000149	Precontact site	Lithic scatter	Unevaluated
4.	P-02-000231 / CA-ALP-000150	Precontact site	Lithic scatter	Unevaluated
5.	P-02-000232 / CA-ALP-000151	Precontact site	Lithic scatter	Unevaluated
6.	P-02-000233 / CA-ALP-000152	Precontact site	Lithic scatter, bedrock milling feature(s)	Unevaluated
7.	P-02-000234 / CA-ALP-000153	Precontact site	Lithic scatter, quarry	Unevaluated
8.	P-02-000235 / CA-ALP-000154H	Historic era site	Collapsed cabin, corrals, refuse scatter	Recommended NRHP ineligible; no SHPO concurrence on file
9.	P-02-000329 / CA-ALP-000252	Precontact site	Lithic scatter, bedrock milling feature(s)	Unevaluated
10.	P-02-000330 / CA-ALP-000253	Precontact site	Bedrock milling feature(s)	Unevaluated
11.	P-05-000949 / CA-CAL-000631	Precontact site	Lithic scatter	Unevaluated
12.	P-05-000988 / CA-CAL-000670	Precontact site	Lithic scatter, habitation debris	Recommended NRHP eligible; no SHPO concurrence on file
13.	P-05-001054 / CA-CAL-000737	Precontact site	Lithic scatter, bedrock milling station(s)	Unevaluated
14.	P-05-001060 / CA-CAL-000743/H	Multicomponent site	Historic era refuse scatter, precontact lithic scatter	Unevaluated
15.	P-05-001679 / CA-CAL-001368H	Historic era site	Utica Ditch	NRHP eligible with SHPO concurrence

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Table 3.11-3. (Continued).

Count	Resource Designation(s)	Type	Resource Description / Attributes	NRHP Evaluation Status
16.	P-05-001797 / CA-CAL-001493/H	Multicomponent site	Historic era refuse scatter, precontact bedrock milling feature(s)	Unevaluated
17.	P-05-002075 P-55-007282	Archaeological/ Historic District	New Melones Archaeological/Historic District	NRHP eligible with SHPO concurrence
18.	P-55-001695 / CA-TUO-000674	Precontact site	Bedrock milling station(s)	Unevaluated
19.	P-55-001696 / CA-TUO-000675	Precontact site	Lithic scatter	Unevaluated
20.	P-55-002285 / CA-TUO-001289/H	Multicomponent site	Historic era foundations, privy pit, fence, standing structure; Precontact era lithic scatter, bedrock milling station	Unevaluated
21.	P-55-002596 / CA-TUO-001607	Precontact site	Lithic scatter, bedrock milling station(s)	Unevaluated
22.	P-55-003136 / CA-TUO-002163	Precontact site	Lithic scatter	Unevaluated
23.	P-55-003944 / CA-TUO-002960H	Historic era site	Utica Dams	Unevaluated

Cultural Resources within 0.5-mile of the APE

There are an additional 101 cultural resources which do not intersect the APE but are identified within 0.5-mile of the APE (Table 3.11-4). These include 49 precontact sites, 5 precontact isolates, 30 historic era sites, 5 multicomponent sites, 9 historic era built environment resources, and 2 historic era resources with both built environment and archaeological components. The portion of the New Melones Archaeological/Historical District which is recorded specifically in Tuolumne County and outside of the APE is also included in Table 3.11-4.

Table 3.11-4. Cultural resources within the 0.5-mile records search buffer.

Count	Resource Designation(s)	Type	Resource Description / Attributes	NRHP Evaluation Status
1.	P-02-000012	Precontact isolate	Lithic artifact	Ineligible for NRHP
2.	P-02-000014	Precontact isolate	Lithic artifacts	Ineligible for NRHP
3.	P-02-000191 / CA-ALP-000110	Precontact site	Bedrock milling feature(s)	Unevaluated

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Table 3.11-4. (Continued).

Count	Resource Designation(s)	Type	Resource Description / Attributes	NRHP Evaluation Status
4.	P-02-000273 / CA-ALP-000192	Precontact site	Lithic scatter, bedrock milling feature(s)	Unevaluated
5.	P-02-000369 / CA-ALP-000293H	Historic era site	Rock alignments, depression, refuse	Unevaluated
6.	P-02-000372 / CA-ALP-000296H	Historic era site	Series of stone quarries and stone and concrete dams	Unevaluated
7.	P-02-000374 / CA-ALP-000298H	Historic era site	Union Water Company water control features (derelict and active)	Unevaluated
8.	P-02-000388 / CA-ALP-000312	Precontact site	Bedrock milling feature(s)	Unevaluated
9.	P-02-001299	Historic era site	Highland Creek Trail	Unevaluated
10.	P-02-001300	Historic era site	Pacific Creek Trail	Unevaluated
11.	P-05-000084	Precontact isolate	Lithic artifact	Ineligible for NRHP
12.	P-05-000102	Precontact isolate	Lithic artifact	Ineligible for NRHP
13.	P-05-000134 / CA-CAL-001554	Precontact site	Lithic scatter, bedrock milling feature(s)	Unevaluated
14.	P-05-000135 / CA-CAL-001555	Precontact site	Bedrock milling feature(s)	Unevaluated
15.	P-15-000137 / CA-CAL-001557	Precontact site	Bedrock milling feature(s)	Unevaluated
16.	P-15-000138 / CA-CAL-001558	Precontact site	Bedrock milling feature(s)	Unevaluated
17.	P-15-000139 / CA-CAL-001558	Precontact site	Bedrock milling feature(s)	Unevaluated
18.	P-15-000143	Precontact site	Lithic artifacts, bedrock milling feature(s)	Unevaluated
19.	P-05-000227 / CA-CAL-001599H	Historic era site	Refuse scatter	Unevaluated
20.	P-05-000254	Historic era site	Ditch segment(s)	Unevaluated
21.	P-05-000260 / CA-CAL-001620	Precontact site	Lithic scatter	Unevaluated

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Table 3.11-4. (Continued).

Count	Resource Designation(s)	Type	Resource Description / Attributes	NRHP Evaluation Status
22.	P-05-000261	Historic era site	Ditch segment(s)	Unevaluated
23.	P-05-000262	Historic era built environment	Darby House	Unevaluated
24.	P-05-000352 / CA-CAL-000016/H	Multicomponent site	Historic era foundations, refuse; precontact lithic scatter, bedrock milling feature(s), habitation debris	Recommended NRHP eligible; no SHPO concurrence on file
25.	P-05-000353 / CA-CAL-000017	Precontact site	Unconfirmed precontact habitation location: identified by informant	Unevaluated
26.	P-05-000643 / CA-CAL-000313	Precontact site	Precontact habitation site	Unevaluated
27.	P-15-000654 / CA-CAL-000324	Precontact site	Bedrock milling feature(s)	Contributing element to the New Melones Archaeological District's NRHP eligibility. Unevaluated individually.
28.	P-05-000655 / CA-CAL-000325	Precontact site	Bedrock milling feature(s)	Contributing element to the New Melones Archaeological District's NRHP eligibility. Unevaluated individually.
29.	P-05-000656 / CA-CAL-000326H	Precontact site	Lithic scatter, bedrock milling feature(s)	Contributing element to the New Melones Archaeological District's NRHP eligibility. Unevaluated individually.
30.	P-05-000657 / CA-CAL-000327	Precontact site	Bedrock milling feature(s), habitation debris	Contributing element to the New Melones Archaeological District's NRHP eligibility. Unevaluated individually.
31.	P-05-000658 / CA-CAL-000328	Precontact site	Bedrock milling feature(s), habitation debris	Contributing element to the New Melones Archaeological District's NRHP eligibility. Unevaluated individually.
32.	P-15-000659 / CA-CAL-000329H	Historic era site	Foundations	Contributing element to the New Melones Archaeological District's NRHP eligibility. Unevaluated individually.
33.	P-15-000913 / CA-CAL-000585H	Historic era site	Foundations	Contributing element to the New Melones Archaeological District's NRHP eligibility. Unevaluated individually.
34.	P-15-000962 / CA-CAL-000644	Precontact site	Bedrock milling feature(s)	Unevaluated
35.	P-05-000989 / CA-CAL-000671	Precontact site	Bedrock milling feature(s)	Contributing element to the New Melones Archaeological District's NRHP eligibility. Unevaluated individually.

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Table 3.11-4. (Continued).

Count	Resource Designation(s)	Type	Resource Description / Attributes	NRHP Evaluation Status
36.	P-05-000990	Precontact site	Lithic scatter, habitation debris	Contributing element to the New Melones Archaeological District's NRHP eligibility. Unevaluated individually.
37.	P-05-001053 / CA-CAL-000736	Precontact site	Lithic scatter, bedrock milling feature(s), habitation debris	Recommended NRHP eligible; no SHPO concurrence on file
38.	P-05-001055 / CA-CAL-000738	Precontact site	Lithic scatter, bedrock milling feature(s), hearths/pits, habitation debris	Recommended NRHP eligible; no SHPO concurrence on file
39.	P-05-001056 / CA-CAL-000739	Precontact site	Lithic scatter, bedrock milling feature(s)	Recommended NRHP eligible; no SHPO concurrence on file
40.	P-05-001057 / CA-CAL-000740H	Precontact site	Lithic scatter, bedrock milling feature(s)	Recommended NRHP eligible; no SHPO concurrence on file
41.	P-05-001058 / CA-CAL-000741	Precontact site	Lithic scatter, bedrock milling feature(s), rockshelter, habitation debris	Recommended NRHP eligible; no SHPO concurrence on file
42.	P-05-001327 / CA-CAL-001011	Precontact site	Lithic scatter, bedrock milling feature(s), rockshelter, habitation debris	Unevaluated
43.	P-05-001362 / CA-CAL-001046	Precontact site	Bedrock milling feature(s)	Unevaluated
44.	P-05-001363 / CA-CAL-001047H	Historic era site	Union Water Ditch segments	Unevaluated
45.	P-05-001366 / CA-CAL-001050	Precontact site	Lithic scatter	Unevaluated
46.	P-05-001367 / CA-CAL-001051	Precontact site	Bedrock milling features	Unevaluated
47.	P-05-001368 / CA-CAL-001052	Precontact site	Bedrock milling features	Unevaluated
48.	P-05-001471 / CA-CAL-001156H	Historic era site	Mining features (Collier Quartz Mine)	Unevaluated
49.	P-05-001490 / CA-CAL-001175	Precontact site	Lithic scatter, bedrock milling features, habitation debris	Unevaluated
50.	P-05-001491 / CA-CAL-001176	Precontact site	Lithic scatter	Unevaluated
51.	P-05-001509 / CA-CAL-001196H	Historic era built environment	Former location of the Calaveras District Forest Service Office	Determined ineligible by USFS

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Table 3.11-4. (Continued).

Count	Resource Designation(s)	Type	Resource Description / Attributes	NRHP Evaluation Status
52.	P-05-001535 / CA-CAL-001222	Precontact site	Lithic scatter, bedrock milling feature(s)	Unevaluated
53.	P-05-001560 / CA-CAL-001247	Precontact site	Lithic scatter, bedrock milling features, habitation debris	Unevaluated
54.	P-05-001561 / CA-CAL-001248	Precontact site	Lithic scatter, bedrock milling features	Unevaluated
55.	P-05-001563 / CA-CAL-001250	Precontact site	“Occupation site”	Unevaluated
56.	P-05-001581 / CA-CAL-001269/H	Multicomponent site	Historic era “notched log structure”; precontact lithic scatter, bedrock milling feature(s)	Unevaluated
57.	P-05-001631 / CA-CAL-001319H	Historic era site	Ditch segments	Unevaluated
58.	P-05-001704 / CA-CAL-001394/H	Multicomponent site	Historic era refuse, trail, ditch segment; precontact lithics, bedrock milling feature(s), habitation debris	Unevaluated
59.	P-05-001705 / CA-CAL-001395/H	Multicomponent site	Historic era foundations, refuse, structures, helipad; precontact lithic scatter, bedrock milling feature(s)	Unevaluated
60.	P-05-001707 / CA-CAL-001397H	Historic era site	Landscape modifications and refuse associated with a former cabin location	Unevaluated
61.	P-05-001708 / CA-CAL-001398H	Historic era site and built environment	Ancillary building(s), privy pit, refuse	Unevaluated
62.	P-05-001709 / CA-CAL-001399H	Historic era site and built environment	Ancillary building(s), refuse, wall/fence, standing structure(s)	Unevaluated
63.	P-150-001714 / CA-CAL-001404H	Historic era site	Ditch segment	Unevaluated
64.	P-05-001715 / CA-CAL-001405/H	Multicomponent site	Historic era refuse, precontact lithic scatter, bedrock milling feature(s)	Unevaluated
65.	P-05-001719 / CA-CAL-001409H	Historic era site	Mining features and refuse (Red Top Mine)	Unevaluated
66.	P-05-001736 / CA-CAL-001426H	Historic era built environment	Friedrich House	Unevaluated

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Table 3.11-4. (Continued).

Count	Resource Designation(s)	Type	Resource Description / Attributes	NRHP Evaluation Status
67.	P-05-001760 / CA-CAL-001454H	Historic era site	Quarry, concrete structures, metal drum, tailings, refuse dump and scatter	Unevaluated
68.	P-05-001798 / CA-CAL-001494	Precontact site	Bedrock milling feature(s)	Unevaluated
69.	P-05-001799 / CA-CAL-001495	Precontact site	Bedrock milling feature(s)	Unevaluated
70.	P-05-001800 / CA-CAL-001496	Precontact site	Bedrock milling feature(s)	Unevaluated
71.	P-05-002165 / CA-CAL-001775	Precontact site	Lithic scatter	Unevaluated
72.	P-05-002184 / CA-CAL-001843H	Historic era site	Abandoned segments of Old Highway 4	Unevaluated
73.	P-05-002263	Precontact site	Bedrock milling feature(s)	Unevaluated
74.	P-05-002419	Precontact site	Bedrock milling feature(s)	Unevaluated
75.	P-05-002420	Historic era site	Structural remnants, refuse	Unevaluated
76.	P-05-002425	Precontact site	Bedrock milling feature(s)	Unevaluated
77.	P-05-003552	Historic era built environment	Ebbett's Pass Route	Recommended eligible for NRHP; no SHPO concurrence on file
78.	P-05-003712 / CA-CAL-002193	Precontact site	Bedrock milling feature(s)	Unevaluated
79.	P-05-003821	Historic era built environment	Town of Hathaway Pines	Unevaluated
80.	P-05-003978	Historic era built environment	CCWD water tank	Recommended ineligible for NRHP listing; no SHPO concurrence on file
81.	P-05-003988	Historic era built environment	Love Creek Ranch Southern Barn and Orchard	Unevaluated
82.	P-05-003991	Historic era built environment	Love Creek Ranch Spring Box and Cistern	Unevaluated
83.	P-05-004022	Precontact site	Lithic artifact	Ineligible for NRHP
84.	P-05-004023 / CA-CAL-002339H	Historic era site	Mining features	Unevaluated

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Table 3.11-4. (Continued).

Count	Resource Designation(s)	Type	Resource Description / Attributes	NRHP Evaluation Status
85.	P-05-004029 / CA-CAL-002340H	Historic era site	Ditch segment	Unevaluated
86.	P-05-004056 / CA-CAL-002350H	Historic era site	Camp Nine Townsite and Stanislaus Powerhouse	Unevaluated
87.	P-55-000278	Historic era site	Pelton Sawmill Site	Unevaluated
88.	P-55-000279	Historic era site	Pelton Sawmill Ditch	Unevaluated
89.	P-55-000280	Historic era site	Water Storage Shed	Unevaluated
90.	P-55-001297 / CA-TUO-000271	Precontact site	Bedrock milling feature(s)	Unevaluated
91.	P-55-001686 / CA-TUO-000665H	Historic era site	Townsite of Camp Nine	Unevaluated
92.	P-55-001689 / CA-TUO-000668	Precontact site	Bedrock milling feature(s)	Unevaluated
93.	P-55-003022 / CA-TUO-002047	Precontact site	Lithic scatter	Unevaluated
94.	P-55-004020 / CA-TUO-003036	Historic era site	“Power line on single set of wooden poles”	Unevaluated
95.	P-55-005958 / CA-TUO-004279	Historic era site	Rock alignment	Unevaluated
96.	P-55-005962	Precontact isolate	Lithic artifact(s)	Ineligible for NRHP
97.	P-55-006209 / CA-TUO-004424H	Historic era built environment	Camp Nine Road	Recommended NRHP eligible; no SHPO concurrence on file
98.	P-55-006259 / CA-TUO-004423	Precontact site	Lithic scatter, bedrock milling feature(s)	Unevaluated
99.	P-55-007282 / P-05-002075	Archaeological/ Historic District	New Melones Archaeological/Historical District	Eligible for the NRHP with SHPO concurrence
100.	P-55-010180	Historic era site	Stanislaus Afterbay Dam	Unevaluated
101.	P-55-010247	Historic era site	Spicer Sand Flat Trail	Unevaluated

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The 49 precontact archaeological site constituents include lithic scatters, bedrock milling feature(s), and habitation debris. One of these 49 precontact sites also includes a rockshelter. Of the 49 sites, seven were found to be contributing elements to the NRHP eligibility of the New Melones Archaeological/Historical District and individually unevaluated, five were recommended individually NRHP eligible but no SHPO concurrence on those recommendations were provided with the site records, and the remaining 37 are unevaluated for NRHP listing. The five precontact isolates, consisting of lithic artifacts, are assumed to be ineligible for listing in the NRHP, but again no SHPO concurrence on these evaluations was provided.

There are 41 historic era resources in the 0.5-mile records search radius including 30 historic era archaeological sites, nine historic era built environment resources, and two historic era resources with both archaeological and built environment constituents. Archaeological sites include derelict and abandoned residential structures and associated features (e.g., fences, landscape modifications), refuse deposits and privies, rock alignments, depressions, abandoned roads, trails, mining and quarry constituents, ditch segments, a power line, the Camp Nine Townsite and Stanislaus Powerhouse, the Stanislaus Afterbay Dam, the Pelton Sawmill Site, the Pelton Sawmill Ditch, and a water storage shed. The nine individually recorded built environment resources include the former location of the Calaveras District Forest Service Office, the Ebbett's Pass Route, a CCWD water tank, Camp Nine Road, Darby House, Friedrich House, Town of Hathaway Pines, the Love Creek Ranch Southern Barn and Orchard, and the Love Creek Ranch Spring Box and Cistern. The two historic era resources which include built environment and archaeological resources include two sites consisting of standing ancillary building(s) with associated features and refuse. Of the 30 historic era sites, two are contributing elements to the NRHP eligibility of the New Melones Archaeological/Historic District, and the remaining 28 are unevaluated for the NRHP. Of the nine built environment resources, the Ebbett's Pass Route and the Camp Nine Road were recommended eligible for the NRHP, but there are no SHPO concurrences for either of those findings on file. The former location of the Calaveras District Forest Service Office was determined ineligible for NRHP listing by the USFS. The CCWD water tank was recommended ineligible for NRHP listing, but there is no SHPO concurrence on file for that recommendation. The remaining five built environment resources are unevaluated for NRHP eligibility. The two historic era resources with built environment and archaeological components are unevaluated regarding their NRHP eligibility.

The five multicomponent sites consist of historic era foundations, refuse, trail and ditch segments with precontact constituents such as lithic scatters, bedrock milling feature(s), and habitation debris. One multicomponent site, P-05-001705 / CA-CAL-001395/H, includes a helipad and standing structures as part of its historic era component, although these were not recorded as built environment resources. Another multicomponent site, P-05-00352 / CA-CAL-000016/H, was recommended eligible for the NRHP, but no SHPO concurrence is on file. The remaining four sites are unevaluated for NRHP eligibility.

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3.11.3 Known Project-Related Effects to Cultural Resources and Additional Data Needs

The records search and background literature review of the APE identified 160 cultural resources studies and 23 cultural resources in the APE. Most of these resources have not been evaluated regarding their eligibility for inclusion in the NRHP. Most of the cultural studies intersecting the APE were conducted in the 1970s and 1980s and were not conducted to adequate modern standards. Also, many of the previously recorded resources in the APE have not been revisited and have not had their records updated within the last 5–10 years and their current condition is unknown. No ongoing Project-related activities are known to be affecting cultural resources, and no ground-disturbing activities or modifications to Project facilities are proposed as part of this relicensing. However, the new license may ultimately include measures or operation and maintenance to Project facilities that could affect cultural resources under the new FERC license. These activities could affect documented or previously unidentified cultural resources that are historic properties. As such, CCWD is proposing to conduct a cultural resources study to identify historic properties in the APE that may be affected by the Project relicensing.

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3.12 Tribal Resources

Per 18 C.F.R. § 5.6 (d)(3)(xii), this section provides a description of Tribes, Tribal lands, and interests that may be affected by the Project. Components of this description include identification of information on resources of existing Project construction and operation impacting Tribal cultural or economic interests; and identification of impacts on Tribes of existing Project construction and operation that may affect Tribal interests not associated with resources but have connection to Project construction and operation.

This section describes known Tribal resources within the total 2,376.9-acre FERC Project Boundary, as identified during background research using existing, relevant, and reasonably available information. The area included in the background research consists of the FERC Project Boundary plus a 0.5-mile radius around the FERC Project Boundary. The purpose of the background research was to identify previously documented cultural and Tribal resources and studies associated with the FERC Project Boundary. Including the 0.5-mile radius around the FERC Project Boundary provides a broader and more detailed understanding of the historic context of the Project Vicinity and thus the types of potential resources that might be encountered within the FERC Project Boundary, as well as identifying the potential for any resources immediately outside of the FERC Project Boundary that could be directly or indirectly affected by Project O&M.

This section relies upon the overview of the cultural context described in Section 3.11 of the PAD. Sources consulted for this section include data obtained from the CICC at California State University, Stanislaus of the CHRIS; the Sacred Lands File (SLF) maintained by the Native American Heritage Commission (NAHC); previous investigations of Tribal resources within the research area; and information provided by Native American Tribes and organizations.

Section 106 of the NHPA and its implementing regulations at 36 C.F.R. Part 800 (Section 106), requires federal agencies to take into account the effects of their undertakings on historic properties and to consult with interested Native American Tribes that attach religious or cultural significance to such properties within the APE, including Tribes that no longer reside in their ancestral areas, but may still have ancestral affiliations to a place.[1] In this case, FERC's issuance of a new license for the continued O&M of the Project is considered to be a federal undertaking that must comply with Section 106 (per 36 C.F.R. § 800.16[y]). FERC, or CCWD if designated by FERC as the non-federal representative for day-to-day NHPA Section 106 consultation, will consult with potentially affected Native American Tribes and agencies during the Project relicensing.

Under the current NHPA Section 106 implementing regulations at 36 C.F.R. § 800.16(d), the APE is defined as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." Based on this regulatory definition, the APE for the Project relicensing has been initially identified by CCWD as including all lands within the FERC Project Boundary. This is the area identified by

[1] As specified under 36 C.F.R. 800.16(f): "*Consultation* means the process of seeking, discussing, and considering the views of other participants and where feasible, seeking agreement with them regarding matters arising in the section 106 process."

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CCWD where Project operations or Project-related activities may cause changes in the character or use of historic properties, if any such properties exist. Pursuant to 36 C.F.R. § 800.4(a)(1), CCWD, once designated by FERC as the non-federal representative for day-to-day NHPA Section 106 consultation, will consult with the California SHPO regarding the determination of the APE.[2]

Throughout this section the following terms are utilized and defined as follows:

- Cultural Resource: "Cultural resource" is used to discuss any precontact or historic district, site, building, structure, or object, regardless of its National Register eligibility.

- Historic Property: *"Historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian Tribe or Native Hawaiian organization and that meet the National Register criteria"* (36 C.F.R. § 800.16(l)(1).

- Indian Trust Asset (ITA): ITAs are legal interests in assets held in trust by the federal government for Indian Tribes or individual Indians. ITAs can be real property, physical assets, or intangible property rights. A characteristic of an ITA is that it cannot be sold, leased, or otherwise alienated without the United States government's approval. Examples of ITAs are lands, including reservations and public domain allotments; minerals; water rights; hunting and fishing rights; other natural resources; and money or claims. ITAs do not include things in which a Tribe or individuals have no legal interest. For example, off-reservation sacred lands or archaeological sites in which a Tribe has no legal interest are not ITAs.

- Traditional Cultural Places (TCPs): TCPs are defined as any place that is a *"…building, structure, object, site, or district that may be listed in (or determined eligible for listing in) the National Register for its significance to a living community because of its association with cultural beliefs, customs, or practices that are rooted in the community's history and that are important in maintaining the community's cultural identity"* (Beasley 2024: 1).

- Tribal Resources: Tribal resources include ITAs, TCPs, and specific geographic locations where an agreement exists between Tribes and other entities to conduct traditional practices. Each of these has the potential to be a historic property.

Examples of TCPs may include:

- A landscape or geographic feature – with or without human modification or other evidence of human activity – whose existence is significant to a community because of its place in the community's knowledge about its origins, its cultural history, or the nature of the world.

[2] Please note that the Advisory Council on Historic Preservation (ACHP) is proposing amendments to the NHPA section 106 consultation regulations (36 C.F.R. Part 800). As of the date of this PAD, ACHP has not yet issued its proposed rules via a Notie of Proposed Rulemaking. If final rules are adopted, they will likely influence the scope and requirements for the section 106 consultation process for Project relicensing.

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- An archaeological site for its capacity to yield information about a community's origins or history, or to convey a community's relationship to a landscape.
- A rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents.
- An urban or suburban neighborhood that is the traditional home of a particular cultural group, and that reflects its beliefs and practices.
- A building directly associated with the historic and continuing social or cultural activities that are essential to a traditional group's identity or belief system (Beasley 2024: 10).

The National Park Service (NPS) provides guidance for evaluating and documenting TCPs in *National Register Bulletin 38 (update): Identifying, Evaluating, and Documenting Traditional Cultural Places*, in which it states that "*the knowledge of those who attribute cultural value to a place should be prioritized; after all, it is they who value it, and therefore are the most authoritative about its value*" (Beasley 2024: 38).

3.12.1 Cultural-Environmental Context

Refer to Section 3.11 of the PAD for a description of the cultural-environmental context.

3.12.2 Native American Tribes and Tribal Resources Research

Record searches were conducted on January 9, 2026, by the CCIC of the CHRIS at California State University, Stanislaus under CCIC Search File No. 13596. The area investigated for the record search included a 0.5-mile buffer around the APE for adequate coverage. CCIC staff provided copies of previously conducted cultural resource investigations, previously recorded resources, and relevant geospatial data that fall within the proposed APE and a 0.5-mile buffer of the APE. Previous investigation reports included ethnographic studies and ethnohistories, which are detailed further below.

3.12.2.1 Background Research

A total of 160 cultural resources studies intersect portions of the APE (see Table 3.11-1 in Section 3.11 Cultural Resources). Of these 160 studies, five included ethnographic research. Two of these studies (Theodoratus et al. 1980; Peters 1988) were conducted in support of the Project. One of these two studies was a historic and ethnographic overview conducted in 1980 by Theodoratus Cultural Research in support of CCWD's proposal for further development of the Project that encompassed three parcels in the tri-county area of Calaveras, Alpine, and Tuolumne. This study presents a cultural overview of Native Americans in the Project Area. The other study was an ethnohistory completed as part of a cultural resources study conducted in 1988 by Peak & Associates, Inc. for the Clarks Flat and Upper Mountain locales of the Project on behalf of both CCWD and NCPA. This 1988 study states that "whereas previous contract research conducted for Calaveras County Water District provided useful regional information, efforts in this study focused more precisely on the limited areas of Clarks Flat and the Upper Mountain locales. Because no

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prior studies had focused on Washoe ethnography in the Project Area, much of this study involved primary research among tribal members[...] This ethnohistory examines changing patterns of Miwok and Washoe land use, addresses contemporary cultural concerns, and clarifies Native American influence in the Project Area's (Peters 1988). The remaining three studies were conducted in support of the New Melones Lake Project and encompass an area that is situated predominantly outside of the Project Area to the southwest. There is minimal overlap in Section 01 of Township 03N, Range 14E and Section 06 of Township 03N, Range 15E, near Clarks Flat and adjacent to the Stanislaus Hydroelectric Powerhouse. These five studies are identified and listed in Table 3.12-1 below.

Table 3.12-1. Previous ethnographic studies within the Project APE and 0.5-mile buffer.

Report No.	Other ID(s)	Year	Author(s)	Title	Affiliation
AP-00371; CA-00371; TO-00371	NADB-R - 1360778	1980	Theodoratus, D. J., H. McCarthy, J. V. Siry, and C. M. Blount	Historic and Ethnographic Overview, North Fork Stanislaus River Hydroelectric Development Project	Theodoratus Cultural Research for Calaveras County Water District
AP-04553	NADB-R - 1364539	1988	Peters, M. P.	Clarks Flat and Upper Mountain Locale, Alpine and Calaveras Counties, California (Cultural Resource Studies, North Fork Stanislaus River Hydroelectric Project, Volume I: Ethnohistory)	Peak & Associates, Inc.
CA-00200; TO-00200	NADB-R - 1362496; NADB-R - 1366404	1976	Moratto, M. J. and A. Hall	New Melones Archaeological Project -- Stanislaus River, Calaveras and Tuolumne Counties, California: Phase VI; Part 2: Ethnography and Ethnohistory	Archaeological Research Laboratory, Department of Anthropology, SFSU for U.S. NPS and Frederic Burk Foundation
CA-00370; TO-00370	NADB-R - 1367055; NADB-R - 1364170	1976	Theodoratus, D. J.	An Ethnographic Study of the New Melones Lake Project	Theodoratus Cultural Research
CA-01665; TO-01665	NADB-R - 1360270; CX-0001-1-0053; NADB-R - 1366015	1985	Goldberg, S. K., A. L. Hall, M. J. Moratto, D. J. Theodoratus, T. M. Van Buren, and T. L. Brejla	DRAFT: Final Report of the New Melones Archaeological Project; Volume II: Cultural Background: Regional Archaeology, Ethnography, and History	Infotec Development, Inc. for the National Park Service

A review of these ethnographic studies revealed at least one named historic rancheria, *Yungakatok*, located within the 0.5-mile buffer of the APE, but outside of the APE (see Table 3.12-2 below). Located near the town of Avery, *Yungakatok*, or *Yung'-ah-ko'-to*, was a Miwok rancheria established by the Plains Miwok who worked for John Murphy in his mining operations (Peters 1988). Merriam identified *Yung'-ah-ko'-to* as being one of the villages of the cultural group he

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describes as the "the Middle Mewuk" (Merriam 1907). Kroeber also identified the general approximation of *Yungakatok* by number 43 among other territories and villages of the Maidu and Miwok (Kroeber 1925: plate 37). "John Eaph, a Miwok who lived in West Point in 1917, told Gifford (1917) that his family had owned 'Yunaugatu' and had come from that place long ago, and he called its people 'Yungakatok'." It is thought that people of this village may have moved to this location with John Murphy when he came to mine gold. They likely originated from the Plains Miwok area near the Cosumnes River (Theodoratus et al. 1980, taken from Hall 1978:65; Bennyhoff 1977). STF has mapped numerous precontact sites near Avery, including one which may be *Yungakatok* (Peters 1988).

A review of the studies associated with New Melones Lake Project indicated there are at least two archaeological sites with ethnographic significance located within the 0.5-mile buffer of the APE, but outside of the APE. Both of these sites are located in the Vicinity of Camp Nine and Clark Flat and one of these sites has known burials associated with it. In the *Ethnographic Study of the New Melones Lake Project*, Theodoratus Cultural Research mentions an area that was used extensively for gathering sourberries and trapping salmon. Forest Service archaeological records specifically describe the Clark Flat area as a "village or base camp-permanent occupation used by Miwok" (Theodoratus 1976). A review of the records search materials indicate that site P-05-000990 (the USFS site also identified as Cal-S347) is a precontact village site with evidence of habitation that is located within a 0.5-mile buffer of the APE (Table 3.12-2).

The Ethnographic Study of the New Melones Lake Project also states that "it has been suggested that on the river 'up above' the Camp Nine area there is a Miwok burial site" (Theodoratus 1976). Furthermore, one of the consultants for this ethnographic study shared that "some Indians used to live in the area of Clark Flat in 1874 but that by the turn of the century there were no Miwok left in that area. He also said that no Indians would work at the Marble Quarry near Camp 9 for fear of finding relatives' bones" (Theodoratus 1976). In Part 4 of *The Final Report of the New Melones Archaeological Project; Volume II: Cultural Background: Regional Archaeology, Ethnography, and History*, in a section which discusses population displacement, Goldberg et. al. specifically mention the relations between Native Americans who lived and worked on missions and Native Americans who did not:

> The raiders of the North Fork Stanislaus village encountered and killed some of these Mission Indians, identified as such by their clothing. Above the South Fork of the Stanislaus the miners of Pine Log attacked a party of Indians which was led by a Spanish-speaking Indian (Harris 1960:128). Excavations at the archeological site, 4-Cal-S-276, on Clarks Flat at the extreme eastern edge of the New Melones Project Area, uncovered a metal crucifix in association with sixteen glass trade beads (Peak 1973:140). Either this was an item which was traded to the local Central Miwok, or it indicates the presence at the site of at least one former mission resident (Goldberg 1985).

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A review of the records search indicate that site P-05-000658 (also identified as 4-Cal-S-276) is a precontact village site with known burials, which suggests a correlation to the ethnographic accounts. P-05-000658 is a precontact village site with evidence of habitation and burials in the Camp Nine and Clark Flat area within a 0.5-mile buffer of the APE.

Table 3.12-2. Places identified from ethnographic studies within the Project APE and 0.5-mile buffer.

Count	Resource	Other Designations	Description	Associated Studies
1	*Yungakatok*	*Yung'-ah-ko'-to*	Historic Miwok Rancheria	Theodoratus D. J., H. McCarthy, J. V. Siry, and C. M. Blount 1980; Peters 1988
2	P-05-000990	FS 05-16-52-28; 4-22-74; CA-CAL-000672; 4-CAL-S347; NMP-95	Precontact archaeological site	Theodoratus, D. J. 1976
3	P-05-000658	CA-CAL-000328; 4-Cal-S-276/328; MR-8; NMP-397	Precontact archaeological site	Goldberg, S. K., A. L. Hall, M. J. Moratto, D. J. Theodoratus, T. M. Van Buren, and T. L. Brejla 1985

3.12.2.2 Native American Tribes and Tribal Coordination

On February 18, 2025, HDR submitted a request to the Native American Heritage Commission (NAHC) for a contact list of potentially interested Tribes within 0.5-mile of the FERC Project Boundary, as well as a search of the NAHC's SLF. The NAHC responded on February 20, 2025, with a list of 10 potentially interested Tribes within 0.5-mile of the FERC Project Boundary (Table 3.12-3). Additionally, their search of the SLF returned a negative result. Although not included in the list of Tribal contacts provided by the NAHC, CCWD identified two additional Tribes that may have an interest in the Project–the California Valley Miwok Tribe and the Tuolumne Band of Me-Wuk Indians.

Table 3.12-3. Native American Tribes and organizations potentially affected by the Project.

Tribe
Buena Vista Rancheria of Me-Wuk Indians
Calaveras Band of Mi-Wuk Indians
California Valley Miwok Tribe
Chicken Ranch Rancheria of Me-Wuk Indians
Ione Band of Miwok Indians
Jackson Rancheria Band of Miwuk Indians
Nashville Enterprise Miwok-Maidu-Nishinam Tribe
Pakan'yani Maidu of Strawberry Valley Rancheria
Susanville Indian Rancheria
Tule River Indian Tribe
Tuolumne Band of Me-Wuk Indians
Washoe Tribe of Nevada and California

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Native American Tribes listed in Table 3.12-3, along with other interested parties, were notified of CCWD's intent to relicense the Project via email on September 23, 2025. The email also requested information regarding known resources that may be affected by the undertaking, issues, or concerns regarding potential Project effects, to solicit interest in Tribal participation at a virtual public meeting scheduled for October 29, 2025, and to request the contact information of any other individuals or organizations who would potentially be interested in coordinating with CCWD for this relicensing. Chairperson Silvia Burley with the California Valley Miwok Tribe responded via letter dated October 17, 2025, that the Tribe has no comments or concerns with the Project. Following a November 21, 2025, reminder email regarding the request for information, HDR conducted follow-up phone calls to the Tribes listed above in Table 3.12-1 on December 03, 2025. Community & Resources Development Director Stephanie Seuss with the Chicken Ranch Rancheria of Me-Wuk Indians of California followed up with HDR via email on December 3, 2025, stating that the Tribe had no comments at that time. On January 29, 2026, CCWD notified the relicensing participants of an initial pre-PAD study planning process meeting to be held on February 19, 2026 to develop studies needed for relicensing and to review CCWD's preliminary list of studies. HDR conducted follow-up phone calls to the Tribes on February 9, 2026. Tribal Chairman Adam Lewis with the Calaveras Band of Mi-wuk Indians followed up via email on February 10, 2026, formally requesting consultation and provided initial comments regarding the pre-PAD study planning process. Chairman Lewis expressed that the Calaveras Band of Mi-wuk Indians is the aboriginal Tribal community of this region, with longstanding ancestral, cultural, spiritual, and subsistence ties throughout the Stanislaus River watershed and surrounding highland territories within present-day Calaveras County. Chairman Lewis also stated that the Tribe maintains documented historical occupancy, family allotments, traditional use areas, ceremonial sites, burial grounds, and cultural landscapes directly associated with lands and waterways that may be affected by Project operations and future relicensing activities. On behalf of the Tribe, Chairman Lewis requested the following: government-to-government consultation; formal consultation consistent with the NHPA Section 106, adherence to FERC Tribal consultation policies and procedures; consideration of California AB 52 Tribal consultation standards; and recognition of Tribal sovereignty and cultural resource protections. On behalf of the Tribe, Chairman Lewis also requested that the PAD and subsequent study plans include, at minimum:

- Cultural resource inventory and survey of all areas of potential effect
- Submerged and shoreline site identification during low-water conditions
- Ethnographic and TCP assessments
- Tribal cultural landscape documentation
- Burial site sensitivity evaluation and repatriation protocols
- Tribal monitoring during any ground-disturbing or shoreline activities
- Evaluation of reservoir fluctuation, erosion, and sediment impacts on cultural sites
- Confidential handling of culturally sensitive information shared by the Tribe

Chairman Lewis requested that study methodologies be developed in coordination with Tribal representatives and provide opportunities for direct Tribal participation or co-management where appropriate. Additionally, Chairman Lewis stated that the Tribe welcomes discussion of collaborative measures that support long-term resource protection, including:

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- Native plant and habitat restoration
- Shoreline stabilization and erosion control
- Protection of archaeological and burial areas
- Tribal workforce and monitoring opportunities
- Long-term stewardship partnerships and land management coordination
- Continued coordination

Chairman Lewis also requested that the Calaveras Band of Mi-wuk Indians be included on all future coordination efforts, future notifications, filings, study plans, and communications related to the relicensing process. On February 11, 2026, CCWD replied via email, thanking Chairman Lewis for his response and comments. CCWD acknowledged the Tribe's longstanding ancestral, cultural, spiritual, and subsistence ties throughout the Stanislaus River watershed and surrounding areas within Calaveras County and that longstanding family allotments, traditional use areas, ceremonial sites, burial grounds, and cultural landscapes directly associated with lands and waterways may be affected by Project operations and future relicensing activities. CCWD stated that they will identify the Calaveras Band of Mi-wuk Indians as an official consulting Tribe and Interested Party for the relicensing and offered to schedule a separate meeting with the Tribe to discuss further details regarding the Project relicensing, in addition to the initial pre-PAD study planning process meeting.

Following the initial pre-PAD study planning process meeting held on February 19, 2026, CCWD emailed the meeting participants on February 23, 2026 to provide meeting materials and planned upcoming meetings for terrestrial resources, recreation, land use, aesthetics, water and aquatic resources. On February 25, 2026, Chairman Lewis of the Calaveras Band of Mi-wuk Indians responded via email, thanking the relicensing team for the updates and sharing the meeting materials. Chairman Lewis was unable to attend the meeting but stated that the Tribe will continue to participate as a consulting Tribal government with ancestral ties to the Project Area and appreciates CCWD's recognition of the Calaveras Band of Mi-wuk Indians as a lead consulting Tribe for cultural and Tribal resource coordination. Furthermore, Chairman Lewis expressed that the Tribe looks forward to reviewing the study descriptions as they become available and participating in the upcoming terrestrial resources meeting and other scheduled sessions. In this email Chairmen Lewis also requested that CCWD continue to include the Tribe in all Project communications, coordination efforts, and scheduling related to cultural and Tribal resource studies. At this time, no other responses or additional information pertaining to potential Tribal cultural resources was provided by the Native American Tribes contacted regarding the Project relicensing.

3.12.3 Known Tribal Resources

Background research in this section relied on information gathered through the records research and a review of the NAHC's SLF. The results of these data gathering efforts identified no TCPs, ITAs, or specific geographic location where an agreement exists between Tribes and other entities to conduct traditional practices within the APE or a 0.5-mile buffer around the APE. Likewise, initial outreach and coordination with Native American Tribes also did not identify any TCPs, ITAs, or any specific geographic location where an agreement exists between Tribes and other

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entities to conduct traditional practices. However, the research did identify three ethnographic locales within a 0.5-mile buffer of the APE: the historic rancheria, *Yungakatok*; archaeological site P-05-000990; and archaeological site P-05-000658. Additionally, the Calaveras Band of Mi-wuk Indians shared that their Tribe is the aboriginal Tribal community of this region, with longstanding ancestral, cultural, spiritual, and subsistence ties throughout the Stanislaus River watershed and surrounding highland territories within present-day Calaveras County. The Calaveras Band of Mi-wuk Indians maintains documented historical occupancy, family allotments, traditional use areas, ceremonial sites, burial grounds, and cultural landscapes directly associated with lands and waterways that may be affected by Project operations and future relicensing activities. Further consultation with potentially affected Native American Tribes may ultimately identify these resources as TCPs and historic properties.

CCWD will continue to consult with Tribes throughout the FERC relicensing process to identify any previously unidentified Tribal resources within the APE and address any potential Project effects to any such resources identified.

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SECTION 4.0

PRELIMINARY ISSUES AND PROPOSED STUDIES

In addition to this introductory information, this section is divided into five subsections. Section 4.1 provides a list of preliminary potential environmental issues that may need to be evaluated during the Project relicensing process and CCWD's "data gap analysis". The analysis identifies for each issue, existing, relevant, and reasonably available information that is used to inform if there is a data gap and relicensing studies to close the data gap. Section 4.2 provides a list of data gathering studies CCWD proposes. Section 4.3 describes studies recommended but not adopted by CCWD. Section 4.4 states that, during the relicensing, CCWD will develop measures it will propose for inclusion in the new license for the purpose of protecting or mitigating impacts from continued Project O&M or enhancing resources affected by continued Project O&M (proposed PM&E measures). Section 4.5 includes a list of Qualifying Plans currently on file with the Commission that may be relevant to the Project relicensing. Section 4.6 includes the full citation for references cited in Section 4. The FERC content requirements for this section are specified in 18 C.F.R. § 5.6(d).

4.1 Preliminary Potential Environmental Issues and Data Gap Analysis

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 in the relicensing process. Once potential environmental issues that are to be addressed are identified, existing information relevant to the issues can be assessed for adequacy and additional information and potential environmental studies needed to supplement existing information can be identified and collected so that FERC, CCWD, Native American tribes, regulatory agencies, and the public have an adequate record to assess the effects of the proposed Project and to inform proposed requirements in the new license. Identified potential environmental issues may or may not ultimately warrant specific PM&E measures.

Table 4.1-1 provides: 1) a list of potential preliminary environmental issues; 2) a summary of existing, relevant, and reasonably available information to address the issue; 3) CCWD's assessment of whether existing information is adequate to assess preliminary potential environmental issues; and 4) if existing information is not adequate, CCWD's proposed study to address the identified data gaps. The list of preliminary potential environmental issues was developed by CCWD based on its knowledge of the Project and potentially affected resources and a review of the five parties that listed or alluded to potential environmental issues in their responses to CCWD's PAD Information Questionnaire. CCWD made a good faith effort to include the respondent's' potential environmental issues in Table 4.1-1. CCWD may have combined or re-worded respondent's potential preliminary environmental issues for ease of reference.

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

Preliminary Potential Environmental Issue	Existing, Relevant, and Reasonably Available Information	CCWD's Identified Data Gap(s) If Any	CCWD's Proposed Study to Close Data Gap(s) If Any
Geology and Soils			
Effect of the proposed Project on geology and on soils, including geomorphic processes and channel form, erosion, sediment, and slope stability. [1, 2, 3]	As described in Section 3.2, the Project area is characterized by steep, bedrock-controlled terrain with shallow, erodible soils derived from granitic, volcanic, and metamorphic materials. These conditions support active geomorphic processes, including erosion, mass wasting, and sediment transport along hillslopes, channels, and reservoir margins. Project impoundments trap sediment and alter natural sediment transport, contributing to reduced downstream supply. Sediment accumulation rates and distribution within McKays Point Diversion Dam and Beaver Creek Diversion Dam have been characterized through bathymetric surveys of both reservoirs over the last several decades.	A data gap does not exist. Existing information is adequate to assess the proposed Project's potential effects on geology and on soils, including geomorphic processes and channel form, erosion, sediment, and slope stability and to inform license requirements.	None
Water Resources			
Effects of the proposed Project on water quantity[1, 3]	As described in Attachment 2B, draft Exhibit B, Section B.3, CCWD has developed a Water Balance/Operations Model. The model is built on the OASIS modeling platform to simulate Project operations on an hourly timestep for water years 2014 through 2025. The model has been used to develop a baseline scenario representative of current Project operations, and can be used to simulate proposed Project operations, as needed. Output provided by the model is adequate to assess effects of proposed Project operations on water quantity related to reservoir storage and flow in reaches downstream of Project facilities as well as water deliveries for irrigation and consumptive use.	A data gap does not exist. Existing information is adequate to assess the proposed Project's potential effects on water quantity to inform license requirements.	None

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Table 4.1-1. (Continued).

Preliminary Potential Environmental Issue	Existing, Relevant, and Reasonably Available Information	CCWD's Identified Data Gap(s) If Any	CCWD's Proposed Study to Close Data Gap(s) If Any
Water Resources			
Effects of the proposed Project on water quality, including near Project recreation facilities[1, 2, 3]	As described in Section 3.3, available information includes CCWD's annual publication of a Water Quality Report for water withdrawn from the Collierville Tunnel at Mill Creek Tap as part of their Hunters Water Treatment Plant operations; however, limited water quality information is available for other areas of the Project.	Identified data gaps include the need for recent water quality data in Project impoundments, including near Project recreation facilities, and Project-affected stream reaches.	WR-1
Effects of the proposed Project on water temperature[1, 2]	As described in Section 3.3.2.2, limited water temperature information is available; however, during early summer 2026 CCWD commenced water temperature data gathering efforts to seasonally collect hourly water temperature data at twenty (20) locations in the watershed and to record water temperature profiles within New Spicer Meadow Reservoir.	Identified data gaps include the ability to model how changes in releases below Project facilities will impact water temperature, including changes in New Spicer Meadow Reservoir storage on release temperatures.	WR-2
Aquatic Resources			
Effects of the proposed Project on stream and reservoir fish populations[1, 2, 3]	As described in Sections 3.4.1 and 3.6, various fish species including ESA-listed and special-status species are known to occur or have the potential to occur within the FERC Project Boundary or in Project-affected stream reaches.	Identified data gaps include the need for more recent presence and distribution information of fish species and to characterize fish condition.	AR-1 and AR-2
Effects of the proposed Project on stream habitat and instream flows in Project-affected streams[1, 2, 3]	As described in Sections 3.4, 3.5, and 3.6, various fish and amphibian species are known to occur or have the potential to occur Project-affected stream reaches. Section 3.5 also provides a preliminary description of habitat along Project-affected stream reaches but no information regarding aquatic habitats is available. Hydrology data is discussed in Attachment 2B, draft Exhibit B.	Identified data gaps include understanding how the timing, magnitude, and duration of instream flows in Project-affected stream reaches is needed to evaluate potential effects of the Project on aquatic resources.	AR-5

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Table 4.1-1. (Continued).

Preliminary Potential Environmental Issue	Existing, Relevant, and Reasonably Available Information	CCWD's Identified Data Gap(s) If Any	CCWD's Proposed Study to Close Data Gap(s) If Any
Aquatic Resources			
Effects of the proposed Project on fishes due to entrainment into Project intakes[1, 2, 3]	The intake at Beaver Creek Diversion Dam has been previously screened to reduce entrainment risk. However, there is little available information on fish entrainment at other Project intakes (i.e., New Spicer Meadow, North Fork Diversion, and McKays Point).	Identified data gaps include characterizing the potential risk of fish entrainment at New Spicer Meadow, North Fork Diversion, and McKays Point intakes. Characterization will include the review of fish species likely to be present near the intakes, the design of each intake, and the conditions present near each intake (i.e., approach velocities, etc.)	AR-4
Effects of the proposed Project on benthic macroinvertebrates[1, 2]	As described in Sections 3.4.2, limited benthic macroinvertebrate species occurrence information is documented in the assessment area.	Identified data gaps include the current presence and distribution of benthic macroinvertebrate species in Project-affected stream reaches.	AR-3
Effects of the proposed Project on special-status or invasive mussels and mollusk species[1]	Invasive mussels and Asian clams have not been recorded to occur in New Spicer Meadow Reservoir, the only Project reservoir with a boat launch facility. Further, as detailed in Section 3.4.3, NCPA has a mussel prevention plan that was approved by CDFW, whereby water quality sampling is conducted at New Spicer Meadows Reservoir and McKays Point Reservoir and visual surface surveys are conducted at New Spicer Meadows Boat Ramp (NCPA 2025). NCPA is also required to submit annual reports to CDFW to demonstrate the implementation of the plan each year and results to date have shown no invasive mussel detections and water quality and temperature sampling have also shown that conditions are not conducive for these species.	A data gap does not exist. Existing information is adequate to assess the proposed Project's potential effects on special-status or invasive mussels and inform license requirements.	None
Effects of the proposed Project on special-status amphibians and aquatic reptiles[1, 2, 3]	As described in Sections 3.4.4.2 and 3.6, special-status amphibians and aquatic reptiles are known or have the potential to occur in the FERC Project Boundary or Project-affected stream reaches.	Identified data gaps include the current presence and distribution of special-status amphibian and aquatic reptile species and characterization of suitability of aquatic habitats to assess potential Project effects.	AR-6 and AR-7

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Table 4.1-1. (Continued).

Preliminary Potential Environmental Issue	Existing, Relevant, and Reasonably Available Information	CCWD's Identified Data Gap(s) If Any	CCWD's Proposed Study to Close Data Gap(s) If Any
Aquatic Resources			
Effects of the proposed Project on spread of aquatic invasive species[2]	As described in Sections 3.4.3, invasive mussels and mollusk species have not been documented in the assessment area and are monitored as part of an NCPA mussel prevention plan (NCPA 2025). Invasive fish have been described in Section 3.4.1.	A data gap does not exist. Existing information is adequate to assess the proposed Project's potential effects on special-status or invasive mussels and inform license requirements.	None
Terrestrial Resources			
Effects of the proposed Project on vegetation communities	As described in Section 3.5.1.1, modeled vegetation data using the California Department of Forestry and Fire Protection's Fire and Resource Assessment Program vegetation model included 21 vegetation communities and 4 other land cover types.	Identified data gaps include the need to have accurate ground-truthed vegetation data using the more widely accepted vegetation standard, California Department of Fish and Wildlife's Vegetation Classification and Mapping Program.	TR-1
Effects of the proposed Project on special-status plants and non-native invasive plants[3]	As described in Sections 3.5.1.2 and 3.5.1.3, the potential for special-status plants and non-native invasive plants exists in and around the FERC Project Boundary.	Identified data gaps include the need to have accurate information about the current presence and distribution of special-status plants and non-native invasive plants in areas of the FERC Project Boundary where Project ground disturbing activities may occur.	TR-1
Effects of the proposed Project on riparian and wetland habitat[1]	As described in Section 3.5.5, wetland and riparian habitat was identified from the National Wetland Inventory (NWI).	Identified data gaps include the need to ground-truth the information identified by the NWI model including where wetlands and riparian features occur in relation to areas of the FERC Project Boundary where Project ground disturbing activities may occur.	TR-1

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Table 4.1-1. (Continued).

Preliminary Potential Environmental Issue	Existing, Relevant, and Reasonably Available Information	CCWD's Identified Data Gap(s) If Any	CCWD's Proposed Study to Close Data Gap(s) If Any
Terrestrial Resources			
Effects of the Project on special status furbearers[1, 2, 3]	As described in Section 3.5.2 and 3.6, one federal ESA listed furbearer was identified in the FWS and CDFW database searches and two special status fur-bearers were identified.	Identified data gaps include the need to ground-truth the vegetation information collected as part of TR-1 and convert those results to wildlife habitats using California Wildlife Habitat Relationships System (CWHR) to identify where habitat for special status furbearers occurs and if the Project may affect that habitat.	TR-3
Effects of the Project on Railroad Flat Deerherd[2]	As described in Sections 3.5.3 and 3.5.4, some information about deer is known in the assessment area.	Identified data gaps include the need to ground-truth the vegetation information collected as part of TR-1 and converting those results to wildlife habitats using CWHR to identify where habitat for the Railroad Flat Deer Herd occurs and if the Project may affect that habitat.	TR-3
Effects of the Project on special status passerine birds[1, 3]	As described in Section 3.5.2 and 3.6, information on ESA listed bird species is presented based on desktop analysis. No federal ESA listed passerine birds were found in the FWS and CDFW database searches, but 11 special status species were identified.	Identified data gaps include the need to ground-truth the vegetation information collected as part of TR-1 and converting those results to wildlife habitats using CWHR to identify where habitat for the special status passerine birds occurs and if the Project may affect that habitat. In addition, recent information on bald eagles and other special-status passerines is needed.	TR-2 and TR-3

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Table 4.1-1. (Continued).

Preliminary Potential Environmental Issue	Existing, Relevant, and Reasonably Available Information	CCWD's Identified Data Gap(s) If Any	CCWD's Proposed Study to Close Data Gap(s) If Any
Terrestrial Resources			
Effects of the proposed Project on special status raptors[1, 2, 3]	As described in Section 3.5.2, one federal ESA listed raptor was identified in the FWS and CDFW database searches and 10 special status raptors were identified.	Identified data gaps include the need to ground-truth the vegetation information collected as part of TR-1 and converting those results to wildlife habitats using CWHR to identify where habitat for special status raptors occurs and if the Project may affect that habitat. In addition, recent information on bald eagles and other special-status raptors is needed.	TR-2 and TR-3
Effects of the proposed Project on special status bats[1, 3]	As described in Section 3.5.2, no federal ESA listed bats were found in the FWS and CDFW database searches, but nine special status bats were identified.	Identified data gaps include the need to ground-truth the vegetation information collected as part of TR-1 and converting those results to wildlife habitats using CWHR to identify where habitat for special status bats occurs and if the Project may affect that habitat.	TR-3
Recreation and Land Use			
Effects of the proposed Project on recreation at Project impoundments, including during winter[1]	As described in Section 3.7, existing Project recreation opportunities, use levels, and the condition of facilities are known primarily at New Spicer Meadow Reservoir. Project recreation facilities at New Spicer Meadow Reservoir are well established and operated under the FERC license on NFS lands. Recreation use is governed by existing license requirements and federal land management policies, with seasonal (including winter) access influenced by elevation, snow conditions, and Forest Service access management.	Identified data gaps include the need for additional and recent information regarding Project recreation facilities condition; use; and visitor preferences, satisfaction, and potential issues.	RR-1

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Table 4.1-1. (Continued).

Preliminary Potential Environmental Issue	Existing, Relevant, and Reasonably Available Information	CCWD's Identified Data Gap(s) If Any	CCWD's Proposed Study to Close Data Gap(s) If Any
Recreation and Land Use			
Effects of proposed Project on recreation due to invasive species related closures[1]	Invasive mussels and Asian clams have not been recorded to occur in New Spicer Meadow Reservoir, the only Project reservoir with a boat launch facility. Further, as detailed in Section 3.4.3, NCPA has a mussel prevention plan that was approved by CDFW, whereby water quality sampling is conducted at New Spicer Meadows Reservoir and McKays Point Reservoir and visual surface surveys are conducted at New Spicer Meadows Boat Ramp (NCPA 2025). NCPA is also required to submit annual reports to CDFW to demonstrate the implementation of the plan each year and results to date have shown no invasive mussel detections and water quality and temperature sampling have also shown that conditions are not conducive for these species.	A data gap does not exist. Existing information is adequate to assess the proposed Project's potential effects on recreation due to invasive species to inform license requirements.	None
Effects of the proposed Project on recreation, including whitewater boating, in Project-affected reaches[4]	Existing recreation facilities, uses, and particularly whitewater flow ranges in the North Fork Stanislaus River downstream of the Project are known and described in Section 3.7 of this PAD (primarily the Sourgrass whitewater run). Hydrology is available and included in Exhibit B of this PAD to understand flows in the North Fork Stanislaus River downstream of the Project.	Identified data gaps include additional information on whitewater boating and other flow-dependent river recreation opportunities, what the acceptable range of flow levels is (particularly for non-whitewater boating opportunities) for the NFSR in the vicinity of Calaveras Big Trees State Park.	RR-2 and RR-3

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Table 4.1-1. (Continued).

Preliminary Potential Environmental Issue	Existing, Relevant, and Reasonably Available Information	CCWD's Identified Data Gap(s) If Any	CCWD's Proposed Study to Close Data Gap(s) If Any
Recreation and Land Use			
Effects of the proposed Project on Project Roads and Trails[1]	As described in Section 3.8.4, Project access relies on existing roads. Some roads are used exclusively by the licensee to access Project facilities and perform routine Project O&M or by the public to access Project recreation facilities or waters. These roads and trails are referred to "Primary Project Roads," are the responsibility of CCWD to maintain, and are normally identified in the FERC license as Project facilities. Other roads and trails used to access the Project are primarily used by multiple parties for non-Project purposes and are referred to as "Shared Use Roads." Maintenance of these roads and trails is shared by the users. Shared Use Roads are normally not included in the license because FERC has no authority to require a party other than the licensee to take an action, such as maintaining a road or trail. The licensee's use of Shared Use Roads federal lands is normally covered under an agreement (e.g., SUP or easement) issued by the federal agency. Information regarding the existing condition of Primary Project Roads is lacking.	Identified data gaps include a description and existing condition of Project primary roads and trails.	LU-1
Effects of the proposed Project on wildfires, including fire and fuels consideration[1]	As described in Section 3.8.4, wildfire prevention and response are addressed through FERC license requirements and USFS permit conditions, which require CCWD to implement fire prevention measures, support suppression efforts, and avoid interference with firefighting activities. Federal fire management policies and Forest Plan direction provide an established framework for fire and fuels management on Project lands.	A data gap does not exist. Existing information is adequate to assess the proposed Project's potential effects on wildfires and to inform license requirements.	None

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Table 4.1-1. (Continued).

Preliminary Potential Environmental Issue	Existing, Relevant, and Reasonably Available Information	CCWD's Identified Data Gap(s) If Any	CCWD's Proposed Study to Close Data Gap(s) If Any
Recreation and Land Use			
Effects of proposed Project facilities on visual resources	As described in Section 3.9, the existing visual character and public views of the Project facilities are limited, largely due to terrain. Project facilities are located primarily within the STF that provides visual quality management guidance. The Project facilities are not visible from any federally, state, or locally designated scenic roads or highways.	Identified data gaps include the need for updated description of the visual character at Project facilities to inform requirements in the new license.	VR-1
Effects of proposed Project on Forest Plan and Wilderness management, land uses, special authorizations, and land use planning[1, 3]	As described in Section 3.8.1, Section 3.8.4 and Section 3.8.6, the Project is located primarily on federal lands (USFS, BLM, BOR) and operates under existing authorizations including the FERC license and USFS Special Use Permit and easements. Project operations are consistent with applicable land use plans (e.g., Stanislaus National Forest Land and Resource Management Plan, BLM Resource Management Plan) and existing land use designations emphasizing resource management, recreation, and conservation. No changes to land use or new authorizations are proposed under relicensing.	A data gap does not exist. Existing information is adequate to assess the proposed Project's potential effects on forest and wilderness management issues and to inform license requirements.	None

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Table 4.1-1. (Continued).

Preliminary Potential Environmental Issue	Existing, Relevant, and Reasonably Available Information	CCWD's Identified Data Gap(s) If Any	CCWD's Proposed Study to Close Data Gap(s) If Any
Recreation and Land Use			
Effects of proposed Project on noise near Wilderness areas[3]	Project facilities in the New Spicer Meadow Reservoir and North Fork Diversion Dam areas are not located in the vicinity of the Carson-Iceberg Wilderness such that noise from operation and maintenance activities would affect visitors in the wilderness. Further, as described in Section 3.7, while New Spicer Meadow Reservoir supports motorized boating, it is restricted to non-motorized boating in the Highland Creek arm approximately 3 miles upstream from the dam where the Carson-Iceberg Wilderness approaches the reservoir shoreline. Camping in the New Spicer Meadow Reservoir Recreation Area is only allowed in designated sites and not along the reservoir shoreline. The Project developed recreation facilities at New Spicer Meadow Reservoir are located 3-4 miles from the wilderness boundary.	A data gap does not exist. Existing information is adequate to assess the proposed Project's potential effects on noise near the Carson-Iceberg Wilderness and to inform license requirements.	None
Cultural and Tribal Resources			
Effects of the proposed Project on cultural resources, including Traditional Cultural Places[1, 5]	As described in Section 3.11, a records search and background literature review identified 160 previously conducted cultural resources studies and 23 previously documented cultural resources in the proposed APE. Most of these previously recorded cultural resources have not been evaluated regarding their eligibility for inclusion in the NRHP.	Identified data gaps include the need for updated cultural resources information using current professional standards. In addition, many of the previously recorded cultural resources in the proposed APE have not been revisited or had their records updated within the last 5 years.	CR-1

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Table 4.1-1. (Continued).

Preliminary Potential Environmental Issue	Existing, Relevant, and Reasonably Available Information	CCWD's Identified Data Gap(s) If Any	CCWD's Proposed Study to Close Data Gap(s) If Any
Cultural and Tribal Resources			
Effects of the proposed Project on tribal resources[1, 5]	Based on the findings in Section 3.12, Tribal Resources, a records search and background literature review of the proposed APE and an additional 0.5-mile buffer indicated that at least five ethnographic studies have been conducted in the general region, however these studies were not specific nor restricted to the APE. Much of the available data reflected more detailed studies to the region southwest of the APE in and around New Melones Lake. As such, no specific Tribal studies have been previously conducted for the proposed APE.	Identified data gaps include the need for updated tribal information. A review of these studies identified at least one known historic Miwok rancheria located within half a mile of the proposed APE. The available data on Tribal resources lacks recent and detailed Tribal insight, contribution, and participation in its recording.	CR-2
		Total Proposed Studies	**19**

[1] This preliminary potential environmental issue was listed or alluded to in Forest Service's December 18, 2025, response to CCWD's PAD Information Questionnaire.
[2] This preliminary potential environmental issue was listed or alluded to in CDFW's December 15, 2025, response to CCWD's PAD Information Questionnaire.
[3] This preliminary potential environmental issue was listed or alluded to in CSERC's December 19, 2025, response to CCWD's PAD Information Questionnaire.
[4] This preliminary potential environmental issue was listed or alluded to in All Outdoors December 17, 2025, response to CCWD's PAD Information Questionnaire.
[5] This preliminary potential environmental issue was listed or alluded to in Calaveras Band of MI-WUK Indians February 10, 2025, response to CCWD's PAD Information Questionnaire.

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Respondents to CCWD's Questionnaire suggested the following potential environmental issues that CCWD determined are not relevant to the Project relicensing for the reasons stated below:

- Forest Service and CDFW suggested the relicensing proceeding address wildlife mortalities due to drowning in Project water conduits (e.g., as measured by number of entrained wildlife collected on trash racks). Besides the North Fork Diversion Outlet Tailrace, which is short, has gradual slopes, and no trash rack (i.e., releases into New Spicer Meadows Reservoir), the Project does not include any open water conduits. Therefore, CCWD has not included this issue in Table 4.1-1.
- The Calaveras Band of MI-WUK Indians suggested that CCWD's relicensing include government-to-government consultation, formal consultation consistent with Section 106 of the NHPA, and recognition of Calaveras Band of MI-WUK Indians sovereignty and cultural resource protections. CCWD respects these suggestions but notes that as the Lead Agency under NEPA and a representative of the U. S. Government, FERC, not CCWD, is responsible for government-to-government consultation with Native American tribes, Section 106 formal consultation, and any recognition of the Calaveras Band of MI-WUK Indians' sovereignty. CCWD anticipates that FERC will designate CCWD as its non-federal representative for Section 106 informal consultation, and in that capacity CCWD intends to consult with the Calaveras Band of MI-WUK Indians' and other interested Native Americans during relicensing.
- In addition, the Calaveras Band of MI-WUK Indians suggested that CCWD's relicensing include consideration of California Assembly Bill (AB)-52 tribal consultation standards. AB-52 is a State of California law that applies to the application of the California Environmental Quality Act (CEQA), not FERC relicensing. If and when CCWD implements CEQA as it may relate to Project relicensing, CCWD will adhere to the requirements in AB-52.
- CSERC suggested that the relicensing proceeding address whether the existing license articles adequately mitigated for impacts to wildlife and recreation due to inundation of meadows when the Project was constructed. The Commission does not require an applicant for new license address in relicensing impacts due to initial Project construction. Therefore, CCWD has not included this issue in Table 4.1-1.

CCWD's list of potential environmental issues in Table 4.1-1 is subject to modification during the relicensing proceeding.

4.2 CCWD's Proposed Relicensing Studies

For ease of reference, Table 4.2-1 lists CCWD's proposed relicensing studies referenced in Table 4.1-1. As discussed in more detail in Attachment 1A, CCWD met with interested parties ten times prior to filing the PAD and CCWD understands interested parties have no additional unresolved comments on 14 of the 19 study descriptions. The status of each study description is provided in table 4.2-1. A study description (i.e., methods, study area, and references cited) for each study listed in Table 4.2-1 is provided in Attachment 4A. For study descriptions where Table 4.2-1 shows "No Additional Unresolved Comments", the description included in Attachment 4A is the version

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agreed to by the parties and for descriptions where Table 4.2-1 show "Remaining Comments", the description included in Attachment 4A is the version currently proposed by CCWD. For remaining comments, CCWD intends to meet with interested parties in early 2027 to resolve the comments.

Table 4.2-1. List of CCWD's proposed studies and status as of the filing of the PAD.

Study Description	No Additional Unresolved Comments	Remaining Comments to Be Discussed & Process for Resolution
WR-1, Water Quality Sampling in Project-Affected Reaches, in New Spicer Meadow and McKays Reservoirs, and Near Project Recreation Facilities	X	--
WR-2, Water Temperature Model of Project-Affected Reaches and New Spicer Meadow Reservoir	X	--
AR-1, Fish Sampling in New Spicer Meadow Reservoir	X	--
AR-2, Fish Sampling in Project-Affected Reaches	X	--
AR-3, Benthic Macroinvertebrate Sampling in Project-Affected Reaches	X	--
AR-4, Assessment of Potential for Fish Entrainment	--	Remaining comments are from CDFW and USFS that provided a redline of CCWD's initial draft study description that was primarily a desktop analysis. Comments focused primarily on: 1) diversions to be studied; 2) and adding fish behavior studies.
AR-5, Instream Flows	X	--
AR-6, Special-Status Amphibians and Aquatic Reptiles eDNA Sampling	X	Remaining comment is: 1) CDFW requests adding "suitable upland meadow/wetland habitat within the project boundary" to the study area.
AR-7, ESA-Listed Amphibians and Aquatic Reptile Visual Encounter Surveys	X	Remaining comments are from CDFW and focus on Yosemite toad. CDFW requests: 1) install audio recorders at suspected breeding locations before snowmelt begins until late June; 2) adjust timing of first survey to be when breeding pools are created by snowmelt; and 3) conduct either three VES at least two weeks apart in the first study year or add two VES at least two weeks apart in the first study year and two VES surveys in the second survey year if no toads are detected in the first study year.
TR-1, Botanical Resources Study Including Vegetation Mapping and Protocol Surveys for Special-Status Species and Non-Native Invasive Plants	X	--
TR-2, Bald Eagle Surveys at New Spicer Meadow Reservoir	X	--
TR-3, ESA-Listed and Special Status Wildlife Habitat Assessment in Areas Disturbed by the Project	X	--

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Table 4.2-1. (Continued)

Study Description	No Additional Unresolved Comments	Remaining Comments to Be Discussed & Process for Resolution
LU-1, Primary Project Roads and Trails Assessment	--	Remaining comment is: 1) USFS requested adding 6 additional "Shared Use Roads" roads and 4 other road segments to list of Primary Project Roads to be included in the study.
RR-1, Project Recreation Use and Visitor Surveys	--	Remaining comment is: 1) USFS requested adding 13 additional sites/areas to be included in the study.
RR-2, NFSR Sourgrass Run Whitewater Boating Use Evaluation	X	--
RR-3, Fishing, Swimming and Wading Use Evaluation at Calaveras Big Trees State Park	X	--
VR-1, Visual Resources Evaluation at Project Facilities	X	--
CR-1, Archeological and Historic Sites Inventory to Support Section 106	X	--
CR-2, Traditional Cultural Sites and Tribal Consultation to Support Section 106	X	--

4.3 Suggested Studies Not Adopted

Respondents to CCWD's PAD Questionnaire suggested the following studies that CCWD did not adopt because CCWD considers the study unnecessary for the reasons stated below:

- CDFW suggested CCWD develop an operations model that can be used to assess Project impacts and develop practical PM&E measures. Development of the model is not needed because CCWD included a Water Balance and Operations Model (Ops Model) in Draft Exhibit B to the PAD. The Ops Model, configured in base case (i.e., environmental baseline, *aka* existing conditions) for use during the relicensing is available by emailing p2409relicene@ccwd.org. The Model Calibration and Validation reports are included in Attachment 2B, Appendix B1 to this PAD as existing information. Therefore, CCWD has not included CDFW's suggested study in Table 4.2-1.
- CDFW and CSERC suggested CCWD develop an unimpaired hydrologic timeseries for all Project-effected streams. The Commission's relicensing regulations require an applicant to compare anticipated Project effects to existing conditions (i.e., environmental baseline), not to pre-Project or even earlier conditions in the watershed. The Ops Model in Appendix 4B includes existing conditions hydrologic timeseries for all Project affected reaches. Therefore, CCWD has not included CDFW's suggested study in Table 4.2-1.
- CSERC suggested CCWD address climate change. The Project does not affect climate change and the Commission's and NEPA regulations do not require an applicant for a new license to address climate change during relicensing. Therefore, CCWD has not included CSWERC's suggested study in Table 4.2-1.

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4.4 CCWD Proposed Measures

Some of the respondents to CCWD's PAD Information Questionnaire suggested or alluded to measures that should be included in the new license. CCWD believes it is too early in the relicensing to discuss measures that may be included in the new license and, therefore, has not replied in this PAD to measures suggested by respondents or proposed any measures. CCWD intends that relicensing will include dialog and collaboration regarding potential issues, discussion of relevant information including from relicensing studies, and the development of requirements that may be included in the new license.

4.5 Relevant Qualifying Plans

This section describes relevant qualifying federal and state comprehensive waterway plans and relevant resource management plans. The effects of Project activities will be evaluated with respect to each of these comprehensive plans as the relicensing process proceeds. The purpose of the evaluation will be to ensure that operation and maintenance of the Project will be best adapted to a comprehensive plan for the waterway.

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 will 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 May 2025, can be found at FERC's website at https://www.ferc.gov/media/comprehensive-plans. A review of this list shows that the Commission has listed, under FPA Section 10(a), 76 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. The plans are listed below in the order they are listed in FERC's May 2025 Revised List of Comprehensive Plans.

1. Bureau of Land Management. 2008. Sierra Resource Management Plan and Record of Decision. BLM Folsom Field office, Folsom, California.

2. Bureau of Land Management. Forest Service. 1994. Standards and Guidelines for Management of Habitat for Late-successional and Old-growth Forest related Species within the Range of the Northern Spotted Owl. Washington, D.C. April 13, 1994.

3. California Department of Fish and Game. U.S. Fish and Wildlife Service. 2010. Final Hatchery and Stocking Program Environmental Impact Report/Environmental Impact Statement. Sacramento, California. January 2010.

4. California Department of Fish and Game. 2007. California Wildlife: Conservation Challenges, California's Wildlife Action Plan. Sacramento, California. 2007.

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5. California Department of Fish and Game. 1993. Restoring Central Valley Streams: A Plan for Action. Sacramento, California. November 1993.

6. California Department of Fish and Game. 2003. Strategic Plan for Trout Management: A Plan for 2004 and Beyond. Sacramento, California. November 2003.

7. California Department of Fish and Wildlife. 2008. California Aquatic Invasive Species Management Plan. Sacramento, California. January 18, 2008.

8. California Department of Parks and Recreation. 1998. Public Opinions and Attitudes on Outdoor Recreation in California. Sacramento, California. March 1998.

9. California Department of Parks and Recreation. 1980. Recreation Outlook in Planning District 2. Sacramento, California. April 1980.

10. California Department of Parks and Recreation. 1994. California Outdoor Recreation Plan. Sacramento, California. April 1994.

11. California Regional Water Quality Control Board, Central Valley Region. 2019. Water Quality Control Plan for Sacramento and San Joaquin River Basins and Appendices. February 2019. [Amended December 2020].

12. California State Water Resources Control Board. 2004. Consolidated Toxic Hot Spots Cleanup Plan. Sacramento, California. January 2004.

13. California State Water Resources Control Board. 2005. Policy for Implementation of Toxics Standards for Inland Surface Waters & Enclosed Bays and Estuaries of California. Sacramento, California. February 2005.

14. California State Water Resources Control Board. 2008. Enclosed Bays and Estuaries Plan: Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1 Sediment Quality. Sacramento, California. September 2008. [Amended April 2011 and June 2018].

15. California State Water Resources Control Board. 2015. ISWEBE Plan: Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California. Sacramento, California. April 2015. [Amended May 2017 and August 2018.]

16. California State Water Resources Control Board. 2018. Bay-Delta Plan: Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. Sacramento, California. December 2018.

17. Forest Service. 1982. Comprehensive Management Plan for the Pacific Crest National Scenic Trail. Portland, OR. January 18, 1982.

18. Forest Service. 1991. Stanislaus National Forest Land and Resource Management Plan. Department of Agriculture, Sonora, California. October 1991.

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19. Forest Service. 2004. Sierra Nevada Forest Plan Amendment, Final Supplemental Environmental Impact Statement Record of Decision. Pacific Southwest Region. Department of Agriculture, Vallejo, California. January 2004.

20. Forest Service. 2017. Stanislaus National Forest, Forest Plan Direction, Sonora, CA. March 2017.

21. National Park Service. The Nationwide Rivers Inventory. Department of the Interior, Washington, D.C. 1993.

22. U.S. Fish and Wildlife Service. 1990. Central Valley Habitat Joint Venture Implementation Plan: A Component of the North American Waterfowl Management Plan. February 1990.

23. U.S. Fish and Wildlife Service. n.d. Fisheries USA: The Recreational Fisheries Policy of the U.S. Fish and Wildlife Service. Washington, D.C.

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Pre-Application Document

Attachment 4A

CCWD's Proposed Studies

North Fork Stanislaus River Hydroelectric Project
FERC Project No. 2409

Prepared by:
Calaveras County Water District

September 2026

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Concepts and Practices Applicable to All Relicensing Studies

The general concepts and practices below apply to all North Fork Stanislaus River Hydroelectric Project, Federal Energy Regulatory Commission (FERC) Project Number 2409 (Project), relicensing studies conducted by Calaveras County Water District (CCWD). These general concepts and practices are not repeated in each study description.

- Personal safety is the most important consideration of each fieldwork team. All field work will be conducted in conformance with health and safety plans developed by CCWD and its consultants.
- If required for the performance of the study, CCWD will make a good faith effort to obtain permission to access private property well in advance of initiating the study. CCWD will only enter private property if the landowner provides written permission.
- CCWD will acquire all necessary agency permits and approvals prior to beginning fieldwork for a study that requires them, and the field crew will have the necessary expertise to conduct the work.
- CCWD's field crews, at their sole discretion, may make variances to the study description in the field to accommodate actual field conditions and unforeseen problems. The reason for the changes may include excluding areas where access is unsafe (e.g., very steep terrain, impassable vegetation, or high streamflow). When a variance is made, the field crew will follow to the extent applicable the protocols in and intent of the study description.
- CCWD's performance of the study does not presume that the Project is affecting the resources to be investigated under the study, or that CCWD is responsible for addressing any adverse effects to the resource that may be identified from the study. Affects identified during a study may not be related to the Project but caused by a third party. CCWD is not responsible to address non-Project effects that may be identified during a relicensing study.
- If Global Positioning System (GPS) data are required by a study description, they will be collected using either a Map Grade Trimble™ GPS (i.e., sub-meter data collection accuracy under ideal conditions) or similar unit. GPS data will be post-processed and exported from the GPS unit into Geographic Information System (GIS) compatible file format in an appropriate coordinate system using desktop software. Both field staff and a GIS analyst will then review the resulting GIS file. Metadata will be developed for deliverable GIS data sets. GIS data and/or maps will be provided to the United States Department of Agriculture, Forest Service (Forest Service), United States Department of the Interior (USDOI), Bureau of Land Management (BLM), USDOI, Bureau of Reclamation (Reclamation), USDOI, Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and State Water Resources Control Board (State Water Board) in a form, such as Esri Shapefile or Geodatabase format with appropriate metadata. Metadata will be Federal Geographic Data Committee compliant.

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- CCWD's field crews conducting relicensing studies will record incidental records of special-status aquatic, botanical, and wildlife species observed during the performance of field work and record other noteworthy observations. All incidental observations will be reported in the CCWD's Draft License Application (DLA) and Final License Application (FLA). The purpose of this effort is not to conduct a focused study (i.e., no effort in addition to the specific field tasks identified for the specific study plan) or to make all field crews experts in identifying all species, but only to opportunistically gather data during the performance of relicensing studies. Species targeted for incidental observation will include but are not limited to bald eagle (*Haliaeetus leucocephalus*); golden eagle (*Aquila chrysaetos*); American goshawk (*Accipiter atricapillus*); short-eared owl (*Asio flammeus*); long-eared owl (*Asio otus*); Northern harrier (*Circus hudsonius*); white-tailed kite (*Elanus leucurus*); great gray owl (*Strix nebulosa*); any bats or positive signs (e.g., bat guano) of bats; northernwestern pond turtle (*Actinemys marmorata*); foothill yellow-legged frog (*Rana boylii*); American bullfrog (*Lithobates catesbeianus*); and other aquatic invasive species including quagga (*Dreissena bugensis*), zebra (*Dreissena polymorpha*), and golden mussel (*Limnoperna fortune*), Asian clam (*Corbicula fluminea*), New Zealand mudsnail (*Potamopyrgus antipodarum*), Didymo (*Didymosphenia geminate*), Eurasian watermilfoil (*Myriophyllum spicatum*), and Hydrilla (*Hydrilla verticillata*).
- If CCWD field crews observe aquatic invasive species, they will notify CDFW's Aquatic Invasive Species Aquatic Invasive Species Regional Coordinator at 530-333-7749 or angie.montalvo@wildlife.ca.gov, within 48 hours for invasive mussels and seven days for all other Aquatic invasive species.
- CCWD's field crews will follow the 2022 CDFW Decontamination Protocol[1], be provided with, and use materials (e.g., Quat disinfectant) for decontaminating their boots, waders, and other equipment between water-based study sites. Major concerns are amphibian chytrid fungus and invasive invertebrates.
- If CCWD's field crews observe an Endangered Species Act (ESA)-listed or other special-status species, a completed record of the observation on the appropriate form will be submitted to CDFW's California Natural Diversity Database (CNDDB) within 30 days of the observation.
- If a study description requires collection and reporting of time series data, the data will be provided at a minimum in Microsoft Excel™ (*.xlsx) or Hydrologic Engineering Center Data Storage System (HEC-DSS) (*.dss) format. A viewer for *.dss files (HEC-DSSVue) can be obtained from the United States Army Corps of Engineers (USACE) at the following website as of February 2026: http://www.hec.usace.army.mil/software/hec-dssvue/.

[1] CDFW (California Department of Fish and Wildlife). 2022. Aquatic Invasive Species Decontamination Protocol. October 3, 2022. Available online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=43333.

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- If a CCWD field crew encounters human remains during field work, all work within a 100-foot radius of the discovery will stop immediately. The field crew will not disturb the remains in any way. The field crew will secure the area to the best of its ability, mark the location with flagging tape in such a way as to not draw attention to the remains, and record the location using a GPS unit or plot the location by hand on a map if no GPS unit is available. As soon as possible thereafter, the field crew will contact CCWD and the relicensing Cultural Resources Lead to report on the discovery. CCWD will immediately report the discovery to the county coroner and the federal land managing agency, if the discovery is located on federally managed lands. CCWD will conduct any further steps required under State of California and federal law to address the discovery, as appropriate. Any human remains encountered will be treated with respect, and the field crew members will keep the location confidential and will not disclose the location of the discovery to the public or to any other study crew. The field crew will keep a log of all calls/contacts it makes regarding the discovery and the details of the event. Work will not proceed in the secure area of the discovery until provided clearance by CCWD.
- Prior to issuance of CCWD's DLA and FLA, CCWD will provide information resulting from each relicensing study to interested parties after study data are collected, tabulated, summarized, and reviewed for quality. If a study description includes a format for reporting study data, the information will be posted in that format and the material will be marked appropriately (e.g., "PUBLIC", "CONTAINS CUI/PRIV - DO NOT RELEASE", or "CONTAINS CEII – DO NOT RELEASE"). The information will be posted to the relicensing website and CCWD will send an e-mail to interested parties advising the information is available. If study data are collected in manner inconsistent with the applicable study description, the posting will include a description of any inconsistency and why it occurred.
- In the performance of relicensing studies and reporting of information, if a study description or reported information pertains to a river mile (RM) along the North Fork Stanislaus River, Stanislaus River, Highland Creek, and Beaver Creek, CCWD developed the RM designation based on its Relicensing GIS database by measuring in 0.1-mile increments along the thalweg from the most downstream location in the river (e.g., the confluence of Beaver Creek with the NFSR is designated as BC RM 0.0.). The stream for which the river mile is provided is indicated in the RM designation (e.g., BC RM 0.0 indicating RM 0.0 on Beaver Creek).
- If the term "areas disturbed by the Project" is used in a study description, the term refers to areas where routine Project operation and maintenance is conducted. In general, these areas include at a minimum the immediate vicinity of Project facilities (e.g., powerhouses, dams, recreation areas, and Primary Project Roads) where routine Project operation and maintenance may include ground disturbing activities and vegetation clearing. Depending upon the study, a buffer area may be added. Study descriptions that refer to "areas disturbed by the Project" will include a detailed description of the area, including buffer if appropriate, in which the study will be conducted.

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STUDY DESCRIPTION AR-1
Fish Sampling in New Spicer Meadow Reservoir
July 21, 2026

This Study Description was developed to inform information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

STUDY AREA

The Study Area includes New Spicer Meadow Reservoir (Figure 1).

Sampling Sites

General sampling sites are identified in Figure 1. Although there is a motorized boat restrictions in the eastern portion of the reservoir associated with the Carson-Iceberg Wilderness Area (Forest Service 2026), CCWD received permission from the Forest Service to sample in the non-motorized area using motorized watercraft. Sampling sites were selected to distribute sampling across the reservoir and target multiple habitat types.

[1] In addition to the details provided in this study description, study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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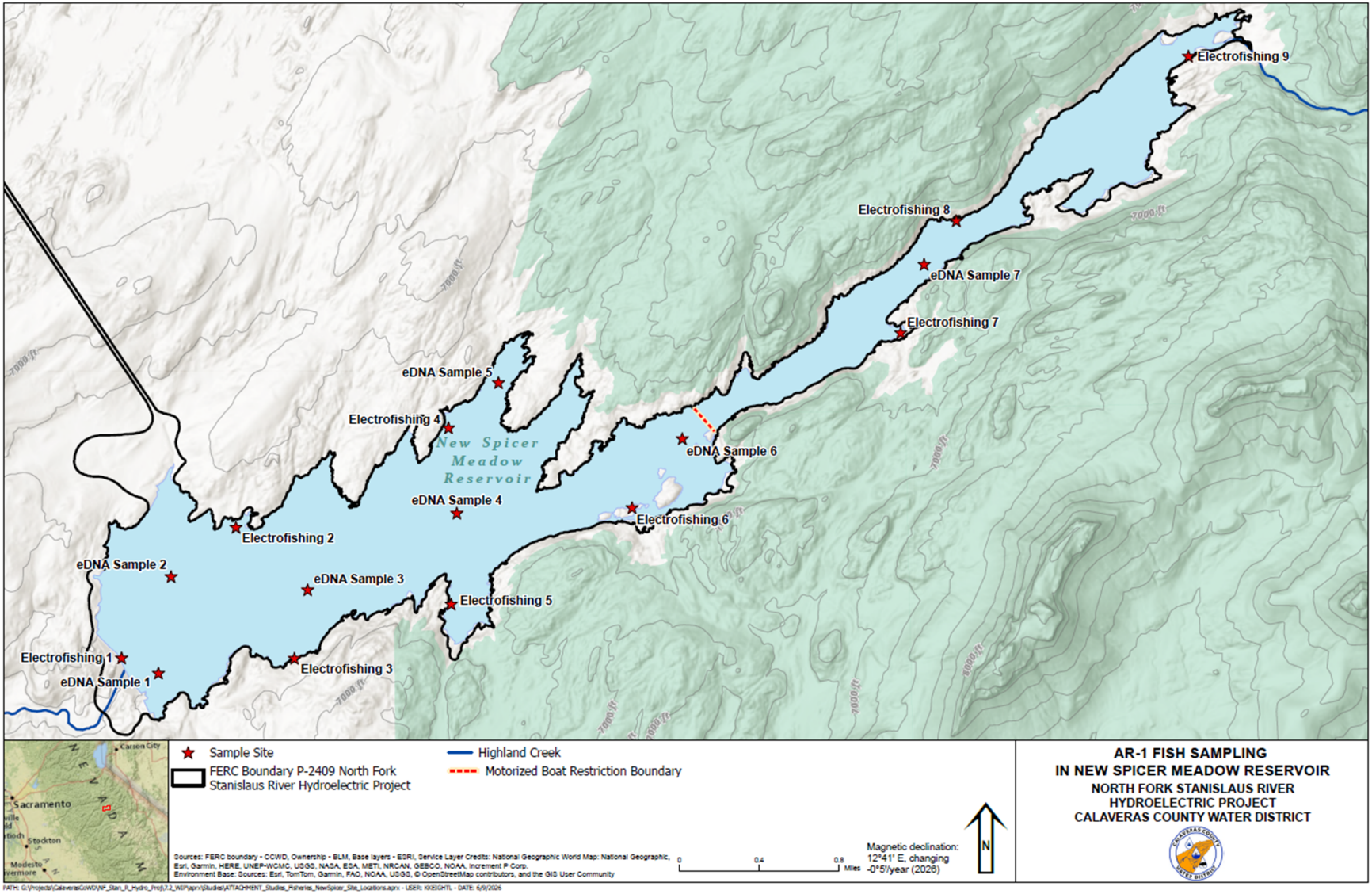


Figure 1. North Fork Stanislaus River Hydroelectric Project AR-1 Sampling Sites.

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STUDY METHODS

Field Methods

Fish sampling will be conducted at New Spicer Meadow Reservoir once during fall 2027 using a combination of eDNA and boat electrofishing. In general, eDNA will be used to sample more broadly for species composition and in deeper habitats and boat electrofishing will be used to sample shoreline habitats and individual fish data. An eDNA-based approach is an efficient, non-invasive method to detect fish species present in the reservoir by analyzing organisms' DNA shed into the water column, providing a comprehensive assessment of fish species present over time from a reduced number of field samples. This study is conditional on measures contained within the California Department of Fish and Wildlife (CDFW) scientific collecting permit and USFWS 10(a)1(a) permit, which will be obtained prior to sampling. Study methods described below that are unsupported by permits may not be implemented.

General information recorded at each sampling location will include site name, sampling method, GPS coordinates of sample location, weather conditions including air temperature, incidental habitat observations, minimum, mean, and maximum depth, and in situ water chemistry (e.g., water temperature, dissolved oxygen, pH, and conductivity).

eDNA Sampling

eDNA samples will be obtained at seven locations following standard protocols and using designated sampling kits for eDNA metabarcoding (simultaneous multi-species eDNA detection). Detailed protocols and methods are provided in Attachment A as an example of the field methods CCWD will follow.

Due to lake stratification, eDNA samples will be collected above and below a thermocline at each sampling site to maximize species detection and improve spatial representation of the fish community. Thermocline depth will be identified in situ using a cabled water quality meter prior to sample collection. Sampling across stratified layers increases the likelihood of detecting species that may occupy distinct vertical habitats within the reservoir.

Boat Electrofishing

Nine sampling sites are identified in New Spicer Meadow Reservoir in Figure 1. Locations are selected to distribute sampling spatially and survey across multiple habitat types. Boat electrofishing using standard methods (Reynolds 1996) to sample nearshore habitat will be conducted to supplement eDNA collection. The majority of sampling will occur during dusk and dark hours when fish are normally active in shallower water[2]. Voltage settings will be generally between 350 and 450 volts, depending on water conductivity and water temperature. Electrofishing stations will be approximately 150 feet in length and will target a diversity of nearshore habitats.

[2] Dusk timing will be determined by the field crew leader based on local sunset timing on the actual date of sampling.

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Sampling will begin at one end of a station with the boat perpendicular to shore about 30 feet from the shoreline or zone too shallow to operate the boat. This area will be electrofished toward shore until the electrodes touch the shoreline, or in stations with shallow depths, to prevent boat damage. In stations with downed trees, sampling will proceed until the electrodes touch the woody vegetation. The boat will be backed away from shore and maneuvered parallel to the shoreline approximately 10 to 15 feet from the previous area, and electrofishing will proceed in this manner until the entire station is sampled. Electrofisher "time-on" will be recorded for each sampling site, and a consistent pace and effort will be employed at all sites.

Captured fish will be enumerated, identified to species, measured to fork length, and the first 20 individuals of each species will be weighed in each sampling site. Trout origin will be identified (hatchery or wild stock) based on adipose fin clips. Captured fish will be allowed to recover after processing and will be released at the site after the sampling is complete or in an area away from sampling.

Analysis

Data summary will include quantifying and describing species composition, distribution, and relative abundance as available. General information for each site will be presented including site name, sampling method, GPS coordinates of sample location, weather conditions including air temperature, incidental habitat observations, minimum, mean, and maximum depth, and in situ water chemistry (e.g., water temperature, dissolved oxygen, pH, and conductivity).

eDNA Sampling

Results of the eDNA metabarcoding analysis will be provided by Genidaqs. This will include a list of species detected, along with supporting tables and figures, as applicable. Fish species composition and distribution information will be compared to known species information as presented in Section 3.4 of the Pre-Application Document.

Boat Electrofishing

Data collected during the fish surveys will be entered into an Excel database for data reduction, tabulation, and summary. Fish capture will be reported both as total catch and in terms of catch per unit effort (CPUE). CPUE for fishes captured by electrofishing will be calculated by dividing the number of fish of each species captured by the total area of water sampled multiplied by the length of time fished [e.g., fish/ (ft^2 x second)].

CPUE will be summarized by location and species. Fish species composition and distribution information will be compared to known species information as presented in Section 3.4 of the Pre-Application Document.

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Data summary will include quantifying and describing species composition, distribution, and relative abundance. Length-weight regression plots will be developed for all species using length and weight measurements. Additionally, Fulton's condition factor (Ricker 1975) for salmonids will be calculated using length and weight measurements. Length frequency histograms by species will also be developed.

REPORTING

This Study will generate the tables and plots described above related to site habitat information, eDNA analysis results, and electrofishing (e.g., CPUE, species composition, fish metrics, etc.).[3]

SCHEDULE

CCWD anticipates the schedule for Study completion as follows:

Conduct Field Sampling	September - October 2027
Data Analysis and Reporting	November 2027 – December 2027

REFERENCES

Reynolds, J.B. 1996. Electrofishing. Pages 221–254 in B.R. Murphy and D.W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.

Ricker, W.E. 1975. Computation and interpretation of biological statistics of fish populations. Fisheries Research Board of Canada. Bulletin 191. Available online at: https://waves-vagues.dfo-mpo.gc.ca/Library/1485.pdf. Accessed on March 24, 2026.

USFS (United States Department of Agriculture, Forest Service). 2026. Carson-Iceberg Wilderness Map. Stanislaus National Forest. Available online at: https://www.fs.usda.gov/sites/nfs/files/r05/stanislaus/publication/carson-iceberg-wilderness-map.pdf . Accessed on March 20, 2026.

[3] In addition to the details provided in this section, reporting will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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Pre-Application Document

Study Description

AR-1 Attachment A

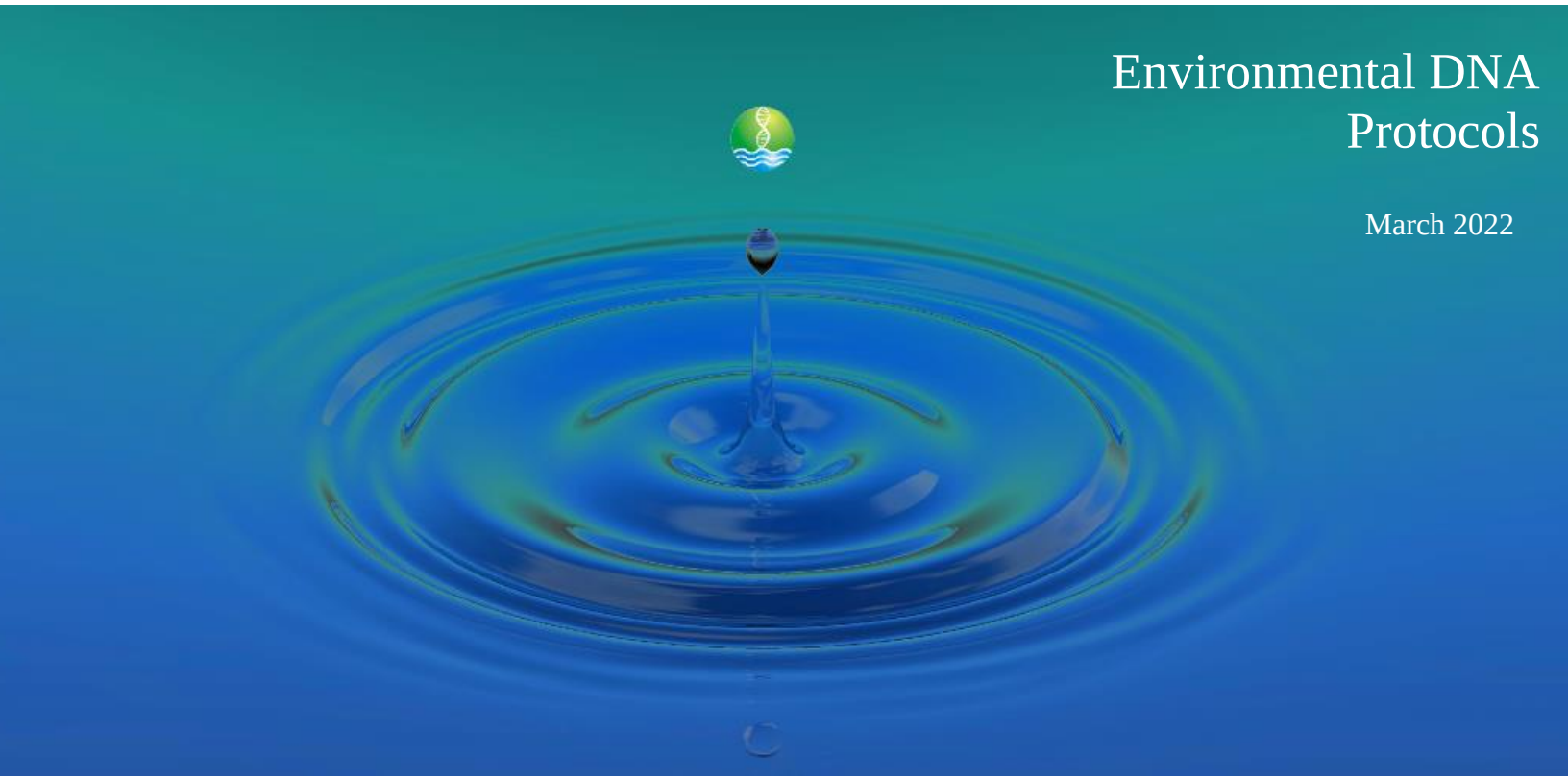
North Fork Stanislaus River Hydroelectric Project
FERC Project No. 2409

Prepared by:
Calaveras County Water District

July 2026

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Environmental DNA Protocols

March 2022

Field Collection Procedure for Aquatic Environmental DNA sample collection and analysis

Procedure prepared by:

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MATERIALS

Material List

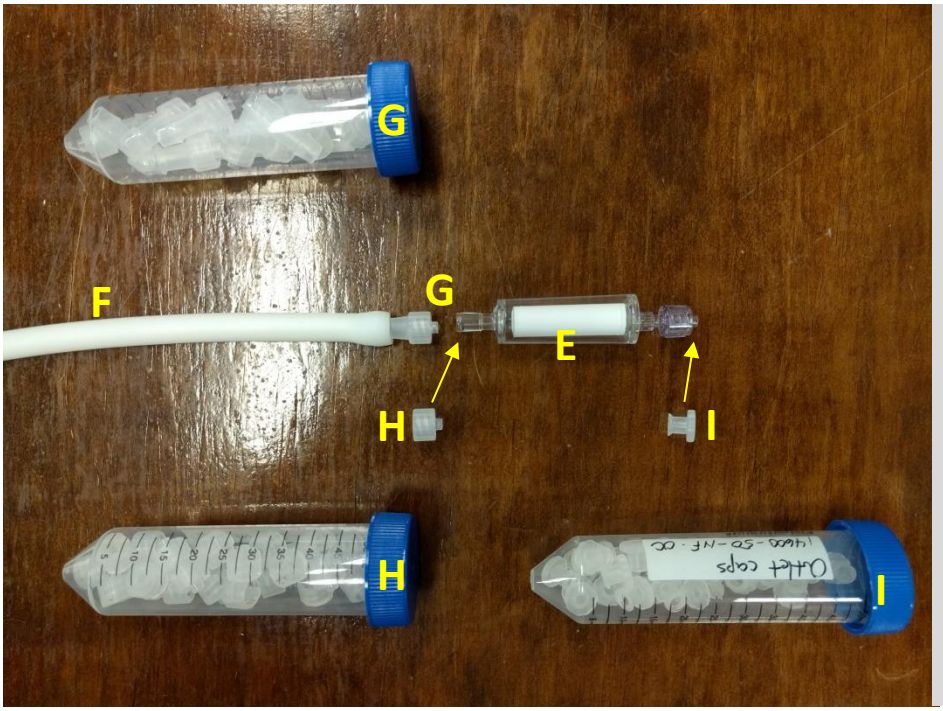
1) Cordless drill (brushless)
2) Pump driver bit (1/2 inch spade)
3) Backup drill battery and battery charger
4) Cole Parmer Peristaltic Pump MasterFlex Easy Loader II Model#77200-52
    a. Pumps can be chained together when samples collected in unison
5) USEPA approved Millipore Sterivex™ 0.45 µm sterile filter units (EPA# 90260-ITA-001)
    a. Clean scissors if cutting tubing in the field.
6) Masterflex spooled peroxide-cured silicon tubing, L/S 15
7) Tube adaptor (Cole Parmer 30800-22)
8) Inlet caps (Qiagen Mat. No. 1104193)
9) Outlet caps (Qiagen Mat. No. 1104194)
10) Graduated beaker
11) Nitrile gloves (non-powdered)
12) Ziploc bags
13) Permanent markers
14) Backpack or toolbox
15) GPS with extra batteries*
16) Cooler with blue ice pack
17) Ice chest with blue ice packs if many filters are collected in one day*
18) Garbage bags

*Optional, project dependent.



Pump Apparatus

A) Cordless drill (brushless)
B) Pump ½" driver bit
C) Peristaltic Pump mounted to 2x6
D) Pumps in series



Filter Apparatus

E) Sterivex™ filter (0.45um)
F) Silicon tubing
G) Tube adaptor
H) Inlet caps
I) Outlet caps

CONTAMINATION PREVENTION

Guidelines

1) The Genidaqs protocol is crafted to reduce the possibility of contamination, primarily through the use of a filter with filtration material shielded within an external housing. Therefore, the filtration material is never handled by the user. Irrespective of filter, following the procedure ensures the best chances of success.
2) Prior to project initiation, Genidaqs recommends that field personnel be trained on the collection protocols, which in part consists of field personnel verifying that they can reliably generate both negative and positive field collections.
3) The Genidaqs protocol uses pre-packaged sterile material. Material should be transported prior to field use in "clean" containers.
4) Ideally there should be a "clean" person handling the filter after water collection that bags and tags. If a single user is in the field, change sterile gloves at each site.
5) Consumables are considered single use. Following use, filter packaging, silicon tubing, gloves, etc. are immediately placed in "dirty" storage.
6) When sampling a flowing water system, conduct collections moving upstream.
7) Take one negative field control per sampling crew at the start of each sampling day. The negative field control consists of pumping clean water through a fresh filter. A clean, sealed bottled water works well as a field control.
8) Place filters on ice between sites. Store in a freezer when done with field work and until delivering samples to the lab. Transport samples on ice in cooler.

General protocol for rinsing and re-using tubing at multiple sites

1) Upon arriving at the new sampling site, pump water through the tubing for approximately 2 minutes prior to attaching filters to flush out any eDNA from the previous site.
2) When flush is complete, attach filters and begin sampling.
3) If sampling in flowing water (river, stream, tidal, etc.), flushed water can be placed on to shore, into a secondary container or into the water. Flowing water will move any contaminants outside of the sampling area.
4) If sampling in stagnant water (vernal pool, pond, lake, etc.), flushed water should be directed on to shore or into a secondary container to not contaminate the new sampling site. In the rare chance that this is not possible, complete flush close to but not directly at the new sampling location or use new tubing at each site.

General protocol for sterilizing instruments and equipment for analyzing genetic samples

Materials needed:

- 20% household bleach solution (mixed with tap water) in spray bottle or beaker
- DI or tap water
- Kimwipes or paper towels

1) Rinse all tissue and body fluids off of instruments, vials, petri dishes, and any other item being exposed to sample tissue using tap water.
2) Submerge any submergible items in 20% bleach solution for at least 1 minute. Be sure to completely expose all surfaces to bleach, including opening and closing scissors while submerged.
3) Use spray bottle to coat surfaces of larger items (pumps, coolers, etc) that cannot be submerged into bleach solution. Spray paper towel with bleach solution and gently wipe surface of non-submersible items such as pens, drills and batteries.
4) Remove items from bleach and rinse with DI water or tap water. Spray clean water on to paper towel and wipe bleach off of non-submersible items. Make sure to remove all bleach. Thoroughly dry items with a fresh Kimwipe, paper towel or air dry on clean paper towels.

SAMPLE COLLECTION

Protocol reference:

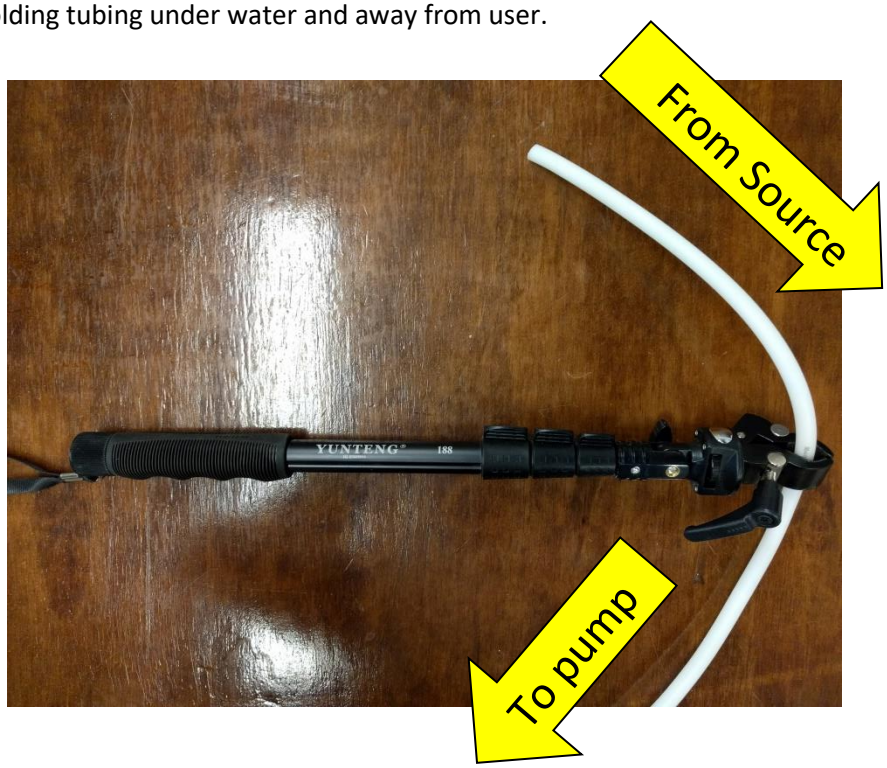
Bergman, P.S., G. Schumer, S. Blankenship, and E. Campbell. 2016. Detection of Adult Green Sturgeon Using Environmental DNA Analysis. PLOS ONE 11(4): e0153500.

Water Collection and Filtration – Point Sampling

Reminders:

- Collect 1 field control at the start of the sampling day per field crew.
- Put on clean gloves at each sampling site. If in doubt of glove cleanliness, switch gloves.

1) Water samples may be collected either from the bank margin, or, where this is infeasible due to dense vegetation or steep topography, by vessel at the channel center.
2) For each sampling event, water is filtered directly from the water body at an approximate depth of 2-6 inches below the surface. We have found a fishing pole or telescoping pole (hiking pole) useful for holding tubing under water and away from user.



3) Sterile Masterflex spooled peroxide-cured silicon tubing, L/S 15 with an internal diameter of 4.8 mm is used in association with a portable Masterflex1 L/S Easy-Load II Model#77200-52 peristaltic pump powered by a cordless hand drill. The tubing is clamped within the pump, so

the pump never comes into contact with the water. Peristaltic action draws water from the source.

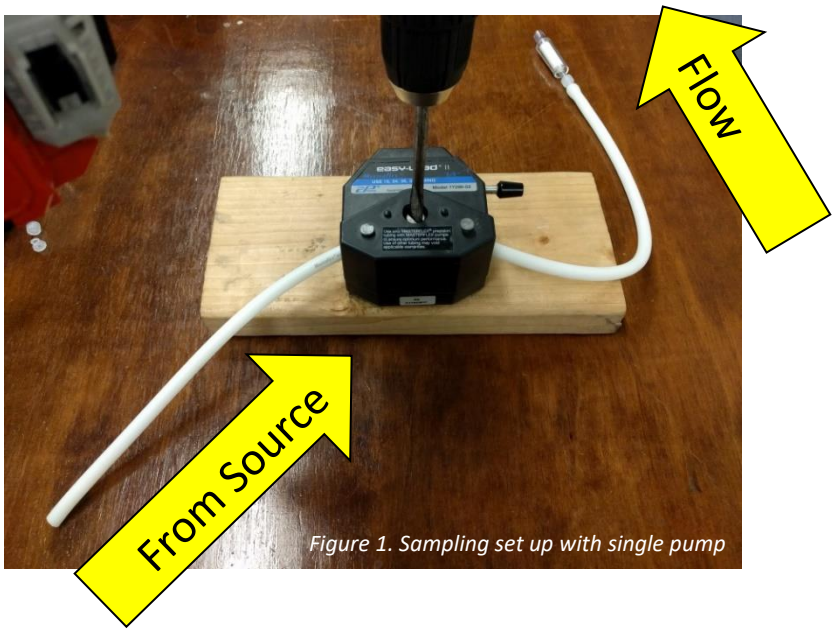


Figure 1. Sampling set up with single pump

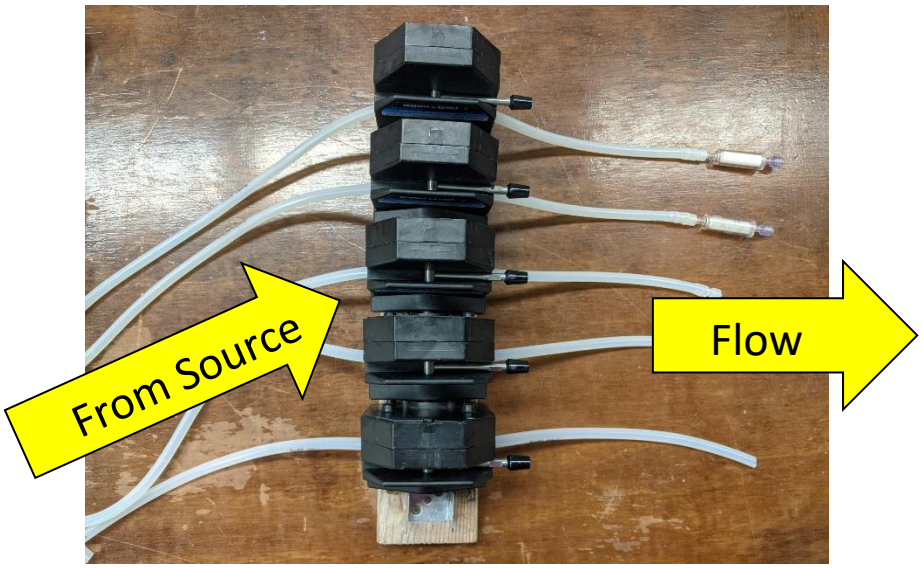
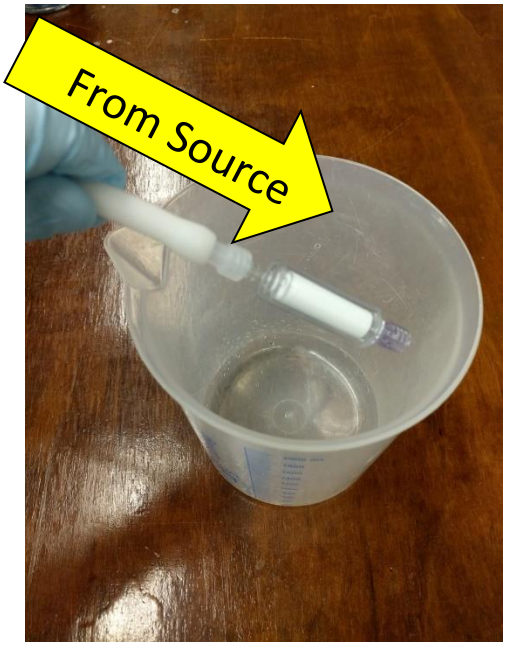


Figure 2. Sampling set up with multiple pumps

4) Water samples are filtered through a Millipore Sterivex™-GP 0.45 µm sterile filter unit. Partially tear open filter packaging to expose filter and connect to tube adapter. The filter only connects to the tube adapter in one way, ensuring proper connection. Note that water is expelled out of the filter and is not sucked into the filter, which is a reversed orientation to that of the commonly used grab samples using disc filter apparatus.



Pro tip: If the tube adapter isn't used (or forgotten) the tube itself can be press fit over the filter inlet and the process will work. However, note that if filter is installed backward, water will simply flow through the filter assembly and not come into contact with the filter material (i.e. no organic material will be captured).

5) All water filtration occurs directly at each site. No water is transported or stored during sampling nor is any water transported between sampling sites.

6) Sample filtrate is captured and measured in a graduated beaker to verify the volume filtered for each sample. Filtration ceases when either the target volume is reached or the filter clogs. Reverse pump to drain remaining water from inside the filter assemble. Note: it is very important to remove water from inside filter. If water is left inside the filter housing, the plastic may break when filters are frozen. If pumping is ineffective the filter can be manually shaken to remove water.

7) In water with high levels of particulates, sediment may accumulate inside filter assembly. This is ok as long as residual water is removed from filter assembly.



8) Filtrate is poured out after completion of sampling at each site.

9) After filtration, the inlet and outlet of filters are capped at each end, the filter is labelled with location ID and volume filtered, placed into a sterile secondary container (Ziploc), sealed, and immediately placed in a cooler. Filter is considered self-contained at this point. Multiple filters from the same site can be placed in the same secondary container (bag). Filters from different site should be stored in separate bags.



10) Gloves are immediately disposed of after each use into a sealed trash bag. Tubing should be disposed of after each site unless the tubing rinsing protocol is being followed.

11) All filters are kept in a cooler for the duration of the sampling day, after which they are transferred to a -20 °C freezer. Filters must be transported or mailed to the Genidaqs laboratory on ice. If mailed, filters must be shipped overnight, and prior notice must be given to Genidaqs staff to ensure timely delivery. The filters are stored within individually sealed secondary containers until DNA extraction.

Pro tip: Filters can be wiped with bleach to sterilize outside or each filter prior to storage and placed into a new secondary container labelled appropriately for project. This bleach step breaks the connection between field and lab environments. In the laboratory, all filters are wiped with DNA neutralizing solution prior to DNA extraction.

12) To ensure that field equipment is free of contamination, DNA field controls are taken for each sampling day. Each field control consists of Sterivex™ filtered water processed in the same fashion as the field samples. The field controls are processed for the presence of target species DNA in parallel with all samples. One field control is collected per sampling team at the start of each sampling day.

Water Collection and Filtration – Transect Sampling

Transect sampling involves using a vessel to move across a landscape while simultaneously collecting an eDNA sample. This sampling technique is preferred for sampling across larger areas or when there is a need to move across stagnant water to capture eDNA particles that may not be encountered when using a stationary point sample. Genidaqs conducts two types of transect sampling styles: (1) moving point sample, and (2) aggregate subsampling with sump.

Moving points sample:

Additional sampling gear:

- Mobile vessel (boat, kayak, raft, etc)
- GPS unit/map with desired transects

1) Plan transects out prior to going into the field. Use GPS with map to orient yourself and find location of transects when in the field.
2) Sample transects from downstream to upstream if there is flow.
3) Using a mobile vessel, follow sampling instructions as written for the point sampling methodology while moving across the pre-planned transect. Typically, one or more staff collect the sample while one or more staff move the vessel.
4) Try to filter water throughout the entirety of the transect. This will involve slowing down the pumping rate (drilling speed) to moderate filtration rate to match transect speed. Ideally, filtration will be complete (filter will clog) close to the end of the transect. Drilling speed will vary depending on turbidity and transect length.
5) Filter replicates can be collected in unison with one transect pass using multiple pumps chained together (Figure 2).

Aggregate subsampling with sump:

Additional sampling gear:

- Boat with power accessory plug
- Inverter (Bestek 300W Power Inverter, model #MRI3011BU)
- GPS unit or map with desired transects
- Submersible pump (sump) (Green Expert 1/6HP sump model# 203617) with hose attachment
- Hose
- Hose flow splitter (Optional. Splitter can be used to slow flow during long transects)
- Anchor (Optional. May be needed to keep pump submerged)
- Large secondary container

1) Plan transects out prior to going into the field. Use GPS to orient yourself and find location of transects when in the field.
2) If flow is present, start at the downstream end of the transect. Collect water into a large secondary container on board the boat for the length of the transect using the sump (Figure 3A).

It may be necessary to calculate the required container volume based on pump flow rate, transect length, and boat speed prior to conducting field work.

3) Once transect is complete, follow the sampling methodologies described in the Point Sampling section to collect eDNA samples from the secondary container (Figure 3B).

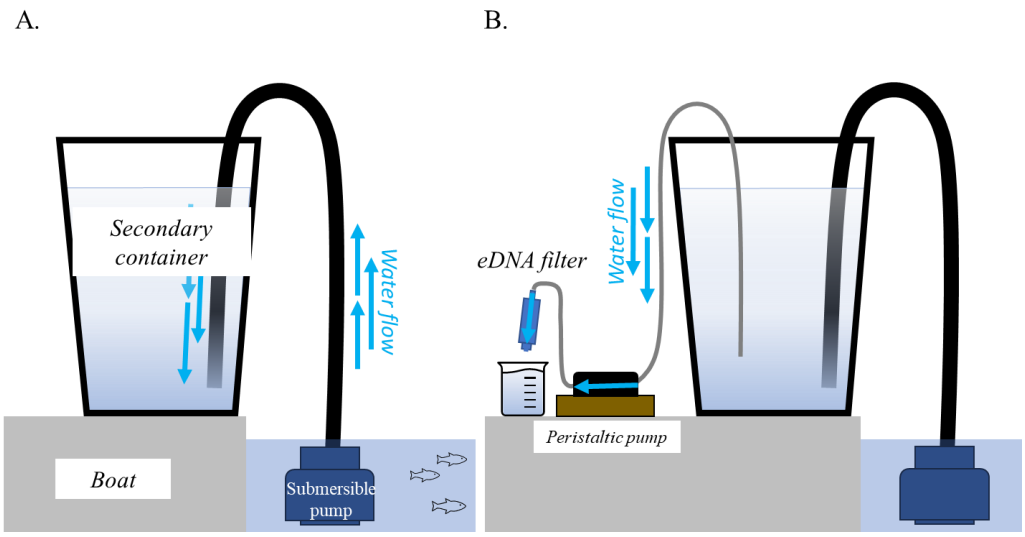
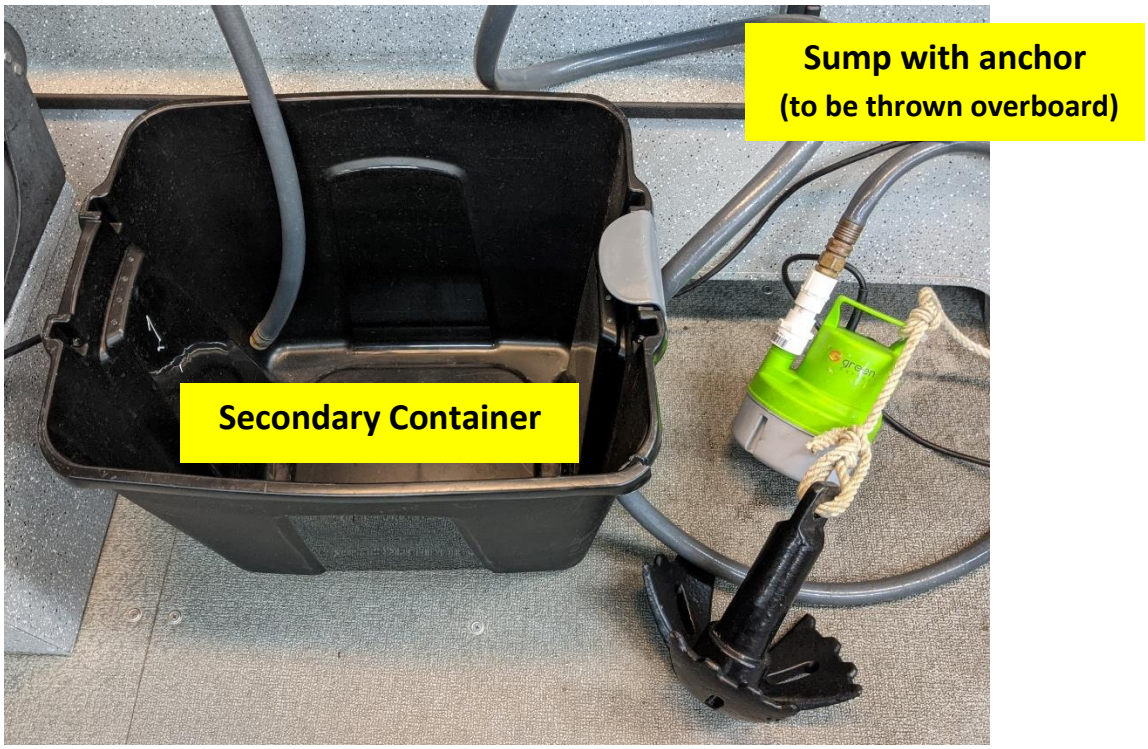


Figure 3. (A) Sump subsampling into secondary container. (B) Sample filtration from secondary container.



4) If multiple transects are to be completed in one day, sump and secondary container can be rinsed in between sites using a similar methodology to the tube rinsing protocol: sump is run for

2 or more minutes after which the sump hose is used to rinse the walls of the secondary container downstream and prior to the start of the next transect to remove eDNA from the previous transect. Separate clean secondary containers can be used for each transect if desired.

FILTER PROCESSING

We will not detail here processing of the sterivex filters and the DNA extraction. DNA from all samples and controls are extracted using PowerWater Sterivex™ DNA Isolation Kit (Mo Bio Laboratories, Inc.) following the manufacturer's recommended guidelines. Please refer to Bergman et al. (2016) for more details.

OTHER RESOURCES

Other procedures available from Genidaqs:

1) Field Collection Procedure for Environmental DNA from Soil.
2) Procedure for field preservation of gut contents for genetic analysis.
3) Tissue sampling and preservation procedures for genetic analysis.
4) Procedure for collection of DNA samples using external buccal swabs.

STUDY DESCRIPTION AR-2
Fish Sampling in Project-affected Reaches
July 23, 2026

This Study Description was developed to inform information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

STUDY AREA

For the purposes of this study, the Study Area includes the North Fork Stanislaus River from the North Fork Diversion Dam downstream to its confluence with the Middle Fork Stanislaus River, the Stanislaus River where it originates at the confluence of the Middle Fork and North Fork Stanislaus rivers downstream to the New Melones Reservoir high water mark, Highland Creek from New Spicer Meadow Reservoir down to its confluence with the North Fork Stanislaus River, and Beaver Creek from Beaver Creek Diversion Dam to the confluence with the North Fork Stanislaus River.

Sampling Locations

General sampling locations are identified in Figure 1 and listed in Table 1. Sites were selected that are distributed across the river's major geomorphic reaches while also ensuring safe and practical access. At each sampling site (Figure 1 and Table 1), representative riffle, run, and pool habitat sampling units will be sampled when possible.

[1] In addition to the details provided in this study description, study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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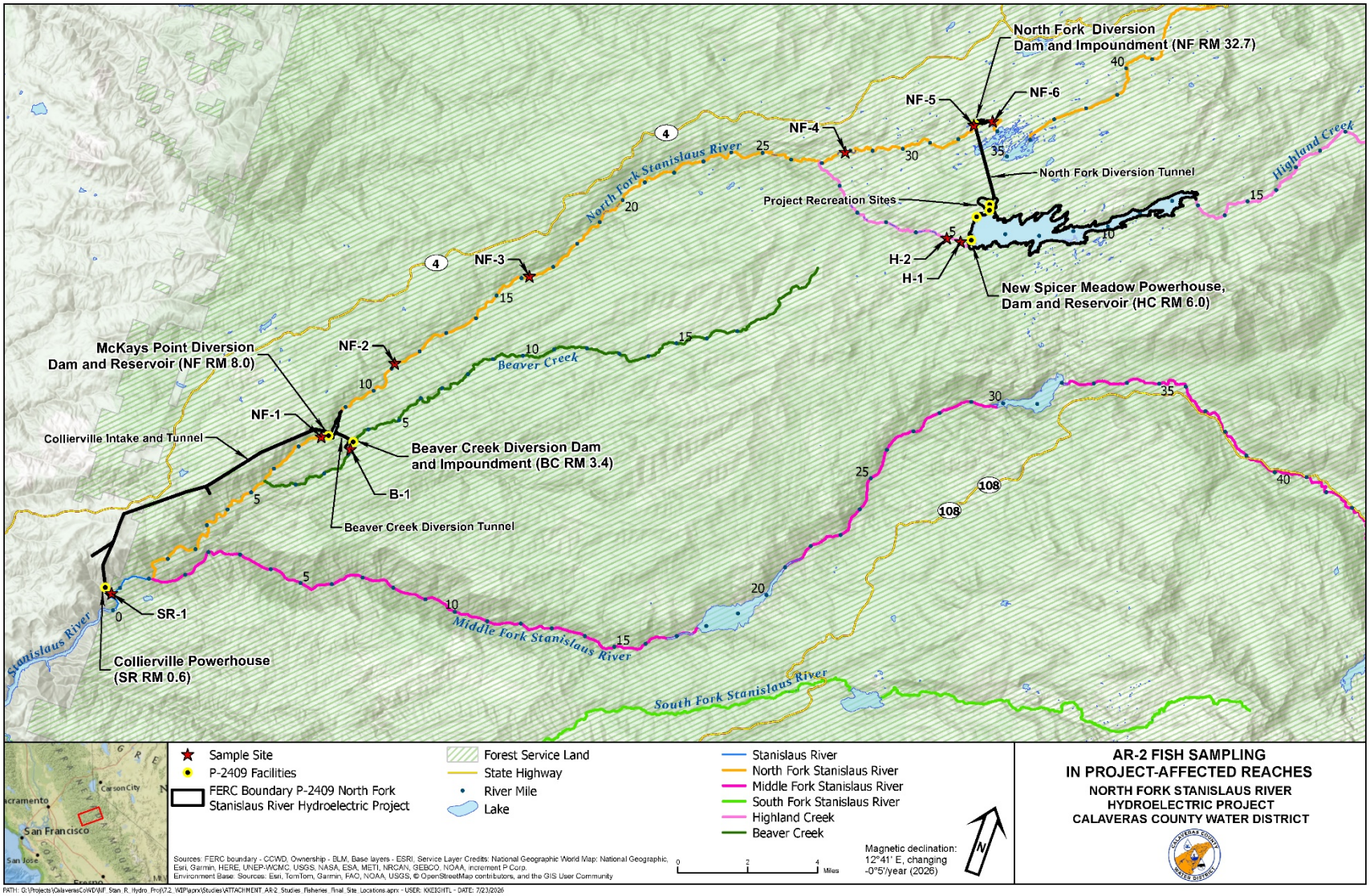


Figure 1. North Fork Stanislaus River Hydroelectric Project AR-2 Sampling Sites.

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Table 1. Summary of North Fork Stanislaus River Hydroelectric Project Fish Sampling Sites.

River	Site Name	Site Description	Approximate River Mile
Stanislaus River[1]	SR-1	Upstream of Collierville Powerhouse	SR 0.7
North Fork Stanislaus River[1]	NF-1	Downstream of McKays Diversion Dam	NF 7.7
	NF-2	Stanislaus River Day Use Area	NF 11.2
	NF-3	Wakalu Hep Yo Campground	NF 16.2
	NF-4	Pioneer Walking Bridge	NF 27.8
	NF-5	Downstream of North Fork Diversion Dam	NF 32.7
	NF-6	Upstream of North Fork Diversion Dam	NF 33.3
Beaver Creek	B-1	Downstream of Beaver Creek Diversion Dam	BC 3.0
Highland Creek	H-1	Downstream of New Spicer Meadows Dam	HC 5.5
	H-2	Downstream of New Spicer Meadows Dam	HC 5.0

[1] River Miles start at New Melones Reservoir high water mark on the mainstem Stanislaus and continue as the same series into the North Fork Stanislaus.

STUDY METHODS

Field Methods

A combination of electrofishing and/or snorkeling at each sample site will be conducted to collect fish data. Electrofishing will generally be used in riffle habitats and shallow runs, while snorkeling will be used in reaches with unsafe electrofishing conditions including deeper water (e.g., pools), swift currents, or other hazards. A minimum of 100 feet of each habitat type will be sampled when possible. When snorkeling in deeper units, unit lengths within a sample site may be significantly longer than 100 feet to accommodate natural hydrologic breaks. This study is conditional on measures contained within the California Department of Fish and Wildlife (CDFW) scientific collecting permit and USFWS 10(a)1(a) permit, which will be obtained prior to sampling. Study methods described below that are unsupported by permits may not be implemented.

In addition to these methods, eDNA metabarcoding will be conducted as a secondary measure of species composition. This will potentially allow for detection of more cryptic species and will sample water coming from areas upstream of selected sample sites, which extends the reach of the study beyond just species composition at the immediate sample sites.

Sampling Unit Habitat Measurements

Routine observations will be made of habitat and physical conditions in each sampling unit. These observations will include physical measurements of water temperature and specific conductance. Sampling unit lengths, widths, and depths will also be documented to calculate fish abundance by length and area of stream sampled. Length will be measured along the thalweg of the channel. Stream widths and depth transects will be measured at one-quarter, half, and three-quarters the

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length of each habitat unit. At each depth transect, depth will be measured at one-quarter, half, and three-quarters the width of the channel.

Electrofishing

For electrofishing efforts, sampling protocols will be consistent with those in Flosi et al. (2010). Multi-pass electrofishing will consist of a minimum of two electrofishing depletions with equal sampling effort. If depletions do not result in an overall fish abundance estimate with a confidence interval of approximately ±15% or less, then a third depletion, if needed, will be completed. Sample units will be sectioned off prior to sampling, using block nets. Captured fish from each pass will be kept in separate live wells or buckets. Fish will be enumerated, identified to species, measured to fork length, and the first 20 individuals of each species will be weighed in each sampling unit. Trout origin will be identified (hatchery or wild stock) based on adipose fin clips. When sampling is completed, fish will be returned to their original habitat.

Snorkeling

For snorkeling efforts, sampling protocols will be consistent with those in Flosi et al. (2010). Sample units will be sectioned off prior to sampling, using block nets. Snorkelers will survey in lanes along the river and identify, count, and estimate the length of each fish observed. Fish will be grouped into five size classes (0–3, 3–6, 6–9, 9-12, 12–18, and >18+ inches). Fish data will be recorded by habitat unit type. When identification is uncertain for juvenile minnows <3 inches in size (i.e., hardhead, Sacramento pikeminnow, Sacramento suckers, and/or California roach) counts will be recorded as a single category called mixed minnow. Very small salmonid fish that cannot be identified to species will be recorded as fry.

eDNA Sampling

eDNA samples will be obtained at eight locations (Figure 1 and Table 1) following standard protocols and using designated sampling kits for eDNA metabarcoding (simultaneous multi-species eDNA detection). Detailed protocols and methods are provided in Attachment A as an example of the field methods CCWD will follow.

Analysis

Fish abundance estimates for each sampling unit, based on multi-pass depletion, will be calculated using MicroFish 3.0 (Van Deventer 2020). Data will be analyzed by fish species and, when sufficient numbers of fish are captured, size specific group estimates for a species can be determined based on an evaluation of the length-frequency distributions. For species with low sample sizes where abundance cannot be estimated, the total number of fish captured will be presented. For sample units with snorkeling surveys, total number of fish observed will serve as an index of abundance. The data will be used to summarize fish standing crop estimates for each sampling unit within each sampling site in terms of density (e.g., fish/ft^2 and fish/mile). Fish species composition and distribution information will be compared to known species information as presented in Section 3.4 of the Pre-Application Document. Results of the eDNA metabarcoding

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analysis will be provided by Genidaqs. This will include a list of detected species, along with supporting tables and figures, as applicable.

Length-weight regression plots will be developed for all species using length and weight measurements. Additionally, fish condition factors for salmonids will be calculated using measured weight and length data. Length frequency histograms by species will also be developed.

Habitat descriptions for each sampling unit will include sample locations and descriptions, a summary of measured water chemistry conditions (i.e., water temperature and conductivity), and a summary of physical measurements (i.e., unit length, width, and depth).

REPORTING

This Study will generate the tables and plots described above related to site habitat information, standing crop estimates, eDNA analysis results, fish metrics, etc.[2]

SCHEDULE

CCWD anticipates the schedule for Study completion as follows:

Conduct Field Surveys	Late August – October 2027
Data Analysis and Reporting	November 2027 – December 2027

REFERENCES

Flosi, G., S. Downie, J. Hopelain, M. Bird, R. Coey, and B. Collins. 2010. California Salmonid Steam Restoration Manual, Fourth Edition. State of California, The Resources Agency, California Department of Fish and Game, Inland Fisheries Division, Sacramento, CA. Available online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=22610&inline. Accessed on March 20, 2026.

Van Deventer, J.S. 2020. Microcomputer Software System for Generating Population Statistics from Electrofishing Data-User's Guide for MicroFish 3.0. USDA Forest Service, General Technical Report INT-254. 29 p. Original software release in 1989. Last updated November 30, 2020. Available online at: https://static1.squarespace.com/static/5d41d4393c649400019ec8c4/t/5fc554d6145a8629dc62871f/1606767832272/MicroFish3+Users+Guide.pdf. Accessed on March 20, 2026.

[2] In addition to the details provided in this section, reporting will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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Pre-Application Document

Study Description

AR-2 Attachment A

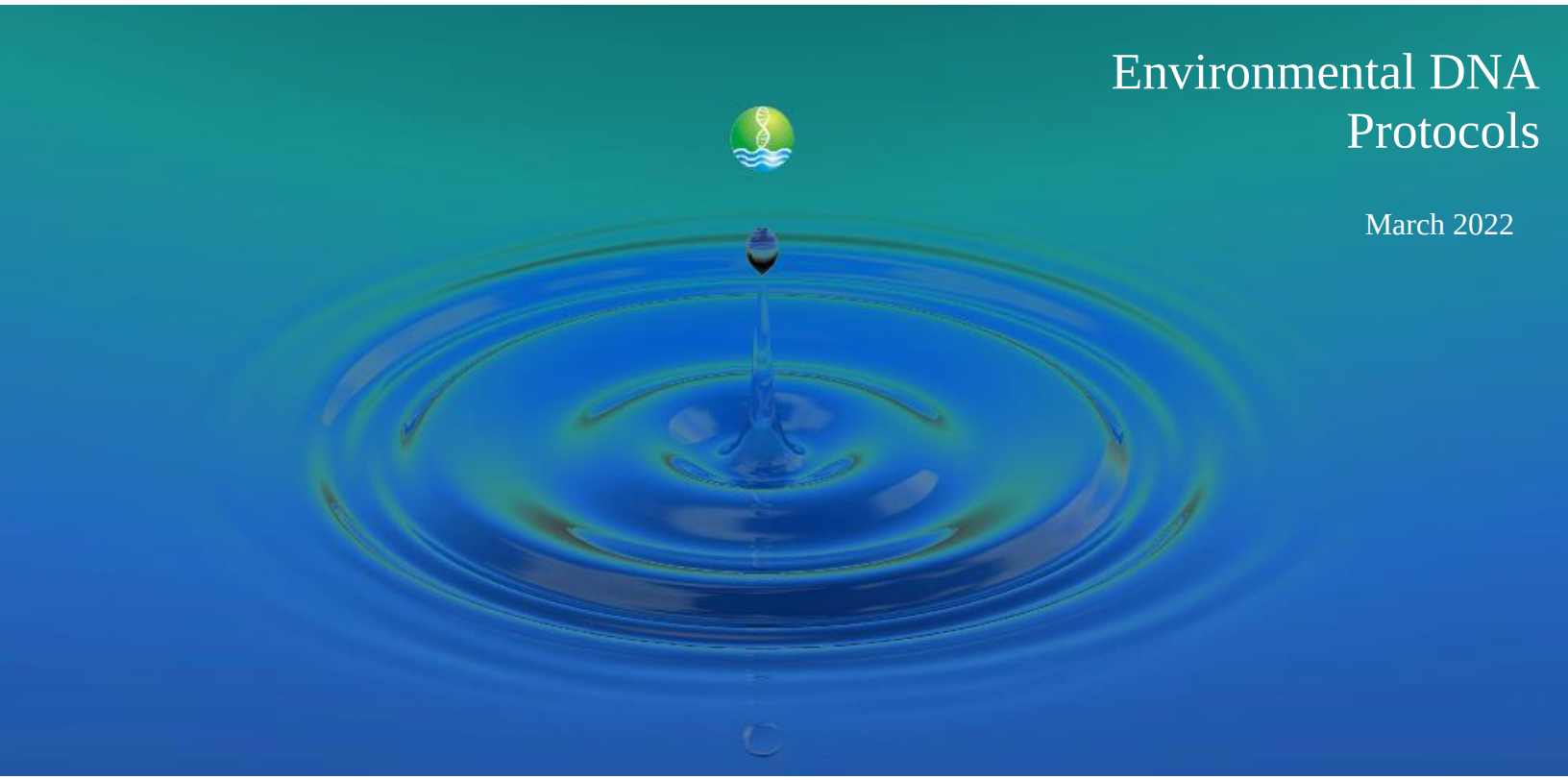
North Fork Stanislaus River Hydroelectric Project
FERC Project No. 2409

Prepared by:
Calaveras County Water District

July 2026

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Environmental DNA Protocols

March 2022

Field Collection Procedure for Aquatic Environmental DNA sample collection and analysis

Procedure prepared by:

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MATERIALS

Material List

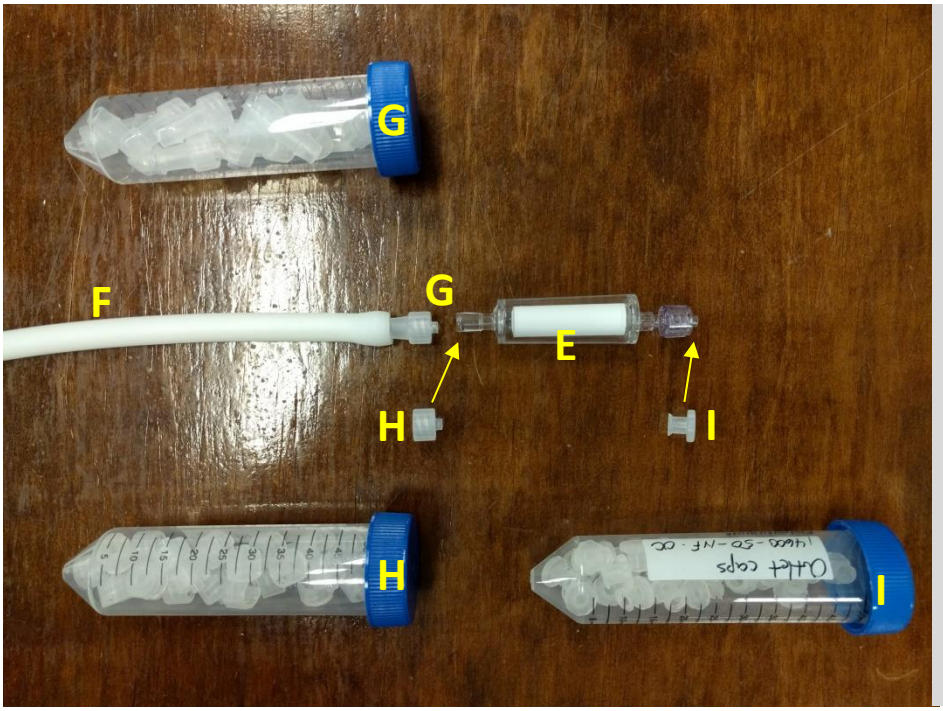
1) Cordless drill (brushless)
2) Pump driver bit (1/2 inch spade)
3) Backup drill battery and battery charger
4) Cole Parmer Peristaltic Pump MasterFlex Easy Loader II Model#77200-52
    a. Pumps can be chained together when samples collected in unison
5) USEPA approved Millipore Sterivex™ 0.45 µm sterile filter units (EPA# 90260-ITA-001)
    a. Clean scissors if cutting tubing in the field.
6) Masterflex spooled peroxide-cured silicon tubing, L/S 15
7) Tube adaptor (Cole Parmer 30800-22)
8) Inlet caps (Qiagen Mat. No. 1104193)
9) Outlet caps (Qiagen Mat. No. 1104194)
10) Graduated beaker
11) Nitrile gloves (non-powdered)
12) Ziploc bags
13) Permanent markers
14) Backpack or toolbox
15) GPS with extra batteries*
16) Cooler with blue ice pack
17) Ice chest with blue ice packs if many filters are collected in one day*
18) Garbage bags

*Optional, project dependent.



Pump Apparatus

A) Cordless drill (brushless)
B) Pump ½" driver bit
C) Peristaltic Pump mounted to 2x6
D) Pumps in series



Filter Apparatus

E) Sterivex™ filter (0.45um)
F) Silicon tubing
G) Tube adaptor
H) Inlet caps
I) Outlet caps

CONTAMINATION PREVENTION

Guidelines

1) The Genidaqs protocol is crafted to reduce the possibility of contamination, primarily through the use of a filter with filtration material shielded within an external housing. Therefore, the filtration material is never handled by the user. Irrespective of filter, following the procedure ensures the best chances of success.
2) Prior to project initiation, Genidaqs recommends that field personnel be trained on the collection protocols, which in part consists of field personnel verifying that they can reliably generate both negative and positive field collections.
3) The Genidaqs protocol uses pre-packaged sterile material. Material should be transported prior to field use in "clean" containers.
4) Ideally there should be a "clean" person handling the filter after water collection that bags and tags. If a single user is in the field, change sterile gloves at each site.
5) Consumables are considered single use. Following use, filter packaging, silicon tubing, gloves, etc. are immediately placed in "dirty" storage.
6) When sampling a flowing water system, conduct collections moving upstream.
7) Take one negative field control per sampling crew at the start of each sampling day. The negative field control consists of pumping clean water through a fresh filter. A clean, sealed bottled water works well as a field control.
8) Place filters on ice between sites. Store in a freezer when done with field work and until delivering samples to the lab. Transport samples on ice in cooler.

General protocol for rinsing and re-using tubing at multiple sites

1) Upon arriving at the new sampling site, pump water through the tubing for approximately 2 minutes prior to attaching filters to flush out any eDNA from the previous site.
2) When flush is complete, attach filters and begin sampling.
3) If sampling in flowing water (river, stream, tidal, etc.), flushed water can be placed on to shore, into a secondary container or into the water. Flowing water will move any contaminants outside of the sampling area.
4) If sampling in stagnant water (vernal pool, pond, lake, etc.), flushed water should be directed on to shore or into a secondary container to not contaminate the new sampling site. In the rare chance that this is not possible, complete flush close to but not directly at the new sampling location or use new tubing at each site.

General protocol for sterilizing instruments and equipment for analyzing genetic samples

Materials needed:

- 20% household bleach solution (mixed with tap water) in spray bottle or beaker
- DI or tap water
- Kimwipes or paper towels

1) Rinse all tissue and body fluids off of instruments, vials, petri dishes, and any other item being exposed to sample tissue using tap water.
2) Submerge any submergible items in 20% bleach solution for at least 1 minute. Be sure to completely expose all surfaces to bleach, including opening and closing scissors while submerged.
3) Use spray bottle to coat surfaces of larger items (pumps, coolers, etc) that cannot be submerged into bleach solution. Spray paper towel with bleach solution and gently wipe surface of non-submersible items such as pens, drills and batteries.
4) Remove items from bleach and rinse with DI water or tap water. Spray clean water on to paper towel and wipe bleach off of non-submersible items. Make sure to remove all bleach. Thoroughly dry items with a fresh Kimwipe, paper towel or air dry on clean paper towels.

SAMPLE COLLECTION

Protocol reference:

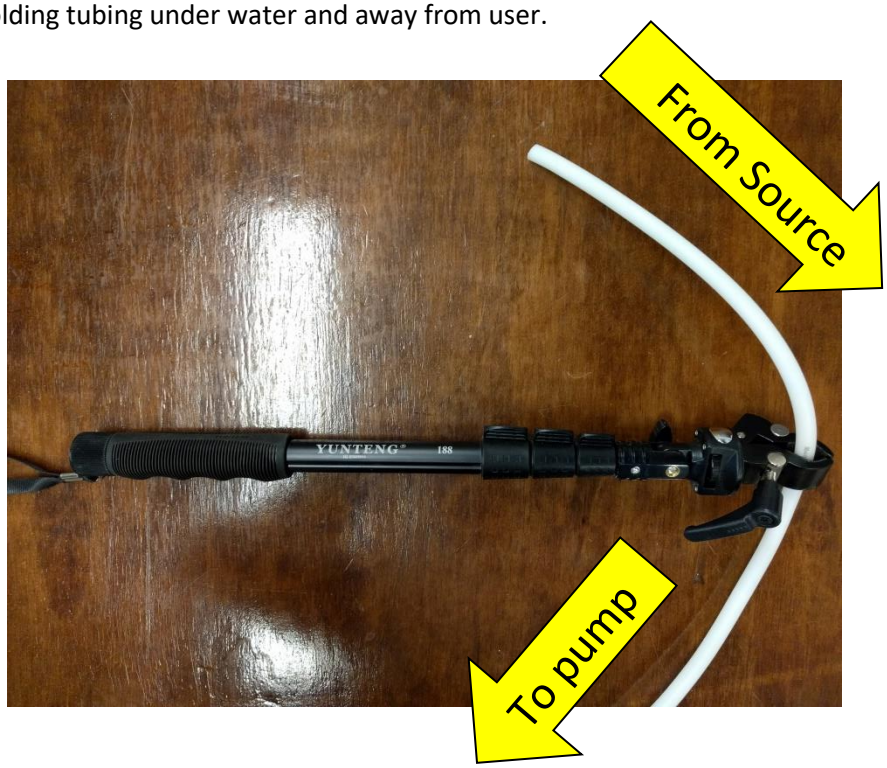
Bergman, P.S., G. Schumer, S. Blankenship, and E. Campbell. 2016. Detection of Adult Green Sturgeon Using Environmental DNA Analysis. PLOS ONE 11(4): e0153500.

Water Collection and Filtration – Point Sampling

Reminders:

- Collect 1 field control at the start of the sampling day per field crew.
- Put on clean gloves at each sampling site. If in doubt of glove cleanliness, switch gloves.

1) Water samples may be collected either from the bank margin, or, where this is infeasible due to dense vegetation or steep topography, by vessel at the channel center.
2) For each sampling event, water is filtered directly from the water body at an approximate depth of 2-6 inches below the surface. We have found a fishing pole or telescoping pole (hiking pole) useful for holding tubing under water and away from user.



3) Sterile Masterflex spooled peroxide-cured silicon tubing, L/S 15 with an internal diameter of 4.8 mm is used in association with a portable Masterflex1 L/S Easy-Load II Model#77200-52 peristaltic pump powered by a cordless hand drill. The tubing is clamped within the pump, so

the pump never comes into contact with the water. Peristaltic action draws water from the source.

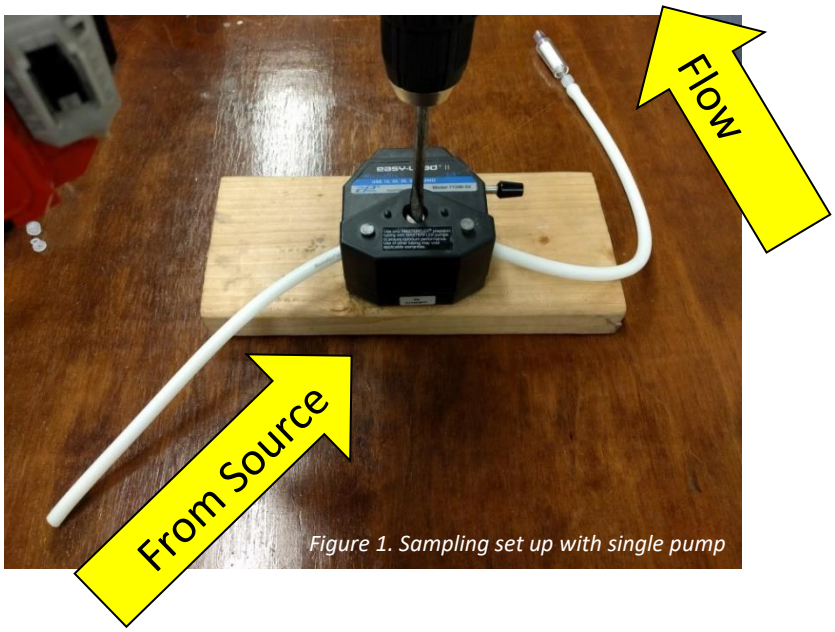


Figure 1. Sampling set up with single pump

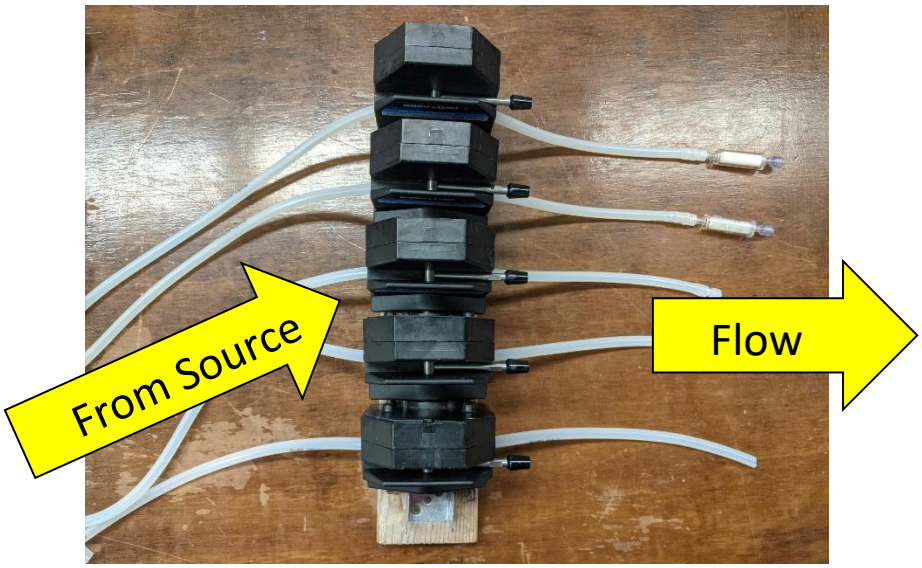
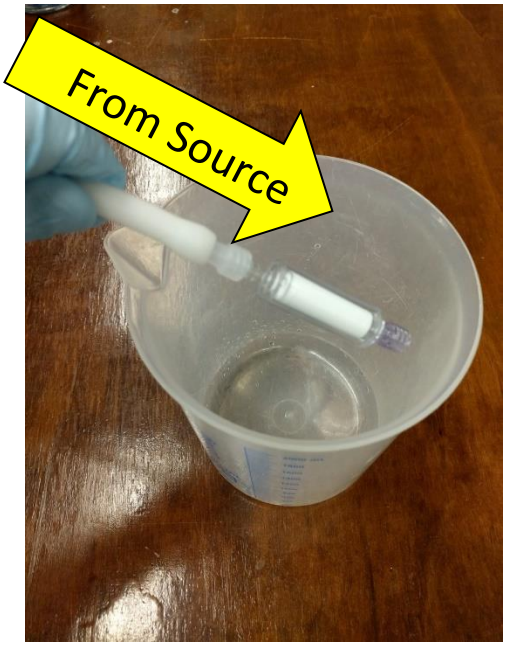


Figure 2. Sampling set up with multiple pumps

4) Water samples are filtered through a Millipore Sterivex™-GP 0.45 µm sterile filter unit. Partially tear open filter packaging to expose filter and connect to tube adapter. The filter only connects to the tube adapter in one way, ensuring proper connection. Note that water is expelled out of the filter and is not sucked into the filter, which is a reversed orientation to that of the commonly used grab samples using disc filter apparatus.



Pro tip: If the tube adapter isn't used (or forgotten) the tube itself can be press fit over the filter inlet and the process will work. However, note that if filter is installed backward, water will simply flow through the filter assembly and not come into contact with the filter material (i.e. no organic material will be captured).

5) All water filtration occurs directly at each site. No water is transported or stored during sampling nor is any water transported between sampling sites.

6) Sample filtrate is captured and measured in a graduated beaker to verify the volume filtered for each sample. Filtration ceases when either the target volume is reached or the filter clogs. Reverse pump to drain remaining water from inside the filter assemble. Note: it is very important to remove water from inside filter. If water is left inside the filter housing, the plastic may break when filters are frozen. If pumping is ineffective the filter can be manually shaken to remove water.

7) In water with high levels of particulates, sediment may accumulate inside filter assembly. This is ok as long as residual water is removed from filter assembly.



8) Filtrate is poured out after completion of sampling at each site.

9) After filtration, the inlet and outlet of filters are capped at each end, the filter is labelled with location ID and volume filtered, placed into a sterile secondary container (Ziploc), sealed, and immediately placed in a cooler. Filter is considered self-contained at this point. Multiple filters from the same site can be placed in the same secondary container (bag). Filters from different site should be stored in separate bags.



10) Gloves are immediately disposed of after each use into a sealed trash bag. Tubing should be disposed of after each site unless the tubing rinsing protocol is being followed.

11) All filters are kept in a cooler for the duration of the sampling day, after which they are transferred to a -20 °C freezer. Filters must be transported or mailed to the Genidaqs laboratory on ice. If mailed, filters must be shipped overnight, and prior notice must be given to Genidaqs staff to ensure timely delivery. The filters are stored within individually sealed secondary containers until DNA extraction.

Pro tip: Filters can be wiped with bleach to sterilize outside or each filter prior to storage and placed into a new secondary container labelled appropriately for project. This bleach step breaks the connection between field and lab environments. In the laboratory, all filters are wiped with DNA neutralizing solution prior to DNA extraction.

12) To ensure that field equipment is free of contamination, DNA field controls are taken for each sampling day. Each field control consists of Sterivex™ filtered water processed in the same fashion as the field samples. The field controls are processed for the presence of target species DNA in parallel with all samples. One field control is collected per sampling team at the start of each sampling day.

Water Collection and Filtration – Transect Sampling

Transect sampling involves using a vessel to move across a landscape while simultaneously collecting an eDNA sample. This sampling technique is preferred for sampling across larger areas or when there is a need to move across stagnant water to capture eDNA particles that may not be encountered when using a stationary point sample. Genidaqs conducts two types of transect sampling styles: (1) moving point sample, and (2) aggregate subsampling with sump.

Moving points sample:

Additional sampling gear:

- Mobile vessel (boat, kayak, raft, etc)
- GPS unit/map with desired transects

1) Plan transects out prior to going into the field. Use GPS with map to orient yourself and find location of transects when in the field.
2) Sample transects from downstream to upstream if there is flow.
3) Using a mobile vessel, follow sampling instructions as written for the point sampling methodology while moving across the pre-planned transect. Typically, one or more staff collect the sample while one or more staff move the vessel.
4) Try to filter water throughout the entirety of the transect. This will involve slowing down the pumping rate (drilling speed) to moderate filtration rate to match transect speed. Ideally, filtration will be complete (filter will clog) close to the end of the transect. Drilling speed will vary depending on turbidity and transect length.
5) Filter replicates can be collected in unison with one transect pass using multiple pumps chained together (Figure 2).

Aggregate subsampling with sump:

Additional sampling gear:

- Boat with power accessory plug
- Inverter (Bestek 300W Power Inverter, model #MRI3011BU)
- GPS unit or map with desired transects
- Submersible pump (sump) (Green Expert 1/6HP sump model# 203617) with hose attachment
- Hose
- Hose flow splitter (Optional. Splitter can be used to slow flow during long transects)
- Anchor (Optional. May be needed to keep pump submerged)
- Large secondary container

1) Plan transects out prior to going into the field. Use GPS to orient yourself and find location of transects when in the field.
2) If flow is present, start at the downstream end of the transect. Collect water into a large secondary container on board the boat for the length of the transect using the sump (Figure 3A).

It may be necessary to calculate the required container volume based on pump flow rate, transect length, and boat speed prior to conducting field work.

3) Once transect is complete, follow the sampling methodologies described in the Point Sampling section to collect eDNA samples from the secondary container (Figure 3B).

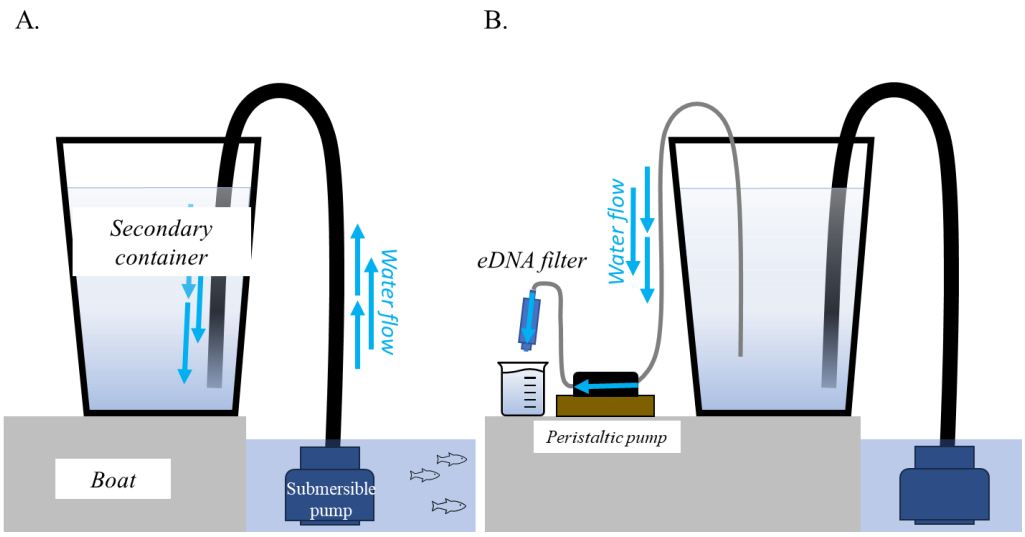
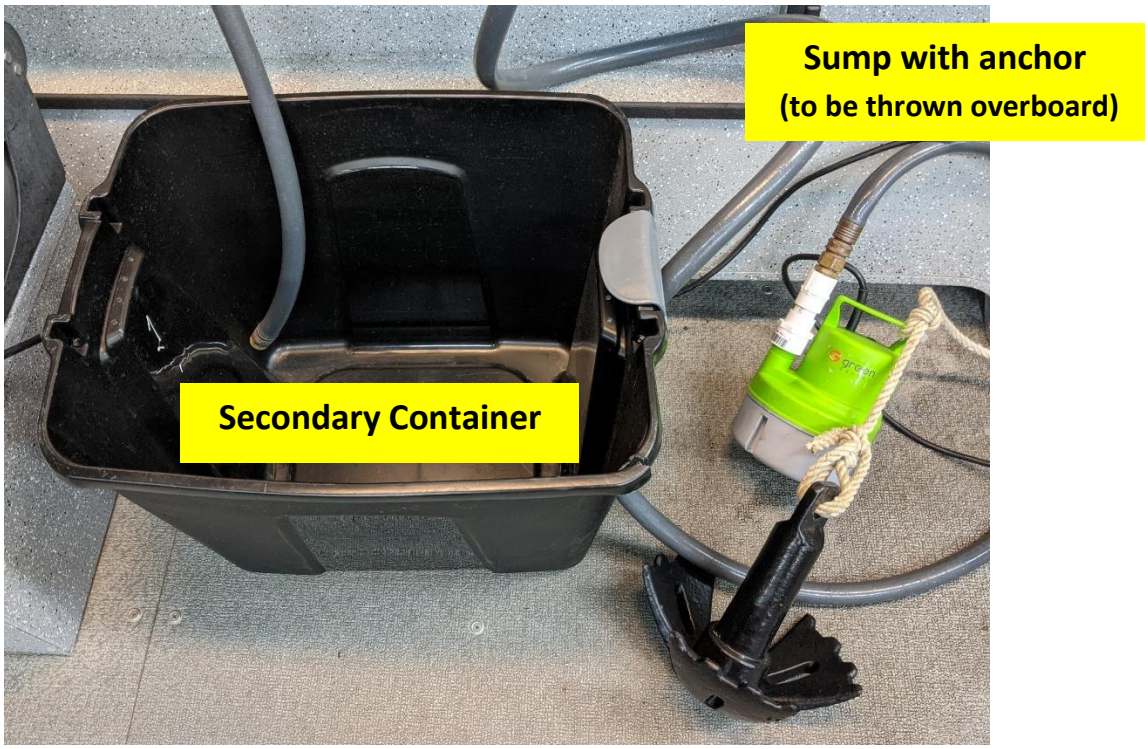


Figure 3. (A) Sump subsampling into secondary container. (B) Sample filtration from secondary container.



4) If multiple transects are to be completed in one day, sump and secondary container can be rinsed in between sites using a similar methodology to the tube rinsing protocol: sump is run for

2 or more minutes after which the sump hose is used to rinse the walls of the secondary container downstream and prior to the start of the next transect to remove eDNA from the previous transect. Separate clean secondary containers can be used for each transect if desired.

FILTER PROCESSING

We will not detail here processing of the sterivex filters and the DNA extraction. DNA from all samples and controls are extracted using PowerWater Sterivex™ DNA Isolation Kit (Mo Bio Laboratories, Inc.) following the manufacturer's recommended guidelines. Please refer to Bergman et al. (2016) for more details.

OTHER RESOURCES

Other procedures available from Genidaqs:

1) Field Collection Procedure for Environmental DNA from Soil.
2) Procedure for field preservation of gut contents for genetic analysis.
3) Tissue sampling and preservation procedures for genetic analysis.
4) Procedure for collection of DNA samples using external buccal swabs.

STUDY DESCRIPTION AR-3
Benthic Macroinvertebrate Sampling in Project-affected Reaches
June 5, 2026

This Study Description was developed to inform information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

STUDY AREA

For the purposes of this study, the Study Area includes the North Fork Stanislaus River from the North Fork Diversion Dam and Impoundment downstream to its confluence with the Middle Fork Stanislaus River, the Stanislaus River where it originates at the confluence of the Middle Fork and North Fork Stanislaus rivers downstream to Collierville Powerhouse, Highland Creek from New Spicer Meadow Reservoir down to its confluence with the North Fork Stanislaus River, and Beaver Creek from Beaver Creek Diversion Dam and Impoundment to the confluence with the North Fork Stanislaus.

Sampling Locations

General sampling locations are identified in Figure 1 and listed in Table 1. Sites were selected that are distributed across the river's major geomorphic reaches while also ensuring safe and practical access. At each sampling site (Figure 1 and Table 1), representative riffle, run, and pool habitat sampling units will be sampled when possible and exact sample reaches will be designated per the State Water Resources Control Board's Surface Water Ambient Monitoring Program (SWAMP) protocol (Ode et al. 2025).

[1] In addition to the details provided in this study description, study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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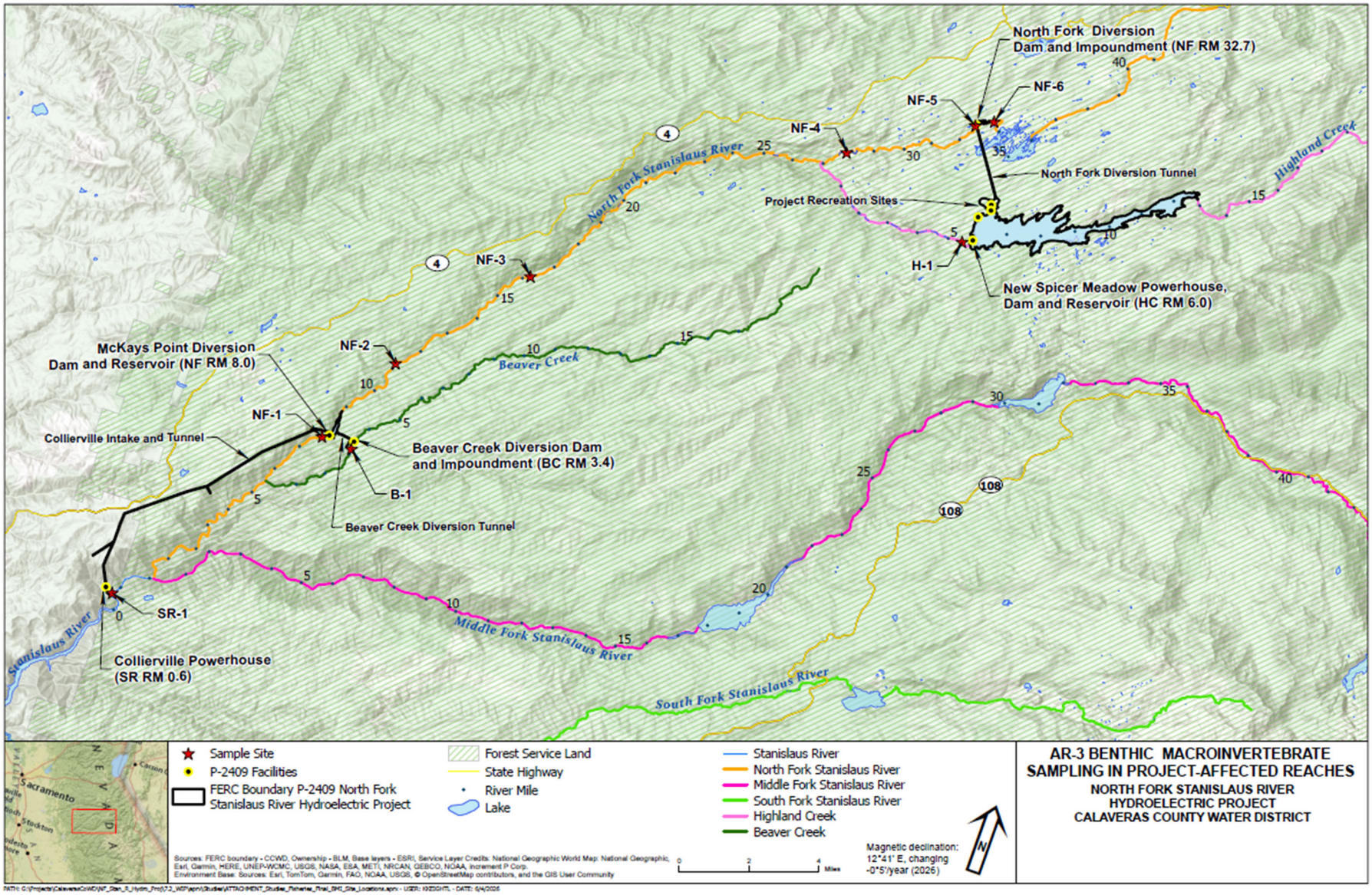


Figure 1. Map of North Fork Stanislaus River Hydroelectric Project AR-3 Sampling Sites.

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Table 1. Summary Information of North Fork Stanislaus River Hydroelectric Project BMI Sampling Sites.

River	Site Name	Site Description	Approximate River Mile
Stanislaus River[1]	SR-1	Upstream of Collierville Powerhouse	SR 0.7
North Fork Stanislaus River[1]	NF-1	Downstream of McKays Diversion Dam	NF 7.7
	NF-2	Stanislaus River Day Use Area	NF 11.2
	NF-3	Wakalu Hep Yo Campground	NF 16.2
	NF-4	Pioneer Walking Bridge	NF 27.8
	NF-5	Downstream of North Fork Diversion Dam	NF 32.7
	NF-6	Upstream of North Fork Diversion Dam	NF 33.3
Beaver Creek	B-1	Downstream of Beaver Creek Diversion Dam	BC 3.0
Highland Creek	H-1	Downstream of New Spicer Meadows Dam	HC 5.5

[1] River Miles start at New Melones Reservoir high water mark on the mainstem Stanislaus and continue as the same series into the North Fork Stanislaus.

STUDY METHODS

Field Methods

CCWD will use SWAMP methods for consistency of methodology with generally accepted scientific practices. This study is conditional on measures contained within the California Department of Fish and Wildlife (CDFW) scientific collecting permit, which will be obtained prior to sampling. Study methods described below that are unsupported by permits may not be implemented.

Reach Set Up

Sampling methods will conform to the standard reach wide benthos (RWB) methods for documenting and describing BMI assemblages and physical habitat described by the SWRCB's SWAMP in 2025 (Ode et al. 2025). If the site's average wetted width is ≤ 10 meters (m), the reach will be 150 m in length and 250 m if the width is greater than 10m. The standard sampling layout consists of 11 "main" transects (A-K) interspersed with 10 "inter-transects", all of which are arranged perpendicularly to the primary direction of stream flow (usually the thalweg), and placed at equal distances from one to the next. The first flag should be installed at water's edge on one bank at the downstream limit of the sampling reach to indicate the first main transect ("A"). The positions of the remaining transects and inter-transects are then established by heading upstream along the bank and using the transect tape or a segment of rope of appropriate length to measure off successive segments of 7.5 m (if sampling reach is 150 m), or 12.5 m (if it is 250 m).

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Physical Habitat and Water Chemistry

Physical habitat and water quality will be characterized at each site. The habitat scoring criteria outlined by the SWAMP provides an effective measure of the physical integrity of a stream. The following list of quantitative measures of chemical and physical/habitat characteristics will be collected at each site:

- Reach-wide Parameters
  - GPS coordinates will be recorded at the top and bottom of the site
  - Water temperature, specific conductance, pH, and dissolved oxygen will be measured using approved standardized procedures and instruments
  - Total reach length and gradient (percent slope) as well as average width and depth will be recorded
  - Take photographs at the top, middle and bottom of the reach
  - A flow measurement will be taken within the reach
- Transect-specific Parameters
  - The wetted and bank full widths of each transect will be taken.
  - Substrate size, depth, and coarse particulate matter will be recorded at five locations along each transect.
  - Record cobble embeddedness for each cobble identified along the transects. If 25 cobbles are not recorded, supplement the data by collecting "random" cobbles within the reach.
  - Algal and macrophyte cover will be recorded at each of the sampling points.
  - Bank stability, riparian vegetation, human influences, and instream habitat complexity will be recorded.
  - Record stream shading using a densiometer.

BMI Field Collection

Samples will be collected at the 11 "main" transects by rubbing cobble and boulder substrates and disturbing finer substrate upstream of a D-frame kicknet fitted with a 0.02-inch (in.) diameter mesh net. For the RWB method, the sub-sampling position alternates between left, center, and right portions of the main transects, as one proceeds upstream from one transect to the next. These sampling locations are defined as the points at 25% ("left"), 50% ("center") and 75% ("right") across the wetted width in most systems. The subsamples will be combined in a jar, preserved with 95% ethanol, and labeled to form a single composite sample for that study site.

BMI Laboratory Process

BMI samples will be processed by a SWAMP certified lab per the methods outlined in the protocol (Ode et al. 2025).

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Each composite sample will be rinsed in a standard no. 35 sieve (0.5 mm) and transferred to a tray with thirty, 2-3/8 inch square grids for subsampling. Subsampling will be performed using a stereomicroscope with magnifications of 10 to 20 times magnification.

Subsamples will be transferred from randomly selected grids to Petri dishes where the aquatic macroinvertebrates will be removed indiscriminately with the aid of a stereomicroscope and placed in vials containing 70 percent ethanol and 2 percent glycerol. In cases where aquatic macroinvertebrates abundance exceeds 100 organisms per grid, half grids will be delineated to assure that a minimum of three discreet areas within the tray of benthic material will be subsampled. At least 100 aquatic macroinvertebrates will be subsampled from a minimum of five grids, or five half grids.

The debris from the processed grids will be placed in a remnant jar and preserved in 70 percent ethanol for later quality control testing. Subsampled aquatic macroinvertebrates will be identified by a taxonomist approved by the California Department of Fish and Wildlife (CDFW) for U.S. Environmental Protection Agency (USEPA) evaluations using standard aquatic macroinvertebrate identification keys (e.g., Kathman and Brinkhurst 1999, Merritt and Cummins 1996, Stewart and Stark 1993, Thorp and Covich 2001, Wiggins 1996) and other appropriate references.

All organisms retained on a 0.5-mm screen will be removed from the subsample and a standard level 2a taxonomic effort will be used as specified in the Southwestern Association of Freshwater Invertebrate Taxonomists (SAFIT) in 2015 (Richards and Rogers 2011).

Analysis

Analytical methods will conform to the standard methods describing BMI assemblages and physical habitat outlined by SWAMP. Standard biological metrics, plus additional relevant metrics, will be calculated for each site (Table 2) and presented in graphical or tabular form.

Table 2. Biological metrics calculated to assess BMI assemblages

BMI Metrics	Description
	RICHNESS MEASURES
Taxonomic Richness	Total number of individual taxa
No. EPT Taxa	Number of taxa in the insect orders Ephemeroptera, Plecoptera, and Trichoptera
Ephemeroptera Taxa	Number of mayfly taxa
Plecoptera Taxa	Number of stonefly taxa
Trichoptera Taxa	Number of caddisfly taxa
Coleoptera Taxa	Number of beetle taxa
% EPT	Percent of the composite of mayfly, stonefly, and caddisfly larvae
% Ephemeroptera	Percent of mayfly nymphs
Shannon Diversity Index	General measure of sample diversity that incorporates richness and evenness
California Tolerance Value (CTV)	CTVs between 0 and 10 weighed for abundance of individuals designated as pollution tolerant (higher values) and intolerant (lower values)
No. of Intolerant taxa	Taxa richness of those organisms considered to be sensitive to perturbation
% Tolerant Organisms	Percent of macrobenthos considered to be tolerant of various types of perturbation

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Table 2. (Continued).

BMI Metrics	Description
	RICHNESS MEASURES
% Dominant Taxon	Measures the dominance of the single most abundant taxon. Can be calculated as dominant 2, 3, 4, or 5 taxa
	FEEDING MEASURES
% CF+CG Individuals	Percentage of BMIs within the collector-filterer and collector gatherer functional feeding groups
% Scrapers	Percent of macroinvertebrates that graze upon periphyton
% Non-gastropoda Scrapers	Percentage of BMIs within the scraper functional feeding group excluding gastropod scrapers
% Predators	Percent of macroinvertebrates that prey on living organisms
% Shredders	Percent of macroinvertebrates that shred leaf litter

The results from each site will be scored utilizing the California Stream Condition Index (CSCI) to translate BMI metrics into a measure of overall stream health (Rehn et al. 2015).

Following data collection and identification of taxa, CCWD will subject all data to quality assurance/quality control (QA/QC) procedures including, but not limited to, spot-checks of data and review of electronic data for completeness. If any datum seems inconsistent, CCWD will investigate the problem.

REPORTING

This Study will generate the tables and plots described above as relevant to the SWAMP protocol including biological and habitat metrics.[2]

SCHEDULE

CCWD anticipates the schedule for Study completion as follows:

Conduct Field Surveys	Late August – October 2027
BMI Laboratory Processing	November – January 2028
Reporting	February – March 2028

[2] In addition to the details provided in this section, reporting will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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REFERENCES

Kathman, R.D., and R.O. Brinkhurst. 1999. Guide to the freshwater oligochaetes of North America. Aquatic Resources Center, College Grove, TN. 264 pp. Available online at: https://cir.nii.ac.jp/crid/1970867909804926507.

Merritt, R.W., and K.W. Cummins (eds.). 1996. 3rd Edition. An Introduction to the Aquatic Insects of North America. Kendall and Hunt Publishing Co., Dubuque, IA. Available online at: https://books.google.com/books?hl=en&lr=&id=UUtEoRejk0AC&oi=fnd&pg=PP17&dq=Merritt,+R.W.+and+K.W.+Cummins+(eds.).++1996.++3rd+Edition.+An+Introduction+to+the+Aquatic+Insects+of+North+America.+Kendall+and+Hunt+Publishing+Co.,+Dubuque,+IA.&ots=f2ZHyXKVZu&sig=54NINQTiNW4Qx3FtwuxAEr8V2YQ#v=onepage&q&f=false.

Ode, P.R., A.E., Fetscher, L. Busse, A. Furler, C. Loflen., N. Mack, R.D. Mazor, S. McBride, D. Pickard, A.C. Rehn, and S. Theroux. 2025. Standard Operating Procedures for the Collection of Field Data for Bioassessments of California Wadeable Streams: Benthic Macroinvertebrates, Algae, and Physical Habitat. California State Water Resources Control Board Surface Water Ambient Monitoring Program (SWAMP) SOP-SB-2025-0001 Available online at: https://www.waterboards.ca.gov/water_issues/programs/swamp/bioassessment/docs/2025/bioassessment-sop-2025-revision.pdf.

Rehn, A.C., R.D. Mazor and P.R. Ode. 2015. The California Stream Condition Index (CSCI): A New Statewide Biological Scoring Tool for Assessing the Health of Freshwater Streams. Swamp Technical Memorandum SWAMP-TM-2015-0002. Available online at: https://www.waterboards.ca.gov/water_issues/programs/swamp/bioassessment/docs/csci_tech_memo.pdf.

Richards, A. B., and D. C. Rogers. 2011. List of freshwater macroinvertebrate taxa from California and adjacent states including standard taxonomic effort levels. Southwest Association of Freshwater Invertebrate Taxonomists. Chico, CA. Available online at: https://safit.org/wp-content/uploads/2024/01/STE_1_March_2011_7MB.pdf.

Stewart, K.W. and B.P. Stark. 1988. Nymphs of North American Stonefly genera (Plecoptera). Monograph 12. Thomas Say Foundation. 460 pp.

Thorp, A.P. and A.P. Covich (eds.) 1991. Ecology and Classification of North American Freshwater Invertebrates. Academic Press, Inc., San Diego, CA.

Wiggins, G.B. 1996. Larvae of the North American Caddisfly Genera (Trichoptera). 2nd ed. Univ. Toronto Press, Canada. Available online at: https://archive.org/details/larvaeofnorthame0000wigg/page/n5/mode/2up.

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STUDY DESCRIPTION AR-4
Assessment of Potential for Fish Entrainment at Project Intakes and Diversions
September 14, 2026

This Study Description was developed to inform information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

STUDY AREA

The Study Area includes intake infrastructure on New Spicer Meadow Dam, McKays Dam, and the North Fork Diversion Dam. Study Locations across the Study Area are identified in Figure 1. Note that CCWD believes that no entrainment assessment is necessary on the Beaver Creek Diversion Dam and impoundment because the intake already has a fish screen to mitigate any potential entrainment.[2]

[1] In addition to the details provided in this study description, study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

[2] The Beaver Creek Diversion Dam Intake was originally designed and commissioned with a perforated fish screen. In 1999, the fish screen was enlarged and replaced with a CDFG approved 3/32" wedge-wire screen.

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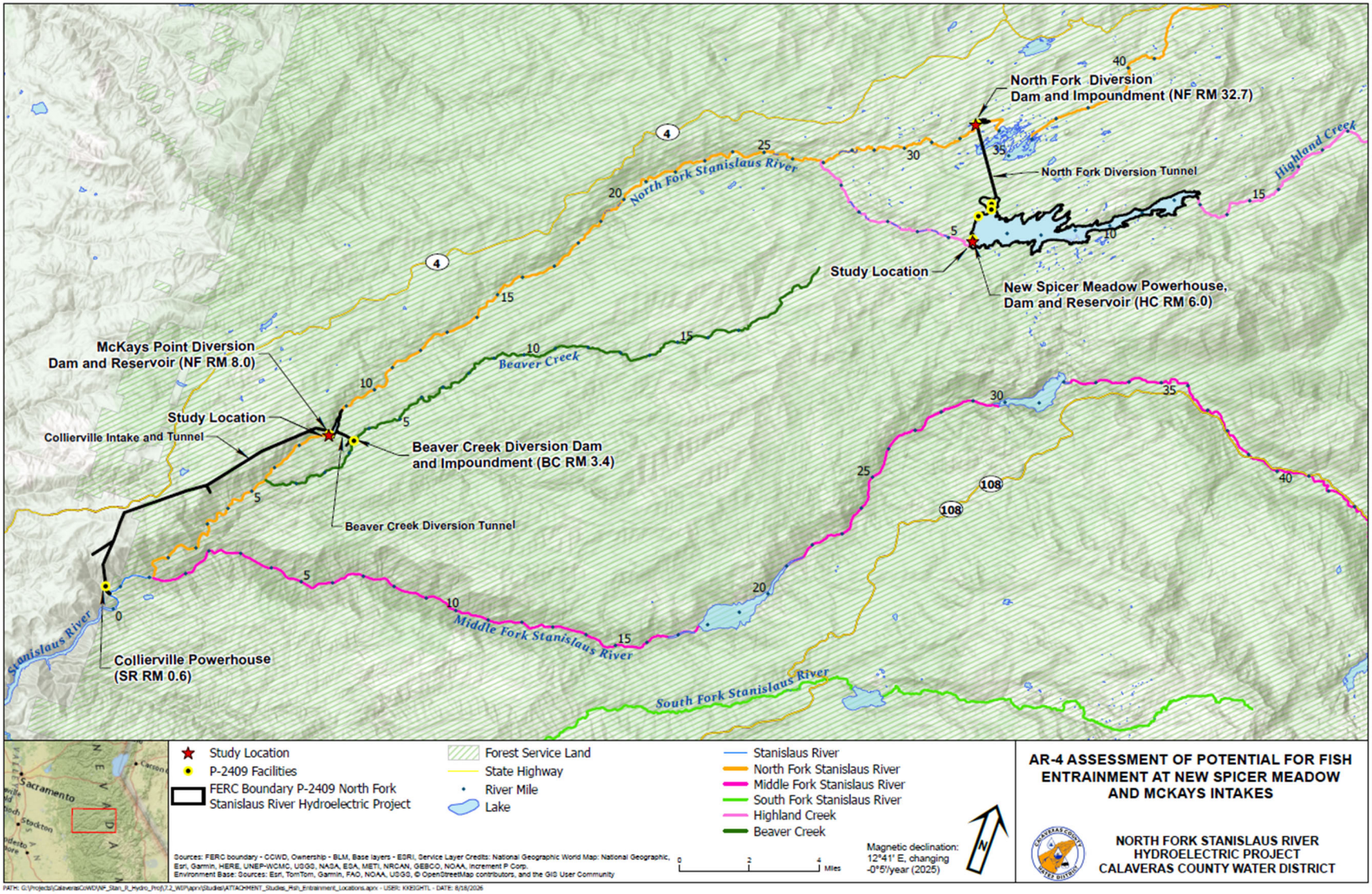


Figure 1. North Fork Stanislaus River Hydroelectric Project AR-4 Study Locations.

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STUDY METHODS

Methods

A desktop assessment of the potential for fish entrainment at New Spicer Meadow intake, McKays intake, and the North Fork Diversion will be conducted. In addition, supplemental field monitoring as described in this section will be conducted at New Spicer Meadow intake and North Fork Diversion. All information collected during this assessment will be subject to appropriate QA/QC procedures including checking all data for accuracy and completeness.

This assessment will consist of four steps: (1) characterize each intake and diversion to better describe water velocities, temperature regime, and depth of water diversion/intake during the season of diversion (2) determine what, if any, reservoir or stream fish would be near the intakes; (3) determine swim speeds for fish life stages likely to be near the intakes; (4) summarize entrainment potential including comparison of swim speeds for relevant fish life stages and intake water velocities and incorporating results of field sampling. These steps are described below:

Step 1 – Characterize Each Intake

CCWD will examine existing design drawings and operations of the intakes to characterize the typical intake depth, dimensions, and flows. Using this information, CCWD will calculate typical approach velocities near and at each intake, and at various distances from the intake. Approach velocities will be calculated by examining the cross-sectional area of the tunnel intake structures and the median, 10 percent, and 90 percent exceedance discharges. These values will be compared with the annual inflow/outflow hydrographs to evaluate the temporal risk of entrainment to fish. The temperature regime at each intake will also be described.

Step 2 – Determine Likelihood That Reservoir Fish Would be Near the Intakes

Using the information developed in Step 1, existing information regarding the fish species composition in McKays and New Spicer Meadow reservoirs and information in existing literature regarding the fish species' life history, CCWD will determine which of the species' life stages has a reasonable potential to be near the intakes and when. Species will be assessed for potential risk of entrainment under both stratified and non-stratified lake conditions. The seasonality of stratification and its effect on species presence near the intakes will be described from available information. Results from the AR-1 Study Description will be used to inform species composition in New Spicer Reservoir (i.e., boat electrofishing and eDNA sampling). Results from AR-2 Study Description will be used to inform species composition in the North Fork Diversion Dam impoundment (i.e., electrofishing and snorkeling in the North Fork Stanislaus River upstream of the North Fork Diversion Dam). To improve the quality of information, CCWD will conduct supplemental field sampling at the New Spicer Meadow Dam intake and North Fork Diversion Dam intake as described below. CCWD believes that no supplemental field sampling is needed in the McKays Dam Impoundment because the intake is located at a substantial depth, as described in Exhibit A.

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New Spicer Meadow Dam and North Fork Diversion Dam Intakes Gillnetting

Gill netting will be conducted in New Spicer Meadow Reservoir in the vicinity of the three reservoir intakes and in the North Fork Diversion Dam impoundment in the vicinity of the intake to characterize fish species composition. Sampling will occur once in spring (or when accessible) and once in late summer/fall. The specific gill net deployment strategy will be informed by intake characteristics identified during Step 1 and by site access and field safety considerations. To the extent practicable, nets will be deployed adjacent to each intake and positioned horizontally for 6 to 8 hours during daylight hours. Nets will be checked at approximately 2-hour intervals to remove and identify captured fish. Sets longer than 4 hours will be avoided to reduce mortality risk. Variable mesh gill nets will be utilized to target a gradient of fish sizes.

Captured fish will be enumerated, identified to species, and measured to fork length. Trout origin will be identified (hatchery or wild) based on the presence or absence of an adipose fin clip. Captured fish will be allowed to recover after processing and will be released at the site after the sampling is complete or in an area away from the gill net. The time of each deployment and retrieval, the minimum and maximum of water depth of each gill net, and Secchi depth will be recorded at each gillnet location.

Step 3 – Determine Swim Speeds for Fish Life Stages Likely to be Near the Intakes

A targeted literature review will be conducted to evaluate the existing understanding of relevant fish swimming capabilities. Using this information, CCWD will determine the swim speeds of fish and their respective life stages that have the potential to be proximal to the tunnel intakes as determined in Step 2. A fish's ability to avoid entrainment is related to its swimming ability, which is a function of its size. Results of the additional field sampling at the New Spicer Meadows Reservoir intakes and North Fork Diversion intake will be incorporated.

Step 4 – Summarize Entrainment Potential

The Licensees will compare the intake velocities calculated in Step 1 with the swim speeds calculated in Step 3 and assess the potential for fish entrainment at the intake infrastructure on New Spicer Meadow Dam, McKays Dam, and the North Fork Diversion Dam.

Analysis

CCWD will produce a report to present the results of the desktop entrainment analysis and field monitoring. CCWD will compare the intake velocities calculated in Step 4 with the swim speeds calculated to determine the risk for fish entrainment. Upon completion, CCWD will convene with the relicensing participants to review the results of the desktop and field sampling.

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REPORTING

This Study will generate the tables and plots described above for each step including characterizing each intake, determining relevant fish species, displaying fish swim speeds or estimates of annual entrainment, and relevant comparison and summary tables.[3]

SCHEDULE

CCWD anticipates the schedule for Study completion as follows:

Conduct Desktop Analysis	May – December 2027
Conduct Field Surveys	May – October 2027
Reporting	December 2027 – March 2028

[3] In addition to the details provided in this section, reporting will also follow "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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STUDY DESCRIPTION AR-5
Instream Flows
September 8, 2026

This Study Description is developed to address information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

STUDY AREA

The Study Area includes four stream reaches extending from directly below Project reservoirs downstream to the first major tributary and a fifth stream reach in the North Fork Stanislaus River (NFSR) extending from the confluence with Highland Creek to the upstream end of McKays Point Reservoir. These locations were selected because they have the highest potential for flows to be influenced by Project operations. The five study reaches are listed below from upstream to downstream and shown in Figure 1:

1. NFSR from the North Fork Diversion Dam to the confluence with Highland Creek;
2. Highland Creek from New Spicer Meadow Dam to the confluence with the NFSR;
3. NFSR from the confluence with Highland Creek to the upstream end of McKays Point Reservoir;
4. NFSR from McKays Point Diversion Dam to the confluence with Beaver Creek; and
5. Beaver Creek from Beaver Creek Diversion Dam to the confluence with the NFSR.

[1] In addition to the details provided in this Study Description, study implementation will also follow the *Concepts and Practices Applicable to All Relicensing Studies* developed by CCWD.

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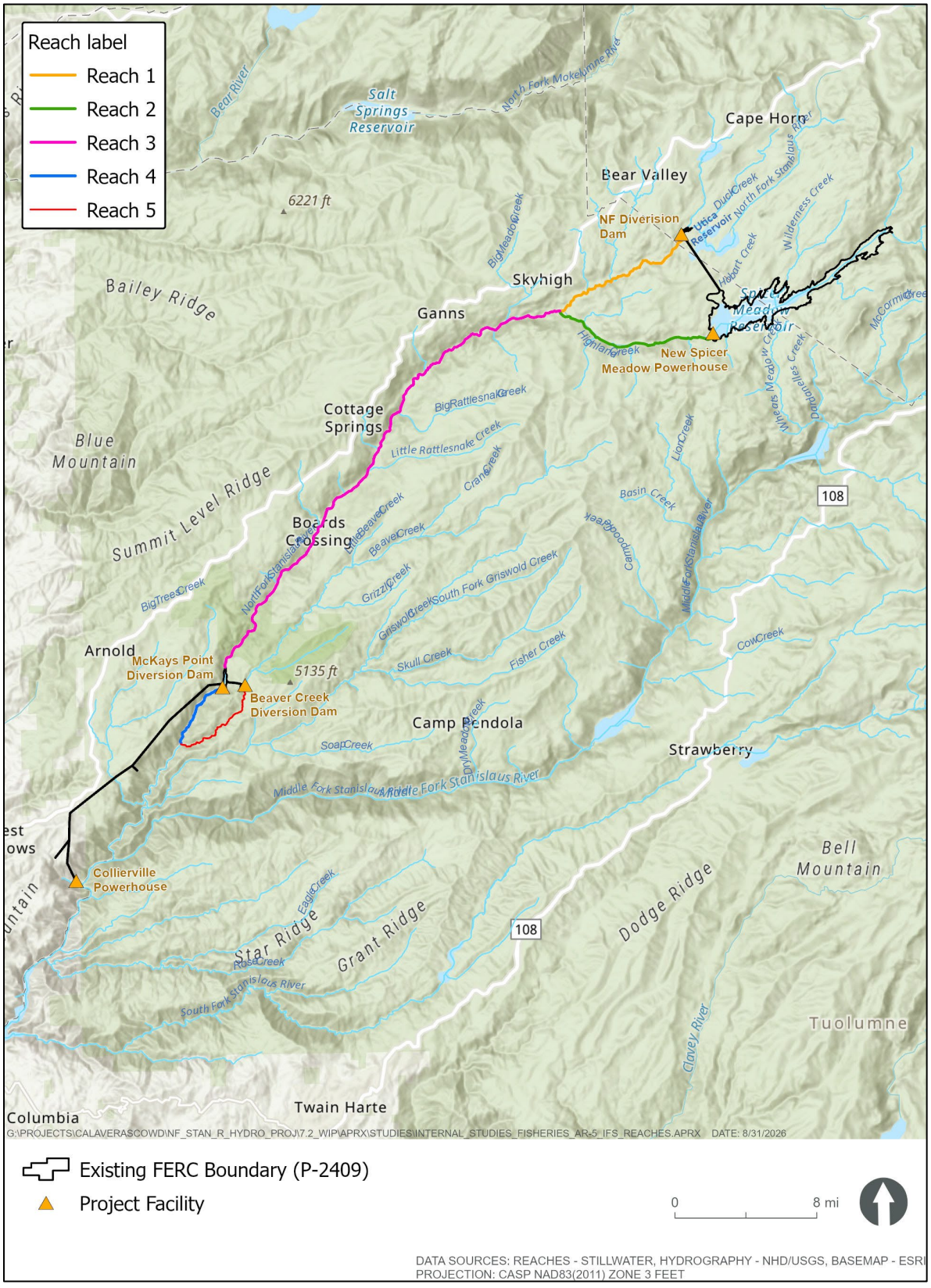


Figure 1. Instream Flow Study Reaches.

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STUDY METHODS

Excluding Data Summary Development (i.e., Reporting), this Study consists of the following seven steps, each of which is described below: 1) Map Stream Habitat Types; 2) Select Study Sites; 3) Select Transects; 4) Collect Field Data; 5) Perform Hydraulic Modeling; and 6) Perform Habitat Modeling. CCWD will use the United States Department of the Interior, Fish and Wildlife Service's (USFWS) Instream Flow Incremental Methodology (IFIM) to evaluate the relationship between streamflow and habitat for rainbow trout fry, juveniles, adult, and spawning life stages. IFIM is a structured habitat evaluation process initially developed by the USFWS's Instream Flow Group in the late 1970s (Bovee and Milhous 1978; Bovee et al. 1998) to allow evaluation of alternative flow regimes for water development projects. Physical Habitat Simulation (PHABSIM) is a component of IFIM that links hydraulic models with species' and life-stage-specific habitat suitability criteria (HSC) to compute an index of habitat suitability over a range of flows. PHABSIM modeling will use HSC developed for the Middle Fork and South Fork Stanislaus River, including site-specific curves for juvenile and adult rainbow trout, and literature-based curves developed by the HSC workgroup for rainbow trout fry and spawning life stages (TRPA 2002).

Improvements have been made to the IFIM process and results interpretation (Bovee 1982), approaches to defining study reaches (Morhardt et al. 1984), transect selection (Payne 1992), data collection, computer modeling, and analysis (Milhous et al. 1984, 1989; Bovee and Zuboy 1988; Milhous and Schneider 1985). One such improvement is the System for Environmental Flow Analysis (SEFA) model for simulating physical habitat. This model is an adaptation of the PHABSIM software that was originally developed and maintained by the USFWS's Instream Flow and Aquatic Systems Group in Fort Collins, Colorado (Milhous 1973, Bovee 1982, Milhous et al. 1984). The SEFA software implements the equivalent algorithms of PHABSIM models, but features expanded input, output, graphic, and calibration capabilities (Payne and Jowett 2013). CCWD will use a mesohabitat and transect-based approach (commonly referred to as the one-dimensional [1-D] method) in each study reach when applying the SEFA model under the IFIM.

Step 1 - Map Stream Habitat Types

Habitat typing involves delineating aquatic habitat into individual habitat units based on geomorphic characteristics and assigning distinct habitat types to each unit. Study reaches may be further divided into subreaches to help characterize changes in habitat composition if major differences in channel slope, confinement, or stream flow are identified during the habitat mapping effort. Biologists will conduct habitat typing within each study reach using a combination of aerial imagery and pedestrian surveys. CCWD will obtain current orthophotography of the Study Area using a fixed winged aircraft. Individual habitat units will be classified using a three-tiered habitat mapping classification system (Hawkins et al. 1993) and characterized to Level III channel geomorphic unit ("mesohabitats"), as shown in Figure 2 and described in Table 1.

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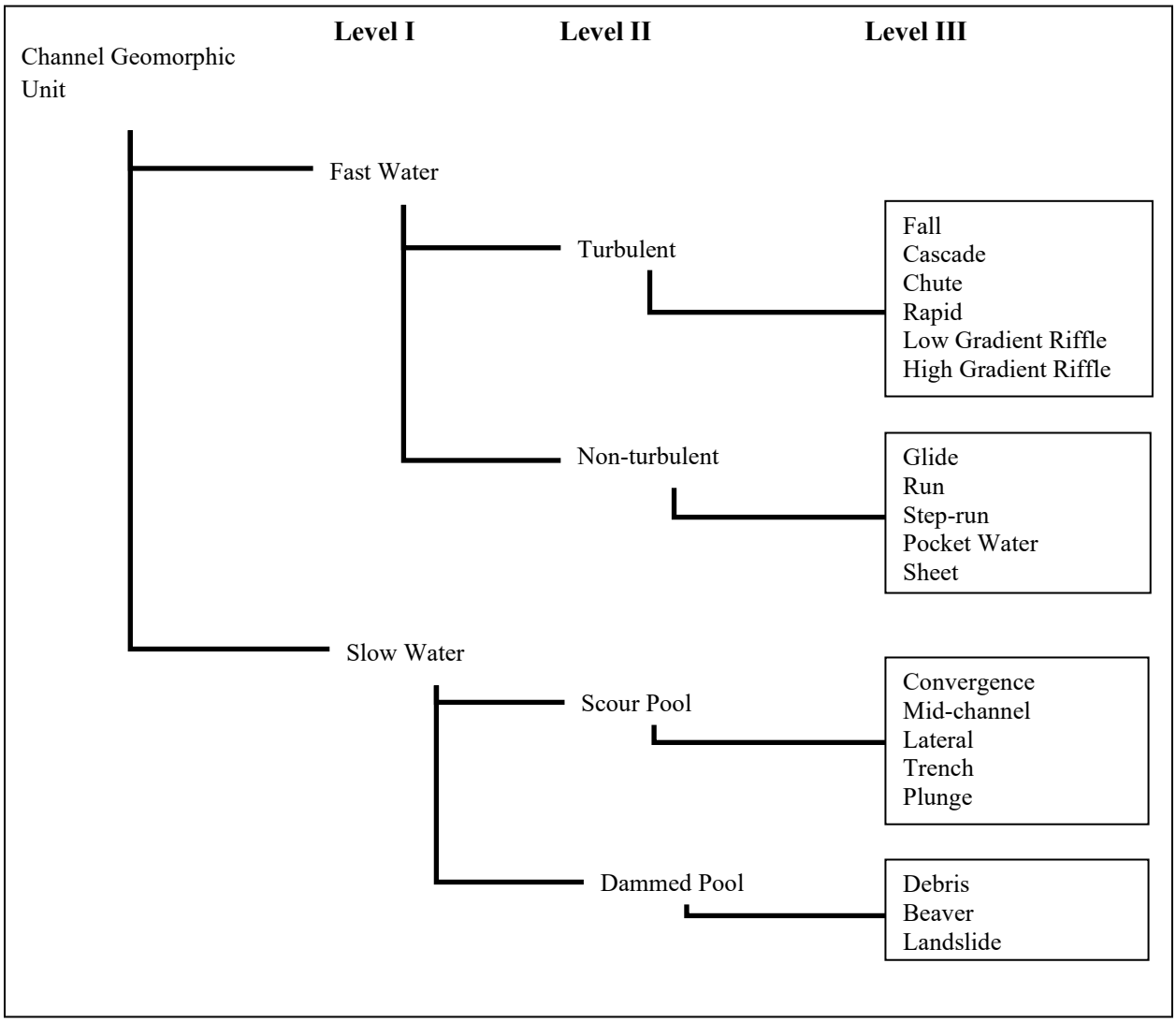


Figure 2. Three-tiered habitat classification system adapted from Hawkins et al. (1993) and McCain et al. (1990)

Habitat units will be delineated where the unit length is greater than 1 to 2 times the active channel width (Flosi et al. 2010) or when the unit is otherwise distinctive. Habitat typing will be contiguous with each habitat unit abutted to the next unit. Each distinct habitat unit will be numbered consecutively, beginning at the downstream end of the study reach and moving in an upstream direction. The length of each habitat unit will be measured and the relative proportion of habitat types within each study reach will be calculated. Off-channel habitat units such as backwaters or abandoned channels will be noted but excluded from further analysis.

Data from the habitat typing will be used to: 1) characterize habitats in the study reaches, 2) establish appropriate and representative study sites, and 3) extrapolate results from the SEFA model analysis throughout the reach to develop flow-habitat relationships that represent the entire study reach.

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Table 1. Habitat types to be used for the instream flow study (adapted from McCain et al. 1990, Armantrout 1998, Payne 1992, McMahon et al. 1996, and Hawkins et al. 1993).

I. Fast Water:	**Riffles, Rapid, Shallow Stream Sections with Steep Water Surface Gradient**
A. Turbulent:	**Channel units having swift current, high channel roughness (large substrate), steep gradient, and non-laminar flow and characterized by surface turbulence**
1. Fall:	Steep vertical drop in water surface elevation. Generally cannot be modeled.
2. Cascade:	Series of alternating small falls and shallow pools; substrate usually bedrock and boulders. Gradient high (more than 4%). Generally cannot be modeled.
3. Chute:	Narrow, confined channel with rapid, relatively unobstructed flow and bedrock substrate.
4. Rapid:	Deeper stream section with considerable surface agitation and swift current; large boulder and standing waves often present. Generally cannot be modeled.
5. Low gradient riffle	Shallow with swift flowing, turbulent water. Partially exposed, cobble dominant substrate. Gradient moderate (less than 4%).
6. High gradient riffle	Moderately deep with swift flowing, turbulent water. Partially exposed, boulder dominant substrate. Gradient steep (greater than 4%). Generally cannot be modeled.
B. Non-turbulent:	**Channel units having low channel roughness, moderate gradient, laminar flow, and lack of surface turbulence**
1. Glide	Shallow water flowing over a variety of different substrates
2. Run	Deep water flowing over a variety of different substrates
3. Step Run	A sequence of runs separated by short riffle steps. Substrates typically cobble and boulder dominant.
4. Pocket water:	Swift flowing water with large boulder or bedrock obstructions creating eddies, small backwater, or scour holes. Gradient low to moderate.
5. Sheet:	Shallow water flowing over smooth bedrock.
II. Slow Water:	**Pools; slow, deep stream sections with nearly flat-water surface gradient.**
A. Scour Pool:	**Formed by scouring action of current.**
1. Convergence	Formed where two stream channels meet.
2. Mid-channel:	Formed by channel constriction or downstream hydraulic control.
3. Lateral:	Formed where flow is deflected by a partial channel obstruction (streambank, rootwad, log, or boulder).
4. Trench:	Formed by scouring of bedrock.
5. Plunge:	Formed by water dropping vertically over channel obstruction.
B. Dammed Pool:	**Water impounded by channel blockage.**
1. Debris:	Formed by rootwads and logs.
2. Beaver:	Formed by beaver dam.
3. Landslide:	Formed by large boulders.

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Step 2 - Select Study Sites

Study sites will include a group of Level III Category mesohabitat units selected to use in the SEFA model. Selection of study sites within the study reaches will be accomplished using a combination of random selection and professional judgment following the procedure outlined in CDFW (2015). The procedure is based on the number and overall proportion of habitat types and provides assurance that all major habitat types will be sampled in relative proportion to the overall reach. Prior to study site selection, portions of a reach will be removed from consideration as a study site for one or more of the following:

- Safety risk;
- Accessibility difficult;
- High gradient riffles and cascade habitats because these habitats are usually not compatible with existing hydraulic models;
- Other "non-modelable" habitats containing characteristics such as transverse flow, multiple water surfaces across the channel, and units immediately upstream of cascades or rapids; and
- Mesohabitat types that account for less than 10 percent of the total reach.

Within each reach, the mesohabitat type that have not been removed from consideration with the lowest percentage of abundance by length, but greater than 10 percent of the total, will be selected to serve as the basis for selection of a random, starting habitat unit. All habitat units within this habitat type category will be sequentially numbered from downstream to upstream and one habitat unit will be randomly selected using a random number generator. The randomly selected habitat unit will then be located in the field and flagged for inclusion in the study site. From the starting habitat unit selected, at least one example of each remaining mesohabitat type will then be located in the immediate vicinity of the starting habitat unit (the closest unit upstream or downstream). Using this approach, a "cluster" of habitat units will be selected which reduces travel time between transects. The same procedure will be followed until one to three survey units of each mesohabitat type are selected in each study reach. Additional habitat units may be selected non-randomly to represent unique, rare, or otherwise important habitat units (e.g., spawning).

Resource agencies will be provided advance notice and invited into the field to observe study site selection.

Step 3 - Select Transects

Transects will be placed within the habitat units of the selected study sites. Transects within a habitat unit will be specifically placed based on CCWD's consultant's professional judgment to avoid random placement in unusual channels or hydraulic anomalies that may interfere with model accuracy. A sufficient number of transects will be established within each reach to adequately model the proportional frequency of habitat types and provide a robust estimate of available habitat in the reach (Payne et al. 2004). Relatively hydraulically homogeneous habitat units require one to three transects per replicate. Approximately 12 to 20 transects will be located within each study reach. Resource agencies will be provided advance notice and invited into the field to observe transect selection

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Step 4 - Collect Field Data

Data collection and recording will be conducted consistent with standardized procedures and guidelines from PHABSIM field technique manuals published by the Instream Flow Group (Trihey and Wegner 1981; Milhous et al. 1984). Water surface elevation and flow measurements will be collected at each site during three separate flow events—low flow, medium flow, and high flow. Depth and velocity will be measured for calibration purposes at each transect during a single high- or medium-flow event (the "one-flow" method). Calibration flows will be selected to allow the models to simulate a range of flows representative of existing and potential management conditions. The target low calibration flow will be approximately the current minimum instream flow (i.e., 16.5 cfs). The target high calibration flow will allow modeled habitat conditions up to approximately 250 cfs. Discharge measurements will follow CDFW (2020) guidelines.

Step 5 - Perform Hydraulic Modeling

Stage-discharge relationships for all transects will be developed from measured discharge and water surface elevation using a Stage-of-Zero-Flow (SZF) log/log regression formula using the SEFA default method of fitting the rating curve through the survey flow. The SZF method requires a minimum of three sets of stage-discharge measurements and an estimate of the SZF flow for each transect. A single set of velocities (commonly referred to as the one-flow method) will be used for velocity simulations. Under this option, velocities are simulated up and down from the measured flow based on the channel's capacity to convey water (a function of hydraulic radius) and a calculated roughness coefficient (Manning's N) for each velocity measurement point.

Step 6 - Perform Habitat Modeling

Habitat will be modeled using the suite of submodels produced by the SEFA model and HSC[2] developed by TRPA (2002) for the Middle and South Fork Stanislaus River PHABSIM modeling, which incorporated direct observation and habitat use data from the North Fork Stanislaus River. The HSC employed in these analyses are presented in Tabes 2 and 3.

[2] Study AR-5 will utilize the primary HSC curves developed during the TRPA (2002) study.

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Table 2. Habitat Suitability Criteria Curve Points Developed by TRPA (2002) Proposed for Use in Study AR-5.

Life stage	Velocity	Suitability	Depth	Suitability	Substrate[1]	Suitability
Fry	0.00	1.00	0.00	0.00	--	--
	0.50	1.00	0.40	1.00	--	--
	1.00	0.20	1.75	1.00	--	--
	1.50	0.10	2.25	0.30	--	--
	3.00	0.00	4.00	0.00	--	--
Juvenile	0.00	0.50	0.50	0.00	--	--
	0.50	1.00	1.75	1.00	--	--
	1.30	1.00	3.00	1.00	--	--
	1.50	0.60	5.00	0.25	--	--
	1.90	0.10	20.00	0.25	--	--
	3.00	0.00	20.10	0.00	--	--
Adult	0.00	0.30	1.00	0.00	--	--
	0.70	1.00	2.25	1.00	--	--
	1.50	1.00	3.50	1.00	--	--
	2.25	0.10	10.00	0.50	--	--
	3.80	0.00	20.00	0.50	--	--
	--	--	20.10	0.00	--	--
Spawning	0.00	0.00	0.00	0.00	4.00	0.00
	0.80	1.00	0.60	1.00	4.50	1.00
	2.00	1.00	1.50	1.00	5.00	1.00
	4.00	0.00	3.00	0.00	6.00	0.00

[1] Substrate codes developed by Bovee (1978) provided in Table 3.

Table 3. Substrate Codes Used to Evaluate Substrate Characteristics (Based on Bovee 1978).

Code	Particle Description	Particle Size (in / mm)
1	plant detritus / organic material	n/a
2	mud / soft clay	<0.002 / <0.06
3	silt	<0.002 / <0.06
4	sand	0.002-0.25 / 0.06-6.35
5	gravel	0.25-3.0 / 6.35-76.2
6	cobble	3.0-12.0 / 76.2-304.8
7	boulder	>12.0 / >304.8
8	bedrock	n/a

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The output from this model will be the study site–specific suitable habitat index that reflects the area weighted suitability (AWS) (previously referred to as the weighted usable area [WUA]) based on simulation of water depths and velocities from the 1-D hydraulic models. AWS versus flow curves will be developed for rainbow trout fry, juveniles, adult, and spawning life stages for each study reach to aid in the interpretation of these habitat-flow relationships.

REPORTING

The study will generate a study reach or sub-reach level summaries of the mesohabitat composition, AWS curves, and model calibration outputs.[3]

SCHEDULE

CCWD anticipates the schedule for Study completion as follows:

Collect aerial imagery	Fall 2026
Identify calibration flows	January–June 2027
Map stream habitat types	June–July 2027
Select study sites and transects	August 2027
Collect field data	August–September 2027
Perform hydraulic and habitat modeling	October–December 2027
Prepare report	January–February 2028

REFERENCES

Armantrout, N. B. 1998. Glossary of aquatic habitat inventory terminology. American Fisheries Society, Bethesda, Maryland.

Bovee, K. D. 1978, Probability-of-use criteria for the family Salmonidae. Instream Flow Information Paper 4. FWS/OBS-78/07. United States Fish and Wildlife Service, Fort Collins, CO.

Bovee, K. D. 1982. A guide to stream habitat analysis using the Instream Flow Incremental Methodology. Instream Flow Information Paper 12. United States Fish and Wildlife Service Report FWS/OBS-82/26. 248pp.

Bovee, K. D., and R. T. Milhous. 1978. Hydraulic simulation in instream flow studies: theory and techniques. Instream Flow Information Paper 5. United States Fish and Wildlife Service FWS/OBS-78/33. 129pp.

Bovee, K., and J. R. Zuboy, editors. 1988. Proceedings of a workshop on the development and evaluation of habitat suitability criteria. United States Fish and Wildlife Service, Biological Report 88(11). 407pp.

[3] In addition to the details provided in this section, reporting will also follow "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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Bovee, K.D., B.L. Lamb, J.M. Bartholow, C.B. Stalnaker, J. Taylor, and J. Henriksen. 1998. Stream habitat analysis using the instream flow incremental methodology. USGS Biological Resources Division Information and Technology Report USGS/BRD-1998-0004. viii + 131 pp.

CDFW (California Department of Fish and Wildlife). 2015. Study site and transect location selection guidance for instream flow hydraulic habitat analyses. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=93989.

CDFW. 2020. Standard operating procedure for discharge measurements in wadeable streams in California. Instream Flow Program. Prepared by CDFW, Sacramento, California. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=74169&inline. Coordinate Resource Management Plan (CRMP). 2001. Lower McCloud River habitat typing report. December 2001. McCloud, California.

Flosi, G., S. Downie, J. Hopelain, M. Bird, R. Coey, and B. Collins. 2010. California salmonid stream habitat restoration manual, 4th ed. California Department of Fish and Game.

Hawkins, C. P., J. L. Kershner, P. A. Bisson, M. D. Bryant, L. M. Decker, S.V. Gregory, D.A. McCullough, C.K. Overton, G.H. Reeves, R.J. Steedman, and M.K. Young. 1993. A hierarchical approach to classifying stream habitat features. Fisheries 18(6):3-12.

McCain, M., D. Fuller, L. Decker, and K. Overton. 1990. Stream habitat classification and inventory procedures for northern California. FHR Currents No. 1, USDA, Forest Service, Region 5 Fish Habitat Relationship Technical Bulletin. Eureka, California. 15pp.

McMahon, T. E., A. V. Zale, and D. J. Orth. 1996. Aquatic habitat measurements. Pages 83–120 in B. R. Murphy and D. W. Willis, editors. Fisheries Techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.

Milhous, R. T. 1973. The PHABSIM system for instream flow studies. Proceedings summer computer simulation conference, Toronto Canada.

Milhous, R. T., and D. M. Schneider. 1985. Unpublished memorandum. Dated 4 October 1985. Cooperative Instream Flow Group, Ft. Collins, Colorado. 3pp.

Milhous, R. T., D. L. Wegner, and T. Waddle. 1984. User's guide to the Physical Habitat Simulation System (PHABSIM). Instream Flow Information Paper 11. United States Fish and Wildlife Service Report FWS/OBS-81/43. v.p.

Milhous, R. T., M. A. Updike, and D. M. Schneider. 1989. Physical Habitat Simulation System Reference Manual - Version II. Instream Flow Information Paper No. 26. United States Fish and Wildlife Service Biological Report 89(16). v.p.

Morhardt, J. E., D. F. Hanson, and P. J. Coulston. 1984. Instream flow analysis: increased accuracy using habitat mapping. Ecological Analysts, Inc., Lafayette, California. 8pp.

Payne, T. R. 1992. Stratified random selection process for the placement of Physical Habitat Simulation (PHABSIM) transects. Paper presented at AFS Western Division Meeting, July 13-16, 1992, Fort Collins, Colorado.

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Payne, T. R., S. D. Eggers, and D. B. Parkinson. 2004. The number of transects required to compute a robust PHABSIM habitat index. Hydroécol. Appliquée (2004) Tome 14 Vol. 1, pp. 27-53.

Payne, T. R., and I. G. Jowett. 2013. SEFA - Computer software system for environmental flow analysis based on the instream flow incremental methodology. In: Proceedings of the 2013 Georgia Water Resources Conference, held at the University of Georgia, April 10–11.

Trihey, E. W. and D. L. Wegner. 1981. Field data collection procedures for use with the Physical Habitat Simulation System of the Instream Flow Group.

TRPA (Thomas R. Payne & Associates). 2002. Instream Flow Study for the Middle Fork Stanislaus River, Spring Gap–Stanislaus Hydroelectric Project (FERC Project No. 2130). Prepared for Pacific Gas and Electric Company, San Ramon, California.

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STUDY DESCRIPTION AR-6
Special-status Amphibian and Aquatic Reptile eDNA Sampling
August 20, 2026

This Study Description is developed to address information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project). [1]

Five special-status amphibian species and one special-status aquatic reptile species have the potential to occur within the proposed Federal Energy Regulatory Commission (FERC) Project Boundary as identified in the Pre-Application Document: southern long-toed salamander (*Ambystoma macrodactylum sigillatum*), Yosemite toad (*Anaxyrus canorus*), foothill yellow-legged frog (*Rana boylii*; South Sierra Distinct Population Segment), California red-legged frog (*Rana draytonii*), Sierra Nevada yellow-legged frog (*Rana sierrae*), and northwestern pond turtle (*Actinemys marmorata*).

This study will use environmental deoxyribonucleic acid (eDNA) sampling to detect special-status amphibian and aquatic reptiles within Project reservoirs and Project-affected reaches. This study will be conducted alongside Study AR-7 (*ESA-Listed Amphibian and Aquatic Reptile Visual Encounter Surveys)* and is intended to supplement the Visual Encounter Survey (VES) results.

STUDY AREA

The Study Area includes safely accessible areas within 0.25 mile of the FERC Project Boundary, which includes Project impoundments (i.e., North Fork Diversion Dam impoundment, New Spicer Meadow Reservoir, Beaver Creek Diversion Dam impoundment, and McKays Point Reservoir impoundment). The Study Area also includes stream reaches downstream of Project dams or other release points that have the potential to be affected by Project activities, including Highland Creek, North Fork Stanislaus River, Beaver Creek, and Stanislaus River. The elevation range of this area is approximately 6,700 feet down to 1,100 feet above mean sea level.

Sampling Locations

eDNA sampling locations are consistent with Study AR-7 and described in Table 1 on the following page.

[1] In addition to the details provided in this Study Description, study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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Table 1. General survey locations for Study AR-6, *Special-status Amphibian and Aquatic Reptile eDNA Sampling*.

Waterbody	General Survey Location (Approximate River Mile[1])	Type	Target Species					
			SLTS	YT	SNYLF	CRLF	FYLF	NWPT
North Fork Diversion Impoundment	Accessible shoreline areas with suitable meadow/ wetland habitat	Reservoir	X	X	X	--	--	--
New Spicer Meadow Reservoir	North Fork Diversion Tunnel outlet channel	Stream	--	--	X	--	--	--
	Accessible shoreline areas with suitable meadow/ wetland habitat	Reservoir	X	X	X	--	--	--
Highland Creek	Downstream of New Spicer Meadow Reservoir (HC 5.5)	Stream	--	--	X	--	--	X
North Fork Stanislaus River	North Fork Stanislaus River or Duck Creek upstream of North Fork Diversion impoundment (NF 33.3)	Stream	X	X	X	--	--	--
	Downstream of North Fork Diversion Dam (NF 32.7)	Stream	--	--	X	--	--	--
	Pioneer Walking Bridge upstream of confluence with Highland Creek (NF 27.8)	Stream	--	--	X	--	--	X
	Wakalu Hep Yo Campground Area (NF 16.2)	Stream	--	--	--	X	X	X
	Upstream of Boards Crossing Road (NF 14.5)	Stream	--	--	--	X	X	X
	Stanislaus River Day Use Area near Lava Bluffs Trailhead (NF 11.2)	Stream	--	--	--	X	X	X
	Downstream of McKays Diversion Dam (NF 7.7)	Stream	--	--	--	X	X	X
McKays Point Reservoir	Accessible shoreline areas with suitable habitat	Reservoir	X	--	--	X	--	X
Beaver Creek Diversion Impoundment	Accessible shoreline areas with suitable habitat	Reservoir	X	--	--	X	--	X
Beaver Creek	Downstream of Beaver Creek Diversion Dam (BC 3.0)	Stream	--	--	--	X	X	X
Stanislaus River	Near confluence of Collierville Powerhouse Tailrace	Stream	--	--	--	X	X	X

NOTES: CRLF = California red-legged frog; FYLF = foothill yellow-legged frog; SLTS = southern long-toed salamander; NA = not applicable; NWPT = northwestern pond turtle; SNYLF = Sierra Nevada yellow-legged frog; YT = Yosemite toad.

[1] For survey locations in stream reaches, approximate river miles are provided.

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STUDY METHODS

Excluding Data Summary Development (i.e., Reporting), the Study consists of two steps: 1) eDNA Sampling; and 2) Analysis. Each of these is described below.

Step 1 - eDNA Sampling

Samples at stream sites will be collected at the downstream end of the site, prior to a VES to reduce the potential for sample contamination. Reservoir or impoundment sites will be evaluated for target species' suitability during a desktop analysis; if suitable, a composite sample will be collected once from the downstream end of the reservoir/impoundment.

For both stream and reservoir survey locations included in Table 1, eDNA samples will be collected once during the second VES (of three VES, described in Study AR-7). This timing is intended to maximize detection probability by targeting periods when most species are likely to be present in aquatic habitats and when streamflows are lower and eDNA may be more concentrated (Bedwell 2018).

Because Yosemite toads may breed earlier than the other target species, surveyors will collect an additional eDNA sample during the first VES at all Yosemite toad survey locations identified in Table 1. Study AR-7 also includes a desktop analysis to identify additional potential Yosemite toad VES locations. If additional locations are identified through this analysis, eDNA samples will also be collected during the first Yosemite toad VES where habitat cannot be fully surveyed.

eDNA samples will be collected following laboratory recommended protocols (e.g., Blankenship and Schumer 2022) and using designated sampling kits.

Site-specific eDNA sample collection design (e.g., the number of samples collected and sampling locations) will be developed based on habitat characteristics, species elevational and habitat range, and laboratory recommendations to maximize the likelihood of detecting species at the sample sites.

Step 2 - Analysis

The collected eDNA samples will be analyzed via quantitative polymerase chain reaction (qPCR) by a qualified laboratory to detect the DNA of specific target species, using environmental samples. Samples will be analyzed using published assays[2] (e.g., Bedwell 2018, Dean 2022, Starks and Schumer 2019).

[2] Because there is very little genetic differentiation among the *Anaxyrus* species, an assay for the western toad complex, which includes *Anaxyrus boreas, canorus, exsul, nelsoni*, will be used in the laboratory analysis and the geographical and elevational location of the sample collection site will be used to determine specific species.

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Laboratory results will be tabulated or summarized as a positive (i.e., DNA of species detected in sample) or negative detection by species and sample location. These data, together with VES data collected during Study AR-7, will inform species' presence in Project reservoirs and Project-affected reaches.

REPORTING

CCWD will analyze the results of Study as described above. Study data will be made available to interested parties and standard GIS shapefiles, including metadata, if developed will be provided.[3]

SCHEDULE

CCWD anticipates the schedule for Study completion as follows:

Step 1 – eDNA Sampling	May – August 2027
Step 2 – Analysis	September – December 2027
Reporting	January – March 2028

REFERENCES

Bedwell, M.E. 2018. Using genetic tools to investigate distribution and connectivity of two Sierra Nevada amphibians, *Rana sierrae* and *Rana boylii*. M.S. Thesis. Washington State University, WA.

Blankenship, S.M. and G. Schumer. 2022. Field collection procedure for aquatic environmental DNA sample collection and analysis. Cramer Fish Sciences/Genidaqs, West Sacramento, CA.

Dean, S. 2022. Western pond turtle (*Actinemys marmorata*) laboratory test (assay) for eDNA samples. Unpublished. Cramer Fish Sciences – Genidaqs.

Starks, H. and F. Schumer. 2019. Foothill yellow-legged frog (*Rana boylii*) laboratory test (assay) for eDNA samples. Unpublished. Cramer Fish Sciences – Genidaqs.

[3] In addition to the details provided in this section, reporting will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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STUDY DESCRIPTION AR-7
ESA-Listed Amphibian and Aquatic Reptile Visual Encounter Surveys
September 9, 2026

This Study Description is developed to address information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).

Four federal Endangered Species Act (ESA) listed amphibian species and one aquatic reptile species proposed for ESA-listing have the potential to occur within the proposed Federal Energy Regulatory Commission (FERC) Project Boundary and/or stream reaches potentially affected by the Project, as identified in the Pre-Application Document (PAD): Yosemite toad (*Anaxyrus canorus*), foothill yellow-legged frog (*Rana boylii*; South Sierra Distinct Population Segment [DPS]), California red-legged frog (*Rana draytonii),* Sierra Nevada yellow-legged frog (*Rana sierrae*), and northwestern pond turtle (*Actinemys marmorata*). Two of these have been documented within the PAD's aquatic resource Assessment Area (i.e., the FERC Project Boundary, Project-affected stream reaches,[1] and a 0.25 mile buffer)—foothill yellow-legged frog and Sierra Nevada yellow-legged frog—while the other three have been documented outside, but within 5 miles, of the aquatic resources Assessment Area.

This study will use Visual Encounter Surveys (VES) to inform the distribution and habitat use by ESA-listed species within Project reservoirs and Project-affected reaches. This study will be conducted alongside Study AR-6 (*Special-status Amphibian and Aquatic Reptile eDNA Sampling*); environmental deoxyribonucleic acid (eDNA) sampling will serve to supplement this study's findings.

STUDY AREA

The Study Area includes safely accessible areas within 0.25 mile of the proposed FERC Project Boundary, which includes the project impoundments (i.e., North Fork Diversion Dam impoundment, New Spicer Meadow Reservoir, Beaver Creek Diversion Dam impoundment, and McKays Point Reservoir). The Study Area also includes stream reaches downstream of project dams that have the potential to be affected by Project operations or activities, including portions of Highland Creek, North Fork Stanislaus River, Beaver Creek, and Stanislaus River.

The elevation range of the Study Area is from approximately 6,700 to 1,100 feet above mean sea level.

[1] Project affected streams reaches include reaches downstream of project dams or other release points that have the potential to be affected by Project operations or activities, including portions of Highland Creek, North Fork Stanislaus River, Beaver Creek, and Stanislaus River.

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Survey Locations

General survey locations and the target species are listed in Table 1, which includes the waterbody, general location of the site, and the proposed site length (if applicable). General survey locations are distributed along Project-affected waterbodies and each location was evaluated for target species based on their life history requirements. Biologists will determine the exact location and extent of each site based on accessibility (e.g., landowner approval, terrain), habitat suitability (detailed in Section 3.6 *Endangered Species Act-listed Species* of the PAD), and safety (described in the Concepts and Practices Applicable to All Relicensing Studies document developed by CCWD). Survey locations may target multiple ESA-listed species where suitable habitat is co-occurring (e.g., North Fork Diversion Impoundment targets Yosemite toad and Sierra Nevada yellow-legged frog). Approximate locations are shown in Figure 1.

Table 1. General survey locations for Study AR-7, *ESA-listed Amphibian and Aquatic Reptile Visual Encounter Surveys*.

Waterbody	General Survey Location (Approximate River Mile[1])	Type	Approximate Site Length (mile)	Target Species				
				YT	SNYLF	CRLF	FYLF	NWPT
North Fork Diversion Impoundment	Accessible shoreline areas with suitable meadow/ wetland habitat	Reservoir	NA[2]	X	X	--	--	--
New Spicer Meadow Reservoir	North Fork Diversion Tunnel outlet channel	Stream	0.20[3]	--	X	--	--	--
	Accessible shoreline areas with suitable meadow/ wetland habitat	Reservoir	NA[2]	X	X	--	--	--
Highland Creek	Downstream of New Spicer Meadow Reservoir (HC 5.5)	Stream	0.25	--	X	--	--	X
North Fork Stanislaus River	North Fork Stanislaus River or Duck Creek upstream of North Fork Diversion impoundment (NF 33.3)	Stream	0.25	X	X	--	--	--
	Downstream of North Fork Diversion Dam (NF 32.7)	Stream	0.25	--	X	--	--	--
	Pioneer Walking Bridge upstream of confluence with Highland Creek (NF 27.8)	Stream	0.25	--	X	--	--	X
	Wakalu Hep Yo Campground Area (NF 16.2)	Stream	0.25	--	--	X	X	X
	Upstream of Boards Crossing Road (NF 14.5)	Stream	0.25	--	--	X	X	X

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Table 1. (Continued).

Waterbody	General Survey Location (Approximate River Mile[1])	Type	Approximate Site Length (mile)	Target Species				
				YT	SNYLF	CRLF	FYLF	NWPT
North Fork Stanislaus River	Stanislaus River Day Use Area near Lava Bluffs Trailhead (NF 11.2)	Stream	0.25	--	--	X	X	X
	Downstream of McKays Diversion Dam (NF 7.7)	Stream	0.25	--	--	X	X	X
McKays Point Reservoir	Accessible shoreline areas with suitable habitat	Reservoir	NA[2]	--	--	X	--	X
Beaver Creek Diversion Impoundment	Accessible shoreline areas with suitable habitat	Reservoir	NA[2]	--	--	X	--	X
Beaver Creek	Downstream of Beaver Creek Diversion Dam (BC 3.0)	Stream	0.25	--	--	X	X	X
Stanislaus River	Near confluence of Collierville Powerhouse Tailrace	Stream	0.25	--	--	X	X	X

Notes: CRLF = California red-legged frog; FYLF = foothill yellow-legged frog; NA = not applicable; NWPT = northwestern pond turtle; SNYLF = Sierra Nevada yellow-legged frog; YT = Yosemite toad;

[1] For survey locations in stream reaches, approximate river miles are provided.

[2] Reservoirs or impoundment shoreline surveys will include up to 0.25 miles of combined shoreline focusing on suitable habitat for target species that is safely accessible.

[3] Surveys will be conducted in the open, accessible portion of the tunnel outlet channel near the confluence with New Spicer Meadow Reservoir and Hobart Creek. Enclosed portions of the North Fork Diversion Tunnel will not be surveyed.

Because Yosemite toad spends a substantial portion of its adult life stage in terrestrial habitats and may use upland areas up to 0.78 mile from suitable breeding habitat (Liang 2013), a desktop habitat assessment will be used to identify additional potential survey locations (e.g., meadows, ponds, or other suitable breeding features) to assess the species distribution in the FERC Project Boundary. Habitat may be included as an additional survey location if it meets the following criteria: (1) contains suitable aquatic breeding habitat for Yosemite toad; (2) occurs within 0.78 mile of the FERC Project Boundary and above 6,400 feet in elevation (e.g., areas around North Fork Diversion Impoundment, New Spicer Meadow Reservoir, and Spicer Reservoir Campground); (3) the breeding habitat or surrounding uplands (within 0.78 mile of the FERC Project Boundary) have the potential to be affected by routine Project operation and maintenance activities or Project-related recreation; and (4) is safely accessible with appropriate landowner approval(s). The desktop habitat assessment will use existing data including National Wetland Inventory maps, U.S. Geological Survey 1:24,000 topographic quadrangle maps, hydrologic data, and aerial imagery.

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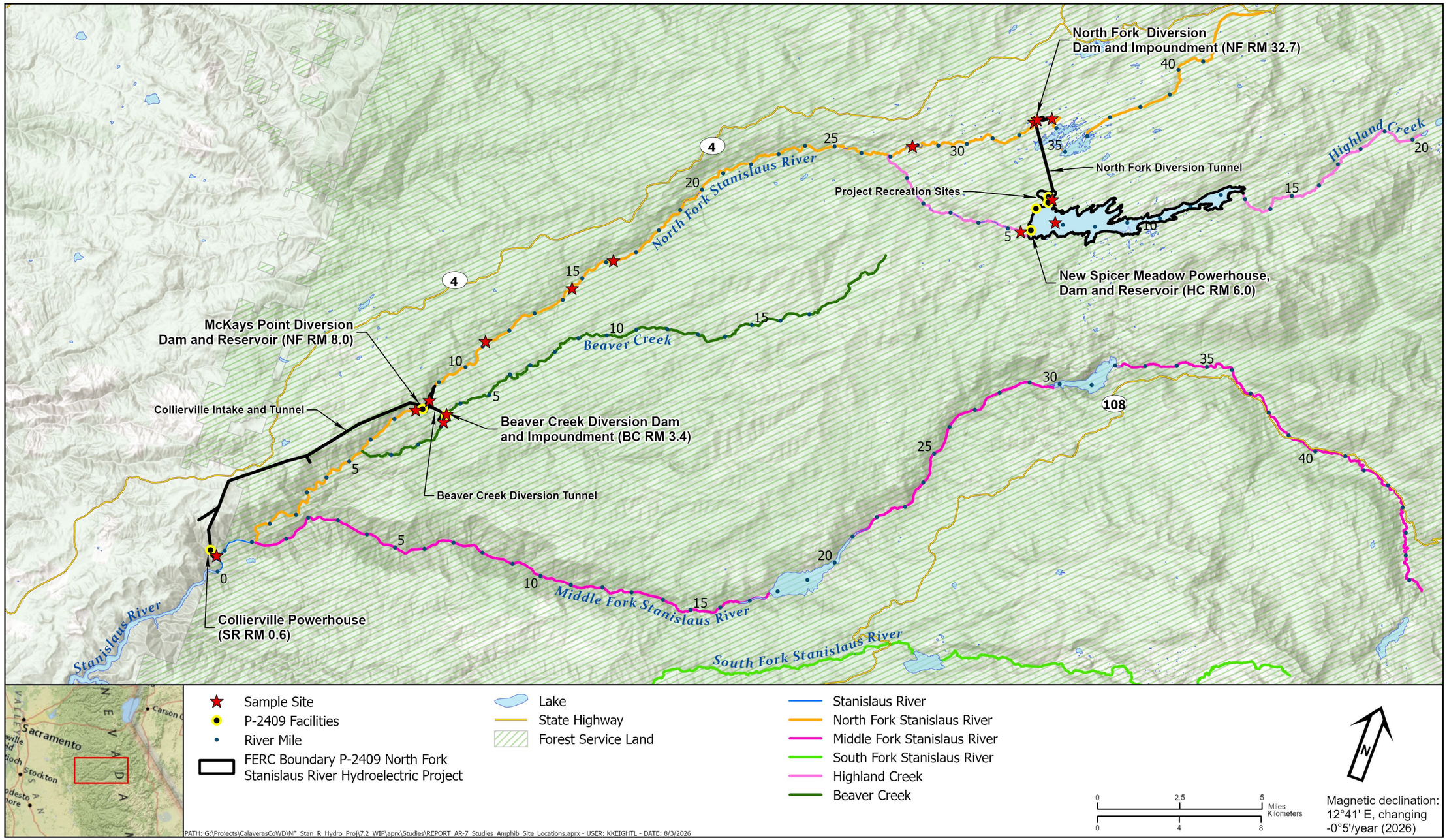


Figure 1. AR-7 Approximate Survey Locations.

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STUDY METHODS

Field Survey Methods

Field surveys will include visual encounter surveys (VESs) for target species based on aquatic habitat associations and established or recommended methods. Survey methods and frequencies were developed based on available survey guidance, species-specific recommendations, and the information needs of the relicensing process. The proposed surveys are intended to characterize the presence, distribution, habitat use, and life-stages of target species within the Study Area and provide information sufficient to support an analysis of Project-related effects. The study is not intended to satisfy all species-specific occupancy determination protocols or presence/absence survey requirements that may apply in other contexts. Appropriate scientific permitting (e.g., handling permit, scientific collecting permit) for ESA-listed species will be sought from the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) prior to initiating surveys.

For all target species except Yosemite toad, surveyors will conduct a total of three VESs at the survey locations included in Table 1. For Yosemite toad, two spring surveys will be conducted because breeding is concentrated within a relatively narrow seasonal window; surveying during spring and suitable breeding conditions is the most effective period for detecting adults, egg masses, and/or larvae. Exact timing for each survey will be determined based on the target species' breeding seasons and environmental conditions (e.g., snowmelt, temperature, and accessibility) for that year. Surveys for multiple target species may be conducted concurrently based on elevational or target species ranges. For instance, the North Fork Stanislaus River near the Wakalu Hep Yo Campground Area has the potential for four target species (Table 1).

Habitat conditions will be recorded during each survey with notes relevant to each target species, such as habitat type, stream type (i.e., perennial, intermittent, or ephemeral), aquatic and terrestrial vegetation, stream gradient, stream bankfull width estimates, aquatic substrate, water temperature, stream channel characteristics, water clarity, and presence of potential predators. Additionally, during all targeted field surveys, incidental observations of all amphibian or aquatic reptile species will be noted and detailed data will be collected (e.g., location, life stage, habitat description). If American bullfrog (*Lithobates catesbeianus*) are observed, observation data will be uploaded online via CDFW's Statewide Bullfrog Reporting Form.

Yosemite Toad. VESs will be conducted using survey methods and recommendations for Yosemite toad outlined in Brown et al. (2012 and 2015) and Brown and Olsen (2013). Two surveys in one calendar year will be conducted, targeting the species' breeding season when egg masses, tadpoles, and/or breeding adults could be present. Surveys will be conducted at least two weeks apart and one survey may be timed concurrent with the first Sierra Nevada yellow-legged frog survey. Biologists will aim to conduct surveys at snowmelt when monitoring sites (i.e., breeding areas) are free of snow, but snow may still be present in the uplands. To determine the timing of the surveys, biologists will work with CCWD to get frequent condition updates and access reports and may also use current snowpack, snow depth maps, and/or forecasts. Surveys will be conducted during conditions that are ideal for detecting amphibians (e.g., clear or partially cloudy skies, warm

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weather), if adverse weather is observed (e.g., rain, snow, dense fog) the crew will delay the survey until conditions improve.

Foothill Yellow-legged Frog. VESs will be conducted using survey methods and recommendations for foothill yellow-legged frogs outlined in Peek et al. (2017). Three surveys will be conducted in one calendar year between early spring and early fall to target and document all life stages of the species: adults, subadults, tadpoles, and egg masses.

California Red-legged Frog. VESs will be conducted following daytime and, where feasible, nighttime survey methods and recommendations described in USFWS (2005). Three daytime surveys will be conducted at sites with suitable habitat, with survey timing aligned with foothill yellow-legged frog and northwestern pond turtle surveys to the extent practicable. During the daytime survey, surveyors will assess if the site can be feasibly surveyed at nighttime as well (e.g., safely surveyable based on terrain, access, and water safety). If it is deemed feasible, up to three nighttime surveys will be conducted following the daytime survey.

Sierra Nevada Yellow-legged Frog. VESs will be conducted following survey methods and recommendations for Sierra Nevada yellow-legged frogs outlined in CDFW (2022) and using techniques described in Brown and Olsen (2013), Brown et al. (2014), and Brown et al. (2019). Three surveys will be conducted in one calendar year between early spring and early fall (an early-, mid-, and late-season survey) to target and document all life stages of the species and to document presence of the species in and near Project-affected reservoirs and reaches.

Northwestern Pond Turtle. Methods of surveying for this species in lentic and lotic habitats will follow visual survey methods (i.e., pedestrian surveys) and recommendations for pond turtles outlined in USGS (2006) and Bury et al. (2012). Three surveys will be conducted concurrently with surveys for Sierra Nevada yellow-legged frog (where species' range overlaps), California red-legged frog, and/or foothill yellow-legged frog at sites with suitable aquatic habitat.

Analysis

Species presence and distribution data will be tabulated, summarized, and checked for quality. Habitat conditions, photographs, and other field notes collected during VESs will be used to identify suitable habitat for target ESA-listed amphibian and reptile species within the proposed FERC Project Boundary or potentially affected by the Project.

Occupancy status for Yosemite toad and Sierra Nevada yellow-legged frog will be evaluated using the guidelines outlined in U.S. Department of Agriculture, Forest Service (Forest Service) and USFWS (2014 and 2017) Programmatic Biological Opinions (PBOs), where applicable. These PBOs provide relevant guidelines for evaluating survey data and habitat use for Yosemite toad and Sierra Nevada yellow-legged frog on National Forest System lands[2] and will be used to inform

[2] For Yosemite toad occupancy determinations, the PBOs require three VESs, over three separate calendar years, during a ten-year period, with at least one survey during a water year where snowpack is ≥80% of normal. For Sierra Nevada yellow-legged frog occupancy determinations, the PBOs require three surveys within a ten-year period (within one season or in separate years) with one survey conducted in a water year where snowpack is ≥80% of normal.

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interpretation of survey results, where applicable. If prior surveys have been conducted within the previous ten years, those data will be evaluated in conjunction with results of this Study to determine if there is sufficient data to support a suitability and occupancy determination (e.g., unsuitable or suitable habitat—utilized, utilization unknown, or unutilized potential; USFWS 2017) to support the Project effects analysis.

REPORTING

CCWD will analyze the results of desktop and field efforts as described above. Study data will be made available to interested parties and standard GIS shapefiles, including metadata, if developed will be provided.[3]

SCHEDULE

CCWD anticipates the schedule for Study completion as follows:

Desktop breeding habitat assessment for Yosemite toad	December 2026–February 2027
Field surveys for target species	March/April–October 2027
Analysis	October–December 2027
Reporting	December 2027–February 2028

REFERENCES

Bury, R.B., H.H. Welsh, D. J. Germano, D.T. Ashton. 2012. Western pond turtle: Biology, sampling techniques, inventory and monitoring, conservation, and management. Northwest Fauna 7.

Brown, C., K. Kiehl, L. Wilkinson. 2012. Advantages of long-term, multi-scale monitoring: assessing the current status of the Yosemite toad (*Anaxyrus* [*Bufo*] *canorus*) in the Sierra Nevada, California, USA. Herpetological Conservation and Biology, 7, 115–131.

Brown, C. and A.R. Olsen. 2013. Bioregional monitoring design and occupancy estimation for two Sierra Nevadan amphibian taxa. Freshwater Science, 32, 675–691.

Brown, C., L.R. Wilkinson, and K.B. Kiehl. 2014. Comparing the status of two sympatric amphibians in the Sierra Nevada, California: Insights on ecological risk and monitoring common species. Journal of Herpetology, 48, 74–83.

Brown, C., M.P. Hayes, G.A. Green, and D.C. Macfarlane (Tech. Coords.). 2015. Yosemite toad conservation assessment (Gen. Tech. Rep. R5-TP-040). U.S. Department of Agriculture, Forest Service, Pacific Southwest Region, Vallejo, CA. 122 p.

[3] In addition to the details provided in this section, reporting will also follow the "Concepts and Practices Applicable to All Relicensing Studies" developed by CCWD.

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Brown, C., L.R. Wilkinson, K.K. Wilkinson, T. Tunstall, R. Foote, B.D. Todd, and V.T. Vredenburg. 2019. Demography, habitat, and movements of the Sierra Nevada yellow-legged frog (*Rana sierrae*) in streams. Copeia, 107 (4), 661-675.

CDFW (California Department of Fish and Wildlife). 2022. Protocol for Amphibian and Reptile Visual Encounter Surveys at Monitoring Sites. Version 4. Updated Spring 2022 by I. Chellman.

Forest Service and USFWS (U.S. Department of Agriculture, Forest Service and U.S. Fish and Wildlife Service). 2014. Programmatic Biological Opinion for Yosemite toad, Sierra Nevada yellow-legged frog, and mountain yellow-legged frog—December 19, 2014 (FF08ESMF00-2014-F-0557).

Forest Service and USFWS. 2017. Programmatic Biological Opinion for Yosemite toad, Sierra Nevada yellow-legged frog, and mountain yellow-legged frog—December 19, 2014 (FF08ESMF00-2014-F-0557); amended on June 15, 2017 (FF08ESMF00-2014-F-0557-1) for critical habitat.

Liang, Christina T. 2013. Movements and habitat use of Yosemite toads (*Anaxyrus* (formerly *Bufo*) *canorus*) in the Sierra National Forest, California. Journal of Herpetology 47(4):555-564.

Peek, R.A., S.M. Yarnell, and A.J. Lind. 2017. Visual encounter survey protocol for *Rana boylii* in lotic environments.

USFWS (U.S. Fish and Wildlife Service). 2005. Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog. August 2005.

USGS (U.S. Geological Survey). 2006. Western pond turtle (*Emys marmorata*) visual survey protocol for the south coast ecoregion. U.S. Geological Survey protocol. San Diego, California.

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STUDY DESCRIPTION CR-1
Cultural Resources Study
April 9, 2026

This Study Description is developed to inform information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

STUDY AREA

CCWD anticipates that the Study Area for the Cultural Resources Study will be the same as the proposed area of potential effects (APE) for the relicensing.

Under the National Historic Preservation Act (NHPA) Section 106 implementing regulations at 36 Code of Federal Regulations (C.F.R.) § 800.16(d), the APE is defined as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." Based on this regulatory definition, the APE for the Project relicensing has been initially identified by CCWD as including all lands within the FERC Project Boundary. This is the area identified by CCWD where Project operations or Project-related activities may cause changes in the character or use of historic properties, if any such properties exist.

CCWD anticipates that FERC will designate CCWD as FERC's non-federal representative for carrying out consultation pursuant to Section 106 of the NHPA. Thus, following this designation, and pursuant to 36 C.F.R. § 800.4(a)(1), CCWD will consult with the California State Historic Preservation Officer (SHPO) regarding the determination of the APE prior to study implementation.

If CCWD proposes modifications to the FERC Project Boundary or Project-related effects are identified outside of the Study Area, the Study Area (and subsequently the APE) will be expanded as necessary to include areas potentially affected by the addition.

STUDY METHODS

Archival Research

A cultural resources records search of the Study Area and a half-mile buffer around the Study Area was conducted for the preparations of the Pre-Application Document (PAD). This included a review of previously recorded cultural resources and previously conducted cultural resources investigations. As necessary, additional archival research will be conducted to obtain any additional information specific to cultural resources in the Study Area. Potential places to be contacted include:

[1] In addition to the details provided in this study description, study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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- Calaveras County Historical Society and Museums;
- Publicly available digital archives; and
- United States Forest Service (USFS) Records.

Field Survey and Identification of Resources

Archaeological Field Survey

CCWD will conduct a pedestrian field survey to verify locations of previously recorded cultural resources and to identify previously unknown cultural resources, if present, in the Study Area. The archaeological survey will be an intensive level survey and will follow the approved archaeological survey and inventory standards maintained by SHPO and the USFS. The field survey will be supervised by qualified, professional archaeologists (i.e., individuals who meet the Secretary of the Interior's (SOI) Historic Preservation Professional Qualifications Standards for Archaeology) and will follow the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (National Park Service [NPS] 1983). As a portion of the Study Area consists of USFS managed lands, the field survey of these lands will be conducted under an Archaeological Resource Protection Act (ARPA) permit acquired through the Stanislaus National Forest.

The survey will examine all accessible lands within the Study Area. Locations within the Study Area that cannot be accessed in a safe manner (e.g., locations containing dense vegetation, unsafe slopes, or inundated areas) will not be surveyed; these areas will be identified in the Study Report and an explanation for survey exclusion will be provided. Field methods will include crew members walking parallel transects spaced no more than 15-20 meters apart. Topographical features considered to be sensitive for cultural resources (e.g., flat stream terraces) will be thoroughly inspected. Lands typically inundated by the Project reservoirs that become accessible during the survey season as a result of normal operations or other maintenance activities will be examined. CCWD will make a reasonable effort to access all areas that are safe to survey during the Study and where feasible will view inaccessible locations from boat or other advantageous locations to provide as much information as possible on locations that cannot be surveyed on foot. Additionally, each site identified during the survey will be assessed for Project-related effects including, but not limited to, water fluctuation, wave action, and vegetation management activities. Locations of previously recorded cultural resources will be verified, and the sites re-recorded to current standards.

Field crews will use digital tablets (iPad or similar) equipped with Esri's Field Maps application and connected to a global navigation satellite system receiver. The digital tablets will be pre-loaded into the Field Maps application along with the FERC Project Boundary, locations of previously documented sites received from record search data, and digitized locations of potential historic features identified during pre-field research. Newly and previously identified resources will be recorded according to SHPO standards on the appropriate Department of Parks and Recreation 523 forms.

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Built Environment Survey

A field inspection and documentation of historic built-environment resources 45 years or older that are within or partially within the FERC Project Boundary will be conducted. For the purposes of this survey, only those built-environment resources fully within or partially within the FERC Project Boundary, or that may not be within the FERC Project Boundary but are on parcels that intersect with the FERC Project Boundary will be surveyed and evaluated. Each resource will be recorded on the appropriate Department of Parks and Recreation 523 forms.

An architectural historian who meets the SOI's Professional Qualifications Standards for architectural history will supervise all fieldwork and reporting. Architectural historians will review available documents to provide a basis for recommendations on eligibility, significance, and integrity. The survey will consist of a field visit and archival research following methods outlined by SHPO guidance. Historic built-environment resources will be recorded or re-recorded to meet current SHPO standards. This will include digital color photography and sketch maps of individual features that show the relationship between buildings and structures, including any historic architectural or engineering plans, subject to availability. The historic built environment resources identified during the Study will be assessed together, as a system and a potential district[2], as well as on an individual basis.

Analysis

Identify and Assess Potential Effects on Cultural Resources

CCWD will document any Project-related effects identified at cultural resources in the Study Area. This information will be used to inform the need for any National Register of Historic Places (NRHP) evaluations that may occur under the NHPA Section 106 consultation. Additionally, CCWD will also describe other potential threats to the cultural properties within the Study Area, including natural deterioration such as erosion or deflation; on-going use such as recreational use; or the potential for vandalism. The Study Report will describe potential effects from Project-related activities and any potential avoidance, minimization or mitigation options.

As possible based on the level of documentation completed for the Study, CCWD will apply the NRHP criteria for evaluation pursuant to 36 C.F.R. § 60.4 to evaluate the eligibility of identified properties for inclusion in the NRHP and consider and review previous NRHP evaluations conducted by others to incorporate existing evaluation data as appropriate. The integrity of properties that meet the significance requirements under one or more of the NRHP criteria of evaluation will be assessed pursuant to 36 C.F.R. § 60.4 to confirm they still retain sufficient integrity in order to convey their significance[3]. It is possible that some identified properties may not have enough available information to complete NRHP eligibility evaluations (e.g., precontact

[2] "A district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development" (NPS 1997:5).

[3] Integrity of historic properties is described in National Register Bulletin 15, *How to Apply the National Register Criteria for Evaluation* (NPS 1997).

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sites with untested subsurface components); these properties will be assumed and treated as eligible for inclusion in the NRHP.

In accordance with the criteria for evaluation (36 C.F.R. § 60.4), properties are eligible if they are significant in American history, architecture, archaeology, engineering, or culture. The quality of significance is present in historic properties that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- Criterion A: Are associated with events that have made a significant contribution to the broad patterns of our history; or
- Criterion B: Are associated with the lives of persons significant in our history; or
- Criterion C: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant or distinguishable entity whose components may lack individual distinction; or
- Criterion D: Have yielded or may be likely to yield information important in prehistory or history.

REPORTING

CCWD will prepare a report at the conclusion of the Study consistent with SHPO guidance that includes the following sections[4]: 1) Project Description, 2) Study Goals and Objectives, 3) Environmental Setting and Cultural and Historical Context, 4) Pre-Field Research, 5) Consultation Summary, 6) Methods and Results, 7) Management Recommendations and Conclusions[5], and 8) Description of Variances from this Study Plan. The report will also include:

- Maps that clearly depict the following on U.S. Geological Survey 1:24,000 topographic maps:
  - The FERC Project Boundary;
  - Resource locations; and
  - Survey coverage.
- Consultation correspondence related to the Study.
- Descriptions of the isolated finds.
- Resumes for key Study personnel.

[4] In addition to the details provided in this section, reporting will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

[5] Recommendations could include the development a PA and Historic Properties Treatment Plan or HPMP if there are eligible resources within the APE.

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The results of the Study may include culturally sensitive information that is exempt from public release[6]. CCWD will protect the culturally sensitive information from public view by designating it as privileged and only distributing it to those consulting parties allowed access to privileged information (i.e., Tribes, SHPO, FERC, and USFS cultural resources representatives). It is expected that the portions of the Study Report that include privileged information will only be shared as described here and will be filed in FERC's privileged files. The Study Report will be distributed to interested Tribes, USFS, and the SHPO for review and comment as part of the NHPA Section 106 consultation process that will be conducted by CCWD outside of this Study.

SCHEDULE

CCWD anticipates the schedule for Study completion as follows:

Conduct Archival Research	March – June 2027
Conduct Field Survey and Identification	May – July 2027
Analysis	August – September 2027
Reporting	September – November 2027

REFERENCES

United States Department of Interior, National Park Service (NPS). 1983. Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines in the Federal Register, September 29, 1983 (48FR44716). Department of the Interior, Washington, D.C.

[6] Federal laws exempt certain types of cultural resources information from public disclosure (e.g., 54 U.S.C. Section 307103(a) of the NHPA, Section 9(a) of the ARPA, exclusions permitted by the Freedom of Information Act (FOIA), and the Native American Graves Protection and Repatriation Act (NAGPRA)).

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STUDY DESCRIPTION CR-2
Tribal Resources Study
June 3, 2026

This Study Description is developed to inform information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

STUDY AREA

CCWD anticipates that the Study Area for the Tribal Resources Study (Study) will be the same as the proposed area of potential effects (APE) for the relicensing.

Under the National Historic Preservation Act (NHPA) Section 106 implementing regulations at 36 Code of Federal Regulations (C.F.R.) § 800.16(d), the APE is defined as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." Based on this regulatory definition, the APE for the Project relicensing has been initially identified by CCWD as including all lands within the FERC Project Boundary. This is the area identified by CCWD where Project operations or Project-related activities may cause changes in the character or use of historic properties, if any such properties exist.

CCWD anticipates that FERC will designate CCWD as FERC's non-federal representative for carrying out consultation pursuant to Section 106 of the NHPA. Thus, following this designation, and pursuant to 36 C.F.R. § 800.4(a)(1), CCWD will consult with the California State Historic Preservation Officer (SHPO) regarding the determination of the APE prior to Study implementation.

If CCWD proposes modifications to the FERC Project Boundary or Project-related effects are identified outside of the Study Area, the Study Area (and subsequently the APE) will be expanded as necessary to include areas potentially affected by the addition.

STUDY METHODS

The objective of this Study is to identify traditional cultural places (TCPs), Indian Trust Assets (ITAs), or lands with associated tribal agreements for tribal traditional uses within the Study Area that are historic properties or potential historic properties, and to assess whether continued Project O&M is affecting or has the potential to affect any such resources under the new FERC license when issued. In compliance with 36 C.F.R. § 800.4(c)(1), CCWD acknowledges "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." Likewise, CCWD acknowledges that the communities affiliated with historic properties with traditional cultural

[1] In addition to the details provided in this Study Description, Study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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significance (i.e., TCPs) also have special expertise in assessing the National Register of Historic Places (NRHP) eligibility of such properties. Accordingly, CCWD's approach to this Study is to engage Native American Tribes and work with each group that would like to participate in this Study to develop the detailed activities and methods that will work for each individual group to accomplish CCWD's goal and objective of the Study as described.

CCWD anticipates that participating groups may already have completed similar studies they wish CCWD to incorporate into this Study and/or would like to conduct their own investigation to identify TCPs, ITAs, or lands with agreements. As such, CCWD foresees this Study as incorporating such information provided by participating Native American Tribes in formats deemed appropriate by each Tribe. The specific Study implementation activities identified below take into account this approach and will follow the latest guidance for identifying, evaluating, and documenting TCPs (Frear 2024).

Specific Study Implementation Activities

Step 1: Hire Ethnographer

Select and hire one or more professionals that meet the ethnography qualifications included in the original National Register Bulletin 38, *Guidelines for Evaluating and Documenting Traditional Cultural Properties* (Parker and King 1998) (herein after referred to as "ethnographer"), who will implement the Study. This will include soliciting input from Native American Tribes on who they recommend for this role and offering Tribes the opportunity to provide input on the final selection. As well, as stated above, individual Tribes may prefer to conduct their own Tribal Resources Study, utilizing their own specialists, which CCWD can support and fund. CCWD acknowledges that the Tribes are the knowledge holders for this Study and Tribal input is needed in order to identify and assess potential Project effects to Tribal resources.

Step 2: Initial Tribal Outreach

Ethnographer will conduct outreach to individual Native American Tribes to identify who would like to participate in the Study, how they would like to participate, to develop any confidentiality agreements/protocols with individual Native American Tribes, and to identify how data will be collected (e.g., by the participating Native American Tribe, by the ethnographer hired by CCWD, or other), transferred to the ethnographer, and used for this Study.

Step 3: Data Gathering

Ethnographer will work with the individual Native American Tribes participating in the Study to gather data they want to share and in the way they want to share it as identified in Step 2. This step may include archival research, interviews, field visits, and review and collection of previous study efforts conducted by others that were not already gathered during development of the PAD. The data gathered as part of the PAD will also be reviewed and incorporated as appropriate in consultation with the participating Native American Tribes.

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Analysis

Resource Identification and Evaluation

Ethnographer will work with individual Native American Tribes to review gathered data, visit any properties in the field if necessary, and identify TCPs and other properties comprising ITAs or lands with agreements as described above. In collaboration with individual Native American Tribes, the ethnographer will apply the NRHP criteria of evaluation pursuant to 36 C.F.R. § 60.4 to evaluate the eligibility of identified properties for inclusion in the NRHP, and/or consider and review previous NRHP evaluations conducted by others to determine if additional evaluation efforts are needed. The integrity of properties that meet the significance requirements under one or more of the NRHP criteria of evaluation will be assessed pursuant to 36 C.F.R. § 60.4 to confirm they still retain sufficient integrity in order to convey their significance.[2] It is possible that some identified properties may not have enough available information to complete NRHP eligibility evaluations; these properties will be assumed and treated as eligible for inclusion in the NRHP.

Consider Project-Related Effects to Identified Properties

Ethnographer will work with individual Native American Tribes to identify ongoing Project-related effects or potential future effects to NRHP listed or eligible properties, and/or properties assumed and treated as eligible that are identified during the Study. Ethnographer will document any treatment measures for these properties as recommended by individual Native American Tribes.

REPORTING

The Study ethnographer will draft one or more reports documenting the Study efforts and the results of the activities described above, along with the subsequent conclusions of the overall Study. The conclusions of the Study should identify TCPs, ITAs, and lands with associated tribal agreements for tribal traditional uses that were identified during the Study. The conclusions would further identify if any of these places that have been evaluated as eligible or are already listed in the NRHP, or are assumed and treated as eligible. As specified above, the conclusions should also identify ongoing Project-related effects and potential future effects to such properties, and any potential treatment identified by individual Native American Tribes. The review and dissemination of this information as outlined during Step 2, described above, will be followed and reviewed during this step. It is expected that the report(s) will include multiple components with varying protocols for access and availability to Section 106 consulting parties. It is however, expected that at least a summary report summarizing efforts and conclusions of this Study will be provided to Native American Tribes and USFS for review, and subsequently submitted to SHPO for review and concurrence on any NRHP eligibility evaluations, and then filed with FERC in its privileged (i.e., confidential) files.

[2] Integrity of historic properties is described in National Register Bulletin 15, *How to Apply the National Register Criteria for Evaluation* (Andrus 1995), and National Register Bulletin 38, *Guidelines for Evaluating and Documenting Traditional Cultural Properties* (Parker and King 1998).

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Reports prepared for this Study will be consistent with SHPO guidance and include the following sections:[3] 1) Project Description, 2) Study Goals and Objectives, 3) Environmental Setting and Cultural and Historical Context, 4) Pre-Field Research, 5) Consultation Summary, 6) Methods and Results, 7) Management Recommendations and Conclusions, and 8) Description of Variances from this Study Plan. Reports will also include, as appropriate:

- Maps that clearly depict the following on U.S. Geological Survey 1:24,000 topographic maps:
  - The FERC Project Boundary; and
  - Resource locations.
- Consultation correspondence related to the Study.
- Resume for the ethnographer.

The results of this Study are likely to include culturally sensitive information that is exempt from public release.[4] CCWD will protect culturally sensitive information from public view by designating it as privileged and only distributing it to those consulting parties allowed access to privileged information (i.e., Tribes, SHPO, FERC, and USFS cultural resources representatives). It is expected that the portions of the Study Report that include privileged information will only be shared as described here and will be filed in FERC's privileged files. The Study Report will be distributed to interested Tribes, USFS, and the SHPO for review and comment as part of the NHPA Section 106 consultation process that will be conducted by CCWD outside of this Study. CCWD will collaborate with individual Native American Tribes regarding any confidentiality concerns and may withhold information from the Study Report that is deemed too sensitive to share, even with only the small number of parties identified here (i.e., Tribes, SHPO, FERC, and USFS cultural resources representatives).

SCHEDULE

CCWD proposes the schedule for Study completion as follows:

Hire Ethnographer	January – February 2027
Initiate Outreach and Collect Data	March – June 2027
Analysis	June – September 2027
Reporting	September – November 2027

[3] In addition to the details provided in this section, reporting will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

[4] Federal laws exempt certain types of cultural resources information from public disclosure (e.g., 54 U.S.C. Section 307103(a) of the NHPA, Section 9(a) of the Archaeological Resource Protection Act [ARPA], exclusions permitted by the Freedom of Information Act [FOIA], and the Native American Graves Protection and Repatriation Act [NAGPRA]).

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Section 106 consultation efforts for the Study findings will be conducted following the reporting period described above. As well, while this Study Description provides the above schedule, CCWD will work with participating Native American Tribes to coordinate Study work around individual Native American Tribes' internal schedules and existing processes. For instance, there may be times of the year when a participating Native American Tribe cannot conduct sensitive work such as this Study effort for cultural reasons. As well, Native American Tribes often have internal approval and review processes that involve the Tribal Council which may only meet once a month, limiting the speed with which efforts, such as this Study effort can be completed. CCWD believes that the above schedule, which provides approximately one year for Study completion should allow sufficient time to complete this Study while still considering individual Native American Tribes' internal schedules and existing processes.

REFERENCES

Frear, Sherry A. (editor). 2024. *Identifying, Evaluating and Documenting Traditional Cultural Places.* National Register Bulletin No. 38, revised. National Register of Historic Places and National Historic Landmarks Program, National Park Service, U.S. Department of the Interior, Washington, D.C.

Parker, Patricia L., and Thomas F. King. 1998. Guidelines for Evaluating and Documenting Traditional Cultural Properties. Revised. National Register Bulletin 38. U.S. Department of the Interior, National Park Service, National Register, History, and Education Division, Washington, D.C Acronyms.

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STUDY DESCRIPTION LU-1
Project Roads and Trails
Condition Assessment
September 14, 2026

This Study Description is developed to inform information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

STUDY AREA

The Study Area includes Project Roads and Trails used to access Project facilities to conduct Operation and Maintenance (O&M) activities. For the purposes of this Study, a "Project Road or Trail" is a road or trail segment that is used exclusively for the purposes of the Project, including access to Project recreation facilities, and that is not otherwise used for non-Project purposes. Due to this Project need, a Project Road or Trail segment is maintained by and at the sole expense of CCWD. Project Roads and Trails do not include "joint use" or "multi-purpose" road and trail segments (i.e., road and trail segments used by other parties to access non-Project facilities, such as electric lines, residences, or other areas).[2] For the purposes of this Study, Project Roads or Trails do not include roads within Project recreation areas or Project recreation trails (i.e., trails whose sole purpose is for Project recreation).[3] A list and description of Project Roads is provided in Attachment A. The Project does not include any non-recreation trails.

STUDY METHODS

Excluding Data Summary Development (i.e., Reporting), the study will be completed in one step: Data Collection at Project Roads, which is described below.

Step 1: Data Collection at Project Roads

CCWD will visit each Project Road listed in Table 1 to assess the road segments' condition and identify obvious signs and potential risks of environmental damage. If a road is on federal lands managed by the United States Department of Agriculture, Forest Service, or United States Department of the Interior, Bureau of Land Management (BLM) and the federal land management agency has established maintenance levels for the road segment on its managed lands, CCWD will become familiar with those maintenance level requirements prior to the field assessment. Assessments will be made in comparison to those Forest Service or BLM maintenance levels. Forest Service Maintenance Levels are provided in Attachment A. Items to be assessed or confirmed in the field condition assessment will include:

[1] In addition to the details provided in this study description, study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

[2] Outside of relicensing and this Study, CCWD is willing to meet with the Forest Service and other users of joint use roads to discuss operation and maintenance responsibilities.

[3] The condition of roads and trails within Project recreation areas will be included in the Pre-Application Document (PAD).

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- List, map, and confirm lengths (i.e., hundredths of a mile) and widths (feet); Forest Service or BLM maintenance level, if applicable; traffic classification; seasons of use; confirm travel way surface material (i.e., native, gravel/aggregate, paved, or combination); and CCWD's use (i.e., type and frequency of CCWD vehicle use) of each Project Road. The confirmation will not entail any land survey work but will utilize field Global Positioning System (GPS) equipment and best estimate by field staff during the filed condition assessment.
- Assess the condition of the travel way surface treatment and estimate remaining useful life of travel way surface. Determine pavement conditions, if appropriate, using the industry standard Pavement Management System (PMS). If the road is on Forest Service or BLM managed lands, determine if the travel way surface treatment is consistent with the designated maintenance level of the road (see Attachments A and B).
- Assess the condition and locate culverts and other drainage structures, including noting any significant erosion (take photographs and note location of the culverts and drainage structures by GPS).
- List, describe, and map bridges or other water crossings (take photographs and note location by GPS). Identify widths (feet) for all bridges and posted weight limits for any bridges that were constructed by or on behalf of CCWD.
- Assess the condition and confirm the location of CCWD-maintained traffic control devices; safety features; directional, warning and information signage including signs along roads (photograph each and note location of the culverts and drainage structures by GPS), and document compliance of those CCWD-maintained features with current Manual on Uniform Traffic Control Devices (MUTCD) standards or Forest Service or BLM standards, if the sign occurs in federal lands.
- Assess the condition of CCWD-maintained gates or other traffic exclusion structures (e.g., boulders) structures (photograph each and note location of gates and traffic exclusion structures by GPS). Note whether gate is locked at all times or opened during periods, and what parties have locks on the gate.
- Identify, describe, and map sub-standard, unsafe, or hazardous traffic conditions such as site clearing (e.g., blind spots and poor sight distances) and inadequate clear zones, using the appropriate American Association of State Highway and Transportation Officials (AASHTO) standards for traffic levels (photograph each and note location by GPS).
- Identify, describe, and map the location of obvious slope instability along the travel way or that may affect the road segment (photograph each and note location by GPS). This will not include any geotechnical or ground disturbing activities but best estimate by field staff during the condition assessment.
- Estimate CCWD's typical use and routine O&M activities of the Project Road segment (i.e., this is an estimate of CCWD's use, not a traffic count survey).

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- Identify, describe, and map location and size of specifically designated vehicle turnouts (photograph each and note location by GPS). A turnout for the purpose of the Study is an area cleared along the side of the road that is at least 20 feet long and allows cars to pass a slower moving vehicle, and at which a motorist can safely (e.g., clear lines of sight and adequate width) turn around. Vehicular turnouts do not include parking areas near the Project facility being accessed.

REPORTING

CCWD will compile the study data into a summary report, including maps. If the information is collected in a manner inconsistent with this plan, the report will include a description of any inconsistency and why it occurred. Study data will be made available to all interested parties (See *Concepts and Practices Applicable to All Relicensing Studies)* and standard GIS shapefiles, including metadata, will be provided to the Forest Service.[4]

SCHEDULE

CCWD anticipates the schedule for Study completion as follows:

Data Collection at Project Roads	April – September 2027
Reporting	October – December 2027

REFERENCES

USFS. June 2012. Guidelines for Road Maintenance Levels. 7700-Transportation Management 1177 1811-SDTDC.

USFS. March 2022. Forest Service Manual 7700 – Travel Management. Chapter 7730 – Transportation System Operation and Maintenance.

[4] In addition to the details provided in this section, reporting will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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Table 1. List of Project Roads in Study LU-1.

Road Segment Designation		Termini (Lat/Long)		Est. Length (mile)	Est. Width (~feet)	Est. Driving Surface	Gated	Land Ownership	Current Maintenance Responsibility
Name	Forest Service Designation	Start	End						
NFDD Access Rd	7N17B	38.44039733443908, -120.00852306396033	38.43805295682596, -120.01707424824865	0.57	14	Gravel	Yes	NFS	Forest Service
NSM Water Tank Access Road	Unnamed Extension off 7N01	38.405547943620526, -120.00461105098194	38.40503465244793, -120.00421889622864	0.04	14	Native	No	NFS	CCWD
MPDD Access Road	Unnamed Extension off 4N38	38.23305529769888, -120.29545276032123	38.23378357483741, -120.29311575448797	0.14	13	Gravel	Yes	NFS	CCWD
McKays LLO Access Road	Unnamed Extension off 4N38	38.23290512909011, -120.29553293431842	38.23305914803599, -120.29331640745194	0.13	13	Gravel	Yes	NFS	CCWD
Beaver Creek Top of Penstock Access Road	4N38D	38.2358069, -120.2824934	38.2349360, -120.2837234	0.09	12	Native	No	NFS	Forest Service
Beaver Creek Top of Penstock Access Road	Unnamed Extension off 4N38D	38.23968934855315, -120.28164817438875	38.2358069, -120.2824934	0.23	12	Native	No	Private	SPI
Beaver Creek Comms Tower Access Road	4N38E	38.23468513821321, -120.281137100000	38.231183317281584, -120.28211351755967	0.26	12	Native	Yes	NFS	CCWD
Beaver Creek Access Road	4N38D	38.235801700309494, -120.27895108335633	38.23418864617101, -120.27933286675513	0.16	16	Gravel	Yes	NFS	CCWD
Mill Creek Tap Access Road	Not Applicable	38.191596860630966, -120.35392393679835	38.192477359900515, -120.35497497494651	0.14	12	Paved	Yes	Private	CCWD / UWPA
Adit 4 Access Road	Not Applicable	38.15741912992568, -120.38959526847506	38.154620110630475, -120.39179981973696	0.23	18	Gravel	Yes	BLM & Private	CCWD
Road to Spicer Meadow Powerhouse	Unnamed Extension off 7N01	38.391495, -120.001228	38.392288, -120.000548	0.05	25	Paved	Yes	--	CCWD
11 Road Segments		--		**2.04**	--				

Key:
~ = Approximate
BLM = United States Department of the Interior, Bureau of Land Management
CCWD = Calaveras County Water District
Comms = Communications
MPDD = McKays Point Diversion Dam
NFDD = North Fork Diversion Dam
NFS = National Forest System lands
NSM = New Spicer Meadows Reservoir
LLO = Low Level Outlet

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ATTACHMENT A

Table A-1. Summary of Forest Service Maintenance Levels.[1]

Parameters	Maintenance Level				
	1	2	3	4	5
Service Life	Intermittent Service-Closed Status	Constant Service or Intermittent Service-Open Status (Some uses may be restricted under 36 Code of Federal Regulations Section 261.50)			
Traffic Type	Open for non-motorized uses; Closed to motorized traffic.	Administrative, permitted, dispersed recreation specialized, commercial haul	All National Forest Traffic – General Use, Commercial Haul		
Vehicle Type	Closed - N/A	High clearance, pick-up, 4x4, log trucks, etc.	All types - passenger cars to large commercial vehicles		
Traffic Volume	Closed - N/A	Traffic volume increases with maintenance level			
Typical Surface	All types	None; Native, or Aggregate – may be dust abated		Aggregate – usually dust abated; paved	
Travel Speed	Closed - N/A	Travel speed increases with maintenance level			
User Comfort and Convenience	Closed - N/A	Not a consideration	Low priority	Moderate priority	High priority
Functional Classification	All types	Local collector	Local collector arterial	Local collector arterial	Local collector arterial
Level of Service	Closed - N/A	J	G, H, I - Traffic service level increases with maintenance level		
Management Strategy	Prohibit or eliminate	Discourage or prohibit cars. Accept or discourage high clearance vehicles	Encourage, accept	Encourage	Encourage

[1] See also USDA Forest Service. 2012. Guidelines for Road Maintenance Levels. National Technology and Development Program. 7700 Transportation Management 11771811-SDTDC. June 2012., Forest Service Handbook. 7709.59, secs. 11 and 62.3., and Manual on Uniform Traffic Control Devices. Available online at: http://mutcd.fhwa.dot.gov/.

Key:
J = Traffic flow is slow and may be blocked by management activities. Two-way traffic is difficult, backing may be required. Rough and irregular surface. Travel with low clearance vehicles is difficult. Single purpose facility.
G = Free flowing, mixed traffic; stable, smooth surface. Provides safe service to all traffic.
H = Congested during heavy traffic, slower speeds, and periodic dust; accommodates any legal-size load or vehicle.
I = Interrupted traffic flow, limited passing facilities, may not accommodate some vehicles. Low design speeds. Unstable surface under certain traffic or weather.
N/A = Not applicable

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STUDY DESCRIPTION RR-1
Project Recreation Use and Visitor Surveys
September 14, 2026

This Study Description is developed to inform information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

STUDY AREA

The Study Area includes Project recreation sites and use areas within the FERC Project Boundary at New Spicer Meadow Reservoir, North Fork Diversion Dam, and Bear Creek Diversion Dam - all located on National Forest System (NFS) lands managed by the Stanislaus National Forest (STF). Table 1 identifies the study sites.

Table 1. RR-1 study sites.

Project Impoundment	Site
New Spicer Meadow Reservoir	New Spicer Meadow Campground
	New Spicer Meadow Group Campground
	New Spicer Meadow Boat Launch and Day Use Area
	Forest Road 7N01 roadside use between New Spicer Meadow Group Campground and New Spicer Meadow Dam
	North Fork Diversion Tunnel Outlet
North Fork Diversion Dam	Diversion dam
	Locked gate on Forest Road 7N17B
Beaver Creek Diversion Dam	Diversion dam

STUDY METHODS

Excluding Data Summary Development (i.e., Reporting), the Study consists of one step: Recreation Use and Visitor Surveys, which includes Observation Surveys and Visitor Surveys.

Step 1 - Recreation Use and Visitor Surveys

CCWD will conduct observation surveys and visitor surveys to gather information related to recreation uses, opportunities, and preferences at the four study sites listed above, which is common practice (Malvestuto 1996, Pollock et al. 1994, Salant and Dillman 1994, Watson et al. 2000, Forest Service 1995). Table 2 identifies the specific study sites and type of data collection that CCWD will employ at New Spicer Meadow Reservoir, North Fork Diversion Dam, and Beaver Creek Diversion Dam.

[1] In addition to the details provided in this study description, study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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Table 2. Survey data collection methods by study site.

Study Site	Visitor Input Data Collection	Use Data Collection	
		Method	Parameter
NEW SPICER MEADOW RESERVOIR			
New Spicer Meadow Campground	Visitor survey	Reservation records	▪ Daily occupancy
New Spicer Meadow Group Campground	Visitor survey	Reservation records	▪ Daily occupancy
New Spicer Meadow Boat Launch and Day Use Area	Visitor survey	Observation survey	▪ Vehicles (parking areas) ▪ Picnic sites (day use area) ▪ Shoreline users (day use area)
Forest Road 7N01 roadside use between New Spicer Meadow Group Campground and New Spicer Meadow Dam	Visitor survey	Observation survey	▪ Vehicles (roadside pullouts) ▪ Shoreline users
DIVERSION DAMS			
North Fork Diversion Dam	Visitor survey	Observation survey	▪ Vehicles (locked gate) ▪ Shoreline users (impoundment)
Bear Creek Diversion Dam	Visitor survey	Observation survey	▪ Vehicles (impoundment) ▪ Shoreline users (impoundment)

Observation Surveys

During observation surveys, a CCWD surveyor will count and record the time, date, location, and the use parameters Listed in Table 2 by type of recreation facility/feature. Observations will be made and recorded by site and area to include parking outside provided parking areas. For camping use at Project campgrounds, CCWD will rely on reservation records to document campsite occupancy. Observation survey data and campground reservation records will be used to identify the Project recreation use levels.

Visitor Surveys

Once the CCWD surveyor completes the Observation Surveys at each site listed in Table 2, the surveyor will administer an on-site recreation visitor questionnaire survey (visitor survey) to randomly selected recreation visitors. The visitor survey will collect visitor perceptions, attitudes, and satisfaction levels on current resource conditions (i.e., users' feelings towards current water or use levels), recreational activities, recreation facility development, management concerns, and overall recreational experiences specific to the recreation site and Project impoundment the visitor is intercepted at (i.e., New Spicer Meadow Reservoir, North Fork Diversion Dam impoundment, or Beaver Creek Diversion Dam impoundment). The visitor survey will also ask general questions of each visitor surveyed (e.g., zip code, visitor and group characteristics, history of recreation use at the Project impoundment, etc.).

CCWD will collect non-response bias during visitor survey collection, whereby CCWD's surveyor will collect the following information from visitors who refuse to complete the survey – refusal reason and their observed recreation activity. For all survey efforts, the number of refusals will be recorded.

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CCWD will administer the visitor survey on-site where recreation visitors are readily visible and willing to participate. The visitor survey will be provided in English. The visitor survey will address visitor use characteristics and preferences including:

- Recreation activity participation
- Recreation group size
- Satisfaction with existing recreation facilities
- Preference for improved or additional recreation facilities
- Reservoir water levels and their experience
- Crowding and user conflicts
- Constraints or barriers to participation

The survey instrument is provided in Attachment A, which is an example for visitors intercepted at New Spicer Meadow Reservoir study sites. Prior to survey implementation, the survey instrument will be pre-tested in the field (up to 10 completed surveys) with recreation users with the intent to receive feedback on readability, length, and general understanding of survey content. If necessary, CCWD will make minor changes to the survey instrument to refine the survey for clarity, legibility, and/or ease of completion.

Mail-back Windshield Surveys

CCWD will prioritize conducting in-person visitor surveys whenever visitors are readily available. However, CCWD will utilize a mail-back windshield visitor survey at study sites where recreation visitors are not typically present, but their vehicles are (e.g., boat launch and day-use parking areas, shoreline areas with roadside parking, diversion dams). In these cases, a mail-back version of the visitor survey will be left on vehicle windshields with self-addressed envelopes and postage for convenient response and return.

Methodology at North Fork and Beaver Creek Diversion Dams

CCWD will implement modified observation and visitor survey methods at the North Fork and Beaver Creek Diversion Dam impoundment study sites as these are more remote locations without developed recreation facilities, where visitors are less centralized and may be more difficult to locate or access. CCWD will implement the following methodology at each impoundment.

North Fork Diversion Dam

Vehicles cannot access the North Fork Diversion Dam as the road (Forest Road 7N17B) has a locked gate approximately 0.6 mile from the impoundment. Thus, CCWD will visit the locked gate on Forest Road 7N17B and observe if any vehicles are parked directly at the gate leading to the North Fork Diversion Dam. At the locked gate, CCWD will conduct an observation survey for vehicles observed directly at the gated area. If vehicles are observed parked at the gate, then CCWD will walk to the impoundment and observe if visitors are readily available/visible from the

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roadway and diversion dam area (i.e., conduct an observation survey for shoreline users). If impoundment users are observed, then CCWD will conduct a visitor survey if the users are readily and safely accessible (i.e., along the shoreline adjacent to the road up to the diversion dam). CCWD will not hike the shoreline to find or access users that are not readily accessible for safety reasons. When visitors cannot be located or accessed safely for a visitor survey, CCWD will leave a mail-back windshield survey on the vehicles parked at the locked gate.

Notably, the locked gate on Forest Road 7N17B is adjacent to the STF's Slick Rock OHV Trailhead, a non-Project trailhead, which provides access to the popular Slick Rock OHV Trail that leads to Lake Alpine to the north. The non-Project Slick Rock OHV Trailhead is not part of this study.

Beaver Creek Diversion Dam

CCWD will visit Beaver Creek Diversion Dam and observe if any vehicles are parked in the vicinity of the diversion dam. At this location, CCWD will conduct an observation survey for vehicles observed. If vehicles are observed, then CCWD will assess if visitors are readily available/visible along the impoundment shoreline (i.e., conduct an observation survey for shoreline users). If impoundment users are observed, then CCWD will conduct a visitor survey if the users are readily and safely accessible (i.e., in the immediate vicinity of the parked vehicles). CCWD will not hike the shoreline to find or access users that are not readily accessible for safety reasons as the terrain is very steep between the road and shoreline. When visitors cannot be located or accessed safely for a visitor survey, CCWD will leave a mail-back windshield survey on the vehicles parked at the diversion dam.

Sampling Approach and Data Collection

Target Number of Completed Surveys

CCWD is targeting one survey population for the Project. In 2014, the total Project recreation use was 35,207 Recreation Days[2] (RD). Using a 95 percent confidence interval with a sampling error no more than plus or minus 10 percent and a 50/50 split,[3] CCWD's target is 96 completed visitor surveys (Salant and Dillman 1994). CCWD will make every attempt to secure the target number of visitor surveys, continuously monitor the survey returns, and if survey targets are not being met, then CCWD will re-evaluate the sampling frequency to determine if additional efforts are warranted. CCWD will continue the survey effort throughout the established survey season, even if the target number of visitor surveys has been met.

Sampling Period

CCWD will conduct Observation Survey and Visitor Survey sampling during the peak season from Memorial Day holiday weekend through Labor Day holiday weekend. The sampling frequency will be: 1) two weekdays per month (June-August); 2) two non-holiday weekend days per month

[2] FERC defines a Recreation Day (RD) as each visit by a person to a development for recreational purposes during any portion of a 24-hour period.

[3] Since it is not apparent how varied the Project sample population is in its response to various questions, CCWD will use a more conservative sampling approach that utilizes a "50/50 split," (Salant and Dillman 1994).

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(June-August); and 3) one holiday day (Saturday or Sunday) for Memorial Day, Independence Day, and Labor Day holiday weekends. In total, CCWD will conduct the surveys on 15 sampling days, including 6 weekdays, 6 non-holiday weekend days, and 3 holiday weekend days.

Notably, the STF opens the Project recreation facilities at New Spicer Meadow Reservoir when the snowpack and ice have melted, public access/travel is safe on Forest Road 7N01, and the recreation facilities have been inspected and ready for public use. Thus, CCWD will initiate the Observation Survey and Visitor Survey effort at the study sites accessed via Forest Road 7N01 (i.e., New Spicer Meadow Reservoir and North Fork Diversion Dam) once the Project recreation facilities are opened to the public.

REPORTING

CCWD will analyze the field data to include tables summarizing observed recreation use and visitor responses to the questionnaire. Study data will be made available to all interested parties (See *Concepts and Practices Applicable to All Relicensing Studies)* and standard GIS shapefiles, including metadata, will be provided to the Forest Service.

SCHEDULE

CCWD anticipates the schedule for Study completion as follows:

Recreation Use and Visitor Surveys	May - September 2027
Reporting	October - December 2027

REFERENCES

Malvestuto, Stephen P. 1996. Sampling the Recreational Creel Fisheries Techniques (Chapter 20), 2nd edition. American Fisheries Society.

Pollock, Jones, and Brown. 1994. Roving Creel Survey. Angler Survey Methods and Their Applications in Fisheries Management (Chapter 11). American Fisheries Society.

Salant, P. and Dillman, D.A. 1994. *How to Conduct Your Own Survey.* John Wiley and Sons, Inc.

United States Department of Agriculture, Forest Service (Forest Service). 1995. Techniques and Equipment for Gathering Visitor Use Data on Recreation Sites (Personal Observation, page 23 -25 and Visitor Surveys, page 35-37).

Watson, A. E., Cole, D. N., Turnery D. L., and Reynolds, P. S. (October 2000). *Wilderness Recreation Use: A Handbook of Methods and Systems,* October 2000, United States Forest Service Rocky Mountain Research Station General Technical Report-56. Ogden, Ut

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ATTACHMENT A

DRAFT RECREATION VISITOR SURVEY INSTRUMENT

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RECREATION VISITOR SURVEY

North Fork Stanislaus River Hydroelectric Project (FERC Project No. 2049)

Recreation Site:	

1. Is this visit a day trip or an overnight trip?

- ❑ Day trip
- ❑ Overnight trip

2. When did you arrive and plan to depart New Spicer Meadow Reservoir?

3. Which of the following best describes your recreation group?

- ❑ Alone
- ❑ Friends
- ❑ Family
- ❑ Family & Friends
- ❑ Multiple Families
- ❑ Organized Outing
- ❑ Other (specify)

4. How many **people** came in your group today?

5. How many **vehicles** did your group use to travel to New Spicer Meadow Reservoir?

6. Which activities do **you expect to participate in** during this visit to New Spicer Meadow Reservoir?

- ❑ Camping
- ❑ Picnicking
- ❑ Fishing
- ❑ Swimming
- ❑ Hiking or walking
- ❑ Wildlife viewing (birding, etc.)
- ❑ Driving for pleasure
- ❑ Flat-water, motorized boating
- ❑ Flat-water, non-motorized boating (kayaks, canoes)
- ❑ Other (specify)

7. Which activity is your **primary recreation activity** for this visit to New Spicer Meadow Reservoir?

8. How often do you visit New Spicer Meadow Reservoir?

- ❑ Once per year
- ❑ 2-5 times per year
- ❑ 6-10 times per year
- ❑ More than 10 times per year

9. List up to 3 other areas in Central California where you participate in your **primary recreation activity**.

10. Please rate and explain the **relative uniqueness** of the recreation opportunities at New Spicer Meadow Reservoir relative to similar opportunities at other Central California areas your identified.

(A) Rate the Uniqueness:

Extremely Common	Somewhat Common	Neither Common or Unique	Somewhat Unique	Extremely Unique
1	2	3	4	5

(B) Explain what is unique or special about recreation opportunities at New Spicer Meadow Reservoir.

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11. Please rate the **acceptability** of the **Existing Conditions** at this recreation facility/site.
*Note: if you rated a condition **"unacceptable"**, please describe the location & nature of the condition.*

Facilities/Resources	Unacceptable	Slightly Unacceptable	Neither	Slightly Acceptable	Acceptable	Did Not Use/ Not Applicable
Campsites	1	2	3	4	5	❑
Picnic sites	1	2	3	4	5	❑
Food storage locker	1	2	3	4	5	❑
Restroom	1	2	3	4	5	❑
Potable water	1	2	3	4	5	❑
Trash receptacle	1	2	3	4	5	❑
Parking area	1	2	3	4	5	❑
Boat ramp	1	2	3	4	5	❑
Courtesy dock	1	2	3	4	5	❑
Signage	1	2	3	4	5	❑
Visitor information	1	2	3	4	5	❑
Other (specify)	1	2	3	4	5	❑

12. Did/do you feel **crowded** today at any of the following locations during your visit?

Location /Area	Not At All Crowded			Slightly Crowded		Moderately Crowded		Extremely Crowded		Did Not Use / Not Applicable
Campground	1	2	3	4	5	6	7	8	9	❑
Picnic Area	1	2	3	4	5	6	7	8	9	❑
Boat Launch	1	2	3	4	5	6	7	8	9	❑
Shoreline	1	2	3	4	5	6	7	8	9	❑
Water Surface	1	2	3	4	5	6	7	8	9	❑

13. Please indicate whether or not the **level of the reservoir** was a problem for each of the following.

(Circle one number for each)	Not a Problem	A Small Problem	Neither	A Moderate Problem	A Large Problem	No Opinion/ Not Applicable
Ability to launch or take out boat	1	2	3	4	5	❑
Ability to safely boat	1	2	3	4	5	❑
Ability to access the shoreline	1	2	3	4	5	❑
Other (specify)	1	2	3	4	5	❑

14. (A) Did you experience any **conflict** with other recreation users at New Spicer Meadow Reservoir during your visit (i.e., anyone who negatively impacted your experience)? ❑ Yes ❑ No

(B) If **YES**, what was the activity of the other recreation user?

❑ Fishing boat ❑ Camper
❑ Other power boat ❑ Non-motorized boater
❑ PWC / Jet ski ❑ Hiker
❑ Ski boat ❑ Other (specify)

(C) If you **experienced conflict**, please check the reasons that contributed to the conflict.

❑ Proximity to where we were ❑ Loudness
❑ Rowdiness ❑ Other (specify)

15. (A) On this trip, did you experience any situations or encounters where you felt unsafe?

❑ Yes ❑ No

(B) If **YES**, please identify: i) why you felt unsafe, and ii) the location where you felt unsafe.

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16. (A) Did anything prevent you or a member of your group from participating in desired recreation activities at New Spicer Meadow Reservoir?

❑ Yes ❑ No

(B) If **YES**, please identify the location(s) and the thing(s) that prevented your participation.

17. Please rate your preference for these **potential facility improvements** at New Spicer Meadow Reservoir.

Facility	Not At All Preferred	Slightly Not Preferred	Neither	Slightly Preferred	Highly Preferred	No Opinion/ Not Applicable
Boat launch ramp	1	2	3	4	5	❑
Boat trailer parking (double space)	1	2	3	4	5	❑
Vehicle parking (single space)	1	2	3	4	5	❑
Courtesy dock	1	2	3	4	5	❑
Picnic sites	1	2	3	4	5	❑
Campsites	1	2	3	4	5	❑
Group campsites	1	2	3	4	5	❑
Restrooms	1	2	3	4	5	❑
Potable water	1	2	3	4	5	❑
Food storage lockers	1	2	3	4	5	❑
Trash receptacles	1	2	3	4	5	❑
Picnic sites	1	2	3	4	5	❑
Visitor information	1	2	3	4	5	❑
Signage at the recreation site	1	2	3	4	5	❑
Other (specify)	1	2	3	4	5	❑

18. What is the **zip code** for your primary residence?

19. Please provide any **additional comments** regarding your recreation experience here.

Thank You for Taking the Time to Participate in this Survey!

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STUDY DESCRIPTION RR-2
North Fork Stanislaus River Sourgrass Run Whitewater Boating Use Evaluation
June 3, 2026

This Study Description is developed to inform information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

STUDY AREA

The Study Area includes the 5-mile-long, Class IV+ Sourgrass whitewater boating run on the North Fork Stanislaus River (NFSR). The put-in for the run is at Sourgrass Bridge on Boards Crossing Road (River Mile [RM] 16.2). The primary take-out is at Calaveras Big Trees State Park at the bridge over the NFSR along Walter W. Smith Parkway (RM 11.2). A secondary takeout is available downstream of Calaveras Big Trees State Park upstream of McKays Point Reservoir off of McKays Point Road (Forest Road 5N63) (RM 8.9).

STUDY METHODS

Excluding Data Summary Development (i.e., Reporting), the Study consists of a Level 1 Assessment: Desktop Analysis (Step 1) and may include a Level 2 Assessment: Field Reconnaissance and Focus Group (Step 2) and a Level 3 Assessment: Whitewater Boating Flow Study (Step 3). The three-phased assessment follows the general approach contained in *Flows and Recreation: A Guide to Studies for River Professionals* (Whittaker et al. 2005). The phased approach is designed to increase study resolution as investigations progress from one level to the next. Advancing to more intensive study levels is dependent on results in the prior study level. CCWD will conduct Step 1 and will proceed to Steps 2 and possibly Step 3 if CCWD determines that the results of the previous level assessment indicate further assessment is needed. Progression to the next level of assessment will not occur if results from the current level indicate the study reach does not meet the criteria for advancement to the next level of assessment.

Step 1 - Level 1 Assessment: Desktop Analysis

Level 1 investigation will include literature reviews, structured interviews, summary of hydrology, estimated boating-days under existing Project operations, characterization of historical spill events, physical description of the river channel, and descriptions of existing river access locations and river uses.

[1] In addition to the details provided in this study description, study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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Literature Review

In the Pre-Application Document (PAD), CCWD will report results of its whitewater boating literature review including whitewater guidebooks, electronic whitewater guidebooks available online, internet searches for trip reports, and relevant information provided by interested parties in response to CCWD's PAD Questionnaire for existing, relevant, and reasonably available information.

Structured Interviews

CCWD will conduct structured interviews with individuals in the whitewater boating community with knowledge of the study reach. The interviews will focus on individuals' knowledge of the study reach, any dates with direct observations of the study reach, opinion on whitewater boating difficulty, estimates of acceptable boatable flow ranges, and type of watercraft used. CCWD will request structured interview candidates from American Whitewater (AW), National Park Service (NPS), the United States Department of Agriculture, Forest Service (Forest Service), and known commercial rafting outfitters. Draft questions for the structured interviews are in Attachment A.

Hydrology Analysis

CCWD will analyze the recent hydrology of the Study Reach including the annual frequency and timing of unplanned and planned spill events at New Spicer Meadows Dam. The summary will also include a description of typical planned spill events, including the predictability, timing, and reason for planned spill events, as applicable. The hydrology analysis will:

- Identify, map, and characterize existing stream gaging stations in the NFSR, including location, equipment, and data collection capabilities.
- Provide graphs of average hourly flow for representative wet, normal, and dry water year (WY) types.
- Describe how the Project influences flows in the study reach on a monthly, daily, and hourly basis.
- Characterize planned and unplanned historical spill events from monthly, daily, and hourly perspectives.
- Provide a table summarizing "boating-day" opportunities[2] by month based on hourly data, if a boatable flow range is known/identified.

[2] A "boating-day" opportunity is any flow within the acceptable flow range that is continuously present in the channel during 8 hours of daylight.

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Summarize Whitewater Boating Opportunity.

Based on the information gathered from the literature review, structured interviews, and hydrology analysis, CCWD will describe the whitewater boating opportunity on the study reach. CCWD will describe the following for the study reach, as applicable:

- Existing whitewater use types and levels.
- Overall river channel access opportunities and constraints with specific put-in and takeout locations identified and described.
- Whitewater boating difficulty using the International Scale of Difficulty grading system.[3]
- Whitewater boating portage and safety considerations.
- Types of watercraft used and timing (i.e., boating season).
- Acceptable boatable flow range.
- Physical characteristics of river.
- Availability of flow information.
- "Boating-day" opportunities under existing Project operations within the identified acceptable boatable flow range using the historical daily flow records.

Level 1 Data Summary

Progression to Step 2, Level 2 Assessment, will be based on results from Step 1. The Level 1 decision criterion to determine if the study should progress to the Level 2 Assessment consists of the following question:

- Are acceptable boatable flow ranges, in particular the minimum acceptable flow, adequately identified for relicensing purposes?[4]

CCWD will determine if Level 1 data adequately addresses the evaluation criterion (i.e., no further study/assessment is needed to identify the range of acceptable boating flows) or if additional information is needed to address the evaluation criterion (i.e., proceed with Step 2, Level 2 Assessment).

[3] Refer to: https://www.americanwhitewater.org/content/Wiki/safety:internation_scale_of_river_difficulty.

[4] Besides determining the acceptable range of boating flows, Level 1 criteria in Whittaker et al. 2005, include determining: 1) if there is a whitewater boating opportunity; and 2) if the opportunity is significantly affected by Project operations. These criteria have been removed because as the Sourgrass Run is an established, known whitewater boating run that receives both private boating use and commercial rafting use and the Project operations affect the whitewater boating opportunity. Therefore, these criteria have been met.

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Step 2 - Level 2 Assessment: Field Reconnaissance and Focus Group

Field Reconnaissance

Level 2 Assessment, if determined necessary by CCWD, will evaluate on-site river access and involve land-based observation of flow in the study reach. The objective is to assess the current condition of whitewater boating put-in and take-outs and observe flow in the study reach to evaluate navigability, whitewater boating difficulty, and to better estimate a boatable flow range for Level 3 Assessment. River access, regional uniqueness and significance, and safety concerns will also be evaluated during the field reconnaissance.

Participants in the Level 2 reconnaissance will be identified in advance of the field reconnaissance by CCWD in consultation with Forest Service (Stanislaus National Forest or STF), NPS, AW, and STF-permitted commercial rafting outfitters, should they choose to participate in the identification process. The field reconnaissance will include up to six participants for site visit logistics and to facilitate focus group discussion. Participants in the field reconnaissance will receive a brief overview of the relicensing process, the study plan process within the broader relicensing, objectives of the field reconnaissance, and specific criteria to evaluate, as listed below. CCWD will identify areas of interest for the field reconnaissance visit based on information from Step 1. Participants are responsible for their safety as part of this Level 2 flow assessment.

Focus Group

The field reconnaissance will conclude with structured focus groups with whitewater boating participants. Focus group questions will prompt discussion on navigability, whitewater difficulty, suitable range of flows for whitewater boating for watercrafts that use/may use the reach, river access, safety, other areas of concern, and uniqueness of the study reach compared to other opportunities in the region.

Level 2 Data Summary

The Level 2 Data Summary will summarize findings from the field reconnaissance and focus group. The Data Summary will include notes from group discussions at individual field locations during the site reconnaissance, opinions expressed in focus groups, river access locations, and potential resource issues identified.

Progression to Step 3, Level 3 Assessment, will be based on results from the Level 2 Data Summary. The Level 2 decision criteria to determine if the study should progress to the Level 3 Assessment include:

- Are acceptable boatable flow ranges, in particular the minimum acceptable flow, adequately identified for relicensing purposes?
- Can a controlled flow study be conducted safely?

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CCWD will determine if the Level 2 Data Summary adequately addresses the evaluation criteria (i.e., no further study/assessment is needed) or if additional information is needed to refine the acceptable boatable flow range (i.e., proceed with Level 3 Assessment).

Step 3 - Level 3 Assessment: Whitewater Boating Flow Study

Flow Assessments

One of the primary goals of the Level 3 Assessment is to refine the acceptable whitewater boating flow range and, in particular the minimum acceptable flow of the study reach. The Level 3 flow evaluation will consist of a team of up to six boaters paddling up to three flows.

CCWD will determine the number and flow levels to be studied based on the estimated flow ranges identified in Steps 1 and 2 and in consultation with Forest Service, NPS, AW, and STF-permitted commercial rafting outfitters who participated in the Level 1 and 2 Assessments. Scheduling of the flow study will, to the extent feasible, take advantage of opportunistic flows. After each study flow, participants will complete a single flow evaluation form and participate in a structured focus group. If more than one study flow is conducted on a study reach, after completion of all study flows, whitewater boaters will complete a comparative flow evaluation form and participate in a final structured focus group. Draft questions for the single flow and comparative flow evaluation forms and the focus group will be sent to STF, AW, and NPS for review and comment. Whitewater boaters will be identified in advance by CCWD in consultation with Forest Service, NPS, AW, and STF-permitted commercial rafting outfitters, should they choose to participate in this identification process. Participants are responsible for their safety as part of this Level 3 flow assessment. CCWD will require liability waivers and will develop a safety plan prior to whitewater boaters getting on the river.

AW and STF-permitted commercial rafting outfitters will be responsible for determining if selected whitewater boating individuals possess the necessary skills, experience, and safety training to participate in the Level 3 Assessment. If more than one study flow is planned for a study reach, participants will need to commit to each flow evaluation for comparison purposes. A consistent team of participant boaters between Level 2 and Level 3 Assessments is necessary.

Level 3 Data Summary

The Level 3 flow evaluation will analyze the whitewater boaters' single flow and, if multiple flows are conducted, comparative flow evaluation forms as well as opinions expressed in focus group discussions. The analysis will refine the acceptable flow ranges identified for whitewater boating including the minimum acceptable flow. The Data Summary will also identify the overall whitewater difficulty and list significant rapids. Flow conditions and boating opportunities will be documented with photographs and/or video of significant rapids or key whitewater elements that are accessible within the study reach.

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REPORTING

The Level 1 Data Summary and Level 2 and 3 data summaries, if Levels 2 and 3 are done, will be made available to interested parties as described in *Concepts and Practices Applicable to All Relicensing Studies*. Refer to the description above for the material to be included in each data summary.

SCHEDULE

Step 1 – Level 1 Assessment	February - May 2027
Step 1 – Level 1 Data Summary	June 2027
Step 2 – Level 2 Assessment	June - September 2027
Step 2 – Level 2 Data Summary	October 2027
Step 3 – Level 3 Assessment	February - September 2028
Step 3 – Level 3 Data Summary	October 2028

REFERENCES

Whittaker, D., B. Shelby, and J. Gangemi. 2005. Flows and Recreation: A Guide to Studies for River Professionals. Hydropower Reform Coalition, Washington, DC.

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ATTACHMENT A

Level 1 Assessment Structured Interview Questions

General Boating Experience

1. How many years have you been whitewater boating?
2. How many times a year do you generally go whitewater boating?
3. Please indicate for each type of whitewater craft you use, the:
   a. Frequency you use each compared to other craft (never/rarely/occasionally/frequently)
   b. Years of experience you have with each craft
   c. Whitewater skill level with that craft (Class II, III, IV, V, etc.)

Boating Experience on the Sourgrass Run

4. Please describe your history/interest in the Sourgrass Run.
5. How many years have you been boating the Sourgrass Run?
6. How many times per year do you boat the Sourgrass Run?
7. What are the beginning and end dates for the normal Sourgrass Run boating season?
8. What factors determine the beginning and end of the Sourgrass Run boating season?
9. Where are the primary and alternative, if any, put-in and take-out locations for the Sourgrass Run and are there any issues with these locations?
10. What type of watercraft are appropriate for the Sourgrass Run?
11. What is your preferred watercraft to boat the Sourgrass Run?
12. Please provide an estimate, to the best of your ability, of the dates, times, flow in cfs, and the acceptability of the flow, using the below scale, during your previous boating visits to the Sourgrass Run in your **preferred watercraft**.

    When rating the acceptability of flow levels, please use flow-dependent characteristics that contribute to high quality trips (e.g., boatability, whitewater challenge, safety, aesthetics, pace).

Acceptability Level Scale						
Totally Unacceptable *1*	*Moderately Unacceptable* *2*	*Slightly Unacceptable* *3*	*Marginal* *4*	*Slightly Acceptable* *5*	*Moderately Acceptable* *6*	*Totally Acceptable* *7*

Run	**Watercraft**	**Date**	**River Time**		**Flow** (cfs)	**Acceptability** (circle one)	**Source of Flow Information**
			On	**Off**			
1						1 2 3 4 5 6 7	
2						1 2 3 4 5 6 7	
3						1 2 3 4 5 6 7	

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13. When planning a trip to the Sourgrass Run, where do you go to find information about flow levels and generally how far in advance do you last check the flow level?
14. Can you identify any significant rapids for the reaches you have boated? *Please provide a rapid name, location, and whitewater difficulty, if possible.*
15. Can you identify any significant play spots and/or portages for the reaches you have boated? *Please identify the play spot name and location, if possible.*
16. Can you identify any significant portages for the reaches you have boated? *Please identify the portage name and location, if possible.*
17. Are there specific rapids that determine the overall boatability of the Sourgrass Run? *Please identify the name and location of the rapids*.
18. Do you think there are safety concerns for whitewater recreation unique to the Sourgrass Run that are different from whitewater segments of similar difficulty? If **YES**, please describe.
19. What is the **acceptable flow range** (in cfs) for boating the Sourgrass Run? And, what are the factors that determine the lower and upper end of the **acceptable** flow range?

    ❖ *An "acceptable flow range" is a flow range that provides an experience that a majority of boaters with the necessary skills to boat the flow range would return to boat the reach.*

Question	Response	Factors that Determine the Flow
Watercraft Type		
Low End, **Acceptable** Flow (cfs)		
High End, **Acceptable** Flow (cfs)		

20. What is the **optimum flow range** (in cfs) for boating the Sourgrass Run? And, what are the factors that determine the lower and upper end of the **optimum** flow range?

    ❖ *An "optimal flow range" contains flow characteristics that will provide an optimum experience for the boaters with the skills necessary to whitewater boat the reach .*

Question	Response	Factors that Determine the Flow
Watercraft Type		
Low End, **Optimum** Flow (cfs)		
High End, **Optimum** Flow (cfs)		

21. How would you rate the Sourgrass Run relative to other areas below?

Other Areas	Much Worse	Worse	Similar	Better	Much Better
In Calaveras County	1	2	3	4	5
In Central California	1	2	3	4	5
In California	1	2	3	4	5
In Nation	1	2	3	4	5

22. Relative to the Sourgrass Run, what are comparable experiences in Central California?
23. Can you recommend other individuals we should contact to interview who have previously boated the Sourgrass Run? *Please provide their name, email, and phone number, if possible.*
24. Please provide any additional information you believe will help inform this study.

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STUDY DESCRIPTION RR-3
Fishing, Swimming and Wading Use Evaluation at Calaveras Big Trees State Park
June 3, 2026

This Study Description is developed to inform information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

STUDY AREA

The Study Area includes the North Fork Stanislaus River (NFSR) access sites within Calaveras Big Trees State Park (Big Trees SP) in the vicinity of the bridge over the NFSR along Walter W. Smith Parkway (Figure 1). The Study Area is the 0.3-mile-long section of the North Fork Stanislaus River from River Mile (RM) 11.2 to RM 10.9.



Figure 1. Aerial view of the study area along NFSR within Calaveras Big Trees State Park.

[1] In addition to the details provided in this study description, study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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STUDY METHODS

Excluding Data Summary Development (i.e., Reporting), the Study consists of three steps: 1) Gather Information; 2) Conduct Focus Groups; and 3) Summarize River Recreation Opportunities. Each of these steps is detailed below. The goal of the focus groups is to describe the character of angling, swimming, and wading recreation opportunities in the Study Area and identify flow-dependent attributes.

Step 1 – Gather Information

CCWD will coordinate with Big Trees SP staff to:

- Identify popular sites for fishing, swimming, and wading opportunities.
- Identify the river recreation uses (i.e., fishing, swimming, and/or wading) that occur at each site.
- Identify the peak use periods for each use (i.e., fishing, swimming, and wading).

CCWD will photo-document and map the specific river access locations.

CCWD will summarize representative years of the existing NFSR hydrology (average hourly flows) at the USGS gage near Avery, CA (USGS-11294500) at River Mile (RM) 8.8, approximately 2.4 miles downstream of Big Trees SP for the peak recreation use season(s).

Step 2 – Conduct Focus Groups

CCWD, in consultation with Big Trees SP staff and interested participants will select focus group participants. Participants will include river recreationists (i.e., anglers, waders, and swimmers) and State Park staff, at a minimum. Each focus group will consist of no more than 10 participants.

CCWD will conduct up to two focus group meetings – one meeting with anglers and one meeting with swimmers/waders.

Focus Group Process

Focus group topics will likely include: 1) access considerations; 2) flow ranges for each type of opportunity (i.e., angling, wading, swimming); and 3) constraints to each type of use. In addition, the angling focus group will include additional topics such as target species, types of fishing (e.g., wade/boat-based/shore-based, spin/bait/fly), and angling quality.

A second series of questions will focus on the effects of flows on those attributes and whether interviewees can identify specific flows that affect the quality of these opportunities.

Focus groups and interviews will be semi-structured, with specific topic areas and questions developed for anglers and swimmers/waders.

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The focus group will include up to two CCWD-provided facilitators. The facilitators will pose open-ended questions to guide discussion but will draw out participants with follow-up questions as needed. The focus groups will be scheduled after CCWD researchers have completed Step 1 to increase opportunities for shared understanding about the locations and issues under discussion.

Step 3 – Summarize River Recreation Opportunities

CCWD will summarize the types of use(s), acceptable flow ranges, and general physical site characteristics at the identified river access locations.

CCWD will describe the following for angling and swimming/wading opportunities, as applicable:

- Existing use types and levels
- River access locations and constraints
- Safety considerations
- Acceptable flow range
- Physical characteristics of river
- Availability of flow information
- "Usable-day" opportunities[2] under existing Project operations within the identified acceptable flow range using the historical flow records for the reaches.
- Representative photographs of each river access location.

REPORTING

CCWD will analyze the data to include summary text, tables, figures, and maps, as applicable and completed focus group summaries. The study data will be provided to interested parties as described in *Concepts and Practices Applicable to All Relicensing Studies*.

SCHEDULE

Step 1 – Gather Information	February - November 2027
Step 2 – Conduct Focus Groups	July - October 2027
Step 3 – Summarize Opportunities	October - December 2027
Reporting	January - March 2028

REFERENCES

None.

[2] A "usable-day" opportunity is any flow within the acceptable flow range that that is continuously present in the channel during 8 hours of daylight as recorded at the USGS-11294500 gage.

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STUDY DESCRIPTION TR-1
Botanical Resources Study including Vegetation Mapping and Protocol Surveys for Special-Status Species and Non-Native Invasive Plants

June 9, 2026

This Study Description is developed to inform information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

STUDY AREA

The Study Area includes all areas within the Federal Energy Regulatory Commission (FERC) Project boundary plus a 20-foot buffer around the boundary with the following exceptions: 1) boundaries for underground Project facilities (i.e., tunnels) are not included in the Study Area; 2) at Spicer Meadows Reservoir, the Study Area includes the boundary encompassing the powerhouses, dam, other Project facilities, and recreation areas plus a 20 foot buffer (i.e., these are areas where routine ground disturbing activities may occur) and the area within the New Spicer Meadows Reservoir normal maximum water surface elevation (NMWSE) plus a 50 foot buffer area; and 3) at McKays Reservoir, the Study Area includes the boundary encompassing the dam plus a 20 foot buffer and the area within the McKays Dam NMWSE plus a 50 foot buffer area. Figures 1 and 2 show the Study Area. This results in a Study Area of approximately 1,400 acres, minus those areas that will be inundated at the time the surveys are conducted. The Study Area ranges in elevation between 1,086 feet and 6,766 feet.

[1] In addition to the details provided in this study description, study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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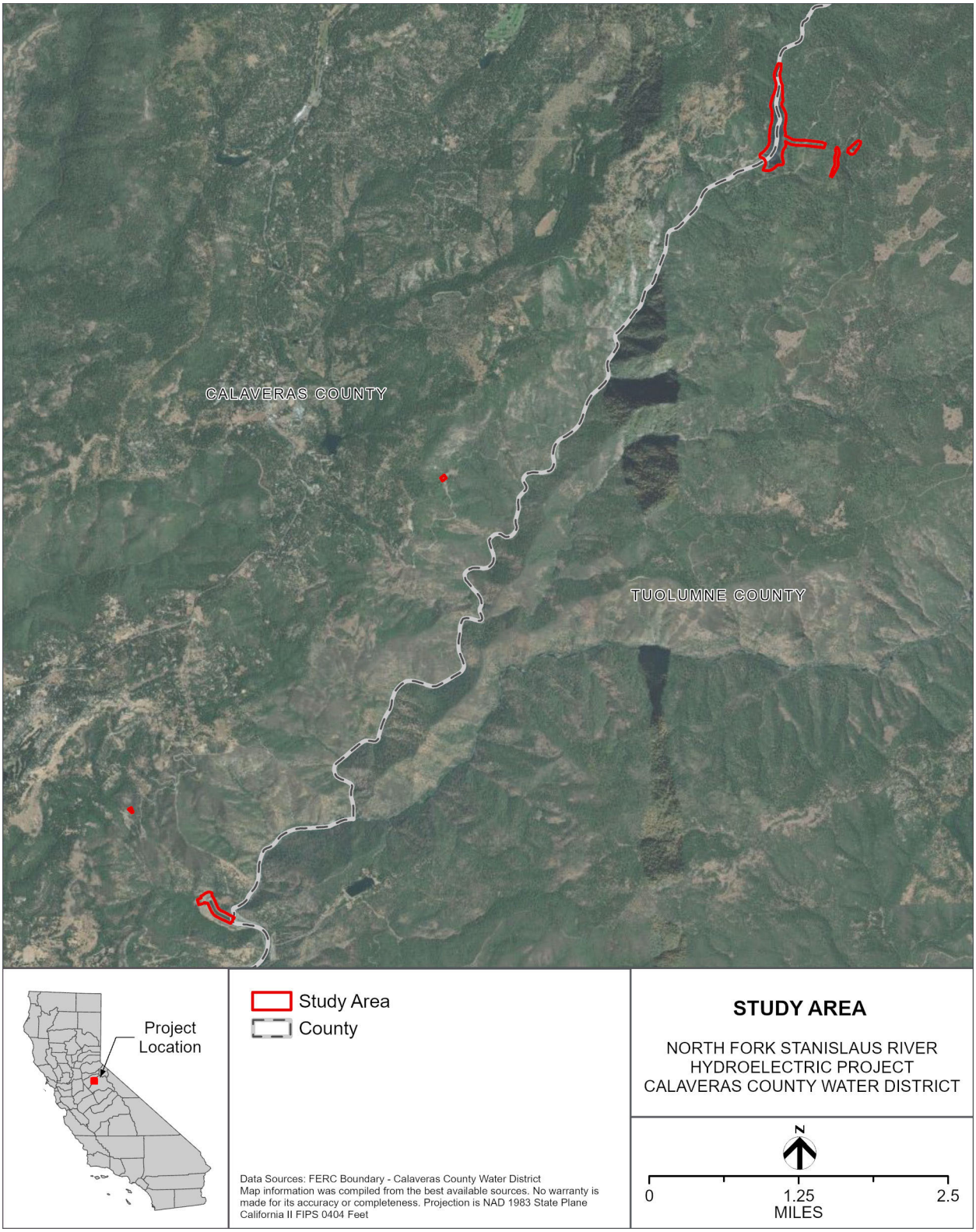


Figure 1. Study Area (McKays Dam & Collierville Tunnel & Beaver Creek Portion).

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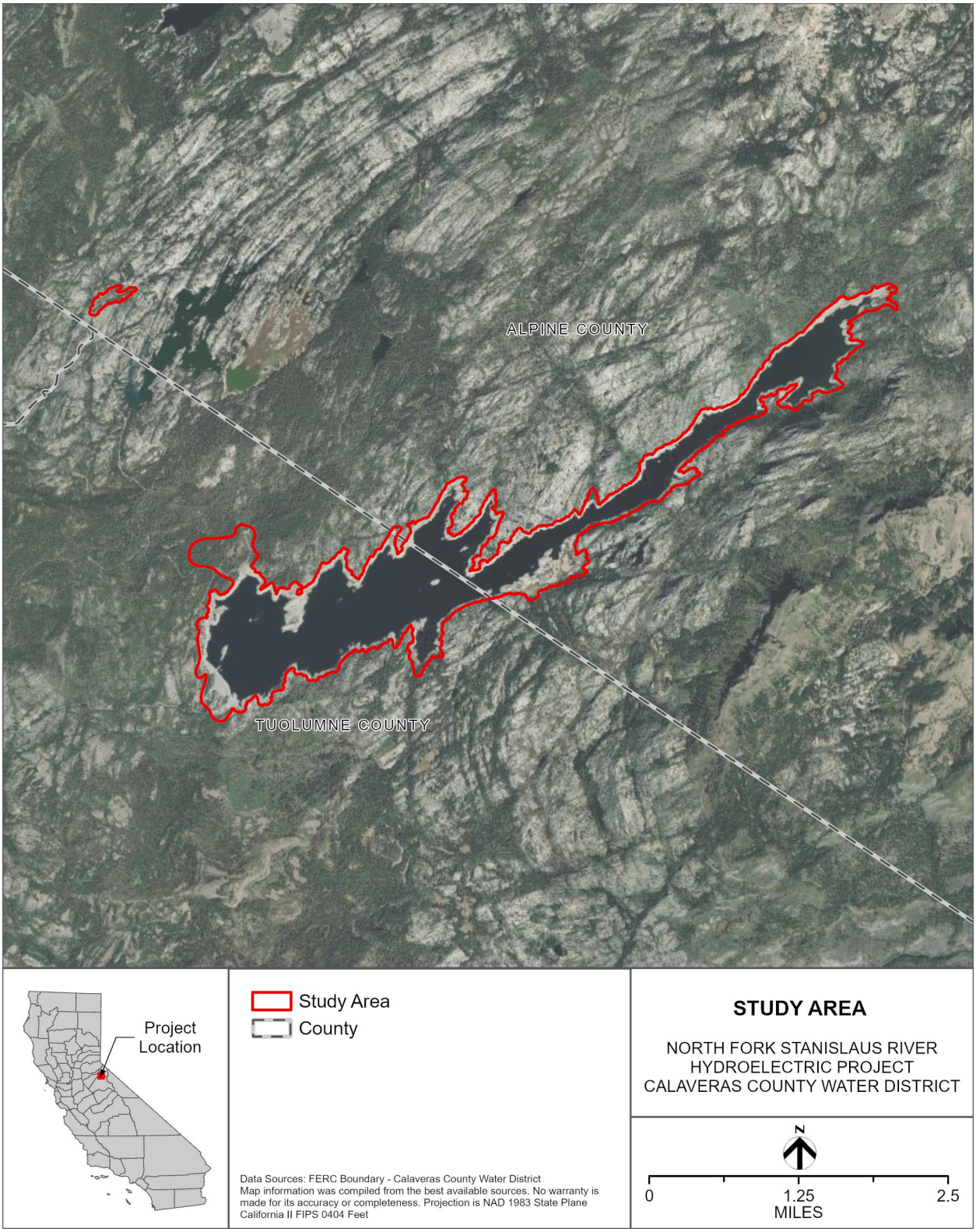


Figure 2. Study Area (New Spicer Reservoir & North Fork Diversion Dam Portion).

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For this Study description the following definitions apply:

Special-Status Botanical Species

- Is a botanical species that, at the time the study is conducted, is;
    - Listed as Threatened or Endangered, or is a candidate or proposed for listing under the federal Endangered Species Act (USFWS 2026) and/or;
    - Listed as Threatened, Endangered, or Rare or is a candidate for listing under the California Endangered Species Act (CDFW 2026a) and/or;
    - Listed as a United States Department of the Interior, Bureau of Land Management (BLM) Sensitive species and occurs on lands administered by BLM (BLM 2026) and/or;
    - A plant that is listed by the United States Department of Agriculture, Forest Service (Forest Service) as a Forest Service Sensitive Species or a Stanislaus National Forest (STF) Watch List species and occurs on National Forest System (NFS) lands (STF 2026); and/or
    - Listed by the California Native Plant Society as a Rare Plant with a Rank of 1B (Rare, Threatened, or Endangered Throughout Its Range) or 2B (Rare, Threatened, or Endangered in California, But Common Elsewhere) (CNPS 2026a).
    - Species of milkweed in the genus *Asclepias*, which are the only food source for monarch butterfly (*Danaus plexippus*) caterpillars.

Non-Native Invasive Plant (NNIP)

- Occurs as a discreet occurrence or cluster of occurrences that cumulatively cover less than 1 acre of the Study Area and is;
    - Listed by the California Department of Food and Agriculture (CDFA) with a rating of A (pest of known economic or environmental detriment and is either not known to be established in California or it is present in a limited distribution that allows for the possibility of eradication or successful containment) or B (pest of known economic or environmental detriment and, if present in California, it is of limited distribution) (CDFA 2021) and/or;
    - Listed by the STF on its priority 1 invasive plant list (STF 2026) and is on NFS lands, as well as priority 2 species in certain circumstances, such as the species presence in the study area being co-located with a special-status plant occurrence and/or;

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- Listed by the California Invasive Plant Council (Cal-IPC) with a Weed Rating of High (species with severe ecological impacts on physical processes, plant and animal communities, and vegetation structure) Moderate (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) or 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) (Cal-IPC 2026).

Additionally if a CDFA rated C species (If found in the state, they are subject to regulations designed to retard spread or to suppress at the discretion of the individual county agricultural commissioner) (CDFA 2021) is found in immediate proximity to a special-status botanical species occurrence it will be noted in the metadata collected for that occurrence.

Special status plants and NNIP collectively will hereafter in this study description be referred to as Target Species.

STUDY METHODS

Excluding Data Summary Development (i.e., Reporting), the Study consists of the following four steps: 1) Conduct Desktop Review; 2) Conduct Floristic Field Survey; 3) Prepare Vegetation Map; and 4) Analysis. Each step is described below.

Step 1 – Conduct Desktop Review

CCWD will compile a list of special-status plant species with potential to occur in the Study Area starting with the information from CCWD's Project Pre-Application Document, or PAD (CCWD 2026) and updated by querying the following:

- United States Department of the Interior, Fish and Wildlife Service's (USFWS) Information for Planning and Consultation portal (USFWS 2026);
- California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2026b);
- California Native Plant Society's online Inventory of Rare and Endangered Plants of California (California Native Plant Society 2026);
- STF's updated list of Threatened, Endangered, Sensitive, and Watch List Plants (Forest Service 2026); and
- BLM's updated list of Sensitive Species (BLM 2026).

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The primary purpose of this list of special-status plant species is to direct the timing of surveys being conducted in the Study Area, so that surveyors have the greatest likelihood of detecting special-status species with potential to occur in the Study Area. All special-status botanical species, as defined, located during surveys will be recorded. Should a list of culturally significant plants for relicensing be provided by Native American Tribe(s) (developed under Study CR-2), information on the culturally significant plants will be compiled and used to inform field studies and reporting needs.

With respect to NNIP, CCWD will compile a list of potential NNIP species using CCWD's PAD (CCWD 2026) as well as the most current CDFA list of noxious weeds (CDFA 2021), STF's Invasive Plant List (Forest Service 2026), and the list of Cal-IPC ranked High and Moderate species known to occur in the upper Stanislaus River watershed (Cal-IPC 2026). This list is also intended to direct the timing of surveys.

Step 2 – Conduct Floristic Field Survey

CCWD's surveyors will generally conduct surveys for special-status botanical species, NNIP species, and vegetation community/habitat mapping as outlined in the CDFW's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018). This protocol comprehensively covers all land types in the study area that are safe to access (Forest Service, BLM, and private) and includes the same guidelines and provisions for data collection and survey intensity as the BLM Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009) as well as the Forest Service Handbook 2609.26, Chapter 10 (Forest Service 2020), while also providing information requested by CDFW.

Furthermore, as outlined in Forest Service Handbook 2609.26, Chapter 10;

- Lead surveyors will obtain a voucher collection permit from the Forest Service prior to surveys being conducted. Any voucher collection will be conducted by or under the direct supervision of a lead surveyor following Forest Service guidelines.
- Voucher specimens of vascular plants will be deposited at the University of California, Davis herbarium, voucher specimens of lichens will be deposited at the Jepson Herbarium, voucher specimens of bryophyte species will be deposited at the Jepson herbarium or San Jose State University herbarium. All voucher collection data will be shared with the Forest Service botanist.
- CCWD will request from the Forest Service appropriate occurrence codes for any special-status plant species found as outlined in Section 12 of Forest Service Handbook 2609.26, Chapter 10.

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For vascular plant species, the surveys will be floristic in nature in that all vascular species observed will be fully identified to the lowest possible rank based on the plants' available anatomy. Scientific and common names for those species that are considered special status will conform to the nomenclature found in CDFW's Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2026b) while all other species' scientific names will conform to the nomenclature found on the Jepson eFlora (Jepson Flora Project 2026). Other species' common names will conform to the nomenclature found on the Jepson eFlora.

The Study Area will be surveyed twice with all surveys tentatively scheduled to occur between April and September. This time range is based on the elevation range of the two primary components of the Study Area as depicted in Figures 1 and 2, the mixture of special-status botanical species and NNIP species with potential to occur and their phenology ranges when they are most identifiable, and as of yet unknown weather conditions for the survey year which can shift survey timing. The timing will ultimately be set to survey when all special-status plant species and NNIP species with potential to occur in the study area are detectable. This timing will also include the ability to map all vegetation types and habitats in the study area as well. Any special status botanical species and NNIP species, as well as special habitats such as lava caps, meadows, rocky outcroppings, aquatic features, large riparian areas will be mapped when observed.

Non-vascular special-status botanical species surveys will also be conducted in the same manner as vascular species surveys with the following deviations:

- Surveys for bryophytes may need to begin in March for lower elevation portions of the study area based on weather conditions.
- As identified in the PAD, one species of special-status lichen has potential to occur in the study area. Two additional lichen species are designated as watch list by the STF (STF 2026). If any lichen species are found that resemble these three lichen species, they will be mapped as if they are special-status botanical species. Voucher samples will be collected if the population is of sufficient size to allow collecting, and these samples will be sent to the Jepson Herbarium for expert verification. If expert verification determines that the collected samples are not a special-status lichen species, these data will not be included in the study report. If expert verification determines that the collected samples are a special-status lichen species, these data will be included in the study report. Voucher collection information of any lichen species will be shared with the Forest Service regardless of what species they are verified to be.

Special-Status Botanical Species

If special-status botanical occurrences are located in the Study Area, the following information will be collected:

- Digital photographs (both large and small scale) showing the species and its habitat (one set only per taxa);

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- Any special-status botanical species found in the Study Area will be mapped with a polygon.
- Ecological information sufficient to fill out a CNDDB form will be collected at the time of survey, except for species of milkweed in the genus *Asclepias*[2] which do not have a California Rare Plant Rank nor are listed by the STF or BLM as sensitive or watch list. Such species of milkweed will only have metadata for species and population size collected.

NNIP

If NNIP occurrences are found in the Study Area, surveyors will collect the following data to the edge of the occurrence or to the edge of the Study Area if the occurrence goes beyond it:

- Digital photographs depicting the species and its habitat (one set only per species);
- Any NNIP species found in the study area will be mapped with a polygon. Metadata to be collected at the time of survey will include location and plant population estimated size. In instances where one polygon represents multiple co-occurring NNIP species, each species in the polygon and their respective population size will be recorded in the metadata.

Step 3 – Prepare Vegetation Map

Vegetation types and other habitats will be mapped covering the Study Area. Where vegetation overlaps with another type of mapping unit, such as a tree canopy over water or roads, the area will be mapped according to the uppermost layer of vegetation. A minimum mapping unit of 0.1 acre will be used when differentiating vegetation types and other habitats. Some vegetation types and other habitats may be mapped below the level of 0.1 acre, such as vegetation types typically associated with wetland features, at the discretion of the surveyors. Vegetation mapping will occur concurrently with surveys for target species. Vegetation mapping will not require surveyors to physically access each mapped polygon but be mapped from appropriate vantage points to view the Study Area.

For each vegetation type or other habitat observed in the field, species composition and percent cover will be recorded on vegetation mapping forms. Nomenclature of vegetation types will follow that of the Manual of California Vegetation Online (CNPS 2026b) to allow for importing into CDFW's Vegetation Classification and Mapping Program (CDFW 2025) as a requirement to the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018). If a vegetation type is recorded that does not conform to a described vegetation type, a new name will be created conforming to the general format of the Manual of California Vegetation Online (CNPS 2026b). These vegetation and other habitat layers will be used to inform components of Study TR-3, as it can be imported into the California Wildlife Habitat Relationships (CWHR) model.

[2] CNDDB forms will be completed if monarch butterflies are located.

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Step 4 - Analysis

Analysis of Target Species data will consist of reviewing field forms and comparing them and GIS datasets to verify that all required data are recorded and there are no data gaps. Plant species unable to be confidently identified in the field will have pictures or samples reviewed and identified. If necessary, CCWD will use the herbarium at the University of California Davis to compare samples and pictures with expertly identified voucher samples.

Vegetation data will be reviewed with the Manual of California Vegetation Online (CNPS 2026b) to assign labels to each vegetation type mapped in the field. Other habitat types will be named based on their primary component, such as lava cap or developed land. Field maps will be digitized to complete a final vegetation layer for the Project. All Project photographs taken in the field and intended for inclusion in future reporting will be catalogued and labeled for future use.

REPORTING

This Study will create shapefiles of special-status botanical and NNIP occurrences as well as special habitats and all other vegetation and habitat types within the Study Area. CNDDB survey forms will also be completed.[3] GIS shapefiles and CNDDB survey forms of botanical data will be shared with the Forest Service.

SCHEDULE

CCWD anticipates the schedule for Study completion as follows:

Conduct Desktop Review	January – March 2027
Conduct Floristic Field Survey [4]	March – September 2027
Prepare Vegetation Map	April – September 2027
Analysis	August – September 2027
Data Summary Development	September – November 2027

REFERENCES

Calaveras County Water District (CCWD). 2026. *North Fork Stanislaus River Hydroelectric Project FERC Project No. 2409 Pre-Application Document (PAD) Volume 1*. Prepared by HDR.

[3] In addition to the details provided in this section, reporting will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

[4] The timing for the field surveys is based on the range of elevation range of the study area and the phenology of target species within the study area

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California Department of Fish and Wildlife (CDFW). 2018. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities*. CDFW, Natural Heritage Division, Sacramento, CA. Available online at: https://wildlife.ca.gov/Conservation/Survey-Protocols#377281280-plants.

_____. 2025. "Vegetation Classification and Mapping Program (VegCAMP)." Natural Heritage Division, Sacramento. Available online at: https://wildlife.ca.gov/Data/VegCAMP.

_____. 2026a. "Special Vascular Plants, Bryophytes, and Lichens List." Natural Heritage Division, Sacramento, California. Available online at: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

_____. 2026b. "California Natural Diversity Database Maps and Data." California Natural Diversity Database: Rarefind 5, records of occurrence. Natural Heritage Division, Sacramento. Available online at: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data.

California Department of Food and Agriculture (CDFA). 2021. "CDFA Weed Pest Ratings and CCR 4500 Noxious Weeds." Last updated June 22, 2021. Available online at: https://www.cdfa.ca.gov/plant/ipc/encycloweedia/pdf/CaliforniaNoxiousWeeds.pdf.

California Invasive Plant Council (Cal-IPC). 2026. "California Invasive Plant Inventory Database." Berkeley. Available online at: http://cal-ipc.org/ip/inventory/index.php/.

California Native Plant Society. 2026a. "CNPS Rare Plant Inventory." Inventory of rare and endangered vascular plants of California. (Online Edition, v9.5.1). Sacramento. Available online at: http://www.rareplants.cnps.org/.

_____. 2026b. *A Manual of California Vegetation Online*. Available online at: https://vegetation.cnps.org/.

Jepson Flora Project. 2026. "Jepson eFlora" (Revision 14). University of California, Berkeley. Last updated March 12, 2026. Available online at: http://ucjeps.berkeley.edu/IJM.html.

Stanislaus National Forest (STF). 2026. Information on Forest Service Sensitive, Watch List, and Invasive species for the Stanislaus National Forest. Transmitted by SNF on January 12, 2026.

United States Department of Agriculture, Forest Service (Forest Service). 2020. Forest Service Handbook 2609.26, Chapter 10, Sensitive Plant Program Management. Pacific Southwest Region (R5). Available online at: https://www.fs.usda.gov/im/directives/field/r5/fsh/2609.26/R5-2609-26-Contents-2020-1%203a.pdf.

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____, Stanislaus National Forest (STF). 2026. Information on Forest Service Sensitive, Watch List, and Invasive species for the Stanislaus National Forest. Transmitted by Stanislaus National Forest on January 12, 2026.

United States Department of the Interior, Bureau of Land Management (BLM). 2009. *Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species*. Bureau of Land Management California State Office. Geographic Services.

_____. 2026. Information on BLM Sensitive species for California. Transmitted by BLM on January 15, 2026.

United States Fish and Wildlife Service (USFWS). 2026. Information for Planning and Consultation. Environmental Conservation Online System. Available online at: https://ecos.fws.gov/ecp/. United States Fish and Wildlife Service. Washington D.C.

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STUDY DESCRIPTION TR-2
Protocol-level Surveys for Bald Eagle
April 1, 2026

This Study Description is developed to inform information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

STUDY AREA

The Study Area includes the area within the normal maximum water surface elevation (NMWSE) of New Spicer Meadow Reservoir plus the visible area of a 1.0-mile around the reservoir's edge. Figure 1 shows Study Area.

[1] In addition to the details provided in this study description, study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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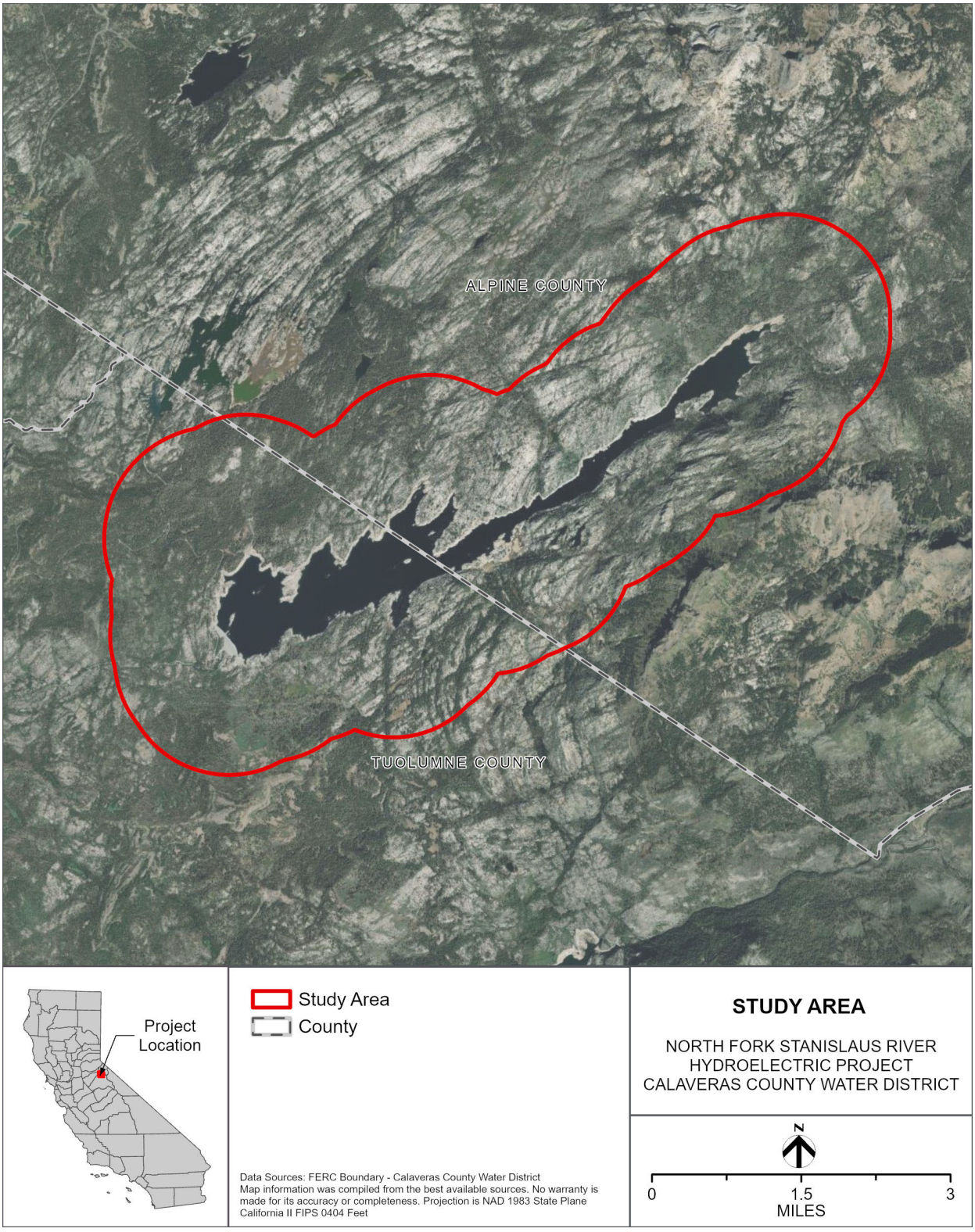


Figure 1. Study Area for Bald Eagle Nest Surveys.

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STUDY METHODS

Excluding Data Summary Development (i.e., Reporting), the Study consists of the following two steps: 1) Identify and Map Known Bald Eagle (*Haliaeetus leucocephalus*) Winter Roosts and Nest Sites Occurrences; and 2) Conduct Field Surveys for Bald Eagles. Both steps are described below.

Step 1 – Identify and Map Known Bald Eagle Winter Roosts and Nest Sites

CCWD will identify and map any known occurrences of bald eagles, including nests and winter roosts in the Study Area. For informational purposes, known nests and roosts of other special-status raptors[2] in the Study Area will be noted. The map will be based on: California Department of Fish and Wildlife's California Natural Diversity Data Base (CNDDB) existing data (CDFW 2026); confirmed eBird (Cornell Lab of Ornithology 2026); verified iNaturalist (iNaturalist 2026) sitings; information provided by the Stanislaus National Forest (STF); and discussions with Project Operations Staff.

Step 2 – Conduct Field Surveys for Bald Eagle

Bald Eagle Surveys

CCWD will conduct nesting surveys according to the Protocol for Evaluating Bald Eagle Habitat and Populations in California (Jackman and Jenkins 2004).[3] More in-depth survey methodology and descriptions can be found in the associated Field Methods section of this document.

Bald Eagle surveys will be conducted from a boat or by foot, depending on weather conditions and accessibility. If by boat, it is assumed that the surveyor will be able to visually observe an area of approximately 0.25-mile from the water's edge of New Spicer Meadow Reservoir. Surveying should concentrate on areas closest to the water but search up to 1.0-mile from the shoreline within suitable habitat (Jackman and Jenkins 2004).

CCWD will conduct nesting surveys according to the Bald Eagle Breeding Survey Instructions (CDFG 1999) and Protocol for Evaluating Bald Eagle Habitat and Populations in California (Jackman and Jenkins 2004). Nesting territories will be checked at least three times during the nesting season (March[4] through July). Survey methods include:

[2] Other special-status raptor species that may occur in or near the Project include American goshawk (*Accipiter atricapillus*), golden eagle (*Aquila chrysaetos*), short-eared owl (*Asio flammeus*), long-eared owl (*Asio otus*), Northern harrier (*Circus hudsonius*), white-tailed kite (*Elanus leucurus*), and great gray owl (*Strix nebulosa*).

[3] Spicer Meadow Reservoir is inaccessible during winter months, so Study TR-2 does not include winter surveys.

[4] Surveys may start in February if weather and access allow.

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- Determine Occupancy of Territories and Early Incubation – Territories will be checked in early March, as weather conditions and access allows. Data collected at each site will consist of: 1) presence of adults; 2) courtship behavior; 3) evidence of nest repair or construction; 4) incubation; 5) observation of old nests: and 6) identification of new nests. Surveys will be performed by boat, GPS coordinates will be recorded, and photographs taken for all nests observed.
- Confirm Occupancy of Territories and Presence of Eggs/Nestlings – Surveys will be conducted in late April or early May to determine whether breeding pair identified during the March survey is still tending to the nest (e.g., incubating eggs or rearing nestlings). The number of eggs/nestlings, bird behavior, and any other relevant observations will be recorded. These surveys will be conducted in the same manner as the initial surveys.
- Determine Nest Success – Surveys will be conducted in mid-June to determine how many nestlings are approaching fledgling age. These surveys will be conducted in the same manner as the other nesting surveys. The CDFW California Bald Eagle Nesting Territory Survey Form (CDFG 1999) will be utilized during all nesting surveys.

REPORTING

The study will generate maps and GIS data for previously known and newly mapped bald eagle nests and observations. Completed CNDDB forms and California Bald Eagle Nesting Territory Survey Forms will also be produced.[5]

SCHEDULE

CCWD anticipates the schedule for Study completion as follows:

Identify and Map Known Occurrences	November 2026 – February 2027
Conduct Bald Eagle Surveys	(February) March – August 2027
Data Summary Development	September – November 2027

REFERENCES

California Department of Fish and Game (CDFG). 1999. Bald Eagle Breeding Survey Instructions. November 1999. Sacramento, CA. Available online at: https://nrm.dfg.ca.gov/documents/docviewer.aspx.

California Department of Fish and Wildlife (CDFW). 2026. *California Natural Diversity Database (CNDDB).* Available online at: https://wildlife.ca.gov/Data/CNDDB.

[5] In addition to the details provided in this section, reporting will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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Cornell Lab of Ornithology. 2026. eBird. Species observed, Spicer Meadow Reservoir (TUL Co.). Available online at: https://ebird.org/hotspot/L1230794/bird-list.

iNaturalist. 2026. Observations. Available online at: https://inaturalist.org/observations.

Jackman, R.E. and J.M. Jenkins. 2004. Protocol for Evaluation Bald Eagle Habitat and Populations in California. Prepared for U.S. Fish and Wildlife Service. Sacramento, CA. Available online at: https://nrm.dfg.ca.gov/documents/docviewer.aspx.

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STUDY DESCRIPTION TR-3
Special-Status Terrestrial Wildlife Study
April 1, 2026

This Study Description is developed to inform information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

STUDY AREA

The Study Area includes the FERC Project Boundary plus a 0.25-mile buffer around the boundary with the following exception: 1) boundaries for underground Project facilities (i.e., tunnels) are not included in the Study Area. The Study Area conforms to the Assessment Area described in Section 3.5 *Terrestrial* Resources of the Pre-application Document (PAD). Figure 1 shows the Study Area.

[1] In addition to the details provided in this study description, study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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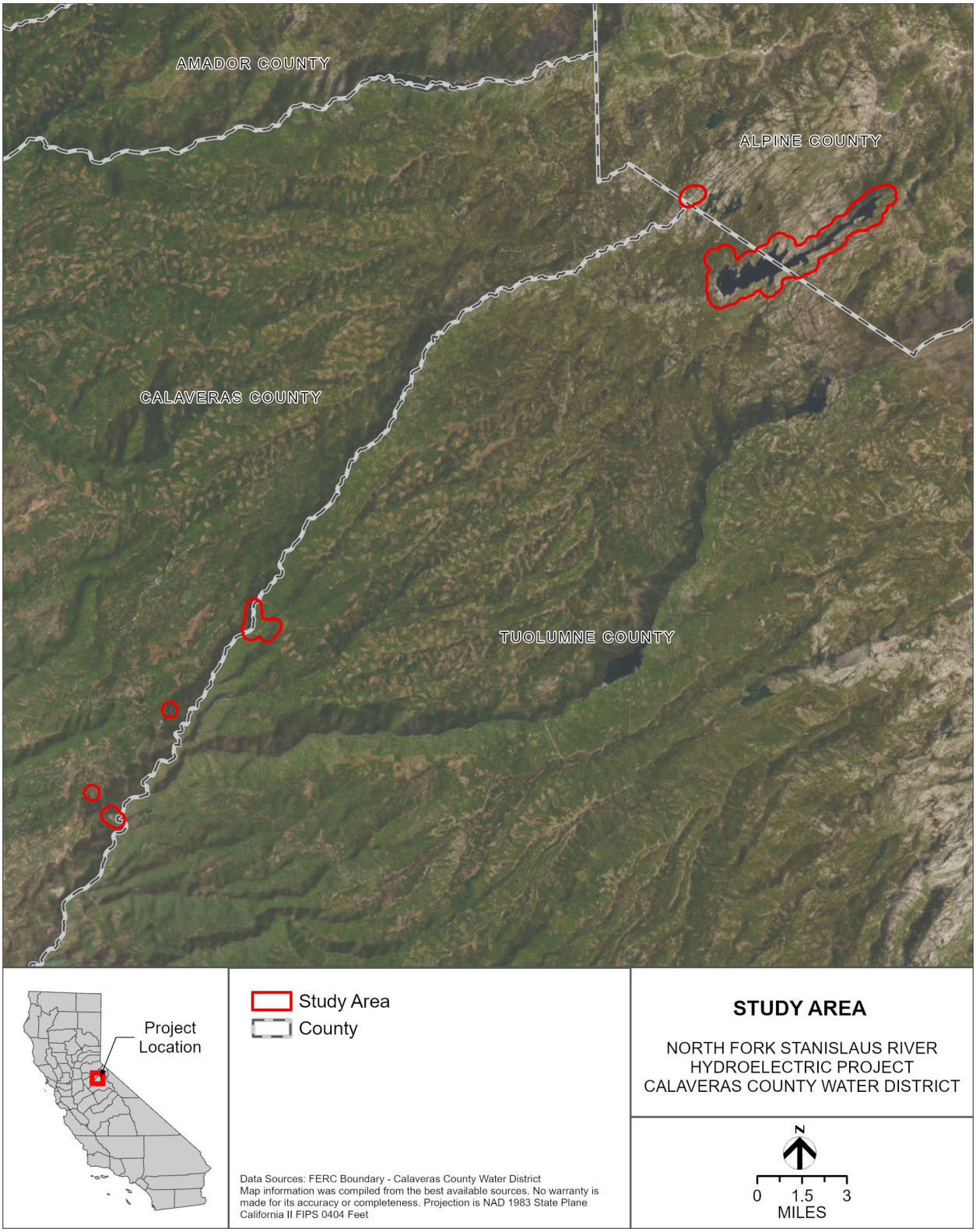


Figure 1. Study Area.

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For the purpose of this Study the following definitions apply:

Special-Status Terrestrial Wildlife Species[2]

- Is a wildlife species that, at the time the Study is conducted, is;
    - Listed as Threatened or Endangered, or is a candidate or proposed for listing under the federal Endangered Species Act (USFWS 2026) and/or;
    - Protected under the Bald and Golden Eagle Protection Act and/or;
    - Listed as Threatened, Endangered, or Rare or is a candidate for listing under the California Endangered Species Act (CDFW 2026a) and/or;
    - Listed as Fully Protected under California law pursuant to Fish and Game Code Sections 3511, 4700, 5050 and 5515 and/or;
    - Designated by California Department of Fish and Wildlife (CDFW) as a Species of Special Concern and/or;
    - Listed as a United States Department of the Interior, Bureau of Land Management (BLM) Sensitive species and occurs on lands administered by BLM (BLM 2026) and/or;
    - Listed by the United States Department of Agriculture, Forest Service (Forest Service) as a Forest Service Sensitive Species and occurs on National Forest System (NFS) lands.

STUDY METHODS

Excluding Data Summary Development (i.e., Reporting), the Study consists of the following two steps: 1) Identify and Quantify Suitable Foraging and/or Breeding Habitat for Special-status Terrestrial Wildlife Species based on California Wildlife Habitat Relationships (CWHR) habitat types; and 2) Refine the List of Special-status Terrestrial Wildlife Species. Study TR-3 does not include any fieldwork, but utilizes information developed by Study TR-1, Botanical Resources Study, including Vegetation Mapping. Incidental observations of special-status wildlife documented during relicensing studies will also be incorporated into the results.

Step 1 - Identify and Quantify Suitable Foraging and/or Breeding Habitat for Special-status Wildlife Species

CCWD will crosswalk the Manual of California Vegetation (MCV) alliances developed during Study TR-1 into CWHR habitat types within the Study Area. CCWD will then run the CWHR habitat types through CDFW's CWHR Version 10 (or as updated) Online Application (CDFW 2021) to generate a list of potential Special-status Terrestrial Wildlife Species that have potential to use the area.

[2] Aquatic amphibians, reptiles, mollusks, and snails are not considered in this Study, but any species that spends part of their life cycle on land is considered terrestrial for the purpose of this Study.

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Step 2 – Refine the List of Special-Status Terrestrial Wildlife Species.

In Step 2, the list of Special-status Terrestrial Wildlife Species developed in Step 1 will be supplemented by information from:

- CDFW's Special Animals List (CDFW 2026a);
- CDFW's California Natural Diversity Database (CNDDB) (CDFW 2026b);
- USFWS's Information for Planning and Consultation (IPaC) portal (USFWS 2026a); and
- USFWS's Critical Habitat Mapper (USFWS 202b).

These data will be utilized to update Table 3.5-3, *Special Status Wildlife Species with the Potential to Occur in the Assessment Area,* from the PAD. The refinements will include addition and subtraction of special-status wildlife species, listing suitable habitat in and around the Project facilities for each species, acreage of suitable habitat in the FERC Project boundary, and acreage of suitable habitat within the 0.25-mile buffer. A map of the CWHR habitat types will be developed for the Project.

REPORTING

The study will generate an updated table of special-status terrestrial wildlife with suitable habitat on and near the Project, as well as maps of the suitable habitat.[3]

SCHEDULE

CCWD anticipates the schedule for Study completion as follows:

Crosswalk MCV into CWHR	July 2027
Develop Terrestrial Wildlife Table	August – September 2027
Data Summary Development	September – November 2027

[3] In addition to the details provided in this section, reporting will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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REFERENCES

California Department of Fish and Wildlife (CDFW). 2026. California *Natural Diversity Database (CNDDB).* Available online at: https://wildlife.ca.gov/Data/CNDDB.

_____. 2021. California Wildlife Habitat Relationship System, Version 10.1.29. Sacramento, CA. Available online at: https://apps.wildlife.ca.gov/cwhr/index.shtml.

California Native Plant Society (CNPS). 2026. Manual of California Vegetation Online. Available online at: https://vegetation.cnps.org/.

U.S. Fish and Wildlife Service. 2026a. Information for Planning and Consultation. Environmental Conservation Online System. Available online at: https://ecos.fws.gov/ecp/. United States Fish and Wildlife Service. Washington D.C.

_____. 2026b. Critical Habitat Mapper. Available online at: https://fws.maps.arcgis.com/apps/mapviewer/index.html?layers=794de45b9d774d21aed3bf9b5313ee24.

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STUDY DESCRIPTION VR-1
Visual Resource Evaluation at Project Facilities
June 3, 2026

This Study Description is developed to inform information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

STUDY AREA

The Study Area includes the aboveground Project facilities and features within the proposed Project boundary on federal lands (Table 1) and their associated viewsheds. Federal lands in the Project boundary include National Forest System (NFS) lands managed by the United States Department of Agriculture, Forest Service, as part of the Stanislaus National Forest (STF), and federal lands administered by the United States Department of the Interior, Bureau of Reclamation (Reclamation or BOR) as part of the New Melones Complex.[2]

Sampling Locations

Table 1. Aboveground Project facilities and features.

Area	Project Facility Complex[1]	Facility Type	Land Ownership & Management
North Fork Diversion Dam Impoundment	North Fork Diversion Dam, Spillway, and Intake	Hydroelectric	Federal (STF)
New Spicer Meadow Reservoir	North Fork Diversion Tunnel Outlet and Outlet Channel	Hydroelectric	Federal (STF)
	New Spicer Meadow Dam, Saddle Dam, Spillway, and Power Intake	Hydroelectric	Federal (STF)
	New Spicer Meadow Powerhouse and Switchyard	Hydroelectric	Federal (STF)
	New Spicer Meadow Campground	Recreation	Federal (STF)
	New Spicer Meadow Group Campground	Recreation	Federal (STF)
	New Spicer Meadow Boat Launch and Day Use Area	Recreation	Federal (STF)
Beaver Creek Diversion Dam Impoundment	Beaver Creek Diversion Dam, Spillway, Intake, and Low Level Outlet	Hydroelectric	Federal (STF)
McKays Point Diversion Dam Impoundment	McKays Point Diversion Dam, Spillway, Low Level Outlet	Hydroelectric	Federal (STF)
	Collierville Tunnel Intake	Hydroelectric	Federal (STF)
	Beaver Creek Tunnel Outlet	Hydroelectric	Federal (STF)
Collierville Powerhouse	Collierville Powerhouse and Tailrace	Hydroelectric	Federal (BOR)
	Collierville Switchyard	Hydroelectric	Federal (BOR)

[1] Many of the Project facilities overlap or are situated together or abutting in an overall complex of facilities. Thus, from a viewer's perspective, these facilities are viewed as a complex - not as separate, standalone facilities.

[1] In addition to the details provided in this study description, study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

[2] The Project includes Adit 4, which is located on federal lands administered by the United States Department of the Interior, Bureau of Land Management. Adit 4 is not included in the study because it is not readily visible from prominent public viewpoints.

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STUDY METHODS

Excluding Data Summary Development (i.e., Reporting), the Study consists of two steps: 1) Gather Information and Mapping; and 2) Field Evaluation. Each step is described below.

Step 1 – Gather Information and Mapping

CCWD will perform the following information gathering and mapping tasks.

- Identify and map reasonable viewsheds associated with the Project facilities and features identified in Table 1.
- Map and summarize the STF Visual Quality Objectives (VQOs) potentially related to the Project facilities and features on NFS lands (Forest Service 1974, Forest Service 1991, Forest Service 2017).[3] Reclamation does not have visual objectives associated with federal lands that Reclamation administers.
- Map the location of the Project facilities and features in Table 1 with respect to their associated foreground, middleground, and background viewsheds and, if on NFS lands, VQOs, as applicable.
- Identify Key Observation Points (KOPs) with critical views where photographs will be taken based on the list of Project facilities and features using typical photographic protocols (i.e., using a 55-millimeter camera lens or equivalent). KOPs will be located where prominent public viewpoints exist.

Step 2 - Field Evaluation

CCWD will perform the following field-related evaluation of the existing visual condition (EVC).

- Document the EVC of the Project facilities and features in the field from the established KOPs.
- Photo-document the observed EVC from each KOP of the Project facilities and features.
- Develop a map and describe the location of each KOP following the field evaluation.

[3] CCWD is utilizing the Forest Service's 1974 Visual Management System (VMS) which uses VQOs since the current 1991 STF Land and Resource Management Plan and 2017 STF Forest Plan Direction uses the VMS/VQOs and not the Forest Service's updated 1995 Scenery Management System (SMS). The SMS system retained the basic inventory elements of the VMS but moved from VQOs to scenic integrity objectives (SIOs) with different terminology.

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REPORTING

CCWD will analyze the field data to include tables and photos. Study data will be made available to all interested parties (See Concepts and Practices Applicable to All Relicensing Studies) and standard GIS shapefiles, including metadata, if developed will be provided to the Forst Service.[4]

SCHEDULE

Step 1 – Gather Information/Mapping	May - July 2027
Step 2 – Field Evaluation	July - September 2027
Reporting	October - December 2027

REFERENCES

United States Department of Agriculture, Forest Service (Forest Service). 1974. National Forest Landscape Management. The Visual Management System, Volume 2. Agriculture Handbook. 462. Washington, DC: U.S. Department of Agriculture, Forest Service.

_____. 1991. Stanislaus National Forest Land and Resource Management Plan. Department of Agriculture, Sonora, California. October 1991.

_____. 2017. Stanislaus National Forest, Forest Plan Direction. Department of Agriculture, Sonora, California. March 2017.

[4] In addition to the details provided in this section, reporting will also follow the "Concepts and Practices Applicable to All Relicensing Studies" developed by CCWD.

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STUDY DESCRIPTION WR-1
Water Quality Study
August 5, 2026

This Study Description is developed to inform information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

This Water Quality Study (Study) is intended to address all pertinent water quality parameters except for water temperature, which is addressed in relicensing study WR-2, *Water Temperature Model of Project-Affected Reaches and in New Spicer Meadow Reservoir*.

STUDY AREA

The Study Area includes the following reservoirs/impoundments and river reaches:

- Reservoirs/Impoundments
  - New Spicer Meadow Reservoir
- River Reaches
  - North Fork Stanislaus River (NFSR) downstream of the North Fork Diversion Dam to the confluence of Highland Creek
  - Highland Creek and NFSR downstream of New Spicer Meadow Dam to McKays Point Diversion Dam
  - NFSR from McKays Point Diversion Dam to confluence with Collierville Powerhouse Tailrace
  - Beaver Creek downstream of beaver Creek Diversion Dam
  - Stanislaus River upstream and within Collierville Powerhouse Tailrace

STUDY METHODS

The Study will be performed in six steps: 1) collect water quality samples; 2) collect dissolved oxygen data; 3) collect bacteria samples; 4) perform laboratory analyses; 5) quality assurance/quality control (QA/QC) review; and 6) reporting. Each of these steps is described below.

[1] In addition to the details provided in this study description, study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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Step 1: Collect Water Quality Samples

Water quality parameters are listed in Table 1.[2]

Table 1. Water quality sampling parameters and laboratory methods (USEPA 2017).

Parameter/Constituent	Methods
In Situ	
Temperature	*Field (in situ)*
Dissolved oxygen	*Field (in situ)*
pH	*Field (in situ)*
Specific conductance	*Field (in situ)*
Secchi disk	*Field (in situ)*
General Chemistry	
Total organic carbon	EPA 415.1
Dissolved organic carbon	EPA 415.1 D
Total alkalinity	EPA 310.1
Turbidity	EPA 180.1
Calcium	EPA 200.7
Hardness	EPA 130.1
Total dissolved solids	EPA 160.1
Total suspended solids	EPA 160.2
Nutrients and Productivity	
Nitrate+Nitrite-N	EPA 300.0
Total ammonia-N	EPA 350.3
Total Kjeldahl nitrogen	EPA 351.3
Orthophosphate	EPA 365.3
Total phosphorous	EPA 365.3
Chlorophyll-a	EPA 445.0
Metals	
Arsenic (total and dissolved)	EPA 200.8
Cadmium (total and dissolved)	EPA 200.8
Chromium, Total (total and dissolved)	EPA 200.8
Copper (total and dissolved)	EPA 200.8
Iron (total and dissolved)	EPA 200.8
Lead (total and dissolved)	EPA 200.8
Mercury (total)	EPA 200.8
Methylmercury (total and dissolved)	EPA 200.8

[2] Neither CCWD nor the Project operator conduct cloud seeding (i.e., inject silver iodide or dry ice into the atmosphere) in the basin.

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Table 1. (Continued).

Parameter/Constituent	Methods
Metals (continued)	
Nickel (total and dissolved)	EPA 200.8
Selenium (total)	EPA 200.8
Silver (total and dissolved)	EPA 200.8
Zinc (total and dissolved)	EPA 200.8

Samples in stream reaches will be collected from flowing water just below the surface. In New Spicer Meadow Reservoir, samples will be collected at two depths: within the hypolimnion and just below the surface in the epilimnion. In the event the reservoir is mixed at the time of sampling, samples will be collected from just below the surface and approximately 5 feet from the bottom (Table 2). Samples will be collected from the locations listed in Table 2 once in the fall. Sampling will occur when New Spicer and Collierville powerhouses are operational.

Table 2. Water quality sample locations.

Location	River Mile	Sample Depth
New Spicer Meadow Reservoir; near Intake	18.4	Surface
		Bottom
Highland Creek below New Spicer Meadow Reservoir Dam	5.6	Surface
North Fork Stanislaus River below North Fork Diversion Dam	32.6	Surface
North Fork Stanislaus River above McKays Point Diversion Dam	9.0	Surface
North Fork Stanislaus River below McKays Point Diversion Dam	7.9	Surface
Beaver Creek below Beaver Creek Diversion Dam	3.4	Surface
Stanislaus River above Collierville Powerhouse Tailrace	1.0	Surface
Stanislaus River in the Collierville Powerhouse Tailrace	0.5	Surface

In Situ Sampling

A multi-parameter water quality meter (e.g., HydroLab, YSI, or similar instrument) will be used to collect the *in situ* measurements. Pre- and post-sampling calibration checks of the water quality meter following the manufacturer instructions will be conducted on-site for each day of sampling. Any calibration variances will be noted on the field data sheet and in the data summary, and recalibration or repair done, as necessary. CCWD will note relevant conditions during each sampling event on the field data sheet (e.g., air temperature; flow, if available at a nearby gage; description of sampling location; floating material; evidence of oil and grease; and activities in the vicinity of the sampling site that could cause short-or long-term alterations to water quality, such as dredging).

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Laboratory Samples

Each sample to be delivered to a laboratory will be collected into laboratory-supplied clean containers. Water samples to be analyzed for metals will be taken using "clean hands" methods consistent with the United States Environmental Protection Agency's (EPA's) Method 1669 sampling protocol *Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria* (EPA 1995).

All sample containers will be labeled with the date and time that the sample is collected, sampling site or identification label, and handled in a manner consistent with appropriate chain-of-custody protocols. The sample container will be preserved as appropriate, stored and delivered to a State of California-certified water quality laboratory for analyses in accordance with maximum holding periods for each parameter. A chain-of-custody record will be maintained at all times.

As part of the field QA program, one field blank and one equipment rinsate will be collected and submitted to the laboratory for each day of sampling. A field blank is a sample of analyte-free water poured into the container in the field, preserved and shipped to the laboratory with samples. A field blank assesses the contamination from field conditions during sampling. A rinsate is a sample of analyte-free water poured over or through decontaminated field sampling equipment prior to the collection of samples and assesses the adequacy of the decontamination processes. One duplicate sample will also be collected to confirm the laboratory's QA process.

Secchi Depth Readings in Reservoirs

Prior to collecting reservoir samples, a Secchi disk will be slowly lowered into the water on the shady side of the boat until it is no longer visible, and the depth recorded. Then, the Secchi disc will be slowly raised until it just becomes visible once again and this depth will be recorded a second time. The average of the two depths will be considered the Secchi depth and recorded.

Step 2: Dissolved Oxygen Monitoring

CCWD will measure continuous dissolved oxygen (DO) concentration and water temperature. While DO is the parameter of interest in this Study, water temperature is often tied to DO results. Note that a separate *Water Temperature Modeling Study* (Study WR-2) has been proposed.

Continuous DO monitors will be installed at three locations: 1) Highland Creek downstream of the New Spicer Meadow Powerhouse (Highland Creek RM 5.6); 2) North Fork Stanislaus River downstream of McKays Point Diversion Dam (RM 7.9); and 3) Collierville Powerhouse Tailrace (RM 0.5).

Continuous DO monitors will be deployed once flows have stabilized (i.e., no spill) and left in through the fall prior to site access being restricted due to weather and road closures. The loggers will be downloaded and inspected/maintained monthly during the deployment periods.

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DO monitoring will generally follow the United States Geological Survey (USGS) published method for the operation of continuous water quality stations (Wagner et al. 2006). DO concentrations will be measured at 1-hour intervals using an Onset sonde or similar device.

Each DO monitor will be contained in a durable protective housing that permits the active flow of water in and around the unit. The DO monitors will be installed in flowing water, and the housing and cable will be disguised as much as possible while ensuring the ability to retrieve the unit. A GPS coordinate will be recorded at each installation point, along with any waypoints that may prove valuable for future retrieval. Photographs of the sampling site, including installation configuration, will be taken. Prior to installation, each recorder will be numbered and calibrated to manufacturer's recommended specifications.

During each visit, CCWD will download data and inspect the loggers. Should a recorder need to be repaired or replaced because it is missing or has failed, CCWD will be able to do so immediately to reduce the potential for additional data loss. Any recorder that fails to download will be returned to the manufacturer for possible data recovery.

Step 3: Bacteria Sampling

CCWD will measure total coliform, fecal coliform, and *Escherichia coli* (i.e., E. coli) concentrations at one location at New Spicer Meadow Reservoir along the shoreline in the area near the boat ramp and campground.

In accordance with bacteria sampling protocols, bacteria samples will be collected on five different days within a 30-day period which spans the Independence Day or Labor Day holiday weekends (CVRWQCB 1998).

Step 4: Perform Laboratory Analyses

All laboratory analyses will be conducted using EPA Standard Methods or the equivalent sufficiently sensitive method to detect and report at levels necessary for evaluation against State and federal water quality standards. A State of California-certified laboratory will prepare and analyze water samples for the parameters listed in Table 1. Surface water samples collected adjacent to recreation sites will be analyzed for total coliform, fecal coliform, and *Escherichia coli*.

Step 5: QA/QC Review

Data will be verified and/or validated as appropriate. Following the field sampling and laboratory analyses, which includes the laboratories' own QA/QC analysis, CCWD will subject all data to QA/QC procedures including, but not limited to: spot-checks for transcription; review of electronic data submissions for completeness; comparison of results to field blank and rinsate results; and, identification of any data that seem inconsistent. If any inconsistencies are found, CCWD will consult with the laboratory to identify any potential sources of error before concluding that the data is correct.

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All verified chemical detections, including data whose results are "J" qualified[3] will be used for this assessment. Should the laboratory need to re-extract samples and re-run the sample under different calibration conditions, the data identified by the laboratory, as the most certain, will be used. If field-sampling conditions, as measured by the field blank and the rinsate sample results, indicate that samples have been corrupted, CCWD will identify the data accordingly.

REPORTING

CCWD will compile the study data into a summary report as well as include the complete laboratory results packages.[4]

SCHEDULE

CCWD anticipates the schedule for Study completion as follows:

Step 1: Water Quality Sampling	September – October 2027
Step 2: Dissolved Oxygen Monitoring	May – October 2027
Step 3: Bacteria Sampling	June – September 2027
Step 4: Laboratory Analysis	July – November 2027
Step 5: QA/QC Review	July – November 2027
Reporting	November – December 2027

REFERENCES

California Regional Water Quality Control Board Central Valley Region (CVRWQCB). 2019. Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin, Fifth Edition. Revised February 2019, with approved amendments. Available online: https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201902.pdf. Accessed June 22, 2026.

U.S. Environmental Protection Agency (EPA). 2017. Clean Water Act Analytical Methods. Office of Water, U.S. Environmental Protection Agency, Washington, DC. Available at: https://www.epa.gov/cwa-methods. Accessed June 22, 2026.

EPA. 1996. Method 1669: Sampling ambient water for trace metals at United States Environmental Protection Agency water quality criteria levels. United States Environmental Protection Agency, Washington, D.C. Available at https://www.epa.gov/sites/default/files/2015-10/documents/method_1669_1996.pdf. Accessed June 22, 2026.

[3] Results with a "J" qualifier are results where the chemical was detected, but there is uncertainty in the quantity. The quantity is above the method detection limit, but below the reporting limit.

[4] In addition to the details provided in this section, reporting will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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Wagner, R.J., R.W. Boulger, Jr., C.J. Oblinger, and B.A. Smith. 2006. Guidelines and standard procedures for continuous water-quality monitors—Station operation, record computation, and data reporting: U.S. Geological Survey Techniques and Methods 1–D3, 51 p. + 8 attachments. Available at https://pubs.usgs.gov/tm/2006/tm1D3/. Accessed June 22, 2026.

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STUDY DESCRIPTION WR-2
Water Temperature Model of Project-Affected Reaches and in New Spicer Meadow Reservoir
July 28, 2026

This Study Description was developed to inform information gaps identified by Calaveras County Water District (CCWD) for the relicensing of its North Fork Stanislaus River Hydroelectric Project (Project).[1]

This Study will use the United States Army Corps of Engineers' (USACE) Hydrologic Engineering Center HEC-5Q (USACE 1998), which is part of a modeling suite developed by USACE as a companion to its HEC-5 flood control and conservation system model. HEC-5Q is designed to simulate water temperature in reservoirs and rivers. California Department of Fish and Wildlife and CCWD's modelers agreed HEC-5Q Model is adequate to reliably model New Spicer Meadows Reservoir. Model output will be average daily temperature and, if maximum daily temperatures are needed, these will be post-processed. For New Spicer Meadow Reservoir, model output will be at various locations, including the intake tower. For stream reaches, model output nodes will include the head and tail of each reach, at Big Trees State Park, and at the Avery stream gage, and at additional locations, if needed. The model output will be provided in HEC-DSS format.

STUDY AREA

The Study Area includes the following reservoirs/impoundments and river reaches:

- Reservoirs/Impoundments
  - North Fork Diversion Impoundment
  - New Spicer Meadow Reservoir.
  - McKays Point Diversion Impoundment.
  - Beaver Creek Diversion Impoundment.
- River Reaches
  - Highland Creek downstream of New Spicer Meadow Dam to confluence with North Fork Stanislaus River (NFSR).
  - NFSR from North Fork Diversion Dam to confluence with Highland Creek.
  - NFSR from confluence with Highland Creek to normal maximum water surface elevation of McKays Point Reservoir.
  - Beaver Creek from Beaver Creek Diversion Dam to confluence with NFSR.

[1] In addition to the details provided in this study description, study implementation will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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- NFSR from McKays Point Diversion Dam to confluence with Beaver Creek.
- NFSR from confluence with Beaver Creek to confluence with Middle Fork Stanislaus River (MFSR).
- Stanislaus River from the confluence of NFSR and MFSR to Collierville Powerhouse Tailrace.

Figure 1 shows a model schematic representing the Study Area.

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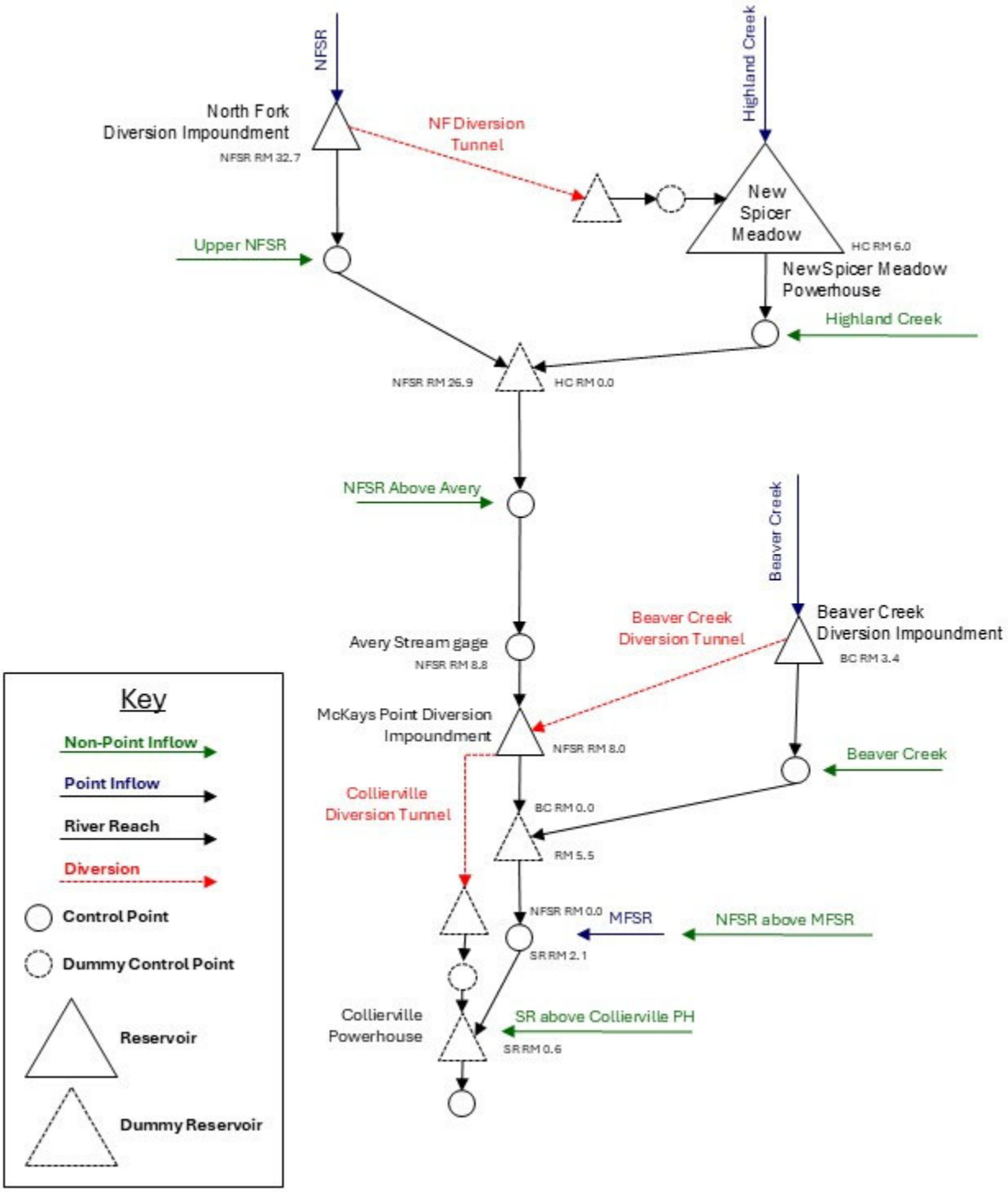


Figure 1. HEC-5Q Water Temperature Model Schematic.

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For this Study description and the above schematic, the following definitions apply:

- Non-Point Inflow: accretion inflow to a reach that is not attributable to a single source or location.
- Point Inflow: inflow to a reach or reservoir/impoundment that is attributable to a single source. Reservoirs/impoundments must be accompanied by a point inflow.
- River Reach: one of the seven river reaches listed above.
- Diversion: a redirection of water from one of three impoundments.
- Control Point: used to identify the beginning or end of a reach where there is no reservoir/impoundment. Used to report flow and temperature within a reach.
- Dummy Control Point: used to report flow and temperature on a diversion.
- Reservoir: one of four impoundments listed above.
- Dummy Reservoir: the most upstream location on a tributary must be a reservoir/impoundment. If no reservoir/impoundment exists, a dummy reservoir/impoundment is used. A dummy reservoir/impoundment is also needed at the confluence of two or more river reaches. A dummy reservoir/impoundment has no storage.

STUDY METHODS

Excluding Data Summary Development (i.e., Reporting), the Study consists of the following six steps: 1) Develop HEC-5 Module Framework; 2) Collect Channel Cross-Section Data; 3) Develop HEC-5Q Module Framework; 4) Calibrate HEC-5Q Model; 5) Validate HEC-5Q Model; and 6) Develop Baseline Scenario. Each step is described below.

Step 1 - Develop HEC-5 Module Framework

The HEC-5Q model consists of two modules, one to simulate water quantity (HEC-5) and one to simulate water quality (HEC-5Q). The HEC-5Q module utilizes the flow simulation capabilities of HEC-5 module. For the Study, the HEC-5 module will run using a daily average time step.

All hydrologic inputs to the HEC-5 module will come from the relicensing OASIS Operations Model (Ops Model).[2] A spreadsheet tool or python script will be developed to pre-process Ops Model output for input to the HEC-5Q water temperature module. Pre-processing will include:

- Conversion of Ops Model output from hourly average flow to daily average flow.
- Distribution of lumped multi-reach non-point inflow into individual reach non-point inflows using watershed area proration.

[2] CCWD will include in the Pre-Application Document (PAD) a description of the Ops Model, a calibration and validation reports, and the Ops Model configured in the baseline scenario.

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The following list summarizes the hydrologic inputs to be included in the HEC-5 module and as shown in Figure 1:

- NFSR inflow to North Fork Diversion Dam.
- Diverted flow out of North Fork Diversion Dam into North Fork Diversion Tunnel.
- Highland Creek inflow to New Spicer Meadow Reservoir.
- Incremental accretion in NFSR between North Fork Diversion Dam and confluence with Highland Creek.
- Incremental accretion in Highland Creek below New Spicer Meadow Dam and confluence with NFSR.
- Incremental accretion between the NFSR-Highland Creek confluence and Avery stream gage.
- Beaver Creek inflow to Beaver Creek Diversion Dam.
- Diverted flow out of Beaver Creek Diversion Dam into Beaver Creek Diversion Tunnel.
- Beaver Creek Diversion Dam release to Beaver Creek.
- Diverted flow out of McKay's Point Diversion Dam into Collierville Diversion Tunnel.
- Incremental accretion in Beaver Creek from Beaver Creek Diversion Dam to NFSR confluence.
- MFSR flow into NFSR.
- Incremental accretion in NFSR from NFSR-Beaver Creek confluence to NFSR-MFSR confluence.
- Incremental accretion in Stanislaus River from NFSR-MFSR confluence to Collierville PH tailrace.

The HEC-5Q Model will use the New Spicer Meadow Reservoir area-capacity curve from the draft Exhibit B in the PAD, which is the same area-capacity curve used in the Ops Model.

Step 2 - Collect Channel Cross-Section Data

For river reaches, the HEC-5Q module cross-section geometry inputs include flow area, hydraulic radius, and water surface top width as a function of elevation for each transect. A minimum of one cross section is needed for each HEC-5Q control point. At control points marking the confluence of a tributary river branch, a cross-section must be provided for both the mainstream and the terminus of the tributary river branch. Cross-sections at intermediate locations within the stream branch may be furnished. The energy grade line slope is also a required input for each channel cross-section.

Channel cross-section data will be collected as part of this Study since there are no existing data sets that can be used to develop channel geometry input data. Accessibility in the Study area is challenging due to the remote nature of much of the Study area, which limits the ability to take

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transect measurements in most Study reaches. In some cases, transect data will be collected in one reach location and repeated at other locations within the reach where similar conditions exist. At a minimum, cross sections will be collected for this Study at the following locations:

- In Highland Creek below New Spicer Meadow Dam (HC RM 5.6).
- In NFSR below North Fork Diversion Dam (NFSR RM 32.5).
- In NFSR above Highland Creek (NFSR RM 27.8).
- In NFSR below Highland Creek (NFSR RM 26.8).
- In NFSR at Boards Crossing (NFSR RM 16.2).
- In NFSR at Big Trees State Park (NFSR RM 11.0).
- In NFSR below McKays Point Diversion Dam (NFSR RM 7.8).
- In Beaver Creek below Beaver Creek Diversion Dam (BC RM 3.4).
- In NFSR at Candy Rock Recreation access (NFSR RM 4.25) or Blue Streak Recreation access (NFSR RM 5.0).
- In Stanislaus River above the Collierville Powerhouse Tailrace (SR RM 1.0).

Light Detection and Ranging information from November 2021 will be used to inform energy grade lines for repeated transect locations.

Step 3 - Develop HEC-5Q Module Framework

The HEC-5Q module computes the distribution of water temperature either vertically or longitudinally in reservoirs and longitudinally in riverine reaches. New Spicer Meadow Reservoir will be simulated as a one-dimensional vertically segmented reservoir. The New Spicer Meadow Powerhouse intake will be simulated as a wet well with multiple port elevations[3] to enable selective withdrawal. North Fork Diversion, Beaver Creek Diversion, and McKays Point Diversion impoundments will be simulated as longitudinally stratified reservoirs with no storage capacity for model stability. Channel geometry input data will be developed from channel cross-section data collected under Step 2.

The following list summarizes daily average water temperature inputs to accompany point inflows and non-point inflows in the HEC-5Q module:

- Point inflow water temperatures to:
  - NFSR at North Fork Diversion Dam.
  - Highland Creek at New Spicer Meadow Reservoir.

[3] The New Spicer Meadows Intake includes three ports (see draft Exhibits A and B for additional information regarding the intake).

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  - Beaver Creek at Beaver Creek Diversion Dam.
  - MFSR at NFSR.
- Non-point inflow water temperatures to:
  - NFSR between North Fork Diversion Dam and confluence with Highland Creek.
  - Highland Creek below New Spicer Meadow Dam and confluence with NFSR.
  - NFSR between the NFSR-Highland Creek confluence and Avery stream gage.
  - Beaver Creek from Beaver Creek Diversion Dam to the NFSR confluence.
  - NFSR from NFSR-Beaver Creek confluence to the NFSR-MFSR confluence.
  - NFSR from NFSR-MFSR confluence to the Collierville Powerhouse tailrace.

HEC-5Q requires daily meteorological input data consisting of the following parameters:

- Coefficient of surface heat exchange, British Thermal Units (BTU)/square-feet (ft^2)/day/degree Fahrenheit (°F).
- Equilibrium temperature (°F).
- Short-wave solar radiation BTU/ft2/day.
- Wind speed, miles per hour (mph).

Coefficient of heat exchange and equilibrium temperature are not directly recorded meteorological parameters and are calculated using the Heat Exchange Program (HEATX) developed by the USACE (USACE 1972). The HEATX model directly calculates the required inputs to the HEC-5Q model as described above. Mean-daily input parameters for HEATX include:

- Cloud cover based on a 0 to 10 scale, with 0 being clear and 10 being completely overcast.
- Wind speed (mph).
- Air temperature (°F).
- Dew point temperature (°F).

Cloud cover and dew point temperature are not typically measured. Cloud Cover will be estimated based on observed daily short-wave solar radiation relative to the theoretical daily maximum solar radiation. Dew point temperature will be calculated from air temperature and relative humidity observations. Available data from nearby weather stations are summarized in Table 1.

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Table 1. Summary of available meteorological data from weather stations located in the vicinity of the Study Area.

Gage (Source, Gage ID)	Gage Elevation (feet)	Available Data	Available Period of Record
Highland Meadow (CDEC, HHM)	8,700	Air Temperature Relative Humidity Wind Speed Solar Radiation	9/2/1999-present
Stanislaus Meadow (CDEC, SLM)	7,750	Air Temperature	10/11/1999-present
Bloods Creek (CDEC, BLD)	7,200	Air Temperature	9/15/1998-present
Upper Met (CDEC, UMT)	7,920	Air Temperature Relative Humidity Wind Speed Solar Radiation	3/1/2018-8/26/2021
Lower Met (CDEC LMT)	7,063	Air Temperature Relative Humidity Wind Speed Solar Radiation	3/1/2018-present
Black Springs (CDEC, BLS)	6,500	Air Temperature	9/8/1998-present
Big Trees (CDEC, ARN)	4,700	Air Temperature Relative Humidity Wind Speed Solar Radiation	5/8/2026-present
Calaveras Ranger Station (CDEC, CVS)	3,360	Air Temperature	9/8/1998-present
Stanislaus Powerhouse (CDEC, SPW)	1,060	Air Temperature Relative Humidity	11/8/2007-present 10/1/2015-present
Columbia Airport (NOAA NCEI, USW00000206)	2,120	Air Temperature Dew Point Temperature Wind Speed Solar Radiation Sky Condition	7/31/2014-8/25/2025
Mount Elizabeth (CDEC, MTE)	4,933	Air Temperature Relative Humidity Wind Speed Solar Radiation	7/19/1999-present

Selection of meteorological data for developing water temperature model inputs will be based on the available period of record and data quality. If possible, two zones will be used within the HEC-5Q model representing conditions in the upper watershed and lower watershed, respectively. A consistent data set will be developed across all simulation periods, as described in Steps 4, 5, and 6.

Step 4 - Calibrate HEC-5Q Model

The calibration scenario will simulate one year, starting June 1, 2026, for comparison with observed water temperature profiles in New Spicer Meadow Reservoir and point measurements taken hourly of water temperature that will be collected throughout the Study Area. The calibration

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scenario will be used to adjust model parameters from upstream to downstream and reach by reach to minimize the error between model simulated daily average water temperature and observed daily average water temperature. Two methods will be used to quantify the error of the simulation (Cole and Wells 2011). These two methods are:

- Mean Error (ME). The daily ME, or difference between historical and simulated data, will be averaged for the period of record. The goal of calibration is to have this value as close to 0°F as possible; a value of 0°F would indicate no systematic bias in the prediction. For calibration, the ME should be within +/-0.5°F to indicate any systematic bias was relatively small compared to the range of temperatures being predicted.
- Absolute Mean Error (AME). The AME indicates how far off the predicted water temperatures are, on average, regardless of whether the predictions are too high or too low. The absolute value of the error for each day is averaged for the period of record. While a value of 0°F was preferable, calibrated AME should be below 1.0°F.

Point inflow water temperatures will be represented by historical water temperature data measured concurrently by CCWD for the calibration simulation period. Non-point inflow water temperatures are less easy to define because the source is often unknown. Adjustment of non-point inflow water temperature may be used as a calibration factor if observed data is inadequate.

Calibration locations will include the following locations, from upstream to downstream, assuming there are available water temperature observations to do so:

- Hobart Creek downstream of confluence with North Fork Tunnel Outlet.
- Highland Creek below New Spicer Meadow Dam (HC RM 5.6).
- Highland Creek upstream of NFSR confluence (HC RM 0.1).
- NFSR upstream of confluence with Highland Creek (NFSR RM 27.8).
- NFSR downstream of confluence with Highland Creek (NFSR RM 26.8).
- NFSR at Boards Crossing (NFSR RM 16.2).
- NFSR at Big Trees State Park (NFSR RM 11.0).
- NFSR at the Avery stream gage (NFSR RM 8.8).
- NFSR below McKays Point Diversion Dam (NFSR RM 7.9).
- NFSR at the Candy Rock Recreation access (NFSR RM 4.25) or Blue Streak Recreation access (NFSR RM 5.0).
- NFSR upstream of confluence with MFSR (NFSR RM 0.1).
- Stanislaus River upstream of Collierville Tailrace (SR RM 1.0).
- Collierville Tailrace.

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All hydrologic inputs for the calibration scenario will come from the Ops Model. Selective withdrawal operations information for the New Spicer Meadow Powerhouse intake will be provided by CCWD.

Step 5 - Validate HEC-5Q Model

The validation scenario will be developed to test the adequacy of the model calibration by simulating a period of time independent of the calibration period, likely beginning in May or June 2027. Like the calibration scenario, ME and AME statistics will be used to assess model error. If validation scenario ME is greater than +/-0.5°F or AME is greater than 1.0°F at any location with adequate gage data, model parameters will be readjusted in both the model calibration and validation scenarios until both ME and AME statistics fall within an acceptable range under both scenarios and no further improvement is possible.

Point inflow water temperatures will be represented by historical water temperature data measured concurrently by CCWD for the validation simulation period. Adjustment of non-point inflow water temperature, if needed, will conform to methods used for the calibration scenario.

All hydrologic inputs for the validation scenario will come from the Ops Model. Selective withdrawal operations information for the New Spicer Meadow Powerhouse intake will be provided by CCWD.

Step 6 - Develop Baseline Scenario

The baseline scenario (i.e., operation of the Project under existing conditions) will use calibrated model parameters to simulate current operations under historical hydrologic conditions from Water Year (WY) 2014 to WY 2025. Results from the baseline scenario will serve as reference for comparison with additional scenarios developed during the relicensing process to evaluate water temperature under alternative Project operating conditions.

All inflows to the baseline scenario and Project operation data will come directly from the Ops Model. General guidelines for selective withdrawal operations at New Spicer Meadow Powerhouse intake will be implemented based on guidance provided by CCWD.

Point measurements of historical inflow water temperature are not available for the baseline period of record. Therefore, inflow water temperatures will be synthesized by repeating historical water temperatures used for calibration and/or validation on an annual basis, or a more robust regression will be developed based on flow and meteorological conditions if there is adequate data to do so.

Simulated water temperature output at the head and tail of each reach, at Big Trees State Park, and at the Avery stream gage will be exported to a model output file in HEC-DSS format. Additional output locations will be added as needed.

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Step 7 – Data Summary Development

A Study report that includes a description of model development, calibration results, validation results, and the model configured in baseline scenario setup will be provided.[4]

SCHEDULE

CCWD anticipates the schedule for completion of Study tasks as follows:

Step 1: Develop HEC-5 Model Framework	January – March 2027
Step 2: Collect Channel Cross-Section Data	June – October 2027
Step 3: Develop HEC-5Q Model Framework	January– October 2027
Step 4: Calibrate HEC-5Q Model	October – December 2027
Step 5: Validate HEC-5Q Model	November 2027 – February 2028
Step 6: Develop Baseline Scenario	March – April 2028
Step 7: Data Summary Development	January – June 2028

REFERENCES

Cole, T.M., and S.A. Wells. 2011. "CE-QUAL-W2: A two-dimensional, laterally averaged, Hydrodynamic and Water Quality Model, Version 3.7," Department of Civil and Environmental Engineering, Portland State University, Portland, OR.

United States Army Corps of Engineers (USACE), Hydrologic Engineering Center (HEC). 1998. Users' Manual, Simulation of Flood Control and Conservation Systems, Appendix on Water Quality Analysis. August 1998.

_____. 1972. HEATX: Thermal Analysis Program. U.S. Army Corps of Engineers, Baltimore District.

[4] In addition to the details provided in this section, reporting will also follow the "*Concepts and Practices Applicable to All Relicensing Studies*" developed by CCWD.

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SECTION 5.0

REFERENCES CITED

Section 1: Introduction

None.

Section 2: Existing and Proposed Project

None.

Section 3.1: Introduction to the River Basin

California Regional Water Quality Control Board Central Valley Region (CVRWQCB). 2019. Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin, Fifth Edition. Revised February 2019, with approved amendments. Available online: https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201902.pdf. Accessed March 7, 2026.

National Oceanic and Atmospheric Administration (NOAA). 2024. Habitat Conservation – San Joaquin River Basin. NOAA Fisheries. Available online: https://www.fisheries.noaa.gov/west-coast/habitat-conservation/san-joaquin-river-basin#stanislaus-river. Accessed March 7, 2026.

U.S. Fish and Wildlife Service (USFWS). 1995. Working Paper on Restoration Needs: Habitat Restoration Actions to Double Natural Production of Anadromous Fish in the Central Valley of California. Volume 2. May 9, 1995. Prepared for the U.S. Fish and Wildlife Service under the Direction of the Anadromous Fish Restoration Program Core Group. Stockton, CA.

Western Regional Climate Center (WRCC). 2025. Cooperative Climatological Data Summaries. Available online: https://wrcc.dri.edu/Climate/west_coop_summaries.php. Accessed March 7, 2026.

Section 3.2: Geology and Soils

Calaveras County Planning Department. 2018. Draft general plan update: Geology, soils, and seismicity (Section 4.6). Available online: https://planning.calaverasgov.us/Portals/Planning/Documents/Draft%20General%20Plan%20Update/CEQA/4_6_Geology,%20Soils%20and%20Seismicity.pdf. Accessed February 10, 2026.

Calaveras County Water District (CCWD). 2025. Annotated license for FERC Project No. 2409. Available online: https://www.ccwd.org/files/efbd97e3d/P-2409_Annotated+License_November+2025.pdf. Accessed February 10, 2026.

©2026, Calaveras County Water District

———. 1985. North Fork Stanislaus River Project No. 2409: Erosion Control Plan. Federal Energy Regulatory Commission.

———. 1980. Final environmental impact statement: North Fork Stanislaus River Project (FERC No. 2409–California). Calaveras County Water District.

California Department of Conservation, California Geological Survey. n.d. Fault Activity Map of California [Web map]. Available online: https://maps.conservation.ca.gov/cgs/fam/. Accessed February 10, 2026.

———. 2010. Geologic Map of California. California Open Data Portal. Available online: https://gis.data.ca.gov/datasets/cadoc::geologic-map-of-california-2010/about. Accessed February 10, 2026.

California Department of Fish and Wildlife (CDFW). n.d. California Wildlife Habitat Relationships (WHR) vegetation classification [Web map]. ArcGIS Online. Available online: https://www.arcgis.com/apps/mapviewer/index.html?layers=b7ec5d68d8114b1fb2bfbf4665989eb3. Accessed February 10, 2026.

Clark, W. B. 1977. Mines and mineral resources of Alpine County, California (County Report 8). California Division of Mines and Geology. Available online: https://archive.org/details/minesandmineral08clark. Accessed February 10, 2026.

Clark, W. B. and P. A. Lydon. 1962. Mines and mineral resources of Calaveras County, California (County Report 2). California Division of Mines and Geology. Available online: https://dn790006.ca.archive.org/0/items/minesandmineral02clar/minesandmineral02clar.pdf. Accessed February 10, 2026.

DeGraff, J. V. 2001. Sourgrass debris flow—A landslide triggered in the Sierra Nevada by the 1997 New Year storm. In H. Ferriz & R. Anderson (Eds.), Engineering geology practice in northern California (Bulletin 210, Special Publication 12, pp. 69–76). California Department of Conservation, Division of Mines and Geology.

Dixon, J. L., A. M. Heimsath, J. M. Kaste, and R. Amundson. 2009. Climate-driven processes of hillslope weathering. Geology, 37(11), 975–978. Available online: https://website.whoi.edu/gfd/wp-content/uploads/sites/14/2018/10/Dixon_et_al_Geology_09_79144.pdf. Accessed February 10, 2026.

LibreTexts. 2025. 9.7: Natural Hazards of the Sierra Nevada. In Geology of California (DRAFT). LibreTexts. Available online: https://geo.libretexts.org/Sandboxes/ajones124_at_sierracollege.edu/Geology_of_California_%28DRAFT%29/09%3A_Sierra_Nevada/9.07%3A_Natural_Hazards_of_the_Sierra_Nevada. Accessed February 10, 2026.

©2026, Calaveras County Water District

Moore, J. G. and B. C. Moring. 2013. Rangewide glaciation in the Sierra Nevada, California. Geosphere, 9(6), 1804–1818. Available online: https://doi.org/10.1130/GES00891.1. Accessed February 10, 2026.

North Fork Stanislaus River Hydroelectric Project Fact Sheet. n.d. Calaveras County Water District. Available online: https://www.ccwd.org/p-2409-relicense-homepage. Accessed February 10, 2026.

Pacific Gas and Electric Company (PG&E). 2017. Notice of Intent/Pre-Application Document/Traditional Licensing Process request for relicensing of the Phoenix Hydroelectric Project (Accession No. 20170822-5018). Federal Energy Regulatory Commission eLibrary. Available online: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20170822-5018. Accessed February 10, 2026.

Schneider, K. S., G. M. Kondolf, and A. Falzone. 2001. Channel-floodplain disconnection on the Stanislaus River: A hydrologic and geomorphic perspective. University of California, Berkeley. Available online: https://www.noaa.gov/sites/default/files/legacy/document/2020/Oct/07354626255.pdf. Accessed February 10, 2026.

U.S. Army Corps of Engineers (USACE). 1977. Recommended guidelines for safety inspection of dams. Available online: https://usace.contentdm.oclc.org/digital/collection/p16021coll11/id/655/. Accessed February 10, 2026.

U.S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS). 2025a. Soil component text: Central Sierra Foothills Area, California (Parts of Calaveras and Tuolumne Counties). U.S. Department of Agriculture, Natural Resources Conservation Service.

———. 2025b. Soil component text: Stanislaus National Forest, California (Parts). U.S. Department of Agriculture, Natural Resources Conservation Service.

U.S. Soil Survey Geographic Database (SSURGO). n.d. Erodibility Factor. Available online: https://www.arcgis.com/apps/mapviewer/index.html?webmap=f46e037cf3d340379f82c2daff6de405. Accessed February 10, 2026.

Section 3.3: Water Resources

Calaveras County Water District (CCWD). 2024. *2024 annual water quality report (Consumer Confidence Report).* Available online: https://www.ccwd.org/files/74f6d64bd/2024+Water+Quality+Report.pdf. Accessed July 14, 2026.

———. 2005. Ebbetts Pass Water Master Plan. Available online: https://www.ccwd.org/files/8bebaeb16/2005-Ebbetts-Pass-Water-Master-Plan.pdf. Accessed July 14, 2026.

©2026, Calaveras County Water District

California Environmental Data Exchange Network (CEDEN). 2026. *Database queries of available water quality data, 2010-2026.* Available online: https://public.tableau.com/app/profile/eric.maag/viz/cedenviz11/CEDENData. Accessed March 5, 2026.

Central Valley Regional Water Quality Control Board (CVRWQCB). 2019. *Central Valley Water Quality Control Plan (Basin Plan) for the Sacramento and San Joaquin Rivers 5th Edition, Revised February 2019.* Available online: https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201902.pdf. Accessed March 5, 2026.

Northern California Power Agency (NCPA). 2026. North Fork Stanislaus River Stream Conditions for previous 24 hours. Available online: http://ncpahydro.com/stream_flow_scada.htm. Accessed July 14, 2026.

State Water Resources Control Board California (SWRCB). 2024. *Integrated Report Clean Water Act Sections 303(d) and 306(d).* Available online: https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2024-integrated-report.html. Accessed March 5, 2026.

———. 2022a. *Integrated Report 2020-2022.* Available online: https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2020_2022_integrated_report.html. Accessed March 5, 2026.

———. 2022b. *National Pollutant Discharge Elimination System CA 0085146 Order R5-2022-0037.* Available online: *https://bvwd.ca.gov/BlogFiles/BearValleyWaterDistrict/R5_2022_0037_ADOPTED.pdf.* Accessed July 14, 2026.

Section 3.4: Fish and Aquatic

California Department of Fish and Wildlife (CDFW). 2026a. CDFW Fishing Guide. Available online: https://apps.wildlife.ca.gov/fishing/?stockid=500942. Accessed March 6, 2026.

———. 2026b. California Natural Diversity Database, Version 5.3.0. Available online: https://map.dfg.ca.gov/rarefind/view/RareFind.aspx. Accessed January 2025. Prepared by California Department of Fish and Wildlife, Sacramento, California.

———. 2026c. Biogeographic Information and Observation System (BIOS). California Natural Diversity Database, Unprocessed Data. Available online: https://apps.wildlife.ca.gov/bios6/. Accessed January 2025. Prepared by CDFW, Sacramento, California.

———. 2025a. Review of Revised Dreissenid Mussel Prevention Plan. Letter to NCPA on September 15, 2025.

©2026, Calaveras County Water District

———. 2025b. Southern Long-Toed Salamander Range – CWHR A003B [ds2844]. BIOS (Biogeographic Information and Observation System). Available online: https://filelib.wildlife.ca.gov/Public/BDB/GIS/BIOS/Public_Datasets/2800_2899/ds2844.zip. Accessed March 6, 2026.

———. 2019. New Spicer Meadow Reservoir (Alpine and Tuolumne Counties) 2015-2016 and 2018 Angler Survey Box Analysis. March 2019.

———. 2016a. Hell Hollow Slender Salamander Range – CWHR A062 [ds1178]. BIOS (Biogeographic Information and Observation System). Available online: https://filelib.wildlife.ca.gov/Public/BDB/GIS/BIOS/Public_Datasets/1100_1199/ds1178.zip. Accessed March 6, 2026.

———. 2016b. Mount Lyell Salamander Range – CWHR A023 [ds1152]. BIOS (Biogeographic Information and Observation System). Available online: https://filelib.wildlife.ca.gov/Public/BDB/GIS/BIOS/Public_Datasets/1100_1199/ds1152.zip. Accessed March 6, 2026.

———. 2013. New Spicer Meadow Reservoir General Fish Survey, Spring 2013. North Central Region. Prepared by Ben Ewing.

Federal Energy Regulatory Commission (FERC). 1980. NFSR Project No. 2409. Final Environmental Impact Statement. Available online: https://babel.hathitrust.org/cgi/pt?id=uc1.31210024772269&seq=1. Accessed February 3, 2026.

Hansen, R.W. and J.D. Shedd. 2025. California Amphibians and Reptiles. Princeton Field Guides. Published Jan 14, 2015.

iNaturalist. 2026. Available online: www.inaturalist.org. Accessed January 2026.

Nafis, G. 2026. A Guide to the Amphibians and Reptiles of California. Available online: http://www.californiaherps.com/. Accessed March 6, 2026.

Northern California Power Agency (NCPA). 1993. FERC Draft License Application – Volume 1, Exhibit E. Griswold Creek Diversion Project. Report 3 – Fish, Wildlife, and Botanical Resources. December 1993.

———. 2025. Dreissenid and Mytilidae Mussel Prevention Plan. July 31, 2025.

Moyle, P. B. 2002. Inland Fishes of California. University of California Press. Berkeley, CA. Available online: https://www.waterboards.ca.gov/water_issues/programs/tmdl/records/state_board/1998/ref2608.pdf. Accessed February 27, 2026.

©2026, Calaveras County Water District

Moyle, P. B., R. M. Quiñones, J. V. Katz, and J. Weaver. 2015. Fish Species of Special Concern in California. Sacramento: California Department of Fish and Wildlife. Available online: https://downloads.regulations.gov/FWS-R8-ES-2021-0065-0003/attachment_37.pdf. Accessed February 26, 2026.

Grant, G. C. and P. E. Maslin. 1999. Movements and reproduction of hardhead and Sacramento squawfish in a small California stream. The Southwestern Naturalist, Vol 44:296-310. September 1999.

Stebbins, R. C. 2003. A Field Guide to Western Reptiles and Amphibians (3rd ed.). Houghton-Mifflin Company, Boston, Massachusetts.

Stebbins, R. C. and S. M. McGinnis. 2012. Field Guide to Amphibians and Reptiles of California: Revised Edition (California Natural History Guides). University of California Press, Berkeley.

U.S. Department of Agriculture, Forest Service (Forest Service). 2013. Region 5 Regional Foresters 2013 Sensitive Animal Species List. Available online: https://www.fs.usda.gov/media/27002. Accessed February 26, 2026.

U.S. Department of the Interior, Bureau of Reclamation (BOR). 2026a. Quagga and Zebra Mussel Prevention Program. Available online: https://www.usbr.gov/mp/ccao/newmelones/docs/Form-Mussel-Free-Certification.pdf?utm. Accessed February 10, 2026.

———. 2026b. New Melones Lake is open to Boat Launching. Available online: https://www.usbr.gov/mp/ccao/newmelones/index.html. Accessed February 10, 2026.

———. 2007. New Melones Resource Management Plan/ Environmental Impact Statement. Resource Inventory Report. August 2007. Available online: https://www.usbr.gov/mp/ccao/newmelones/docs/4.0-Natural_Resources.pdf?utm. Accessed February 26, 2026.

U.S. Department of the Interior, Fish and Wildlife Service (USFWS). 2026. Information for planning and consultation (IPAC). Accessed on February 2, 2026.

Wang, J. C. S. 1986. Fishes of the Sacramento-San Joaquin Estuary and Adjacent Waters, California: A guide to the Early Life Histories. Technical Report 9. Prepared for the Interagency Ecological Study Program for the Sacramento-San Joaquin Estuary. A cooperative study by the California Department of Water Resources, California Department of Fish and Game, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service. January 1986. Available online: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/petitioners_exhibit/dwr/part2/DWR-1101%20Wang%201986.pdf. Accessed February 27, 2026.

©2026, Calaveras County Water District

Section 3.5: Terrestrial Resources

Adams, R. 2003. Bats of the Rocky Mountain West: a natural history, ecology, and conservation. Boulder, CO. University Press of Colorado. Kunz, T. H., and R. A. Martin. 1982. *Plecotus townsendii*. American Society of Mammalogists, Mammalian Species, 175: 1-6.

Ahlborn, G. and M. White. 1990a. "Western Mastiff Bat," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2357&inline=1. Accessed June 23, 2026.

———. 1990b. "American Badger," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2597&inline=1. Accessed June 23, 2026.

Andersen, B. R. and K. Geluso. 2018. Roost characteristics and clustering behavior of western red bats (*Lasiurus blossevillii*) in southwestern New Mexico. Western North American Naturalist 78: 174-183.

Barbour, R. W. and W. H. Davis. 1969. Bats of America. Univ. of Kentucky Press, Lexington. 286pp.

Bat Acoustic Monitoring Portal (BatAMP). 2025. Bat Acoustic Monitoring Visualization Tool; a companion to BatAMP. Available Online: <https://visualize.batamp.databasin.org/presence/>. Accessed December 30, 2025. Last Updated: 2025.

California Department of Fish and Wildlife (CDFW). 2026. *California Natural Diversity Database (CNDDB).* Available online: https://wildlife.ca.gov/Data/CNDDB. Accessed February 27, 2026.

_____. 2025. "Vegetation Classification and Mapping Program (VegCAMP)." Natural Heritage Division, Sacramento. Last updated December 1, 2025. Available online: https://wildlife.ca.gov/Data/VegCAMP. Accessed December 1, 2025.

_____. 1994. Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California. Accessed February, 2022. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83992&inline. Accessed June 23, 2026.

California Department of Food and Agriculture (CDFA). 2026. *Encycloweedia: Weed ratings.* Available online: https://www.cdfa.ca.gov/plant/IPC/encycloweedia/winfo_weedratings.html. Accessed February 27, 2026.

©2026, Calaveras County Water District

California Invasive Plant Council (Cal-IPC). 2025. "California Invasive Plant Inventory Database." Berkeley. Available online: http://cal-ipc.org/ip/inventory/index.php/. Accessed December 30, 2025.

California Native Plant Society (CNPS). 2026. *A Manual of California Vegetation Online*. Available online: https://vegetation.cnps.org/. Accessed January 14, 2026.

_____. 2025. "CNPS Rare Plant Inventory." Inventory of rare and endangered vascular plants of California: Records of occurrence for U.S. Geologic Survey quadrangles Boards Crossing, Calaveras Dome, Dorrington, Murphys, Spicer Meadow Reservoir, Stanislaus, and Tamarack (Online Edition, v9.5.1). Sacramento. Available online: http://www.rareplants.cnps.org/. Accessed December 30, 2025.

California Natural Resources Agency, Department of Forestry and Fire Protection (CAL FIRE). 2022. "Fire and Resource Assessment Program." Vegetation modeling program based on the California Wildlife Habitat Relationship model. Sacramento, California. Available online: https://www.fire.ca.gov/Home/What-We-Do/Fire-Resource-Assessment-Program/GIS-Mapping-and-Data-Analytics. Accessed December 30, 2025.

California State Parks. 1989. Calaveras Big Trees State Park. Preliminary General Plan. February 1989.

Consortium of California Herbaria (CCH). 2025. "Consortium of California Herbaria (CCH)." Data provided by participants of the Consortium of California Herbaria for species in the Habitat Area. University of California, Berkeley. Available online: http://ucjeps.berkeley.edu/consortium/. Accessed December 29, 2025.

eBird. 2026a. Species observed, Spicer Meadow Reservoir (TUL Co.). Available online: <https://ebird.org/hotspot/L1230794/bird-list>. Accessed: January 21, 2026. Last Updated: 2025.

_____. 2026b. Species observed, Forest Meadows. Available online: <https://ebird.org/hotspot/L19129449/bird-list>. Accessed: January 21, 2026. Last Updated: 2025.

Environmental Laboratory. 1987. *Corps of Engineers Wetland Delineation Manual.* Technical Report Y-87-1. U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS.

Faber-Langendoen, D., L. Master, J. Nichols, K. Snow, A. Tomaino, R. Bittman, G. Hammerson, B. Heidel, L. Ramsay, and B. Young. 2012. "NatureServe Conservation Status Assessments: Methodology for Assigning Ranks" (Revised Edition). June. NatureServe, Arlington, Virginia. Available online: https://www.natureserve.org/biodiversity-science/publications/natureserve-conservation-status-assessments-methodology-assigning. Accessed June 23, 2026.

©2026, Calaveras County Water District

Federal Geographic Data Committee. 2013. Classification of Wetlands and Deepwater Habitats of the United States. FGDC-STD-004-2013 (Second Edition). Adapted from Cowardin, Carter, Golet and LaRoe. Wetlands Subcommittee. August 2013.

_____. 2025. United States National Vegetation Classification Database Version 3.0. October 2025. Hierarchy Explorer, Science Analytics and Synthesis Program, U.S. Geological Survey. Federal Geographic Data Committee, Vegetation Subcommittee. Washington D.C.

Gaines, D. 2005a. "Olive-Sided Flycatcher," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1941&inline=1. Accessed June 23, 2026.

_____. 2005b. "Willow Flycatcher," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1945&inline=1. Accessed June 23, 2026.

Gaines, D. and S. Granholm. 1990. "Great Gray Owl," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1875&inline=1. Accessed June 23, 2026.

Granholm, S. 2008. "Tricolored blackbird", California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2181&inline=1. CDFW Biogeographic Data Branch; Sacramento, CA. Accessed June 23, 2026.

Granholm, S., R. Duke, and D. Airola. 1990. "Common Loon," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1545&inline=1. Accessed June 23, 2026.

Granholm, S., J. Harris, and R. Duke. 1990a. "Small-footed Myotis," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2331&inline=1. Accessed June 23, 2026.

_____. 1990b. "Long-eared Myotis," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2323&inline=1. Accessed June 23, 2026.

©2026, Calaveras County Water District

_____. 1990c. "Yuma Myotis," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2319&inline=1. Accessed June 23,2026.

Green, M. 2005. "Yellow Warbler," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2109&inline=1. Accessed June 23, 2026.

———. 1999. "Bank Swallow," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1981&inline=1. Accessed June 23, 2026.

Harris, J. 2000a. "Townsend's Big-Eared Bat," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2347&inline=1. Accessed June 23, 2026.

_____. 2000b. "Spotted Bat," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2345&inline=1. Accessed June 23, 2026.

Harris, J., D. Alley, and R. Duke. 1990. "Pallid Bat," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2349&inline=1. Accessed June 23, 2026.

Hatfield, R., S. Jepsen, R. Thorp, L. Richardson, S. Colla, and S. Foltz Jordan. 2015. Bombus occidentalis. The IUCN Red List of Threatened Species 2015: e.T44937492A46440201. Available online: https://www.iucnredlist.org/species/44937492/46440201. Accessed June 23, 2026.

Hoefler, G., S. Granholm, and R. Duke. 1990a. "Snowshoe Hare," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2369&inline=1. Accessed June 23, 2026.

_____. 1990b. "White-tailed Jackrabbit," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2371&inline=1. Accessed June 23, 2026.

iNaturalist. 2026. Observations. Available online: https://inaturalist.org/observations. Last Updated: 2026. Accessed February 27, 2026..

©2026, Calaveras County Water District

Jepson Flora Project. 2025. "Jepson eFlora" (Revision 13). University of California, Berkeley. Last updated February 19, 2025. Available online: http://ucjeps.berkeley.edu/IJM.html. Accessed December 30, 2025.

Johnson, V. 2008. "Mt. Lyell Shrew," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2281&inline=1. Accessed June 23, 2026.

Kunz, T. H. and R. A. Martin. 1982. *Plecotus townsendii*. American Society of Mammalogists, Mammalian Species, 175: 1-6.

Miller, D. 2002. *Antrozous pallidus*. Available at: Available online: https://animaldiversity.org/accounts/Antrozous_pallidus/l. Accessed June 23, 2026.

Morales, J. C. and J. W. Bickham. 1995. Molecular systematics of the genus Lasiurus (Chiroptera: Vespertilionidae) based on restriction-site maps of the mitochondrial ribosomal genes. Journal of Mammalogy 76: 730-749.

Nafis, G. 2026. California Herps: A Guide to Reptiles and Amphibians of California. Available online: http://www.californiaherps.com. Accessed June 23, 2026.

NatureServe. 2025. NatureServe Explorer. *Martes caurina sierrae*. Available online: https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.777952/Martes_caurina_sierrae. Accessed December 30, 2025.

Pierson, E., W. Rainey, and C. Corben. 2006. Distribution and status of western red bats (Lasiurus blossevillii) in California. State of California Resources Agency, Department of Fish and Game habitat Conservation Planning Branch.

Polite, C. 2006. "Swainson's Hawk," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1673&inline=1. Accessed June 23, 2026.

_____. 2005a. "Short-eared Owl," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1879&inline=1. Accessed June 23, 2026.

_____. 2005b. "Long-eared Owl," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1877&inline=1. Accessed June 23, 2026.

©2026, Calaveras County Water District

_____. 2005c. "White-tailed Kite," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1659&inline=1. Accessed June 23, 2026.

_____. 1999. "Burrowing Owl," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1871&inline=1. Accessed June 23, 2026.

Polite, C. and L. Kiff. 2005. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range. Accessed June 23, 2026. CDFW Biogeographic Data Branch; Sacramento, CA

Polite, C. and J. Pratt. 1999. "Bald Eagle," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1661&inline=1. Accessed June 23, 2026.

Polite, C., J. Pratt, and L. Kiff. 1990. "Golden Eagle," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1681&inline=1. Accessed June 23, 2026.

Polite, C. and M. White. 1990. "Mountain Beaver," California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2377&inline=1. Accessed June 23, 2026.

Shuford, W. D. and T. Gardali, editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Solick, D. I., R. M. R. Barclay, L. Bishop-Boros, Q. R. Hays, and C. L. Lausen. 2020. Distributions of eastern and western red bats in western North America. Western North American Naturalist 80: 90-97.

Stanislaus National Forest (STF). 2026. Information on Forest Service Sensitive, Watch List, and Invasive species for the Stanislaus National Forest. Transmitted by STF on January 12, 2026.

State Water Resources Control Board (SWRCB). 2020. Implementation Guidance for the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. April 2020.

©2026, Calaveras County Water District

———. 2019. State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. Adopted April 2019.

The Xerces Society for Invertebrate Conservation (Xerces). 2014. Jepsen, S. & Foltz Jordan, S. Species Fact Sheet. Bombus occidentalis. Xerces Society for Invertebrate Conservation.

Thomson, R. C., A. N. Wright, and S. H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.

Thorp, R. W., D. S. Horning, and L. L. Dunning. 1983. Bumble bees and cuckoo bumble bees of California (Hymenoptera, Apidae).

U.S. Department of Agriculture. Forest Service (Forest Service). 2026. U.S. Forest Service. *Geodata Clearinghouse*. U.S. Department of Agriculture. Available online: https://data.fs.usda.gov/geodata/. Accessed January 19, 2026.

———. 2018. United States Department of Agriculture, U.S. Forest Service. Fire Effects Information System. Martes americana, M. Caurina. Available online: https://www.fs.usda.gov/database/feis/animals/mammal/mart/all.html. Accessed June 23, 2026.

U.S. Department of the Interior (USDOI), Bureau of Land Management (BLM). 2026. Information on BLM Sensitive species for California. Transmitted by the BLM on January 15, 2026.

U.S. Fish and Wildlife Service (USFWS). 2026a. Information for Planning and Consultation. Environmental Conservation Online System. Available online: https://ecos.fws.gov/ecp/. United States Fish and Wildlife Service. Washington D.C. Accessed February 17, 2026.

———. 2026b. "National Wetlands Inventory: Wetlands Mapper." Available online: https://www.fws.gov/wetlands/data/mapper.html. Accessed February 17, 2026.

———. 2014. Draft. Species Report: Fisher (*Pekania pennanti*), West Coast Population. USFWS; Sacramento, CA.

Section 3.6: Endangered Species Act-Listed Species

Arno, S. F. and R. J. Hoff. 1990. *Pinus albicaulis* Engelm. Whitebark pine. Pages 268-279 *in* R. M. Burns and B. H. Honkala (Eds.). Silvics of North America: Vol. 1. Conifers. U.S. Department of Agriculture, Forest Service.

Bourque, R. M. 2008. Spatial Ecology of an Inland Population of the Foothill Yellow-Legged Frog (Rana boylii) in Tehama County, California. Master's Thesis, Humboldt State University, Arcata, CA

Brower, L. P., O. R. Taylor, E. H. Williams, D. A. Slayback, R. R. Zubieta, and M. I Ramírez. 2012. Decline of monarch butterflies overwintering in Mexico: is the migratory phenomenon at risk? Insect Conservation and Diversity 5: 95-100.

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Brown, C., M. P. Hayes, G. A. Green, and D. C. MacFarlane. 2014. Mountain Yellow-Legged Frog Conservation Assessment for the Sierra Nevada Mountains of California, USA. A Collaborative Inter-Agency Project by: USDA Forest Service, California Department of Fish and Wildlife, National Park Service, and U.S. Fish and Wildlife Service. United States Department of Agriculture, U.S. Forest Service Pacific Southwest Research Station. R5-TP-038. July 2014.

Bulger, J. B., N. J. Scott, Jr., and R. B. Seymour. 2003. Terrestrial activity and conservation of adult California red-legged frogs (*Rana aurora draytonii*) in coastal forests and grasslands. Biological Conservation 110: 85–95.

Bury, R. B., H. H. Welsh, D. J. Germano, and D. T. Ashton. 2012. Western Pond Turtle: Biology, Sampling Techniques, Inventory and Monitoring, Conservation, and Management. Northwest Fauna 7.

California Department of Fish and Wildlife (CDFW). 2026a. "CNDDB Maps and Data." California Natural Diversity Database: Rarefind 5, records of occurrence for the species review area. Natural Heritage Division, Sacramento. Available online: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed February 17, 2026.

_____. 2026b. Unprocessed Data from CNDDB Online Field Survey Form. Biogeographic Information and Observation System (BIOS) 6. Online Resource. Available online: https://wildlife.ca.gov/Data/BIOS. Accessed January 2026. Prepared by Biogeographic Data Branch, CDFW, Sacramento, California.

_____. 2026c. California Wildlife Habitat Relationship Version 10. Online Resource. Available online: https://apps.wildlife.ca.gov/cwhr/index.shtml. Accessed January 2026. Prepared by Biogeographic Data Branch, CDFW, Sacramento, California.

_____. 2025a. Foothill Yellow-Legged Frog South Sierra DPS – Proposed Critical Habitat - FWS [ds3208]. BIOS (Biogeographic Information and Observation System). Available online: https://wildlife.ca.gov/Data/BIOS. Accessed: March 6, 2026.

_____. 2025b. Approximate area of gray wolf activity. California Department of Fish and Wildlife. December 2025. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=241213&inline. Accessed January 2026.

_____. 2023a. Rare sighting of wolverine confirmed in multiple California counties. California Department of Fish and Wildlife Communications. Available online: https://wildlife.ca.gov/News/Archive/rare-sighting-of-wolverine-confirmed-in-multiple-california-counties. Accessed January 15, 2026.

_____. 2023b. Sierra Nevada yellow-legged frog – Final Critical Habitat – FWS [ds1129]. CDFW. BIOS (Biogeographic Information and Observation System). Available online: https://filelib.wildlife.ca.gov/Public/BDB/GIS/BIOS/Public_Datasets/1100_1199/ds1129.zip. Accessed March 6, 2026.

©2026, Calaveras County Water District

———. 2019. Status Review of the Foothill Yellow-legged Frog (Rana boylii) in California. Report to the Fish and Game Commission. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=174663&inline. Accessed March 6, 2026.

California Department of Fish and Wildlife (CDFW), National Park Service (NPS), U. S. Fish and Wildlife Service (FWS), USDA Forest Service (Forest Service). 2018. Interagency Conservation Strategy for Mountain Yellow-Legged Frogs in the Sierra Nevada (*Rana sierrae* and *Rana muscosa*). Version 1.0.

California Native Plant Society (CNPS). 2026. "CNPS Rare Plant Inventory." Inventory of rare and endangered vascular plants of California: Records of occurrence for U.S. Geologic Survey quadrangles intersecting the FERC Project boundary (Online Edition, v9.5.1a). Sacramento. Available online: http://www.rareplants.cnps.org. Accessed February 27, 2026.

California Consortium of Herbaria. 2026. Records for whitebark pine Available online: https://www.cch2.org/portal/index.php. Accessed on January 2, 2026.

Central Sierra Environmental Resource Center (CSERC). 2015. Stanislaus National Forest Meadow Condition and Grazing Utilization Report.

_____. 2014. 2014 Stanislaus National Forest Meadow Condition and Grazing Utilization Report.

Crother, B. I. (ed.). 2017. Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in Our Understanding pp. 1–102. SSAR Herpetological Circular 43.

Davis, J. N. and G. I. Gould Jr. 2008. California spotted owl (*Strix occidentalis occidentalis*). Pages 227-233 *in* W. D. Shuford and T. Gardali, editors. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Ewing, B. 2019. New Spicer Meadow Reservoir (Alpine and Tuolumne Counties) 2015-2016, and 2018 angler survey box analysis. California Department of Fish and Wildlife, North Central Region.

———. 2013. New Spicer Meadow Reservoir general fish survey, Spring 2013. California Department of Fish and Wildlife, North Central Region.

Flockhart, D. T. T., J. Pichancourt, D. R. Norris, and T. G. Martin. 2015. Unravelling the annu8al cycle in a migratory animal: breeding-season habitat loss drives population declines of monarch butterflies. Journal of Animal Ecology 84: 155-165.

©2026, Calaveras County Water District

GANDA (Garcia and Associates). 2008. Identifying Microclimatic and Water Flow Triggers Associated with Breeding Activities of a Foothill Yellow-Legged Frog (Rana boylii) Population on the North Fork Feather River, California. Report prepared for the California Energy Commission, PIER Energy-Related Environmental Research Program. CEC-500-2007-041.

Gutiérrez, R. J., D. J. Tempel, and M. Z. Peery. 2017. The biology of the California spotted owl. Pages 11-47 *in* R. J. Gutiérrez, P. N. Manley, and P. A. Stine, (Eds.). The California Spotted Owl: Current State of Knowledge. United States Department of Agriculture, U.S. Forest Service Pacific Southwest Research Station. General Technical Report PSW-GTR-254. August 2017.

Hansen, R. W. and J. D. Shedd. 2025. California Amphibians and Reptiles. Princeton Field Guides. Princeton University Press.

Hayes, M. P., C. A. Wheeler, A. J. Lind, G. A. Green, and D. C. Macfarlane. 2016. Foothill yellow-legged frog conservation assessment in California. U.S. Department of Agriculture, U.S. Forest Service, Pacific Southwest Research Station, Albany, California. General Technical Report PSW-GTR-248. August 2016.

Holland D. C. 1991. A synopsis of the ecology and status of the western pond turtle (Clemmys marmorata) in 1991.

Holland, D. C. 1994. The western pond turtle: habitat and history. Final Report. Prepared by Dan C. Holland, PhD, Oregon Department of Fish and Wildlife, Portland Oregon for U.S. Department of Energy, Bonneville Power Administration, Portland, Oregon.

ICF. 2020. Multiple Region Operations and Maintenance Habitat Conservation Plan. Final (ICF 00647.17.) Prepared by ICF, Sacramento, California for Pacific Gas and Electric Company, San Francisco, California.

iNaturalist. 2026. Records for northwestern spotted turtle. Available online: www.inaturalist.org Accessed January 2026.

Jennings, M. R. and M. P. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. Final Report. Prepared by California Academy of Sciences, Department of Herpetology, San Francisco and Portland State University, Department of Biology, Portland, Oregon, for California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova.

Jepson Flora Project. 2025. “Jepson eFlora” (Revision 13). University of California, Berkeley. Last updated February 19, 2025. Available online: http://ucjeps.berkeley.edu/IJM.html.

©2026, Calaveras County Water District

Johnson, V. and J. Harris. 2000. "Red Fox", California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2563&inline=1. Accessed January 20, 2026.

Kagarise Sherman, C. and M. L. Morton. 1993. Population declines of Yosemite toads in the eastern Sierra Nevada of California. Journal of Herpetology 27:186–198.

Kovacs, K. E., K. E. Converse, M. C. Stopher, J. H. Hobbs, M. L. Sommer, P. J. Figura, D. A. Applebee, D. L. Clifford, and D. J. Michaels. 2016. Conservation Plan for Gray Wolves in California Part II. California Department of Fish and Wildlife, Sacramento, CA. 329 pp.

Kupferberg, S. J. 1996a. Hydrologic and geomorphic factors affecting conservation of a river-breeding frog (Rana boylii). Ecological Applications 6: 1332-1344.

Lahontan Cutthroat Trout Coordinating Committee (LCTCC). 2019. Updated goals and objectives for the conservation of Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*). May 29, 2019. Available online: https://www.fws.gov/sites/default/files/documents/Lahontan%20Cutthroat%20Trout%202019%20Updated%20Goals%20and%20Objectives.pdf. Accessed March 17, 2026.

Liang, C. T. 2010. Habitat modeling and movements of the Yosemite toad (*Anaxyrus* (=*Bufo*) *canorus*) in the Sierra Nevada, California. Ph.D. dissertation. University of California, Davis.

Lind, A. J., L. Conway, H. E. Sanders, P. Strand, and T. Tharalson. 2003. Distribution, relative abundance, and habitat of foothill yellow-legged frogs (*Rana boylii*) on national forests in the Southern Sierra Nevada Mountains of California. U.S. Department of Agriculture, Forest Service, Region 5, Fish Habitat Relationships (FHR) Program, Washington, D.C.

Martin, D. 2008. Decline, movement and habitat utilization of the Yosemite toad (Bufo canorus): an endangered anuran endemic to the Sierra Nevada of California. PhD dissertation. University of California, Santa Barbara.

Matthews, K. R. and K. L. Pope. 1999. A telemetric study of the movement patterns and habitat use of *Rana muscosa*, the mountain yellow-legged frog, in a high-elevation basin in Kings Canyon National Park, California. Journal of Herpetology 33: 615–623.

McCaughey, W. W. and D. F. Tomback. 2001. The natural regeneration process. Pages 105-120 *in* D. F. Tomback, S. F. Arno, and R. E. Keane (Eds.). Whitebark Pine Communities: Ecology and Restoration. Island Press.

©2026, Calaveras County Water District

Morton, M. L. 1981. Seasonal changes in total body lipid and liver weight in the Yosemite toad. Copeia 1981:234–238.

Moyle, P. B. 2002. Inland Fishes of California. University of California Press. Berkeley, CA. Available online: https://www.waterboards.ca.gov/water_issues/programs/tmdl/records/state_board/1998/ref2608.pdf. Accessed on March 17, 2026.

Nafis, G. 2026. Northwestern pond turtle – *Actinemys marmorata*. Available online: https://californiaherps.com/turtles/pages/a.marmorata.html. Accessed January 20, 2026.

Peacock, M. and N. Dochtermann. 2012. Evolutionary potential but not extinction risk of Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*) is associated with stream characteristics. Canadian Journal of Fisheries and Aquaculture Sciences 69: 615-626.

Pelton, E., S. Jepsen, and S. Black. 2025. US Department of Interior delays monarch butterfly listing under Endangered Species Act. Xerces Society for Invertebrate Conservation. Available online: https://xerces.org/news/organizational-news/us-department-of-interior-delays-monarch-butterfly-listing-under. Accessed January 15, 2026.

Pope, K. 1999. Mountain yellow-legged frog habitat use and movement patterns in a high elevation basin in Kings Canyon National Park. Unpublished MS Thesis, California State Polytechnic University, San Luis Obispo, California. 64 pp

Rathbun G. B., N. J. Scott, and T. G. Murphey. 2002. Terrestrial habitat use by pacific pond turtles in a mediterranean climate. Southwest Nat. 47(2):225–235. Available online: https://doi.org/10.2307/3672910. Accessed January 20, 2026.

Reginfo. 2026. Agency Rule List – Spring 2025. Department of the Interior, United States Fish and Wildlife Department. Regulatory Information Number 1018-BE30. Available online: https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202504&RIN=1018-BE30. Accessed January 15, 2026.

Rhodin, A. G. J., J. B. Iverson, R. Bour, U. Fritz, A. Georges, H. B. Shaffer, and P. P. van Dijk [Turtle Taxonomy Working Group]. 2017. Turtles of the World: Annotated Checklist and Atlas of Taxonomy, Synonymy, Distribution, and Conservation Status (8th Ed.). In: Rhodin, A. G. J., J. B. Iverson, P. P. van Dijk, R. A. Saumure, K. A. Buhlmann, P. C. H. Pritchard, and R. A. Mittermeier (Eds.). Conservation Biology of Freshwater Turtles and Tortoises: A Compilation Project of the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group. Chelonian Research Monographs 7:1–292. doi: 10.3854/crm.7.checklist.atlas.v8.2017.

©2026, Calaveras County Water District

Riensche D. L., S. K. Riensche, and R. E. Riensche. 2019. Habitat use, movement patterns, and nest site selection by western pond turtles (Actinemys marmorata) in a managed central California rangeland pond. Northwest Nat. 100(2):90–101.

Roberts, S. L. 2017. California spotted owl habitat characteristics and use. Pages 49-67 *in* R. J. Gutiérrez, P. N. Manley, and P. A. Stine (Eds.). The California Spotted Owl: Current State of Knowledge. United States Department of Agriculture, U.S. Forest Service Pacific Southwest Research Station. General Technical Report PSW-GTR-254. August 2017.

Rosenberg D. K., J. Gervais, D. Vesely, S. Barnes, L. Holts, R. Horn, R. Swift, L. Todd, and C. Yee. 2009. Conservation assessment for western pond turtles in Oregon. Version 1.0. Available online: https://www.fs.usda.gov/r6/issssp/downloads/xvertebrates/ca-hr-actinemys-marmorata-200911.pdf. Accessed January 2026

Snyder, S. A. 1991. *Canis lupus*, gray wolf. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available online: https://research.fs.usda.gov/feis/species-review/calu. Accessed January 20, 2026.

Stebbins, R. C. 2003. A Field Guide to Western Reptiles and Amphibians. 3rd Edition. Houghton Mifflin Company.

Stebbins, R. C. and S. M. McGinnis. 2012. Field Guide to Amphibians and Reptiles of California: Revised Edition. California Natural History Guides. University of California Press, Berkeley.

Storer, T. I. 1925. A synopsis of the amphibia of California. University of California Publications in Zoology. 27: 1–343.

The Xerces Society for Invertebrate Conservation (Xerces). 2017. Protecting California's butterfly groves: management guidelines for monarch butterfly overwintering habitat. The Xerces Society for Invertebrate Conservation. Portland, OR. vi + 32 pp.

Tomback, D. F. 1982. Dispersal of whitebark pine seeds by Clark's nutcracker: A mutualism hypothesis. Journal of Animal Ecology 51: 451–467.

Tomback, D. F., S. F. Arno, and R. E. Keane (Eds.). 2001. Whitebark Pine Communities: Ecology and Restoration. Island Press.

U.S. Department of Agriculture, Forest Service (Forest Service). 2026. Protected Activity Centers for American goshawk, California spotted owl, and great gray owl. Provided by Crispin Holland, Stanislaus National Forest Range and Wildlife Program Manager.

©2026, Calaveras County Water District

U.S. Fish and Wildlife Service (USFWS). 2026a. Information for Planning and Consultation. Environmental Conservation Online System. Accessed February 27, 2026. https://ecos.fws.gov/ecp/. United States Fish and Wildlife Service. Washington D.C.

_____. 2026b. FWS Threatened & Endangered Species Active Critical Habitat Report. Environmental Conservation Online System. Available online: https://ecos.fws.gov/ecp/report/table/critical-habitat.html. Accessed March 11, 2026.

_____. 2026c. Sierra Nevada red fox. Available online: https://www.fws.gov/species/sierra-nevada-red-fox-vulpes-vulpes-necator. Accessed January 14, 2026.

_____. 2025a. Recovery planning exception findings for the 44-state and Minnesota listed entities of gray wolves (*Canis lupus*). U.S. Fish and Wildlife Service. Falls Church, Virginia. 10 pp.

_____. 2025b. Species status assessment for the gray wolf (*Canis lupus*) in the Eastern United States. Version 1.1, November 3, 2025. Falls Church, Virginia. 307 pp.

_____. 2024. Monarch butterfly (*Danaus plexippus*) species status assessment report. U.S. Fish and Wildlife Service. Version 2.3. December 2024. Midwest Regional Office.

_____. 2023a. Species status assessment addendum for North American wolverine (*Gulo gulo luscus*). U.S. Fish and Wildlife Service. September 2023. 100 pp.

_____. 2023b. Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*) Status Review. U.S. Fish and Wildlife Service. 2023.

_____. 2023c. Species status assessment report for the foothill yellow-legged frog (*Rana boylii*), Version 2.11. April 2023. U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California.

_____. 2023d. Species status assessment report for Northwestern Pond Turtle (*Actinemys marmorata*) and Southwestern Pond Turtle (*Actinemys padilla*). U.S. Fish and Wildlife Service. April 2023.

_____. 2023e. Species status assessment for the gray wolf (*Canis lupus*) in the western United States. U.S. Fish and Wildlife Service, Mountain-Prairie Region. Lakewood, CO. 362 pp.

_____. 2022a. Recovery outline for whitebark pine. U.S. Fish and Wildlife Service, Wyoming Ecological Services Field Office, Cheyenne, WY. 21 pp.

_____. 2022b. California Red-Legged Frog (*Rana draytonii*) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service. December 2022. Sacramento, CA.

_____. 2022c. Species Status assessment report for the California spotted owl (*Strix occidentalis occidentalis*). U.S. Fish and Wildlife Service. Version 2.0. November 2022. Sacramento, CA. 173 pp.

©2026, Calaveras County Water District

_____. 2021a. Species status assessment report for the whitebark pine (*Pinus albicaulis*). U.S. Fish and Wildlife Service. Version 1.3. December 2021. Wyoming Ecological Services Field Office, Cheyenne, WY.

_____. 2021b. Species status assessment for the foothill yellow-legged frog (*Rana boylii*), Version 2.0. October 2021. U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California. 232 pp.

_____. 2021c. Recovery outline for the Sierra Nevada distinct population segment of the Sierra Nevada red fox (*Vulpes vulpes necator*). U.S. Fish and Wildlife Service, Pacific Southwest Region. Sacramento Fish and Wildlife Office. 17pp.

_____. 2020. Monarch (*Danaus plexippus*) species status assessment report. U.S. Fish and Wildlife Service. Version 2.1. September 2020. 96 pp.

_____. 2019. Species status assessment report for the California spotted owl (*Strix occidentalis occidentalis*). U.S. Fish and Wildlife Service. Version 1.0. June 2019. Sacramento, CA. 186 pp.

_____. 2018a. Species Status Assessment Report for the Whitebark Pine (*Pinus albicaulis*). U.S. Fish and Wildlife Service. Wyoming Ecological Services Field Office. Cheyenne, WY. 174 pp.

_____. 2018b. Species Status Assessment Report for the Sierra Nevada Distinct Population Segment of the Sierra Nevada Red Fox. U.S. Fish and Wildlife Service, Region 8. Sacramento, CA. 53 pp.

_____. 2012. Lower 48-state and Mexico Gray wolf (*Canis lupus*) listing, as revised. 5-year review: summary and evaluation. U.S. Fish and Wildlife Service. Arlington, VA.

_____. 2009. Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*). 5-year review: summary and evaluation. U.S. Fish and Wildlife Service. Nevada Fish and Wildlife Office, Reno, NV. March 30, 2009.

_____. 2002. Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Portland, Oregon. viii + 173 pp.

_____. 1994. Lahontan cutthroat trout, *Oncorhynchus clarki henshawi*, Recovery Plan. Portland, OR. 147 pp.

_____. 1992. Recovery plan for the eastern timber wolf. Twin Cities, MN. 73 pp.

_____. 1987. Northern Rocky Mountain Wolf Recovery Plan. U.S. Fish and Wildlife Service, Denver, CO. 119 pp.

©2026, Calaveras County Water District

Western Monarch and Milkweed Occurrence Database (WMMOD). 2025. Data access from the Western Monarch Milkweed Mapper, a project by the Xerces Society, U.S. Fish and Wildlife Service, Idaho Department of Fish and Game, and Washington Department of Fish and Game. Accessed December 31, 2025.

Western Pond Turtle Range-wide Conservation Coalition. 2020. Western Pond Turtle Range-wide Management Strategy.

Wheeler, C. A., H. H. Welsh, Jr., and T. Roelofs. 2006. Oviposition Site Selection, Movement, and Spatial Ecology of the Foothill Yellow-legged Frog (Rana boylii). Final Report to the California Department of Fish and Game Contract No. P0385106, Sacramento, California.

Zeiner, D. C., W. F. Laudenslayer, Jr., K. E. Mayer, and M. White (Eds.). 1988–1990. California's wildlife. Volumes I, II, and III (Amphibians and Reptiles, Birds, and Mammals). California Statewide Habitat Relationships System. California Department of Fish and Game.

Zweifel, R. G. 1955. Ecology, distribution, and systematics of frogs of the Rana boylei group. University of California Publications in Zoology 54(4):207–292.

Section 3.07: Recreation

American Whitewater (AW). 2026. Stanislaus North Fork, Sourgrass Bridge to Calaveras Big Trees (Boards Crossing). Available online: https://www.americanwhitewater.org/content/River/view/river-detail/303/main. Accessed March 19, 2026.

Calaveras County. 2019. Calaveras County General Plan. Available online: https://planning.calaverasgov.us/General-Plan. Accessed March 19, 2026.

California Creeks. 2026. River Descriptions: Stanislaus River North Fork near Arnold. Available online: https://www.cacreeks.com/stan-nf.htm. Accessed March 16, 2026.

California Department Parks and Recreation (CDPR). 2026. Calaveras Big Trees State Park. Available online: https://www.parks.ca.gov/?page_id=551. Accessed March 16, 2026.

_____. 2020. California's 2021-2025 Statewide Comprehensive Outdoor Recreation Plan (SCORP). Available online: https://www.parksforcalifornia.org/scorp/2021. Accessed March 19, 2026.

_____. 2014. Survey on Public Opinions and Attitudes on Outdoor Recreation in California 2012. Sacramento, California: California State Parks.

Golden Pines Resort. 2026. Golden Pines RV and Campground – Arnold, CA. Available online: https://www.goldenpinesresort.com/. Accessed March 16, 2026.

Holbeck and Stanley. 1998. The Best Whitewater in California: The Guide to 180 Runs. Third Edition. Watershed Books. Coloma, California.

©2026, Calaveras County Water District

National Park Service (NPS). 2026. Nationwide Rivers Inventory. Available online: https://www.nps.gov/subjects/rivers/nationwide-rivers-inventory.htm. Accessed March 19, 2026.

National Wild and Scenic Rivers System (NWSRS). 2026. Tuolumne River, CA. Available online: https://www.rivers.gov/river/tuolumne Accessed March 16, 2026.

Northern California Power Agency (NCPA). 2026. Hydroelectric Projects. The North Fork Stanislaus River Hydroelectric Development Project. Available online: https://www.ncpa.com/about/generation/hydroelectric/. Accessed March 11, 2026.

_____. 2023. North Fork Stanislaus River Hydroelectric Development Project (FERC Project NO. 2409). New Spicer Meadow Reservoir Recreation Data: 2023 Use Data.

_____. 2022. North Fork Stanislaus River Hydroelectric Development Project (FERC Project NO. 2409). New Spicer Meadow Reservoir Recreation Data: 2022 Use Data.

_____. 2021. North Fork Stanislaus River Hydroelectric Development Project (FERC Project NO. 2409). New Spicer Meadow Reservoir Recreation Data: 2021 Use Data.

_____. 2020. North Fork Stanislaus River Hydroelectric Development Project (FERC Project NO. 2409). New Spicer Meadow Reservoir Recreation Data: 2020 Use Data.

_____. 2019. North Fork Stanislaus River Hydroelectric Development Project (FERC Project NO. 2409). New Spicer Meadow Reservoir Recreation Data: 2019 Use Data.

_____. 2018. North Fork Stanislaus River Hydroelectric Development Project (FERC Project NO. 2409). New Spicer Meadow Reservoir Recreation Data: 2018 Use Data.

_____. 2017. North Fork Stanislaus River Hydroelectric Development Project (FERC Project NO. 2409). New Spicer Meadow Reservoir Recreation Data: 2017 Use Data.

_____. 2016. North Fork Stanislaus River Hydroelectric Development Project (FERC Project NO. 2409). New Spicer Meadow Reservoir Recreation Data: 2016 Use Data.

_____. 2015. North Fork Stanislaus River Hydroelectric Development Project (FERC Project NO. 2409). New Spicer Meadow Reservoir Recreation Data: 2015 Use Data.

_____. 2014. North Fork Stanislaus River Hydroelectric Development Project (FERC Project NO. 2409). New Spicer Meadow Reservoir Recreation Data: 2014 Use Data.

Tuolumne County. 2018. Tuolumne County General Plan. Available online: https://www.tuolumnecounty.ca.gov/DocumentCenter/View/11752/Vol-I-Goals-Policies-Policies-Final. Accessed March 10, 2026.

U.S. Access Board. 2015. Architectural Barriers Act Accessibility Standards. Available online: https://www.access-board.gov/aba/. Accessed June 19, 2026.

©2026, Calaveras County Water District

U.S. Department of Agriculture, Forest Service (Forest Service). 2026a. Stanislaus National Forest Recreation Opportunities - Hiking. Available online: https://www.fs.usda.gov/r05/stanislaus/recreation/opportunities/hiking. Accessed March 11, 2026.

_____. 2026b. Stanislaus National Forest Recreation: North Fork Stanislaus River. Available online: https://www.fs.usda.gov/r05/stanislaus/recreation/north-fork-stanislaus-river. Accessed March 11, 2026.

_____. 2026c. Utica and Union Reservoirs. Recreation Region: Hwy 4 – Calaveras Ranger District. Available online: https://www.fs.usda.gov/r05/stanislaus/recreation/hwy-4-calaveras-ranger-district. Accessed March 11, 2026.

_____. 2026d. Spicer SNO-PARK. Recreation Region: Hwy 4 – Calaveras Ranger District. Available online: https://www.fs.usda.gov/r05/stanislaus/recreation/spicer-sno-park. Accessed March 11, 2026.

_____. 2026e. Big Meadow Campground. Recreation Region: Hwy 4 – Calaveras Ranger District. Available online: https://www.fs.usda.gov/r05/stanislaus/recreation/big-meadow-campground. Accessed March 11, 2026.

_____. 2026f. Wakalu Hep Yo (Wild River) Campground. Recreation Region: Hwy 4 – Calaveras Ranger District. Available online: https://www.fs.usda.gov/r05/stanislaus/recreation/wakalu-hep-yo-wild-river-campground. Accessed March 11, 2026.

_____. 2013. Forest Service Outdoor Recreation Accessibility Guidelines. Available online: https://www.fs.usda.gov/recreation/programs/accessibility/FSORAG.pdf. Accessed June 19, 2026.

U.S. Department of the Interior, Bureau of Reclamation (BOR). 2026. New Melones Reservoir. California-Great Basin Office. Available online: https://www.usbr.gov/mp/ccao/newmelones/planning-visit/index.html. Accessed March 13, 2026.

Section 3.8: Land Use

Alpine County. n.d. Alpine County zoning map. Available online: https://alpinecounty.maps.arcgis.com/apps/instant/minimalist/index.html?appid=63c6f368dc1b4ecba3804d12e6d8d154. Accessed February 17, 2026.

———. 2024. Alpine County Code, Title 18 – Zoning. Code Publishing Company. Available online: https://www.codepublishing.com/CA/AlpineCounty/#!/AlpineCounty18/AlpineCounty18.html. Accessed February 17, 2026.

©2026, Calaveras County Water District

———. 2009. General plan: Land use element. Available online: https://www.alpinecountyca.gov/DocumentCenter/View/3807/General-Plan-Land-Use-Element. Accessed February 17, 2026.

Calaveras County Water District (CCWD). 2025. Annotated license: North Fork Stanislaus River Hydroelectric Project, FERC Project No. 2409 (pp. 1–22). Available online: https://calaverascwd.specialdistrict.org/files/efbd97e3d/P-2409_Annotated%2BLicense_November%2B2025.pdf. Accessed February 17, 2026.

———. 2020. General plan land use element (amended October 2020). Available online: https://farmandranch.com/storage/brochures/import/tbrffUo9suPIGZB8O2byZZqR9qJ4FMstyY5I7JEt.pdf. Accessed February 17, 2026.

———. 1985. Resolution 85-31: Amended memorandum of agreement between the U.S. Forest Service and Calaveras County Water District for FERC Project No. 2409.

———. 1990. Summary of Agreements between the USDA - Forest Service and Calaveras County Water District for FERC Project No. 2409.

Calaveras County Water District (CCWD) and Northern California Power Agency (NCPA). 1994. Utica–Angels Hydroelectric Projects agreement.

———. 1991. Transmission assignment agreement for the North Fork Stanislaus River Hydroelectric Project (FERC Project No. 2409).

California Department of Fish and Wildlife (CDFW). 2015. California wildlife action plan. Available online: https://wildlife.ca.gov/Conservation/CWAP. Accessed February 17, 2026.

California Department of Parks and Recreation (CDPR). n.d. Calaveras Big Trees State Park. Available online: https://www.parks.ca.gov/?page_id=551. Accessed February 17, 2026.

———. 2021. California State Parks strategic plan 2021–2025. Available online: https://www.parks.ca.gov/?page_id=31240. Accessed February 17, 2026.

Golden Pines Resort. n.d. Golden Pines RV & campground. Available online: https://www.goldenpinesresort.com/. Accessed February 17, 2026.

Pacific Gas and Electric Company. 1989. Operations agreement for the North Fork Stanislaus River Hydroelectric Project (FERC Project No. 2409).

Tuolumne County. 2018. General Plan. Available online: https://www.tuolumnecounty.ca.gov/DocumentCenter/View/29496/GP-with-Bookmark. Accessed February 17, 2026.

U.S. Bureau of Land Management (BLM). n.d. Mother Lode Field Office. Available online: https://www.blm.gov/office/mother-lode-field-office. Accessed February 17, 2026.

©2026, Calaveras County Water District

U.S. Bureau of Reclamation (BOR). n.d. Planning your visit: New Melones. Available online: https://www.usbr.gov/mp/ccao/newmelones/planning-visit/index.html. Accessed February 17, 2026.

———. 2023. Central Valley Project overview. U.S. Department of the Interior. Available online: https://www.usbr.gov/mp/cvp/. Accessed February 17, 2026.

———. 2008. Record of decision: Sierra resource management plan. U.S. Department of the Interior. Available online: https://eplanning.blm.gov/public_projects/lup/72554/96713/116819/Sierra_ROD_12172007.pdf. Accessed February 17, 2026.

U.S. Department of Agriculture, Forest Service (Forest Service). n.d. Stanislaus National Forest. Available online: https://www.fs.usda.gov/r05/stanislaus. Accessed February 17, 2026.

———. 2025a. Carson-Iceberg Wilderness: Stanislaus National Forest. U.S. Department of Agriculture. Available online: https://www.fs.usda.gov/r05/stanislaus/wilderness/carson-iceberg-wilderness. Accessed February 17, 2026.

———. 2025b. Travel management; designation of roads, trails, and areas for motor vehicle use (36 C.F.R. Part 212). Federal Register, 70(234), 68264–68291. Available online: https://www.federalregister.gov/documents/2008/12/09/E8-29041/travel-management-directives-forest-service-manual-2350-7700-and-7710-and-forest-service-handbook?utm. Accessed February 17, 2026.

———. 2023. Caring for the land and serving people: Land management. Available online: https://www.fs.usda.gov/about-agency. Accessed February 17, 2026.

———. 2012. National Forest System land management planning rule. Available online: https://www.fs.usda.gov/managing-land/national-forest-system-planning. Accessed February 17, 2026.

———. 2009. Stanislaus National Forest motorized travel management final environmental impact statement. U.S. Department of Agriculture. Available online: https://19january2021snapshot.epa.gov/sites/static/files/documents/StanislausNatForestMotorTravMgtFEIS.pdf. Accessed February 17, 2026.

———. 1991. Special use authorization for the North Fork Stanislaus River Hydroelectric Project. Stanislaus National Forest, U.S. Department of Agriculture.

U.S. Department of the Interior (USDOI) and U.S. Department of Agriculture (USDA). 2001. Review and update of the 1995 federal wildland fire management policy. Available online: https://www.doi.gov/sites/doi.gov/files/uploads/2001-wfm-policy-review.pdf. Accessed February 17, 2026.

©2026, Calaveras County Water District

Section 3.9: Aesthetics

Alpine County. 2003. General Plan I Conservation Element, Section K, Aesthetics. Available online: https://www.alpinecountyca.gov/DocumentCenter/View/3811/General-Plan-Conservation-Element. Accessed October 28, 2025.

Calaveras County General Plan. 2019. Available online: https://planning.calaverasgov.us/General-Plan. Accessed October 26, 2025.

California Department of Transportation (Caltrans). 2026. Scenic Highways. Available online: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways. Accessed October 24, 2025.

National Park Service (NPS). 2026. National Rivers Inventory. Available online: https://www.nps.gov/subjects/rivers/nationwide-rivers-inventory.htm. Accessed February 18, 2026.

Tuolumne County. 2018. Tuolumne County General Plan, Volume 1. Available online: https://www.tuolumnecounty.ca.gov/DocumentCenter/View/11752/Vol-I-Goals-Policies-Policies-Final. Accessed October 27, 2025.

United States Department of Agriculture, Forest Service (Forest Service). 2017. Stanislaus National Forest Plan Direction. Department of Agriculture, Pacific Southwest Region, Sonora, California. March 2017.

———. 1991. Stanislaus National Forest Land and Resource Management Plan. Department of Agriculture, Pacific Southwest Region, Sonora, California. October 1991. Available online: STANISLAUS NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN, ALPINE, CALAVERAS, MARIPOSA, AND TUOLUMNE COUNTIES, CALIFORNIA. - ScienceBase-Catalog (beta) Accessed October 2, 2025.

———. 1974. National Forest Landscape Management. The visual management system, volume 2, chapter 4. Agric. Handbook. 462. Washington, DC: U.S. Department of Agriculture, Forest Service.

United States Department of the Interior (USDOI), Bureau of Land Management (BLM). 2008. Sierra Resource Management Plan and Record of Decision. Available online: https://eplanning.blm.gov/public_projects/72554/200158567/20036954/250043151/Sierra_ROD_Final_web.pdf. Accessed October 28, 2025.

_____. 1986. Manual H 8410-Visual Resource Inventory. 1986. Available online: https://blmwyomingvisual.anl.gov/docs/BLM_VRI_H-8410.pdf. Accessed November 6, 2025

———. 1984. Manual 8400-Visual Resource Management. Available online: https://www.blm.gov/sites/blm.gov/files/uploads/mediacenter_blmpolicymanual8400.pdf. Accessed November 6, 2025.

©2026, Calaveras County Water District

Section 3.10: Socioeconomic Resources

Calaveras County Water District (CCWD). 2025. Financial Reports. CCWD Final FY 2025-2026 Adopted Budget, District-Wide Budget Summary. Available online: https://www.ccwd.org/finance-department. Accessed December 12, 2025. Last updated 2025.

California Department of Finance. 2025. E-5 Population and Housing Estimates for Cities, Counties, and the State, 2020-2025. Available online: https://dof.ca.gov/forecasting/demographics/estimates/e-5-population-and-housing-estimates-for-cities-counties-and-the-state-2020-2026/. Accessed December 12, 2025. Last updated May 2025.

_____. 2012. E-8 Historical Population and Housing Estimates for Cities, Counties, and the State, 2000-2010. Available online: https://dof.ca.gov/Forecasting/Demographics/Estimates/estimates-e8-2000-2010/. Accessed December 12, 2025. Last updated November 2012.

_____. 2007. E-8 Historical Population and Housing Estimates for Cities, Counties, and the State, 1990-2000. Available online: https://dof.ca.gov/Forecasting/Demographics/Estimates/e-8-historical-population-and-housing-estimates-for-cities-counties-and-the-state-1990-2000/. Accessed December 12, 2025. Last updated August 2007.

California Employment Development Department (EDD). 2025a. Calaveras County, CA. Current Industry Employment and Unemployment Rates. Available online: https://labormarketinfo.edd.ca.gov/data/industry-employment-and-unemployment-rates-for-counties.html. Accessed December 12, 2025. Last updated September 19, 2025.

_____. 2025b. Labor Market Information for the State of California (Statewide Summary). Available online: https://labormarketinfo.edd.ca.gov/geography/california-statewide.html. Accessed December 12, 2025. Last updated September 19, 2025.

_____. 2025c. Calaveras County, Employment by Industry Data. Available online: https://labormarketinfo.edd.ca.gov/file/lfmonth/calavpds.pdf. Accessed December 12, 2025. Last updated September 19, 2025.

_____. 2025d. Tuolumne County, CA. Current Industry Employment and Unemployment Rates. Available online: https://labormarketinfo.edd.ca.gov/data/industry-employment-and-unemployment-rates-for-counties.html. Accessed December 12, 2025. Last updated September 19, 2025.

_____. 2025e. Tuolumne County, Employment by Industry Data. Available online: https://labormarketinfo.edd.ca.gov/file/lfmonth/tuolupds.pdf. Accessed December 12, 2025. Last updated September 19, 2025.

©2026, Calaveras County Water District

_____. 2025f. Alpine County, CA. Current Industry Employment and Unemployment Rates. Available online: https://labormarketinfo.edd.ca.gov/data/industry-employment-and-unemployment-rates-for-counties.html. Accessed December 12, 2025. Last updated September 19, 2025.

_____. 2025g. Alpine County, Employment by Industry Data. Available online: https://labormarketinfo.edd.ca.gov/file/lfmonth/alpinpds.pdf. Accessed December 12, 2025. Last updated September 19, 2025.

United States Census Bureau. 2025a. Calaveras County, California Profile. Available online: https://data.census.gov/profile/Calaveras_County,_California?g=050XX00US06009. Accessed December 12, 2025. Last updated December 12, 2025.

_____. 2025b. State of California Profile. Available online: https://data.census.gov/profile/California?g=040XX00US06. Accessed December 12, 2025. Last updated December 12, 2025.

_____. 2025c. Tuolumne County, California Profile. Available online: https://data.census.gov/profile/Tuolumne_County,_California?g=050XX00US06109. Accessed December 12, 2025. Last updated December 12, 2025.

_____. 2025d. Alpine County, California Profile. Available online: https://data.census.gov/profile/Alpine_County,_California?g=050XX00US06003. Accessed December 12, 2025. Last updated December 12, 2025.

Section 3.11: Cultural

Alpine County Chamber of Commerce. 2026. Alpine County. Available online: About 1 — Alpine County Chamber of Commerce. Accessed January 20, 2026.

Barrett, S. A. 1917. Ceremonies of Pomo Indians. University of California Publications in American Archaeology and Ethnology, Vol 12, No. 10, pp. 397-441. University of California Press, Berkeley, California.

Biggs News. 1985. “Biggs Joins In Hydroelectric Project.” April 18:1.

Brewer, W. H. 1866. Alleged Discovery of an Ancient Human Skull in California. *American Journal of Science* 42:424.

Calaveras History. 2026a. Alpine County. Available online: https://www.calaverashistory.org/alpine-county. Accessed January 20, 2026.

_____. 2026b. Calaveras County. Available online: https://www.calaverashistory.org/calaveras-county. Accessed January 20, 2026.

_____. 2026c. Modern Day. Available online: https://www.calaverashistory.org/modern-day. Accessed January 20, 2026.

©2026, Calaveras County Water District

Davis, E. L. and R. Shutler, Jr. 1969. Recent Discoveries of Fluted Points in California and Nevada. *Nevada State Museum Anthropological Papers* 14:153–169. Reno.

Davis, J. T. 1953. *The Archaeology of Three Central Sierran Sites*. University of California Archaeological Survey, Berkeley. Submitted to the USDI National Park Service, Western Region, San Francisco.

Dempster, D. 1977. "Power Agency Has Option on Stanislaus Project." *Sacramento Bee*. April 22:10.

Fredrickson, D. A. 1949. *Appraisal of the Archaeological Resources of the New Melones Reservoir, Calaveras and Tuolumne Counties, California*. River Basin Surveys. Smithsonian Institution, Washington, D.C.

Fresno Bee. 1982. "Stanislaus River Project OK'd After 3-Year Delay." February 1:5.

Garretson, F. 1975. "'Secret' Dams on the Stanislaus." *Oakland Tribune*. August 24:9.

Gray, T. 1978. "Calaveras Will Vote on $350 Million Power Project." *Modesto Bee*. May 27:3.

Goldberg, S. K. and M. J. Moratto. 1983. Archaeological Investigations at Six Sites on the Stanislaus National Forest, California. INFOTEC Development, Inc., Huntington Beach, California. Submitted to USDA Forest Service, Stanislaus National Forest, Sonora, California.

Hoye, D. 1986. "Powerful Future for P.A." *Peninsula Times*. July 13:1.

Hull, K. C. 2007. The Sierra Nevada: Archaeology in the Range of Light. In California Prehistory: Colonization, Culture, and Complexity, edited by T. L. Jones and K. A. Klar, pp. 177-190, AltaMira Press, New York.

Hull, K. L. and M. J. M. 1999. *Archaeological Synthesis and Research Design, Yosemite National Park, California*. INFOTEC Research, Inc., Fresno, California, and Dames and Moore, Chico, California. Submitted to USDI National Park Service, Yosemite National Park, Yosemite, California.

Jackson, T. L. and J. E. Ericson. 1994. Prehistoric Exchange Systems in California. In *Prehistoric Exchange Systems in North America*, edited by Timothy G. Baugh and Jonathon E. Ericson, pp. 385-415, Plenum Press, New York.

Johnson, J. J. 1967. The Archeology of the Camanche Reservoir Locality, California. *Sacramento Anthropological Society* 6:iii.

Kroeber, A. L. 1925. *Handbook of the Indians of California.* Government Documents and Publications. Smithsonian Institution. Bureau of American Ethnology, Bulletin 8. Washington Government Printing Office.

©2026, Calaveras County Water District

Levy, R. 1978. Eastern Miwok. In *California*, edited by Robert F. Heizer, pp. 398–413. Handbook of North American Indians, vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Merriam, C. H. 1955. *Studies of California Indians*. University of California Press, Berkeley.

———. 1907. Distribution and Classification of Mewan Stock of California. *American Anthropologist* 9:338–357.

Miksicek, C., K. Roper, D. Simons, J. Farquhar, K. Loeffler, J. Hall, T. L. Jackson, and R. J. Jackson. 1996. Forest Overviews: Overview of the Prehistory of the Stanislaus National Forest. In *Framework for Archaeological Research and Management, National Forests of the North-Central Sierra Nevada, Unit II*, vol. B. BioSystems Analysis, Inc., Santa Cruz, California. Submitted to the USDA Forest Service, Eldorado and Stanislaus National Forests.

Modesto Bee. 1977. "Stanislaus River Power Plant Gains Nod." June 3:2.

Moratto, M. J. and O. K. Davis. 1988. Paleoenvironment. In *Culture Change in the Central Sierra Nevada, 8000 B.C–A.D. 1950*, edited by Michael J. Moratto, J. D. Tordoff, and L. H. Shoup, pp. 39–85. INFOTEC Research, Inc., Sonora, California. Submitted to National Park Service, Washington, D.C., Contract No. CX-0001-1-0053.

Moratto, M. J., M. R. Arguelles, S. K. Goldberg, S. O'Brien, L. Riley, and W. Singleton. 1984. *New Melones Archeological Project, California: Indian Sites 04-Cal-S-286, 04-Cal-S-347, and 04-Cal-S- 461*. Final Report of the New Melones Archeological Project, vol. IV, Parts 1, 2, and 3. INFOTEC Development, Inc., Huntington Beach, California. Submitted to National Park Service, Washington, D.C.

Moratto, M. J., J.D. Tordoff, and L. H. Shoup. 1988. Culture Change in the Central Sierra Nevada, 8000B.C.-A.D.I950. Final Report of the New Melones Archeological Project 9, pp. 1-26. INFOTEC Research, Inc., Sonora, California. Submitted to the USDI National Park Service, Washington, D.C.

Noffsinger, L. 1976. "Controversial Hearing Set: SMUD's River Project Goes Before the Public." *Sacramento Union*. November 28:3.

Payen, L. A. 1959. Petroglyphs of Sacramento and Adjoining Counties, California. *University of California Archaeological Survey Reports* 48:66–92. Berkeley.

Peak, A. S. and H. L. Crew. 1989. Cultural Resource Studies, North Fork Stanislaus River Hydroelectric Development Project, Volume II, Part 1: An Archaeological Data Recovery Project at CA-Cal-S342, Clarks Flat, Calaveras County, California. Peak & Associates, Inc. Submitted to the Northern California Power Agency, Roseville.

©2026, Calaveras County Water District

Peak, A. S. and N. J. Neuenschwander. 1990. Cultural Resource Studies, North Fork Stanislaus River Hydroelectric Development Project Volume V, Part I. Prepared by Peak & Associates, Inc. for the Northern California Power Agency.

Price, B. A. and S. E. Johnston. 2002. A Fluted Projectile Point from Courtright Reservoir, Fresno County, California. *Society for California Archaeology Newsletter* 36(1):15–16. Department of Anthropology, California State University, Chico.

Pryor, J. and R. Weisman. 1991. Archaeological Investigations at the Skyrocket Site, CA-CAL-629/630, Royal Mountain King Mine Project. *Proceedings of the Society for California Archaeology* 4:159–192.

Putnam, F. W. 1879. The Southern California: Introduction. In *Report upon United States Geographical Survey of the Territory of the United States West of the One Hundredth Meridian, vol. VII, Archaeology*, edited by G. M. Wheeler, pp. 1–31. Engineering Department, United States Army. Government Printing Office, Washington, D.C.

Sacramento Bee. 1985. "Contract Signed For Hydro Project." April 3:46.

San Francisco Chronicle. 1985. "Business Briefs: Big Hydroelectric Development Project." April 3:28.

_____. 1990. "Construction Winners." June 3:91.

Statistical Atlas. 2018. Industries in Tuolumne County, California. Available online: https://statisticalatlas.com/county/California/Tuolumne-County/Industries. Accessed January 20, 2026.

Stevens, N. E., A. R. Whitaker, and J. S. Rosenthal. 2019. Bedrock mortars as indicators of territorial behavior in the Sierra Nevada. Quaternary International 518 57—68.

Taylor, R. E., L. A. Payen, and P. J. Slota, Jr. 1992. The Age of the Calaveras Skull: Dating of the "Piltdown Man" of the New World. *American Antiquity* 57:269–275.

Theodoratus, D. J. 1976. Ethnographic Study of the Parks Bar Lake Project. Submitted to United States Army Corps of Engineers.

Tuolumne County CAGenWeb Project. 2011. rev. 2017. Early History of Tuolumne County. Available online: https://www.cagenweb.org/tuolumne/his.htm#county. Accessed January 20, 2026.

Tuolumne County Historical Society. n.d. Agriculture and Ranching. Available online: https://tchistory.org/agriculture-and-ranching/. Accessed January 20, 2026.

Visit California. 2026. Tuolumne County. Available online: https://www.visitcalifornia.com/experience/tuolumne-county/. Accessed January 20, 2026.

©2026, Calaveras County Water District

Whitaker, A. and C. Parker. 2020. Bedrock Milling Features in California: Archaeological Context and Research Design. Prepared by Far Western Anthropological Research Group, Inc., for Caltrans.

White, B. 1977. "Calaveras, Power Agency Near Dam Project Pact." *Modesto Bee*. April 30:36.

Willig, J., C. M. Aikens, and B. M. Fagan (editors). 1988. *Early Human Occupation in Far Western North America: The Clovis-Archaic Interface*. Nevada State Museum Anthropological Papers 21. Carson City.

Section 3.12: Tribal

Beasley, J. 2024. *National Register Bulletin 38 Update: Identifying, Evaluating, and Documenting Traditional Cultural Places*. National Register of Historic Places and National Historic Landmarks Program, National Parks Service, U.S. Department of the Interior.

Bennyhoff, J. A. 1977. *The Ethnography of the Plains Miwok.* Center for Archaeological Research at Davis, Number 5, University of California Davis.

Gifford, E. W. 1917. Northern and Central Miwok. Ethnological documents 203, Department and Museum of Anthropology Archives, Bancroft Library, University of California, Berkley.

Goldberg, S. K. and M. J. Moratto. 1983. Archaeological Investigations at Six Sites on the Stanislaus National Forest, California. INFOTEC Development, Inc., Huntington Beach, California. Submitted to USDA Forest Service, Stanislaus National Forest, Sonora, California.

Goldberg, S. K., A. L. Hall, M. J. Moratto, D. J. Theodoratus, T. M. Van Buren, and T. L. Brejla. 1985. DRAFT: Final Report of the New Melones Archaeological Project; Volume II: Cultural Background: Regional Archaeology, Ethnography, and History.

Hall, A. L. 1978. *Ethnohistorical Studies of the Central Sierra Miwok: 1800-1900.* Master's Thesis, San Francisco State University, Department of Anthropology, San Francisco, California.

Kroeber, A. L. 1925. *Handbook of the Indians of California.* Government Documents and Publications. Smithsonian Institution. Bureau of American Ethnology, Bulletin 8. Washington Government Printing Office.

Merriam, C. H. 1907. Distribution and Classification of Mewan Stock of California. *American Anthropologist* 9:338–357.

Peters, M. P. 1988. *Clarks Flat and Upper Mountain Locale, Alpine and Calaveras Counties, California (Cultural Resource Studies, North Fork Stanislaus River Hydroelectric Project, Volume I: Ethnohistory).* Peak & Associates, Inc.

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Theodoratus, D. J. 1976. Ethnographic Study of the Parks Bar Lake Project. Submitted to United States Army Corps of Engineers.

Theodoratus, D. J., H. McCarthy, J. V. Siry, and C. M. Blount. 1980. *Historic and Ethnographic Overview: North Fork Stanislaus River Hydroelectric Development Project.* Theodoratus Cultural Research. Fair Oaks, California.

Section 4: Issues and Proposed Studies

Northern California Power Agency (NCPA). 2025. Dreissenid and Mytilidae Mussel Prevention Plan. July 31, 2025.

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