Lake Mendocino: Environmental Considerations FIRO 2019

NOAA FISHERIES

1. *Background to NOAA Fisheries involvement*
2. *Russian River Salmonid ESA-listings & life histories (general)*
3. *Environmental limitations and regulations*
3. *FIRO: Potential Fisheries Benefits*

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NOAA Fisheries and FIRO

1. NOAA Habitat Blueprint Initiative – Russian River Habitat Focus Area (2012 to present)

A. Multi-NOAA line office (NMFS, NWS, OAR, NOS) demonstration projects – Six projects

FIRO

- Rebuilding endangered coho and threatened steelhead through habitat protection and restoration
- Improving frost, rainfall, and river forecasts in the Russian River watershed
- Increasing community resiliency to flooding and drought through improved planning and water management strategies

2. NOAA Fisheries Biological Opinions (BiOps)

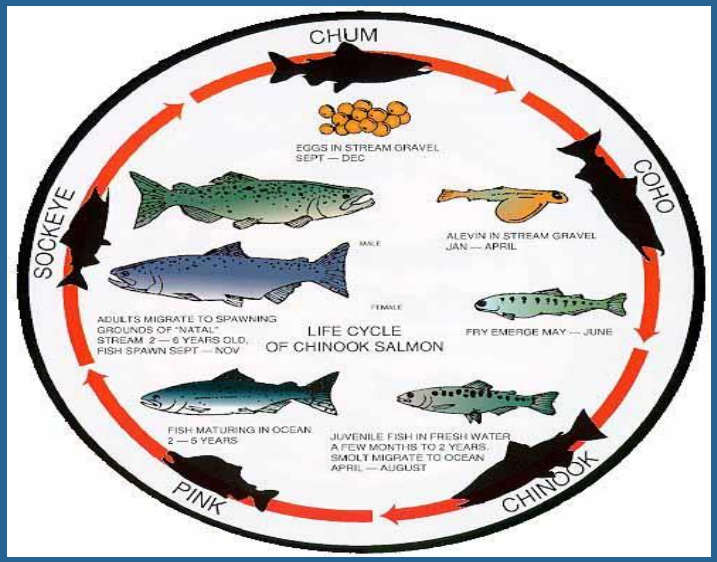
A. Interagency- consultations on the ESA and protections

ESU: California Coastal (CC)

Chinook Salmon

Oncorhynchus tshawytscha

Fall-run



General life history:

- Mainstem spawning/rearing
- <8 mos. in freshwater (juveniles)
- 2 - 4 yrs. in saltwater (sub-adults)
- Semelparous (1x spawners)

ESA-listing status: Threatened

DPS: Central California Coast (CCC)

Steelhead Trout

Oncorhynchus mykiss

Winter-run

CCC Steelhead, Russian River

CCC Steelhead, Russian River

CCC Steelhead, Russian River

General life history:

- Tributary/mainstem spawning/rearing
- 1-2 yrs. in freshwater (juveniles)
- 2 yrs. in saltwater (sub-adults)
- Iteroparous (repeat spawners)

ESA-listing status: Threatened

ESU: Central California Coast (CCC)

Coho Salmon

Oncorhynchus kisutch

Fall-run

General life history:

- Tributary spawning/rearing
- 1 yr. in freshwater (juveniles)
- 2 yrs. in saltwater (sub-adults)
- Semelparous (1x spawners)

ESA-listing status: Endangered

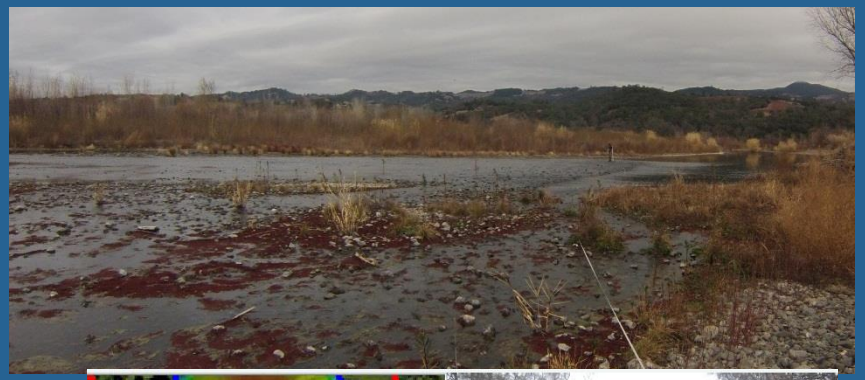
Fisheries and can FIRO help ?

NOAA FISHERIES

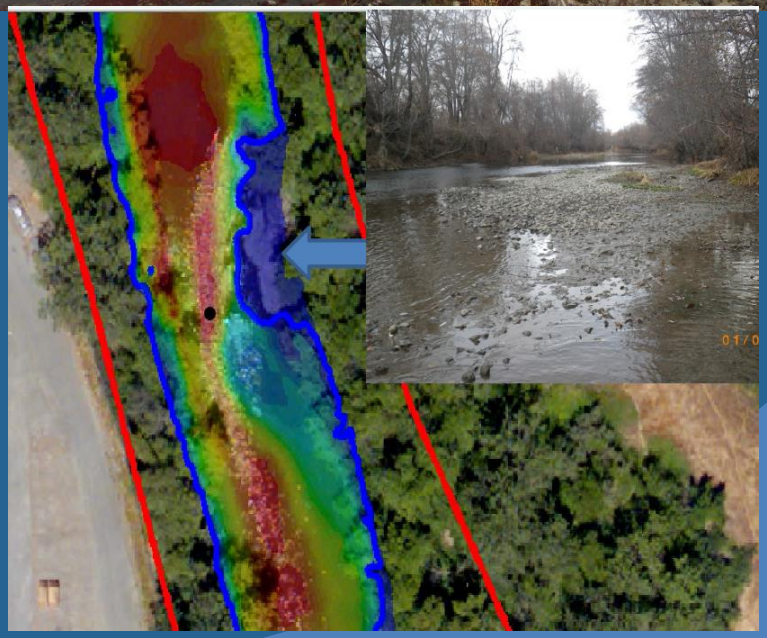
Ample flows

Fish passage

Spawning



Cold and Clear water



NMFS, Sonoma Water and Army Corps are engaged in monitoring to identify appropriate water conditions for fish.

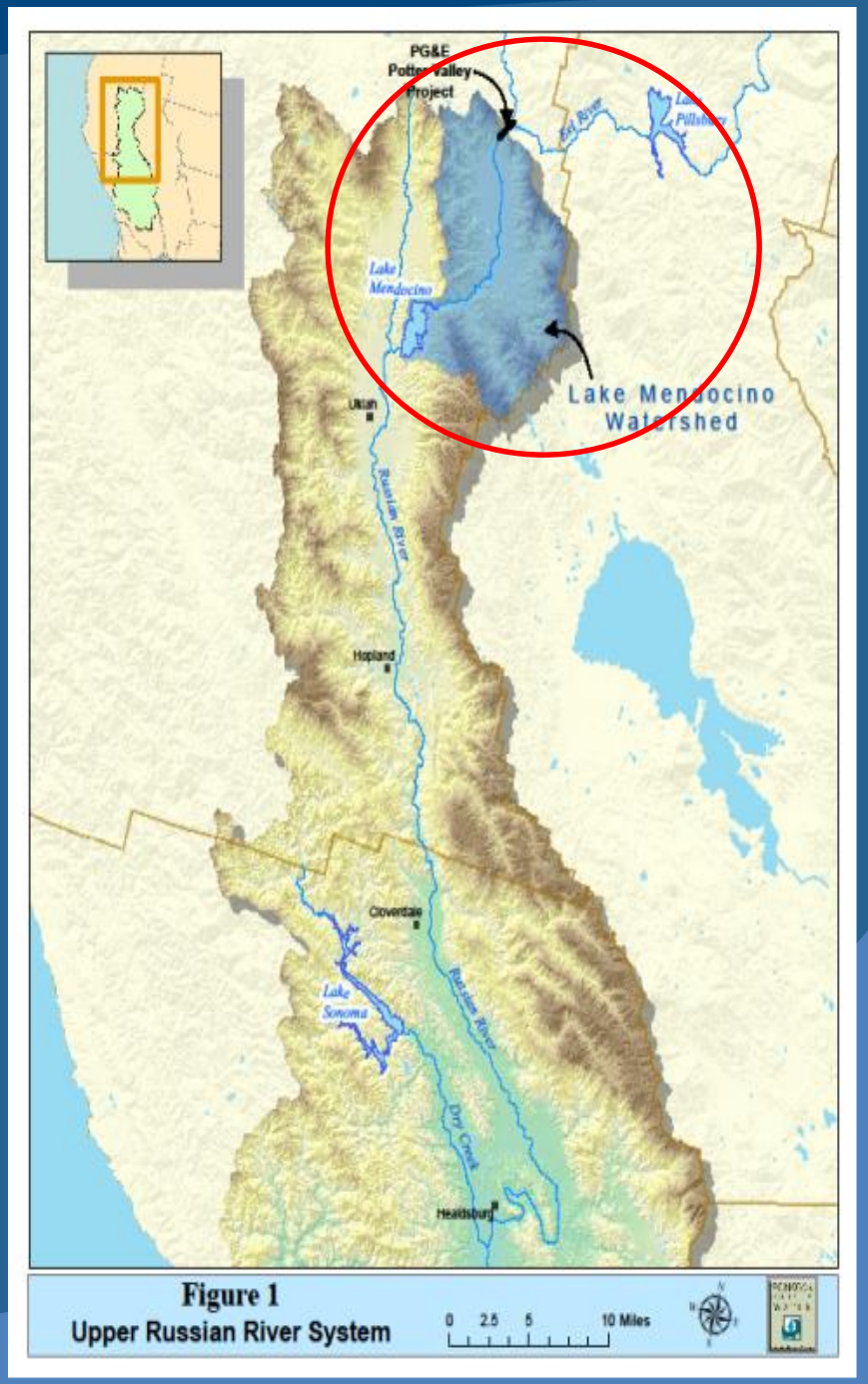
NOAA FISHERIES

Russian River Biological Opinion (2008):

1. Minimum instream flow requirements (Fish flow EIR)
2. Ramping rates
3. Turbidity

Potter Valley Biological Opinion (2002):

1. Eel/Russian River trans-basin diversion
2. 2006 BiOp – reduced flows from PVP
3. FERC Re-licensing ~ April 2017 -2022

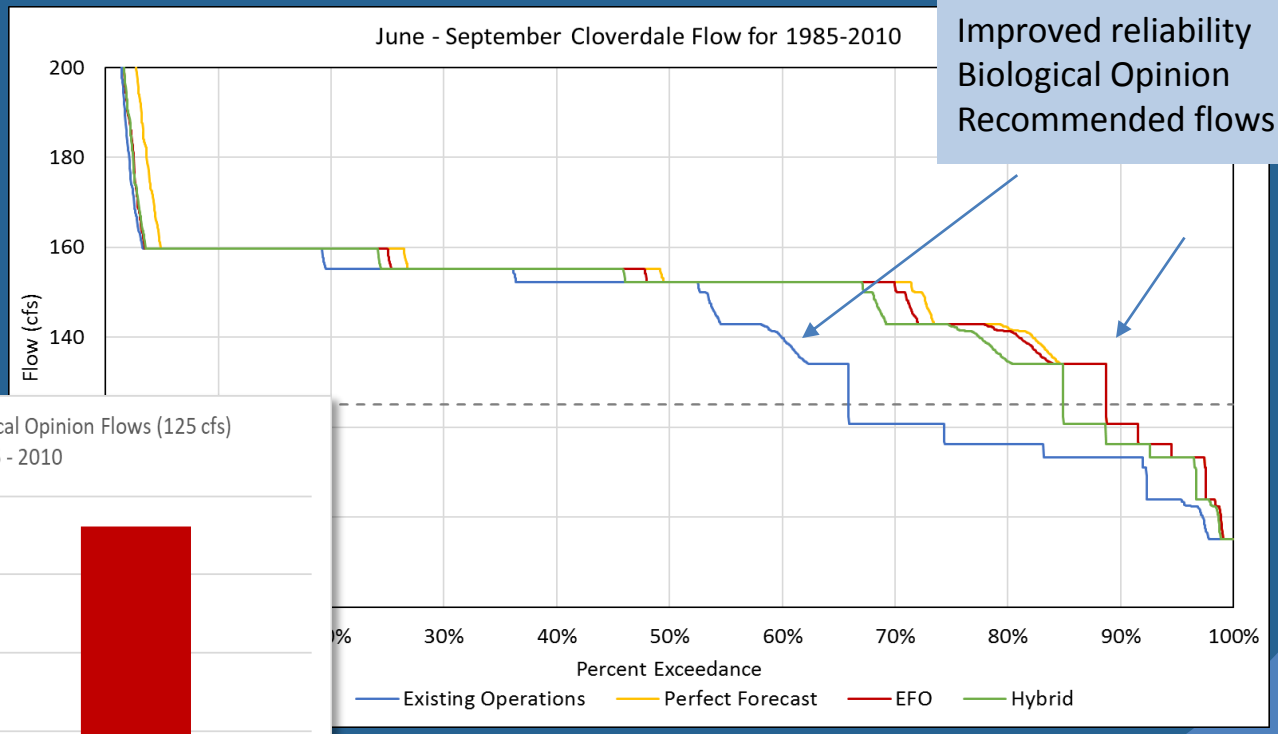


Russian River BiOp: Flows

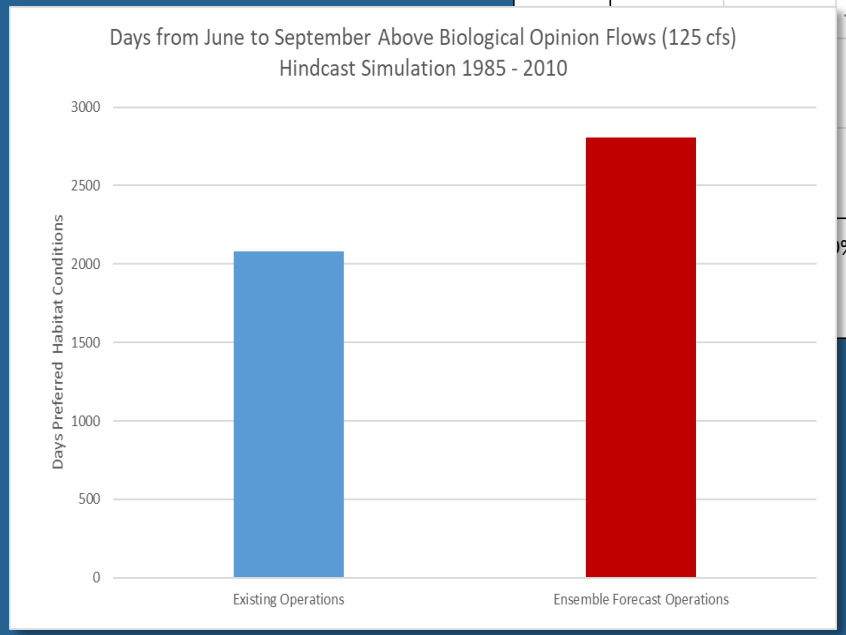
1) Higher summer flows/velocities from CVD impacting 34 miles of juvenile steelhead rearing habitat within upper Russian River

2) Draft Environmental Impact Report (EIR) in 2016 ~created new fisheries flow prescriptions

FIRO - Potentially Improves In-Stream Flows



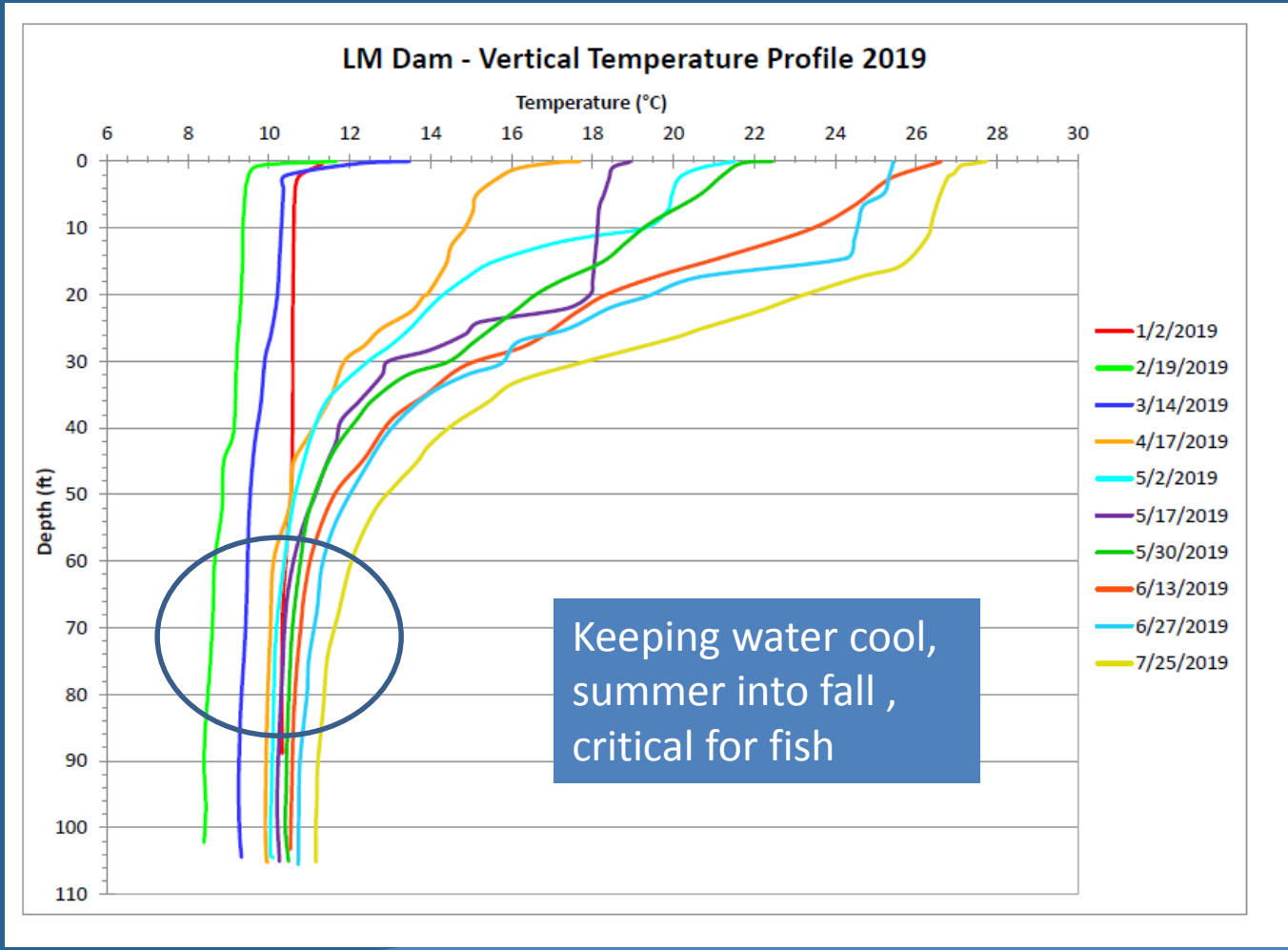
Improved reliability
Biological Opinion
Recommended flows



Number Days Ecologically Beneficial Summer River Flows

Blue = Existing Operations **Red** = Forecast Informed Operations – "Hybrid" Operations

FIRO - Potentially Improves Cold Water Pool January – July



Russian River BiOp:
Flow ramping effects to salmonids

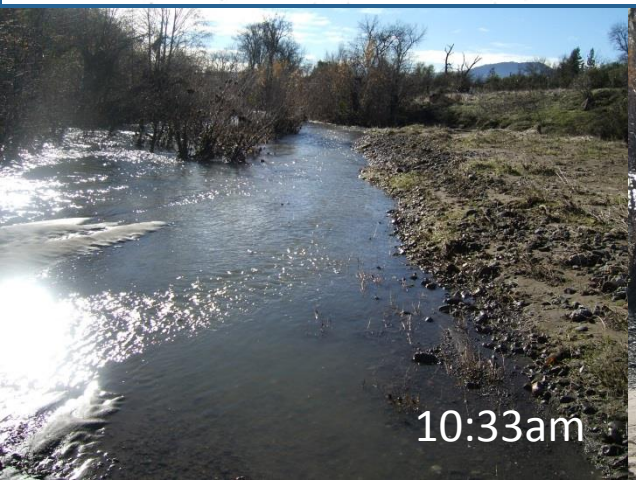
1. Minimize the likelihood of stranding and mortality of salmonids due to ramping-down of CVD releases

2. Minimize habitat impacts from aggressive ramp ups

Season	Daylight Rates[3]	Night Rates
February 16 to June 15[1]	No Ramping	2 inches/hour
June 16 to October 31[2]	1 inch/hour	1 inch/hour
November 1 to February 15	2 inches/hour	2 inches/hour

1 Salmon fry are present
2 Steelhead fry are present
3 Daylight is defined as one hour before sunrise to one hour after sunset

FIRO : May not affect this criteria – but can help advance the science for future operations.



Russian River BiOp: Turbidity associated with CVD

1) Prolonged exposure to salmonids ~ negative impact to juvenile salmonid growth and spawning gravel quality (summer ~ spring)

2) Reduces hatchery steelhead angling opportunities downstream (winter)

FIRO : May not affect this criteria – but can help advance the science for future operations.



How does FIRO potentially benefit fisheries?

1. Coldwater pool storage reliability:
   a) Adult Chinook upstream migration (fall)
   b) Juvenile steelhead rearing conditions (summer)

2. Downstream fisheries flows enhancement and reliability:
   a) Higher frequency of preferred “NORMAL YEAR” vs. “DRY YEAR” flow schedules
   b) Reduce the need for emergency changes in stream flows = less regulatory intervention = savings to the public

3. More storage = Operational flexibility
   a) Water availability for critical fisheries management situations (i.e. Pottery valley – two basin solution)
   b) Stakeholder confidence = Less conflict for water resources, supports other uses of RR water.

How does FIRO potentially benefit fisheries?

4. Resilient Watershed

a) In conjunction with other conservation and restoration measures, FIRO can be part of a greater effort to conserve water and provide quality habitat within a watershed.