Lower Mokelumne River Project

FERC Project No. 2916

Technical Work Group (TWG) Meetings
Fish & Aquatics

June 25, 2025

EBMUD

Kleinschmidt

AGENDA

- **Welcome and Introductions**
- **Brief Project Overview**
- **Identify Potential Studies**
- **Q&A and Feedback**
- **Action Items, Schedule and Next Steps**

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Welcome & Introductions

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Lower Mokelumne Relicensing Team

Project Management Team

Priya Jain

Brad Ledesma

Joe Tam

Sabrina Cheng

Karen Donovan

Resource Leads

Casey Del Real

Michelle Workman

Jason Zhou

Consultant Team

Kleinschmidt
Shannon Luoma

Fatima Oswald

Olivia Smith

Craig Addley

Facilitator

Marie Rainwater

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Meeting Purpose and Objectives

- Ensure EBMUD is aware of relicensing participants interests and objectives as they prepare their draft study plans for inclusion in the PAD

- Receive feedback on potential study plans

Lower Mokelumne River (FERC Project No. 2916) Project Overview

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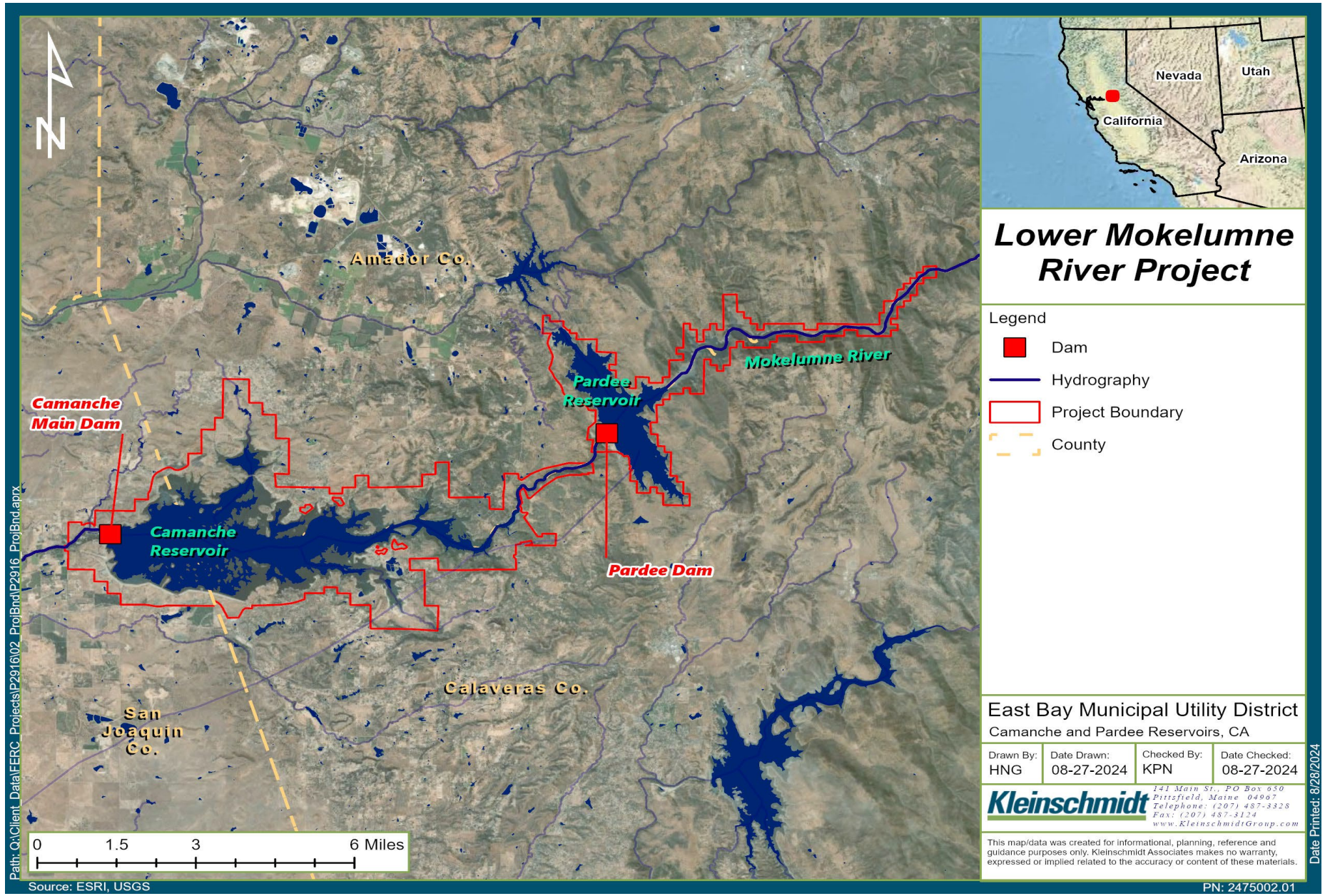
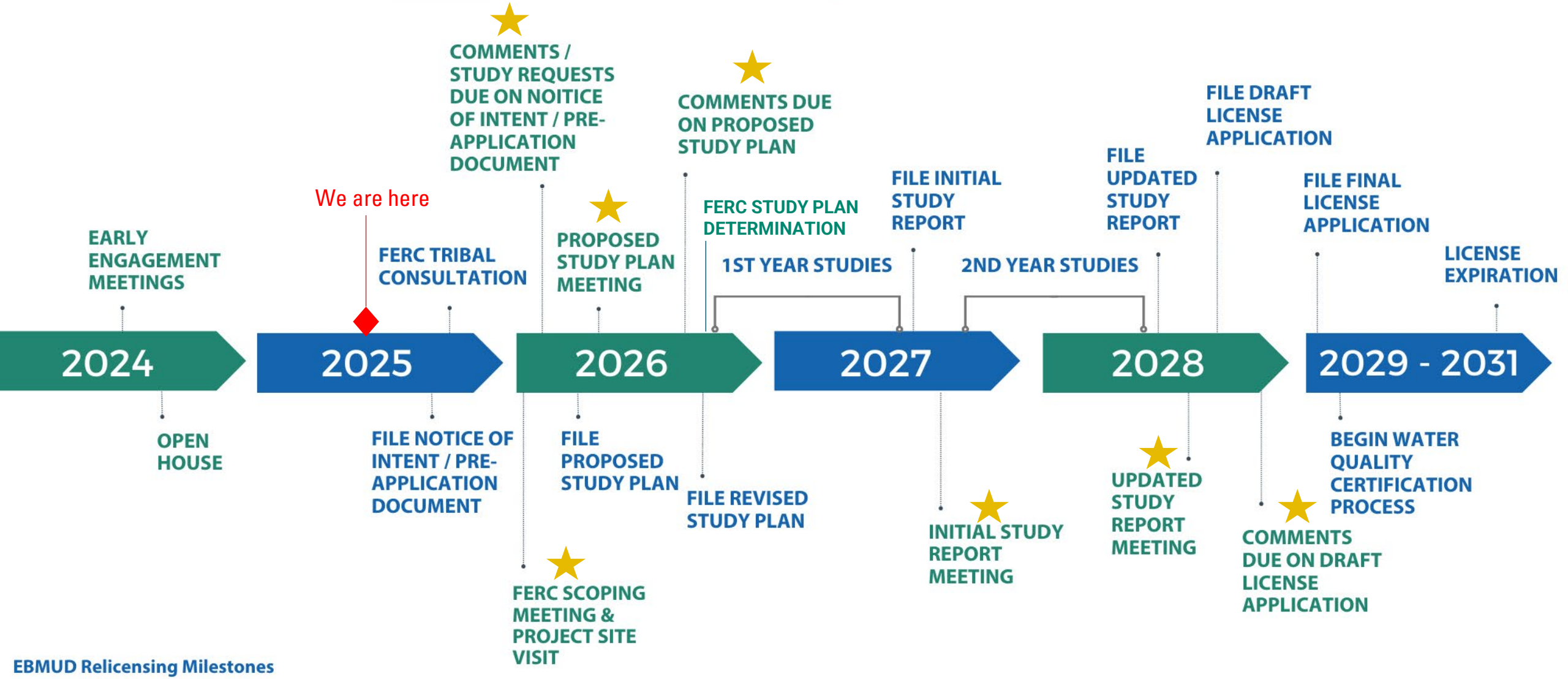
Lower Mokelumne River (P-2916) River Project



RELICENSING SCHEDULE

Lower Mokelumne River Project, FERC No. 2916



EBMUD Relicensing Milestones

Interested Parties Involvement Opportunities

★ Comment Opportunities (not all are shown)

Why Conduct Studies?

- The Proposed Study Plan (PSP) is a FERC requirement under the ILP
- Provide FERC the necessary information to conduct their analysis
- Identify pertinent & potential Project issues
- Lay groundwork for future license conditions & PM&Es

18 CFR § 5.11 Potential Applicant's proposed study plan and study plan meetings.

(a) Within 45 days following the deadline for filing of comments on the pre-application document, including information and study requests, the potential applicant must file with the Commission a proposed study plan.

FERC's 7 Study Guide Criteria

1- Goals & Objectives

2&3 - Relevant Resource Management Goals & Public Interest Considerations

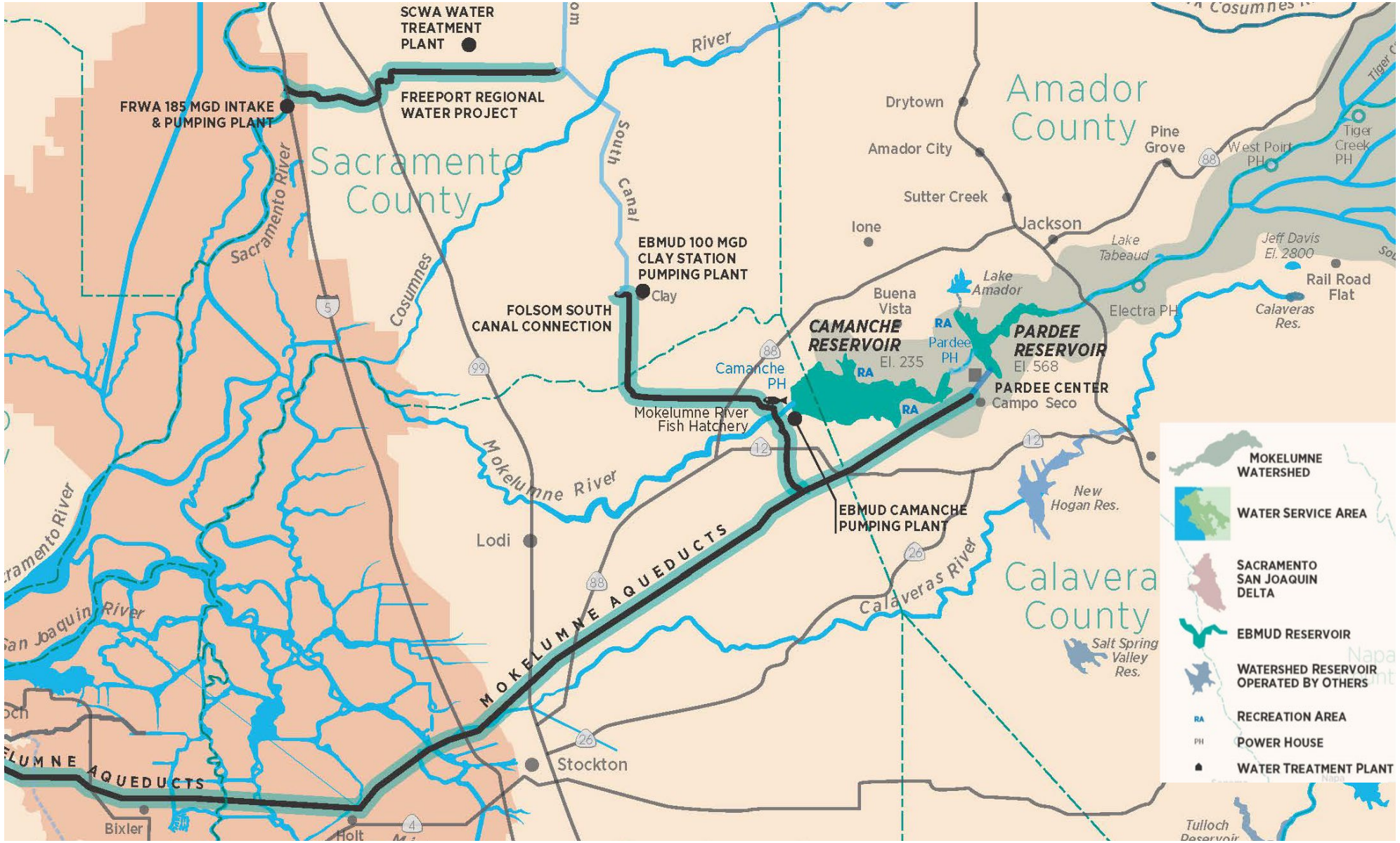
4 - Existing Information & Need for Additional Information

5 - Project Nexus

6 - Proposed Methodology

7 - Level of Effort & Costs

Fish & Aquatics



Fish & Aquatics – Salmonids/ Amphibians & Reptiles

Family	Species	Status	Pardee Reservoir	Camanche Reservoir	Camanche Dam to WIDD	WIDD to Cosumnes River	Cosumnes to San Joaquin
Salmonidae: Salmon and Trout Family	Brown Trout	I	X		X		
	Chinook Salmon	N, SSC			X	X	X
	Chum Salmon	N			X		
	Kokanee	N	X*	X*	X	X	
	Rainbow trout	N	X	X			
	Steelhead/rainbow trout	N, FT, SCC			X	X	X

Family	Species	Status	Pardee Reservoir	Camanche Reservoir	Camanche Dam to WIDD	WIDD to Cosumnes River	Cosumnes to San Joaquin
Ranidae: Trug Frog Family	American Bullfrog	I	X	X	X		
Salamandridae: True Salamander and Newt Family	Sierra Newt	N	X				
Emydidae: Hard-shelled Turtle Family	Northwestern Pond Turtle	N,FPT	X	X	X		
	Red-eared Slider	I		X	X		

Fish & Aquatics – non-salmonids

Family	Species	Status	Pardee Reservoir	Camanche Reservoir	Camanche Dam to WIDD	WIDD to Cosumnes River	Cosumnes River to San Joaquin River
Atherinopsidae: Silversides Family		I				X	X
Catostomidae: Sucker Family	Sacramento Sucker	N	X		X	X	X
Centrarchidae: Sunfish Family	Black Crappie	I	X	X	X	X	X
	Bluegill	I	X	X	X	X	X
	Green Sunfish	I	X	X	X	X	X
	Largemouth Bass	I	X	X	X	X	X
	Redear Sunfish	I	X	X	X	X	X
	Redeye bass	I			X	X	X
	Smallmouth Bass	I	X	X	X	X	X
	Spotted Bass	I	X	X	X	X	X
	Warmouth	I			X	X	X
	White Crappie	I		X	X	X	X
Clupeidae: Herring Family	American Shad	I				X	X
	Threadfin Shad	I	X	X	X	X	X
Cottidae: Sculpin Family	Pacific Staghorn Sculpin	N			X		X
	Prickly Sculpin	N	X	X	X	X	X
Cyprinidae: Minnow Family	California Roach	N	X				
	Common Carp	I	X	X	X	X	X
	Fathead Minnow	I				X	X
	Golden Shiner	I	X	X	X	X	X
	Goldfish	I		X	X	X	X
	Hardhead	N, SSC	X		X		
	Hitch	N, SSC			X	X	X
	Sacramento Blackfish	N, SSC		X	X	X	X
	Sacramento Pikeminnow	N	X	X	X	X	X
	Sacramento Splittail	N, SSC				X	X

Fish & Aquatics – non-salmonids (cont.)

Family	Species	Status	Pardee Reservoir	Camanche Reservoir	Camanche Dam to WIDD	WIDD to Cosumnes River	Cosumnes River to San Joaquin River
Embiotocidae: Surfperch Family	**Tule Perch**	**N, SSC**			**X**	**X**	**X**
Gobiidae: Goby Family	Yellowfin Goby	I				X	X
Ictaluridae: Catfish Family	Black Bullhead	I			X	X	X
	Brown Bullhead	I			X	X	X
	Channel Catfish	I	X	X	X	X	X
	White Catfish	I	X	X	X	X	X
Moronidae: Striped Bass Family	Striped Bass	I			X	X	X
Osmeridae: Smelt Family	Delta Smelt	N, FT, CE				X	X
	Wakasagi	I				X	
Percidae: Perch Family	Bigscale Logperch	I			X	X	X
Petromyzontidae: Lamprey Family	Pacific Lamprey	N, SSC			X	X	
Poeciliidae: Livebearers	Western mosquitofish	I		X	X	X	X

Potential Study – Reservoir Fish Habitat Study

Goals & Objectives:

- Summarize current fish species assemblage data, stocking records, and fishing success for Project reservoirs.
- Characterize existing Project daily water surface elevation patterns and pool habitat volumes (cold water, warm water, dissolved oxygen) at each reservoir.

Potential Methodology:

- Quantify cold and warm water reservoir habitat over the period of record (POR) (2001 -2024)
  - Use the hydrology model to characterize reservoir operations.
  - Use the water temperature model to characterize reservoir water temperatures.
  - Quantify cold water habitat (water temperature ≤20ºC and DO ≥7 mg / l).
  - Quantify warm water habitat (water temperature >20ºC and DO ≥5 mg / l).

Q&A and Feedback

Potential Study – Instream Flow Study

Goals & Objectives:

- Summarize the historical instream flow modeling
- Use the current HEC-RAS hydraulics / habitat model to characterize habitat versus flow relationships to develop a time series analysis of aquatic habitat under existing conditions.
- Identify the time periods, flow conditions, and life stages when habitat may be a limiting factor for fish, benthic macroinvertebrates, other aquatic species, and riparian vegetation.

Potential Methodology:

- Establish an Aquatic TWG to provide input and technical review of modeling procedures.
- Identify the target species and life stages for modeling based on management importance and/or sensitivity to Project operations.
- Use the current HEC-RAS hydrodynamic and habitat model
  - Use existing modeling reaches
- Develop a time series analysis of habitat for existing conditions.

Potential Study – Instream Flow Study

Q&A and Feedback

Potential Study – Fish Population Study

Goals & Objectives:

- Document fish species composition, distribution, and abundance in the reservoirs and river reaches.
- Characterize fish growth, condition factor, and population age structure in the reservoirs and river reaches.
- Collect fish for mercury tissue analysis

Potential Methodology:

- Use the existing reservoir and river sampling / monitoring program (2027).
- Document fish species composition, distribution, and abundance in the reservoirs and river reaches using historical and recently collected data.
- Characterize fish growth, condition factor, and population age structure in the reservoirs and river reaches using historical and recently collected data.
- Collect fish for mercury tissue analysis in the Water Quality Study

Q&A and Feedback

Potential Study – Special Status Amphibians & Aquatic Reptiles Study

Goals & Objectives:

- Identify and map potential habitat for Northwest Pond Turtle (NWPT) in the study area.
- Document the distribution and abundance of NWPT populations in the study area.
- Document the presence of potential NWPT nesting habitat near Project facilities.
- Sample eDNA for foothill yellow-legged frog, red legged-frog, and giant garter snake.
    - Note: Tiger salamander and western spadefoot toad are addressed in the wildlife study plan.

Potential Methodology:

- Develop NWPT habitat suitability criteria in cooperation with relicensing participants.
- Use GIS to characterize NWPT habitat within the study area.
- Conduct distribution and abundance surveys for NWPT in the study area.
- Document the presence of potential NWPT nesting habitat near Project facilities (GIS and field).
- Sample eDNA for foothill yellow-legged frog, red legged-frog, and giant garter snake.

Potential Study – Special Status Amphibians & Aquatic Reptiles Study

Q&A and Feedback

Action Items & Next Steps

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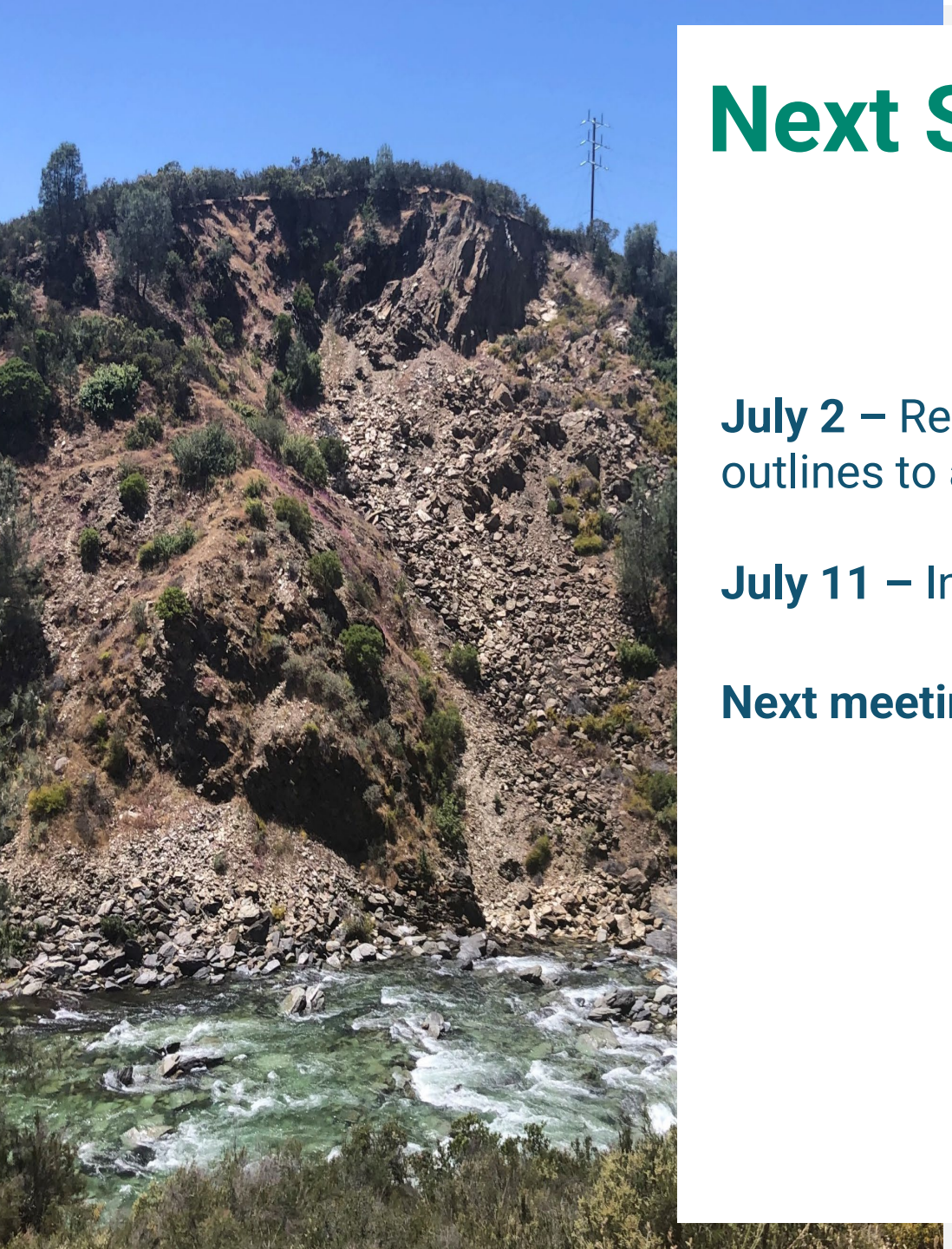

Next Steps

July 2 – Relicensing Team will distribute draft potential study plan outlines to attendees

July 11 – Interested Parties submit feedback on study plans via email

Next meeting: July 30, 9:00 – 11:00 a.m.

Stay Informed

- Lower Mokelumne Website: EBMUD.com/MokRelicense
- Email: MokRelicense@ebmud.com
- Jason Zhou, EBMUD: 510-287-0263
- FERC e-Subscription (docket number “P-2916”) at www.ferc.gov
  - Formal Relicensing begins October 2025 with EBMUD submittal of the Pre-Application Document (PAD)

THANK YOU!

EBMUD