August 3, 2021

Delta Conveyance Project

Fisheries

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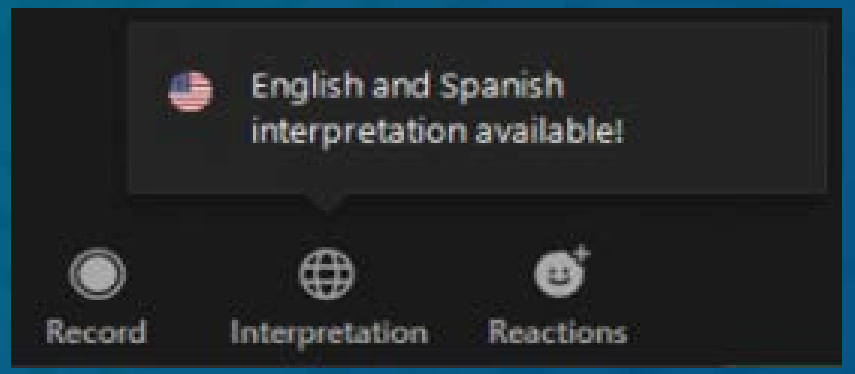
Choose a Language Channel



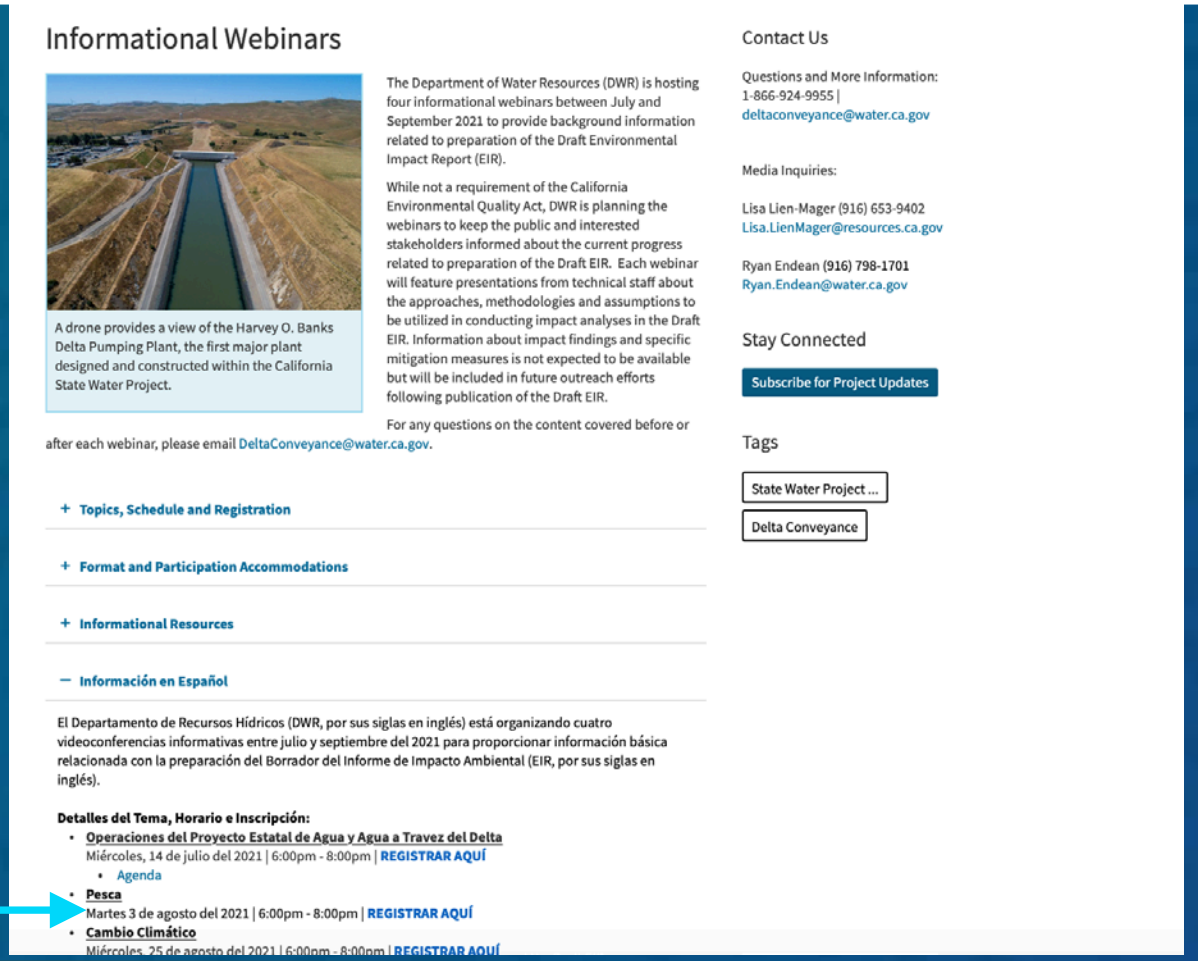
Spanish Resources

Call-in Information:

- Número de Teléfono: (602) 580-9659
- Código de Acceso: 8833787, seguido por el signo de tecla (#)

View or download the translated presentation:

- https://water.ca.gov/Programs/State-Water-Project/Delta-Conveyance/DCP-Informational-Webinars



Informational Webinars

A drone provides a view of the Harvey O. Banks Delta Pumping Plant, the first major plant designed and constructed within the California State Water Project.

The Department of Water Resources (DWR) is hosting four informational webinars between July and September 2021 to provide background information related to preparation of the Draft Environmental Impact Report (EIR).

While not a requirement of the California Environmental Quality Act, DWR is planning the webinars to keep the public and interested stakeholders informed about the current progress related to preparation of the Draft EIR. Each webinar will feature presentations from technical staff about the approaches, methodologies and assumptions to be utilized in conducting impact analyses in the Draft EIR. Information about impact findings and specific mitigation measures is not expected to be available but will be included in future outreach efforts following publication of the Draft EIR.

For any questions on the content covered before or after each webinar, please email DeltaConveyance@water.ca.gov.

+ Topics, Schedule and Registration

+ Format and Participation Accommodations

+ Informational Resources

− Información en Español

El Departamento de Recursos Hídricos (DWR, por sus siglas en inglés) está organizando cuatro videoconferencias informativas entre julio y septiembre del 2021 para proporcionar información básica relacionada con la preparación del Borrador del Informe de Impacto Ambiental (EIR, por sus siglas en inglés).

Detalles del Tema, Horario e Inscripción:

- Operaciones del Proyecto Estatal de Agua y Agua a Travez del Delta
  Miércoles, 14 de julio del 2021 | 6:00pm - 8:00pm | REGISTRAR AQUÍ
  - Agenda
- Pesca
  Martes 3 de agosto del 2021 | 6:00pm - 8:00pm | REGISTRAR AQUÍ
- Cambio Climático
  Miércoles, 25 de agosto del 2021 | 6:00pm - 8:00pm | REGISTRAR AQUÍ

Contact Us

Questions and More Information:
1-866-924-9955 |
deltaconveyance@water.ca.gov

Media Inquiries:

Lisa Lien-Mager (916) 653-9402
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  - Topics, Schedule and Registration
    - Fisheries

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— Topics, Schedule and Registration

- **Operations of the State Water Project and Delta Conveyance**
  Wednesday, July 14, 2021 | 6:00pm – 8:00pm
  - Agenda
  - Presentation
  - Agenda (*en Español*)
  - Presentación
- **Fisheries**
  Tuesday, August 3, 2021 | 6:00pm – 8:00pm | **REGISTER HERE**
- **Climate Change**
  Wednesday, August 25, 2021 | 6:00pm – 8:00pm | **REGISTER HERE**
- **Environmental Justice**
  Thursday, September 16, 2021 | 6:00pm – 8:00pm | **REGISTER HERE**

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Webinar Overview

Presentation

- Overview of fisheries analysis
- Models used in analysis
- Fish screens
- Operations

Question/Answer session

- Via Zoom: Use **Q&A** and **Raise Hand** features in Zoom
- Via Phone: Press ***9** to raise hand and ask question

How to Ask Written Questions in Zoom

To ask a question, click on the **"Q&A"** icon on the bottom of your screen and type your question into the box during the presentation portions of the webinar.

How to ask Verbal Questions in Zoom

To ask a verbal question, click on the **“Raise Hand”** icon on the bottom of your screen. When you are called on, unmute your mic and you will have two minutes to ask your question.

Delta Conveyance Project

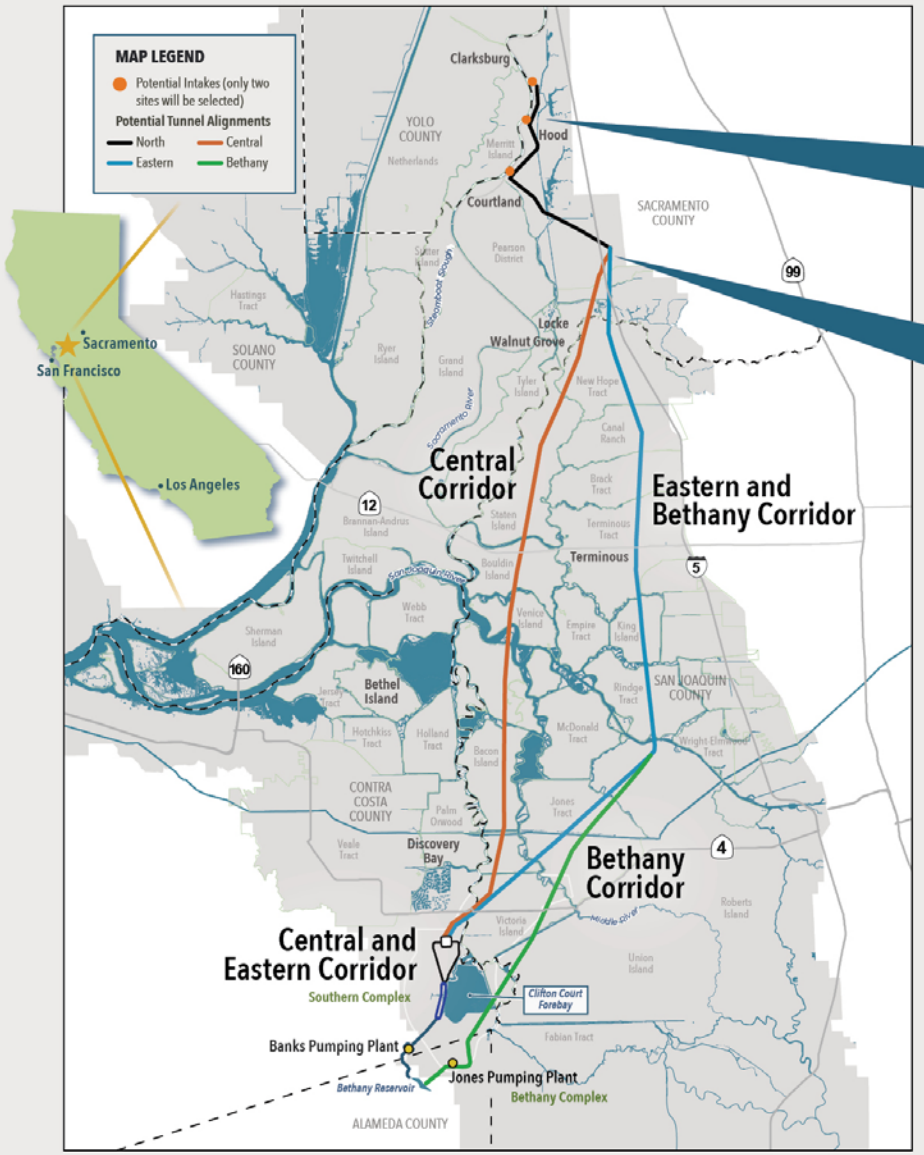
Purpose

Modernize the aging State Water Project (SWP) infrastructure in the Delta to restore and protect the reliability of SWP water deliveries in a cost-effective manner, consistent with the State's Water Resilience Portfolio.

Objectives

- **Address** sea level rise and climate change
- **Minimize** water supply disruption due to seismic risk
- **Protect** water supply reliability
- **Provide** operational flexibility to improve aquatic conditions

PROJECT DETAILS



Proposed Facilities*

Two new intakes in the north Delta, each with 3,000 cubic feet per second (cfs) capacity.

One below ground tunnel, following an eastern or central corridor, designed to protect California's water supplies from sea level rise, earthquakes, subsidence and levee failure.

Operational Flexibility

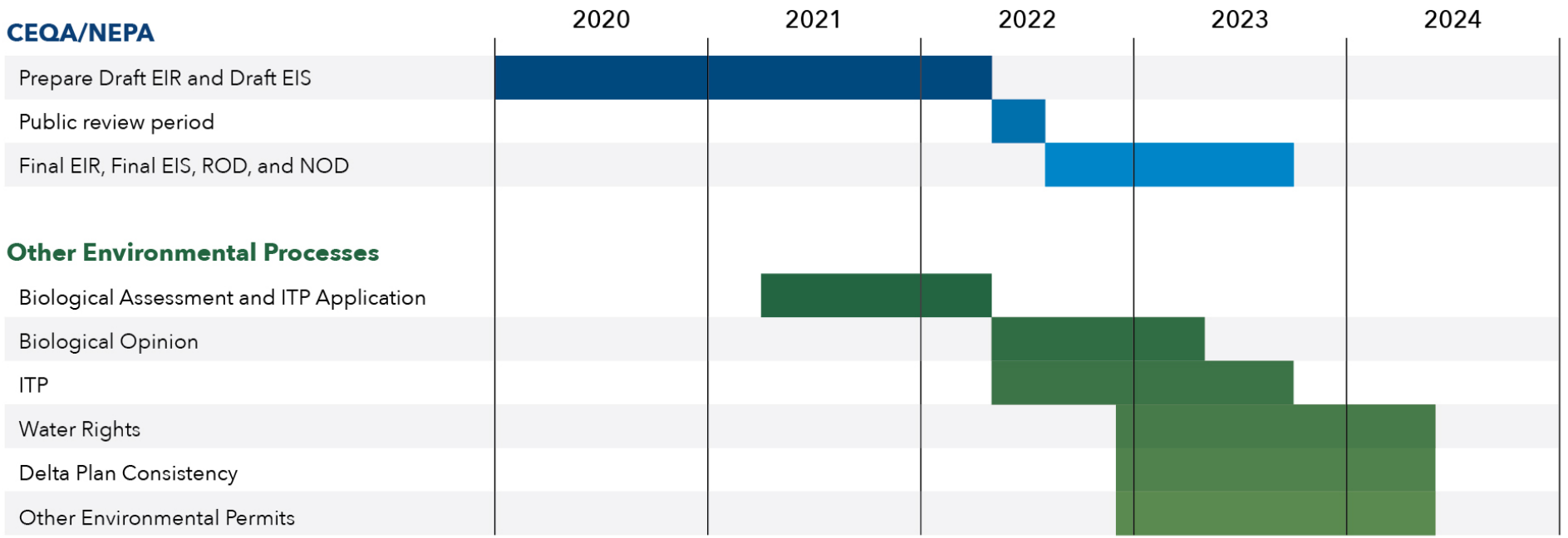
A new diversion facility would be operated together with existing South Delta pumping facilities

Operations would increase DWR's ability to capture water during high flow events

**All proposed project details are subject to refinement. No final decisions will be made until the conclusion of the environmental review process.*

Current Project Schedule

Delta Conveyance Project Schedule



Overview of the CEQA Process

Objectives of the California Environmental Quality Act (CEQA)

Disclose: Potential significant environmental effects

Identify: Ways to avoid or reduce significant environmental impacts

Prevent: Environmental damage, if feasible, by requiring implementation of alternatives or mitigation measures

Foster: Interagency coordination and public participation

Show: That the agency is considering environmental implications of actions prior to making decisions

Environmental Impact Report Purpose

Inform: About a project's potential significant environmental impacts and ways to avoid, minimize, reduce, or compensate for them

Demonstrate: That environment is being considered prior to approving the project and that the agency has considered the environmental implications of its actions

Ensure: Prevention of environmental damage, if feasible, by requiring implementation of feasible alternatives or mitigation measures

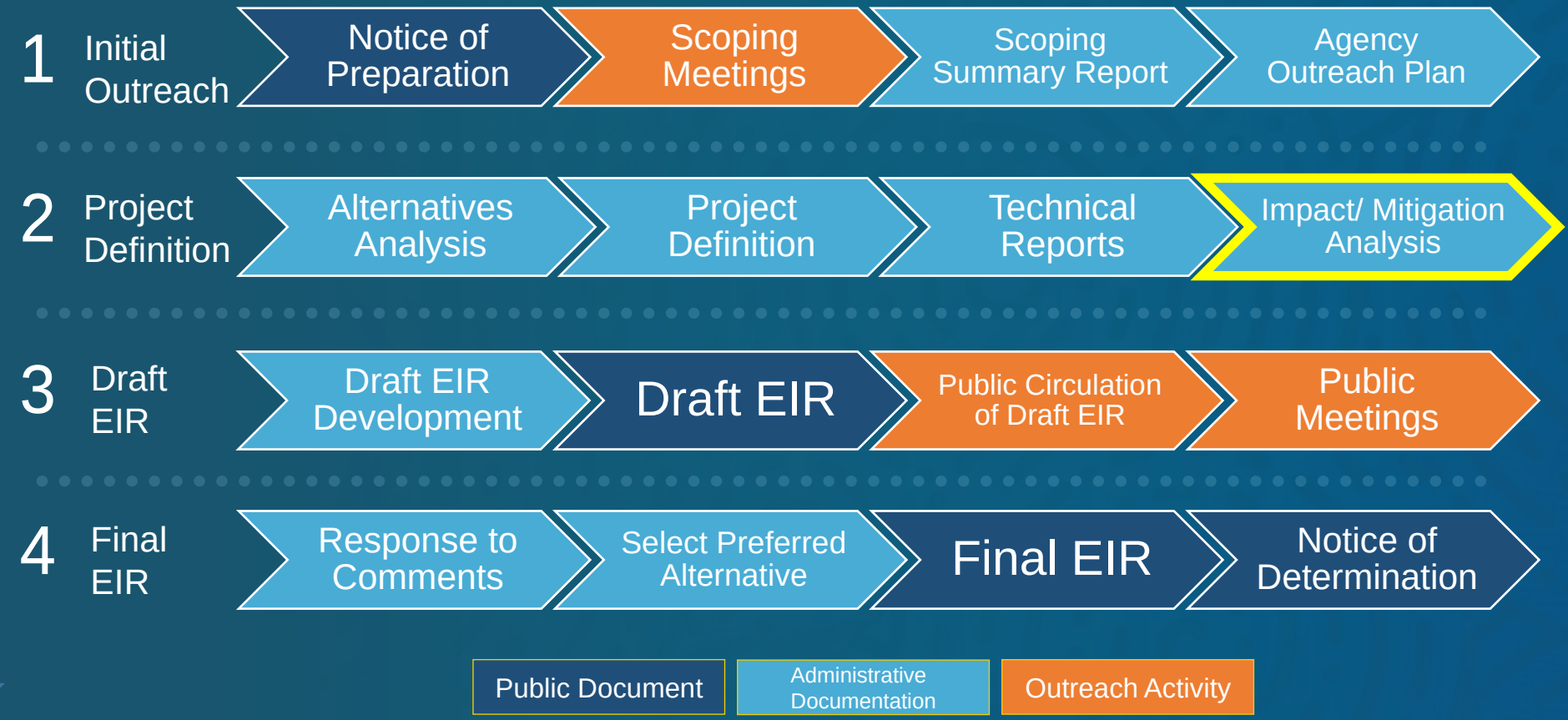
Key Contents of an EIR

- Project description
- Environmental setting / baseline
- Discussion of significant environmental impacts
  - *Direct, indirect and cumulative*
- Mitigation measures
- Growth-inducing impacts
- Alternatives (reasonable range compared in meaningful detail)
- Organizations / persons consulted

Delta Conveyance Project CEQA Process

DWR will identify, analyze and disclose the potential significant adverse environmental impacts of the project, and assess feasible mitigation measures and alternatives to avoid or reduce such effects.

Stakeholder Engagement



Overview of the Fisheries and Aquatics Analysis

Fisheries and Aquatics Resources Analysis

Purpose and use of fisheries and aquatics analysis

- Comply with CEQA
- Used by CEQA responsible agencies to support permit development and decisions
  - CA Department of Fish and Wildlife can issue Incidental Take Permit for state-listed threatened endangered species

What we will be discussing tonight:

- Fisheries and aquatics overview
- Fisheries and aquatics analysis
  - Delta Conveyance fish and aquatic resources study area
  - Species
  - Stressors
  - Methods and models

Fisheries and Aquatics Overview

Fish in study area

Life history

- ***Spawning, rearing, migration***

Anadromous and resident fish

- ***Anadromous*** fish are born in fresh water, migrate to ocean for some amount of time, return to fresh water to spawn
- ***Semi-anadromous*** fish are born in fresh water and migrate to low salinity (brackish) water as adults
- ***Resident*** fish do not migrate to ocean, remain in freshwater

Native and non-native fish species

- ***Native*** species originated naturally in a specific location (river, stream, lake, bay, etc.)
- ***Non-native species*** originated in a location other than the one it is in and was introduced

Commercial/recreational fishing

State and Federally listed fish species

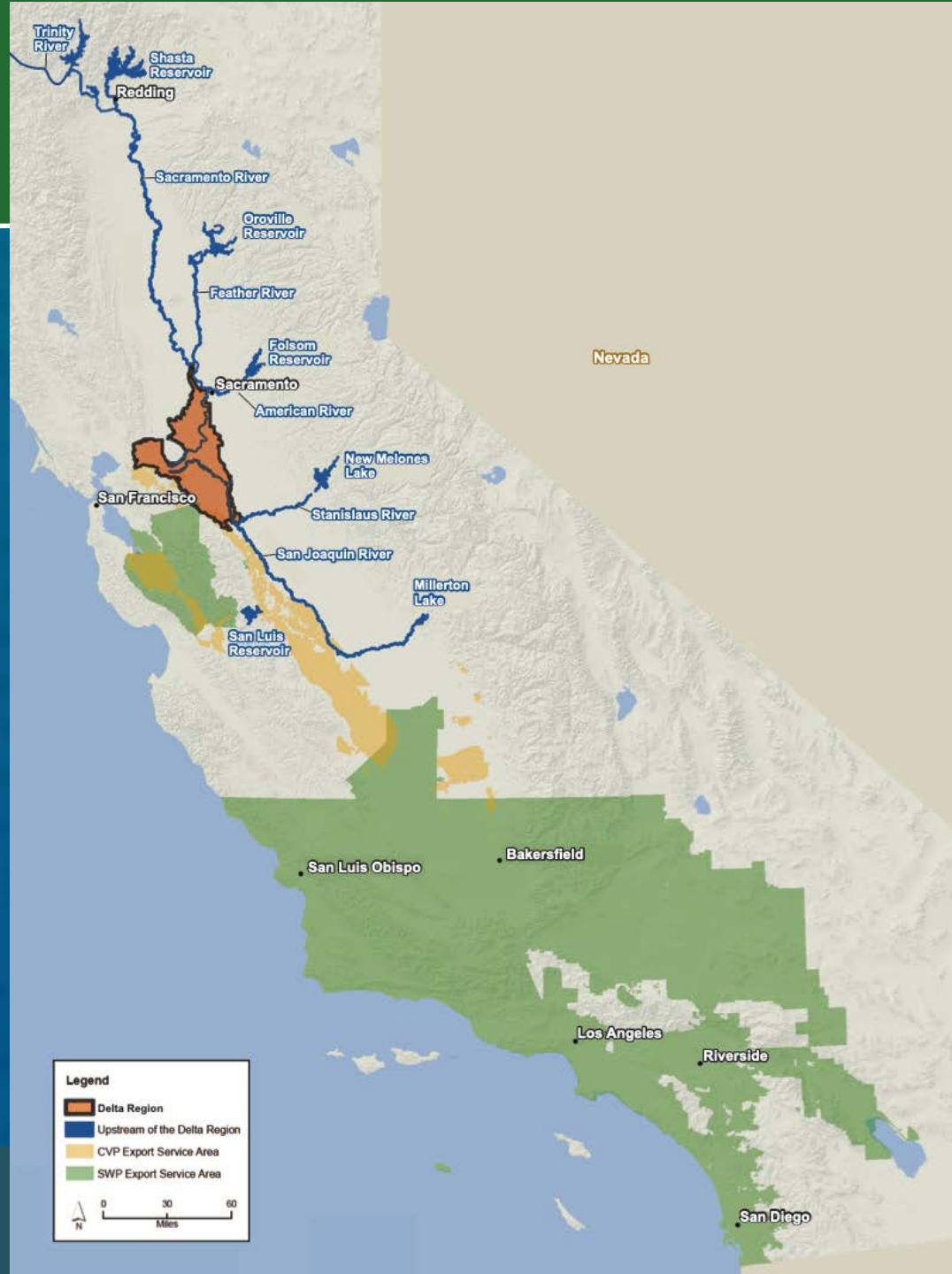
Fisheries and Aquatics Resources Analysis

Analysis will include:

- **Environmental setting** for fish and aquatic resources in the study area in which impacts may occur
- **Analysis of impacts** that could result from construction, operation, and maintenance of the project
- **Proposed mitigation measures** to reduce effects of potentially significant impacts

Study Area

- Trinity River Basin (including Trinity and Lewiston Reservoirs, lower Klamath River)
- Delta and Suisun Bay /Marsh
- San Pablo and San Francisco Bays
- Upstream of Delta
  - Sacramento River (including Shasta and Keswick Reservoirs)
  - Whiskeytown Reservoir and Clear Creek
  - Feather River (including Oroville Reservoir and Thermalito Afterbay)
  - American River and Folsom Lake
  - Stanislaus River and New Melones Reservoir
  - San Joaquin River and Millerton Reservoir
- SWP/CVP Export Service Areas



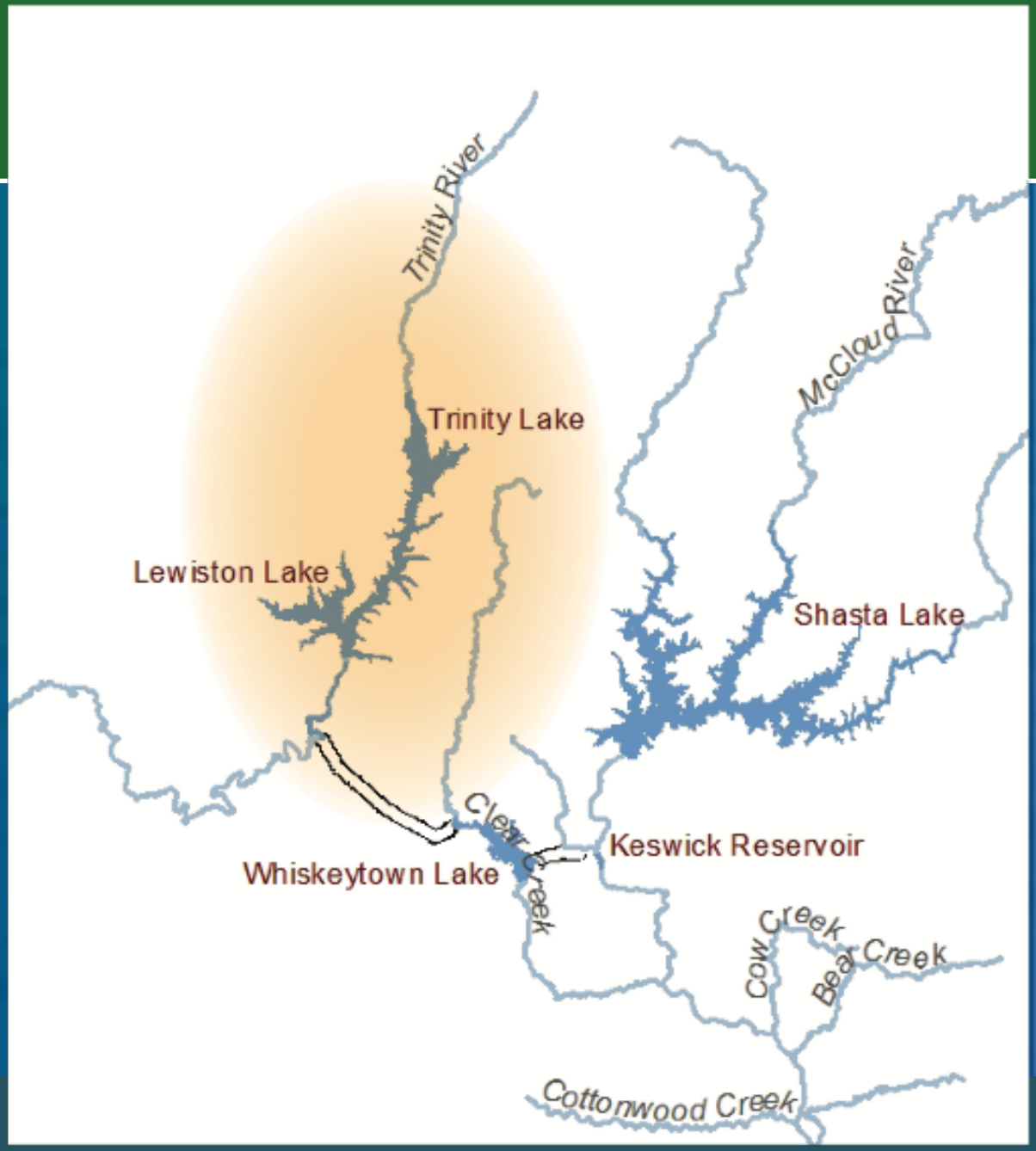
Fish and Aquatic Species

Species in study area are:

- Selected for analysis based on importance, vulnerability, and potential to be affected by construction activities and changes in SWP and CVP operations implemented under the project alternatives
  - ***Species of management concern*** – listed by state or federal agencies as endangered or threatened, as well as species of tribal, commercial or recreational importance
  - ***Species of special concern*** as identified by CA Department of Fish and Wildlife – critical, high or moderate

Trinity River Region

- Coho Salmon
- Spring-run Chinook salmon
- Fall-run Chinook salmon
- Steelhead (winter-run and summer-run)
- Eulachon
- Green sturgeon
- White sturgeon
- Pacific lamprey
- American Shad
- Black bass (largemouth, smallmouth, spotted)



Central Valley Region

- Winter-run Chinook salmon
- Spring-run Chinook salmon
- Fall-run/late fall–run Chinook salmon
- Steelhead
- Delta smelt
- Longfin smelt
- Green sturgeon
- White sturgeon
- Pacific lamprey
- River lamprey
- Kern brook lamprey
- Sacramento hitch
- Sacramento splittail
- Hardhead
- Sacramento perch
- Central CA roach
- Starry flounder
- Northern anchovy
- Striped bass
- American shad
- Threadfin shad
- Black bass (largemouth, smallmouth, spotted)
- California bay shrimp

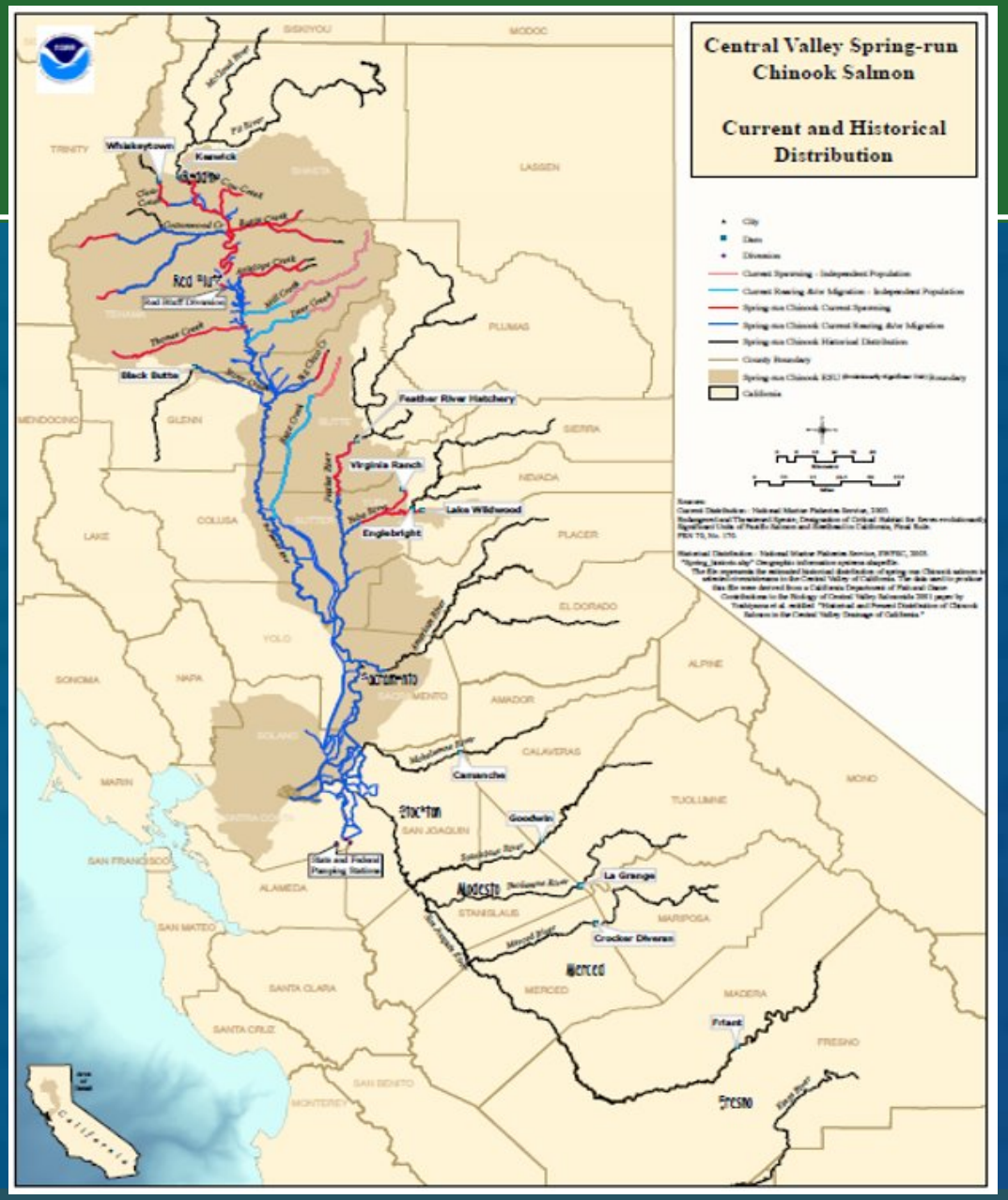
Stressors to Fish and Aquatic Species

Contaminants	Pesticides, metals, pharmaceuticals in waterways
Entrainment	Occurs when fish are transported with water at a diversion point
Habitat Quality and Quantity	Availability of good quality habitat for spawning and rearing
Invasive Species	Increase competition for food and habitat and predation on native species
Passage/Stranding	Impediments to passage (dams), migratory delays
Physical Harm/Noise	Underwater construction can directly harm fish or produce noise that affects behavior or cause physical harm
Predators	Occurs by fish, birds and mammals and influences behavior, distribution, and abundance of prey species in aquatic communities to varying degrees
Water Temperature	Affects metabolic functions of fish, can be lethal
Water Quality	Dissolved oxygen, water clarity, suspended sediment

Migration Patterns

Spring-run Chinook Salmon

Current and Historical Central Valley Spring-Run Chinook Salmon Distribution



Life Cycle

Temporal Occurrence of Central Valley Spring-Run Chinook Salmon by Life Stage in the Sacramento River

Relative Abundance	High (▼)				Medium (⊠)				Low (#)				None (-)											
(a) Adult Migration	Month																							
Location	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
Sac. River Basin [a,b]	-	-	-	-	⊠	⊠	⊠	⊠	▼	▼	▼	▼	⊠	⊠	⊠	⊠	⊠	⊠	#	-	-	-	-	-
Sac. River Mainstem [b,c]	-	#	#	#	⊠	⊠	⊠	⊠	⊠	⊠	⊠	⊠	⊠	⊠	#	#	-	-	-	-	-	-	-	-
Adult Holding [a,b]	-	-	#	#	⊠	⊠	▼	▼	▼	▼	▼	▼	▼	▼	▼	⊠	⊠	#	#	-	-	-	-	-
Adult Spawning [a,b,c]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#	⊠	▼	▼	⊠	#	-	-	-	-
(b) Juvenile Migration	Month																							
Location	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
Sac. River at Red Bluff Diversion Dam [c]	▼	▼	#	#	#	#	#	#	#	-	-	-	-	-	-	-	-	-	-	-	▼	▼	▼	▼
Sac. River at Knights Landing [h]	⊠	⊠	⊠	⊠	▼	▼	▼	▼	⊠	⊠	-	-	-	-	-	-	-	-	-	-	⊠	⊠	▼	▼

Sources: [a] Yoshiyama et al. (1998); [b] Moyle (2002); [c] Myers et al. (1998); [d] Lindley et al. (2004); [e] California Department of Fish and Game (1998); [f] McReynolds et al. (2007); [g] Ward et al. (2003); [h] Snider and Titus (2000b)

Note: Yearling spring-run Chinook salmon rear in their natal streams through the first summer following their birth. Downstream emigration generally occurs the following fall and winter. Most young-of-the-year spring-run Chinook salmon emigrate during the first spring after they hatch.

Life Cycle

Temporal Occurrence of Central Valley Spring-Run Chinook Salmon by Life Stage in the Delta

Relative Abundance	High (▼)			Medium (☒)			Low (#)			None (-)		
Life Stage	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Adult [1]	☒	▼	▼	▼	☒	☒	-	-	-	-	-	-
Juvenile [2]	#	#	#	▼	☒	-	-	-	-	-	-	#
Salvaged [3]	#	#	☒	▼	☒	-	-	-	-	-	-	-

[1] *Adults enter the Bay late January to early February* (California Department of Fish and Game 1998) *and enter the Sacramento River in March* (Yoshiyama et al. 1998). *Adults travel to tributaries as late as July* (Lindley et al. 2004). *Spawning occurs September to October* (Moyle 2002).
[2] *Juvenile presence in the Delta based on Delta Juvenile Fish Monitoring Program data.*
[3] *Juvenile presence in the Delta based on salvage data* (National Marine Fisheries Service 2016a).

Fish and Aquatic Resources Analysis

- Quantitative and qualitative methods
- Will assess potential impacts from construction, operations, and maintenance activities

Construction Activities: Activities potentially affecting in-water environment (construction of intake facilities, forebay emergency spillway, bridge crossings and associated activities)

Quantitative Analysis: Estimation of potential area affected by impact pile-driving and area subject to effects from construction footprint

Operations Activities: Evaluation of potential life stages and types of effect from operations under each alternative

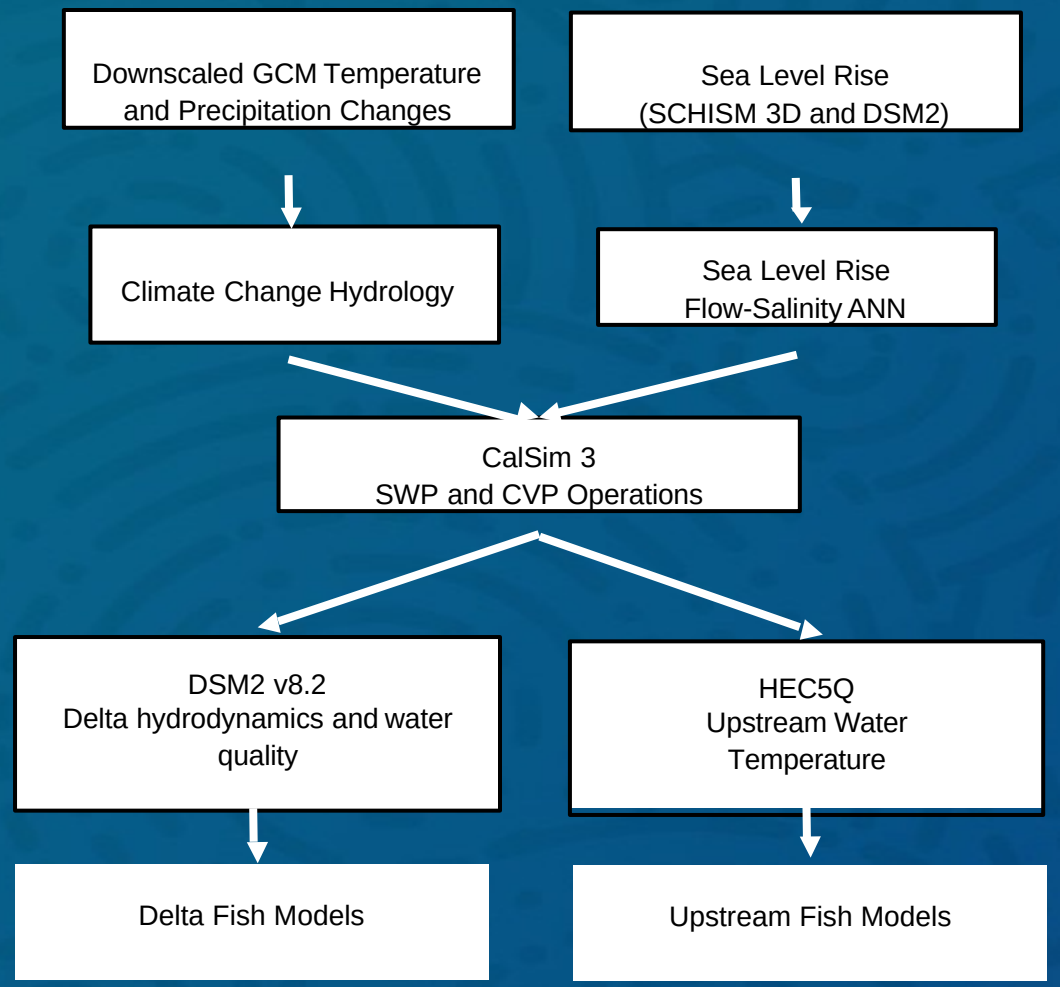
Maintenance Activities: Qualitative evaluation for various facilities included in alternatives

DCP Draft EIR Modeling Framework

Input Data

Simulation of proposed North Delta Diversion Operations

'Downstream' models



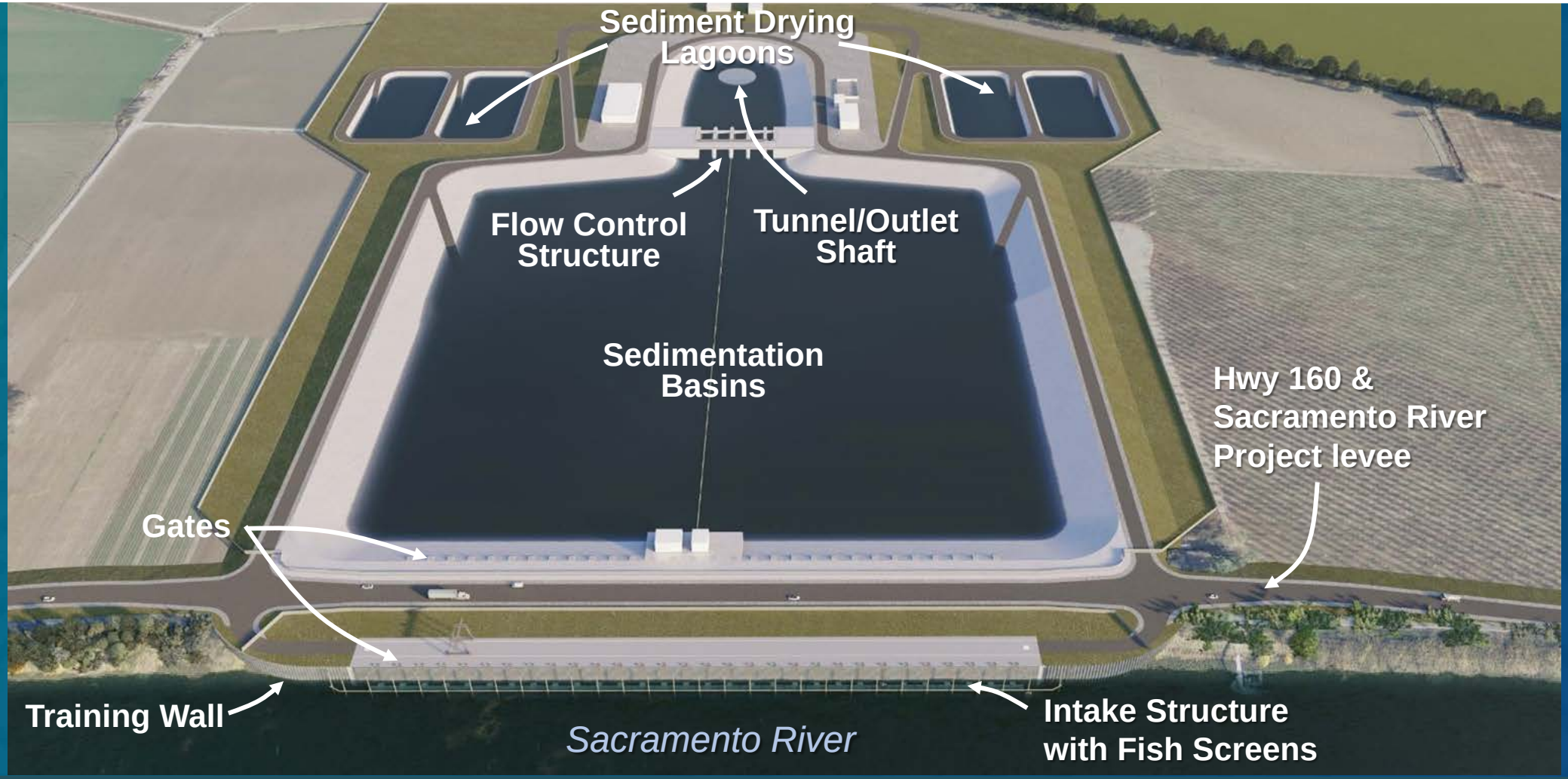
Analysis – Thresholds of Significance

- Substantially reduce the habitat of a fish/aquatic species
- Cause a fish/aquatic species' population to drop below self-sustaining levels
- Threaten to eliminate a fish/aquatic species community.
- Substantially reduce the number or restrict the range of an endangered, rare or threatened fish/aquatic species
- Have a significant impact, either directly or through habitat modifications, on any fish/aquatic species identified as a candidate, sensitive, or special status species in local/regional plans, policies, regulations, CDFW, USFWS, or NMFS
- Have a significant impact on any sensitive aquatic natural community identified in local/regional plans, policies, regulations, CDFW or USFWS
- Interfere substantially with movement of any native resident or migratory fish or aquatic species

Questions

Intake Screen Type Overview

Intake General Configuration – Typical

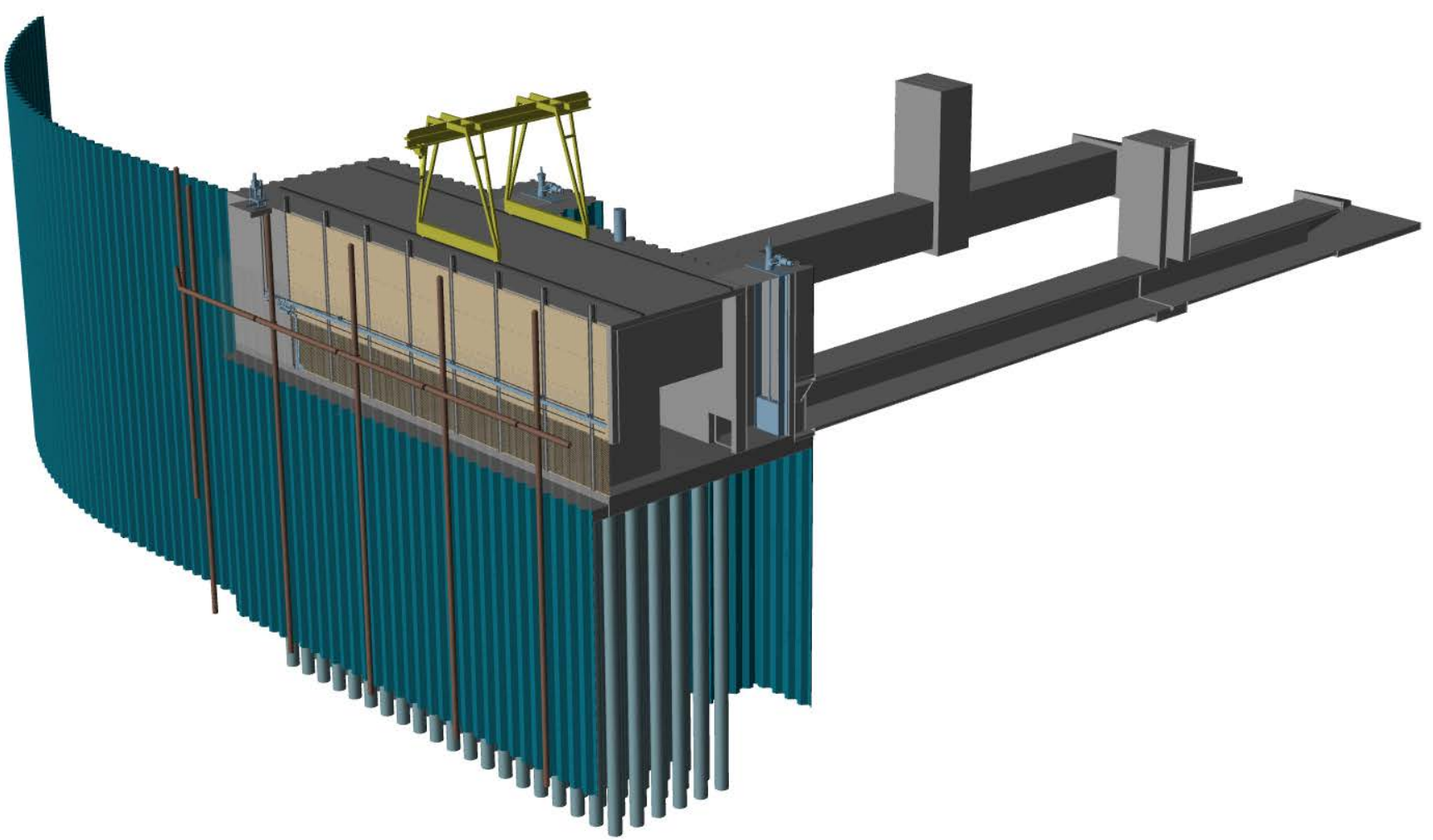


Intake Structure Types

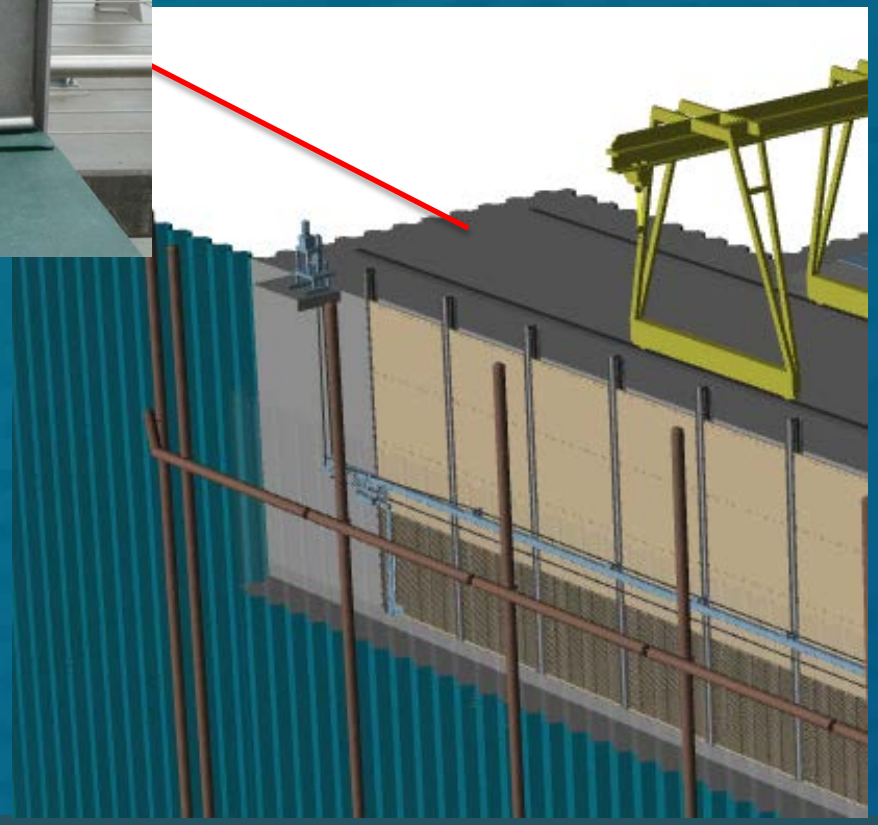
Vertical Plate On-Bank

Cylindrical Tee On-Bank

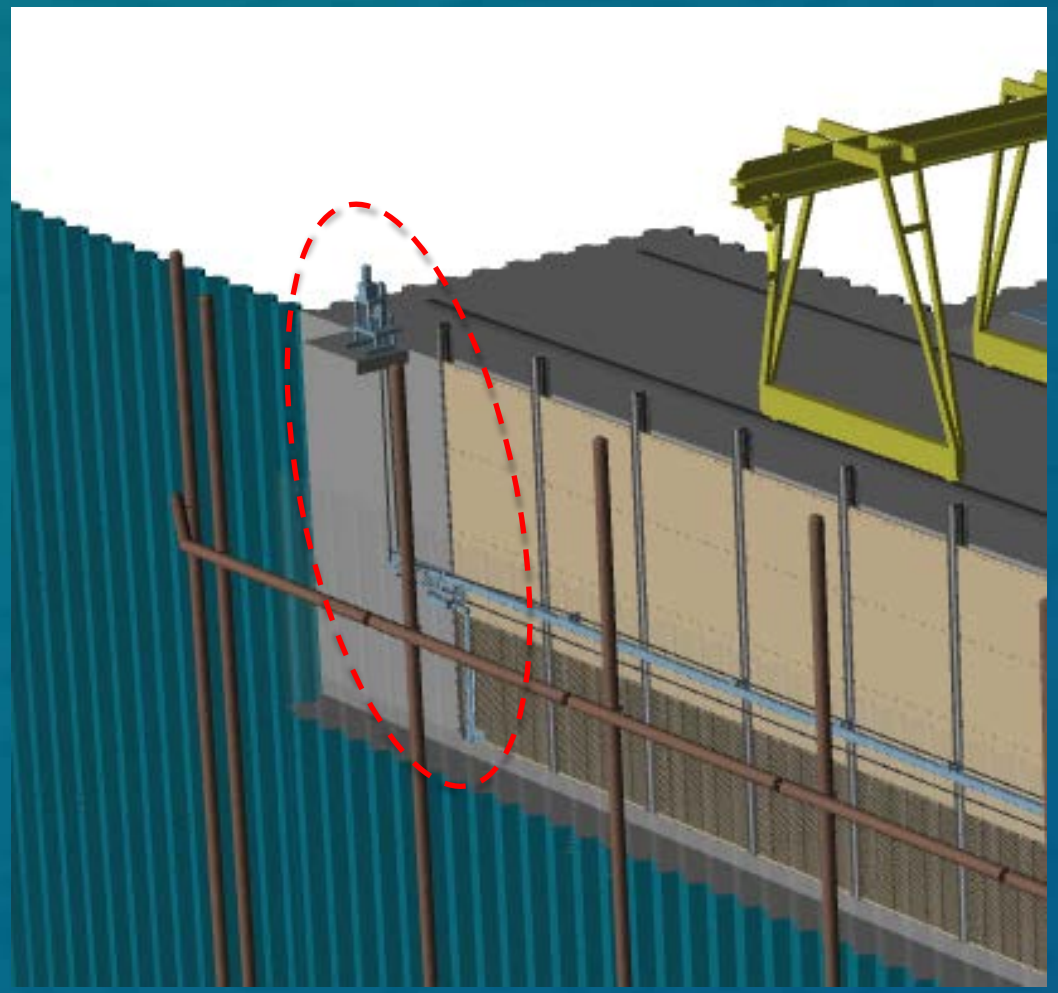
Vertical Flat Plate Screen Facility

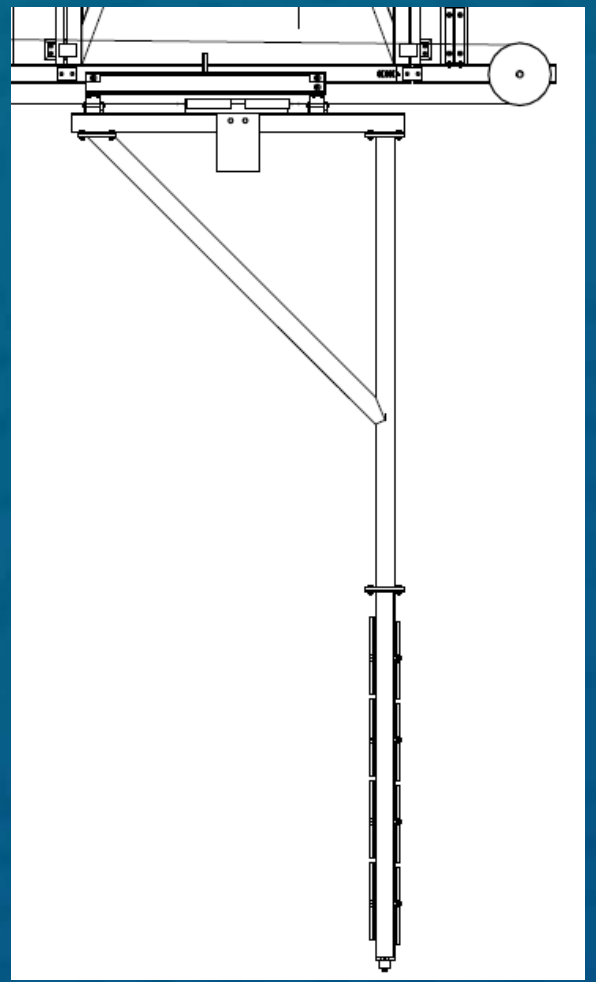


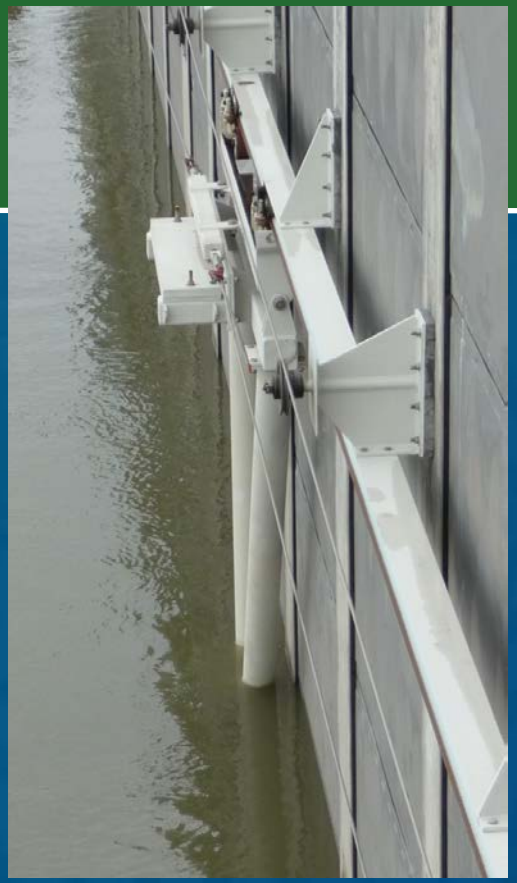
Vertical Flat Plate Screens



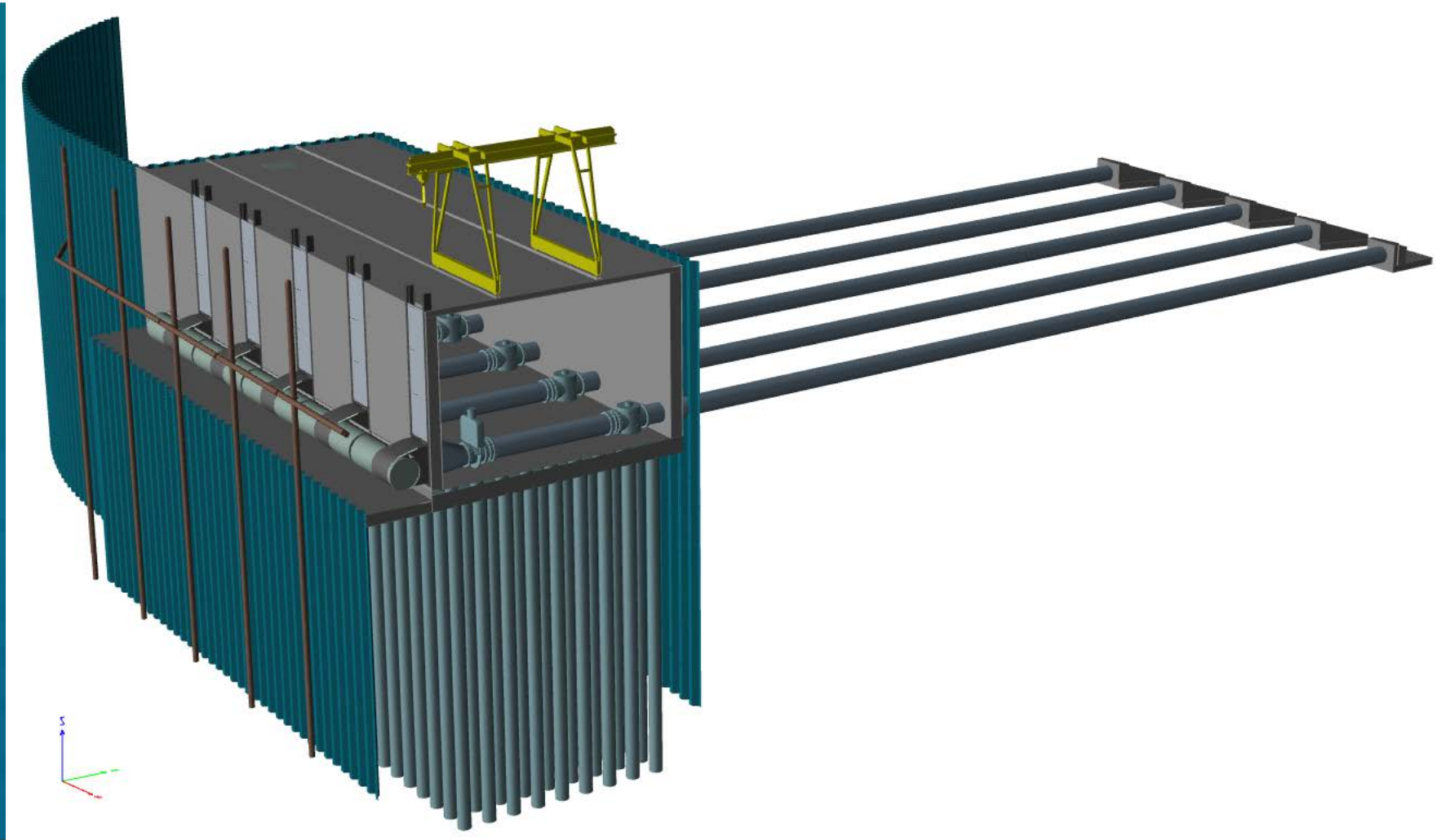
Vertical Flat Plate Screen Cleaning



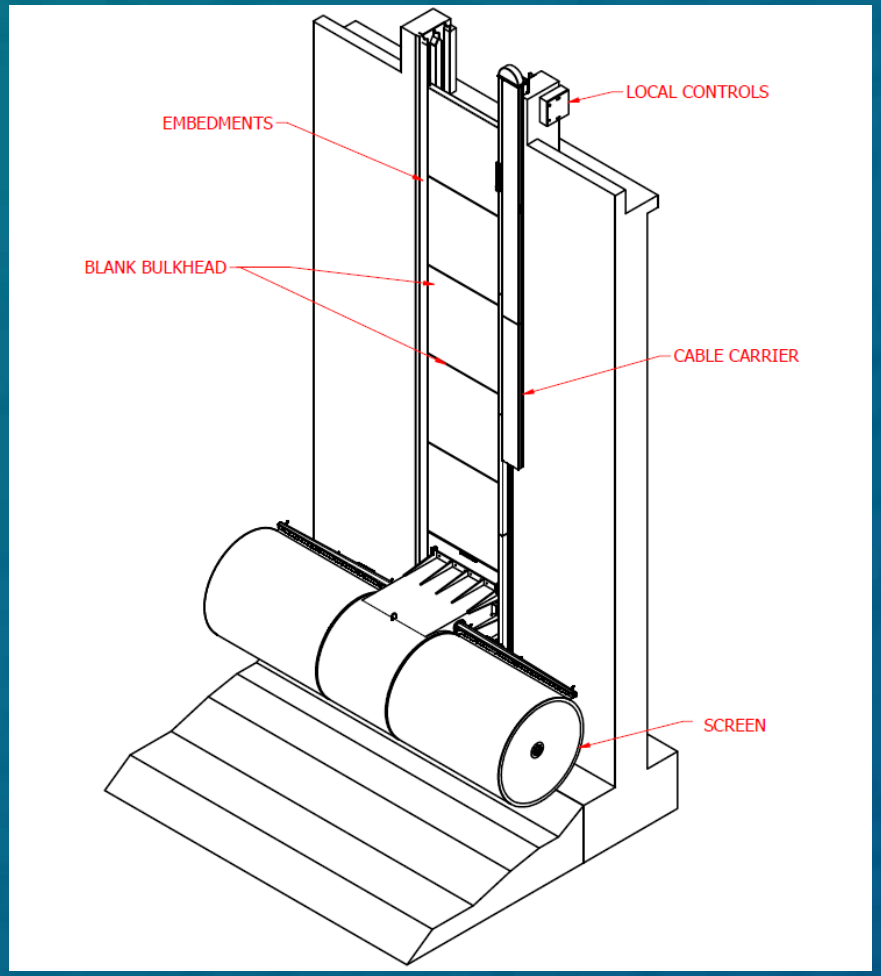




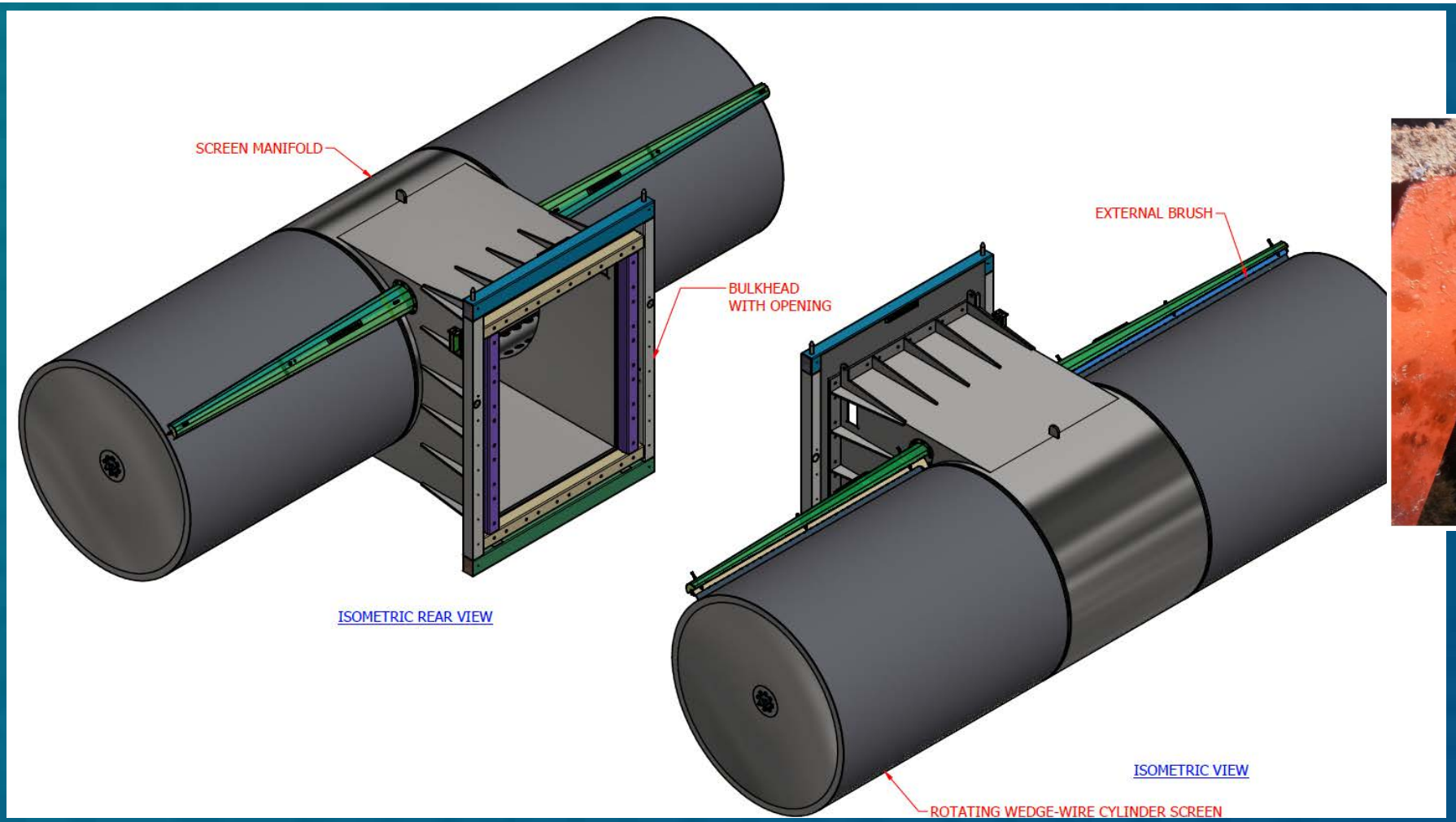
Cylindrical Tee Screen Facility



Cylindrical Tee Screens



Cylindrical Tee Screen Cleaning



Key Issues Comparison

Cylindrical Tee Screens

Shorter structure
- Reduced footprint/impacts
- Better fit in river
- Lower cost

Better flow control
- Individual screen unit control

Better screen cleaning
- Less hot spots
- Better biofouling performance

Less noise

Easier O&M
- Less complex system due to cleaning system
- Screen units are heavy
- More motors

No sediment jetting

Tee sections protrude into river
- Possibly more debris collection
- Potential for damage

Refugia does not add length

Delta supplier

Vertical Flat Plate Screens

Longer structure
- Larger footprint/ impacts
- Higher cost

Flow control effective on 500 cfs sections
- Flow control for bank of screens
- Screen panel uniformity hard to achieve

Less effective screen cleaning
- Striping is common
- Higher cleaner system O&M
- High O&M effort for biofouling

Screen cleaner can be noisy

O&M more frequent
- Screen cleaner needs continuous attention
- Panels are light
- Less motors

Sediment jetting required

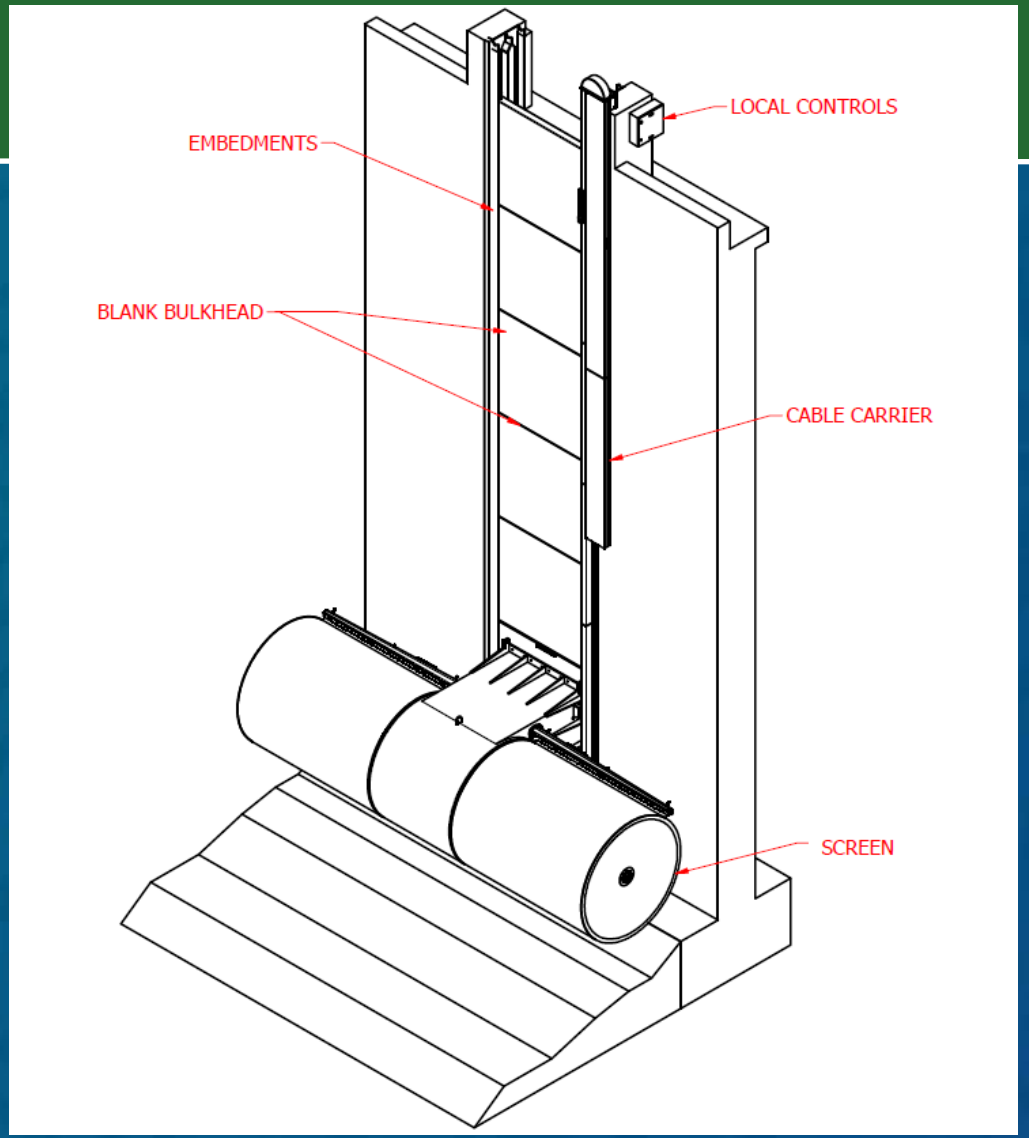
Screen sections flat with structure face
- Screen cleaner susceptible to debris collection and damage

Refugia adds length

Recommendation

Utilize Cylindrical Tee Screens

- Shorter in-river diversion structure
- Better screen cleaning with less O&M
- Better flow control over full range of diversion flows
- No noise
- Excellent track record



Questions

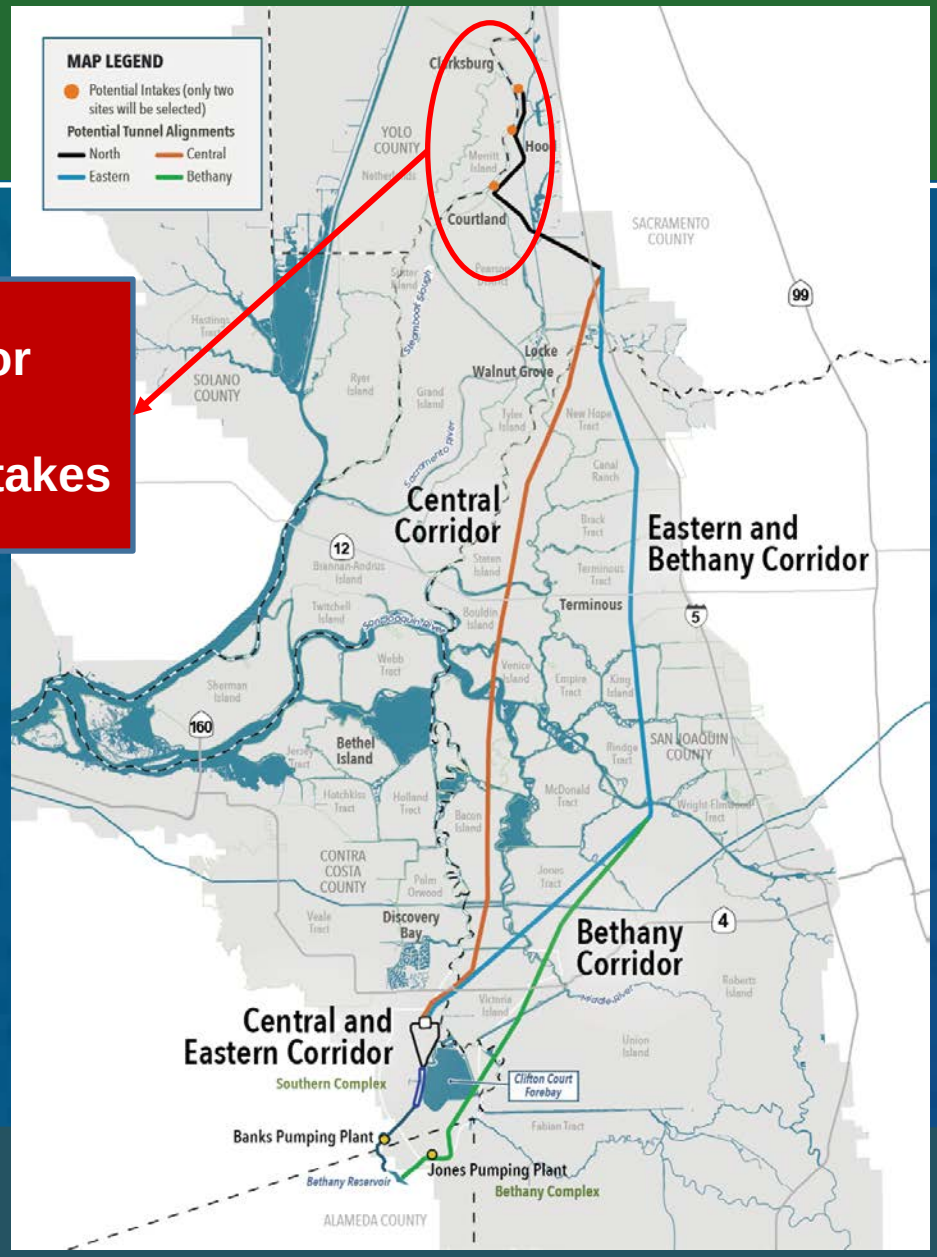
Overview of Operational Criteria

Focus on Identifying Operational Criteria for New Intakes

Existing Delta Operations
(Use 2020 ITP Criteria)

- Delta Outflow Requirements
- D-1641 E/I Ratio computation (Account for ND diversion as part of export)
- OMR
- Export limits

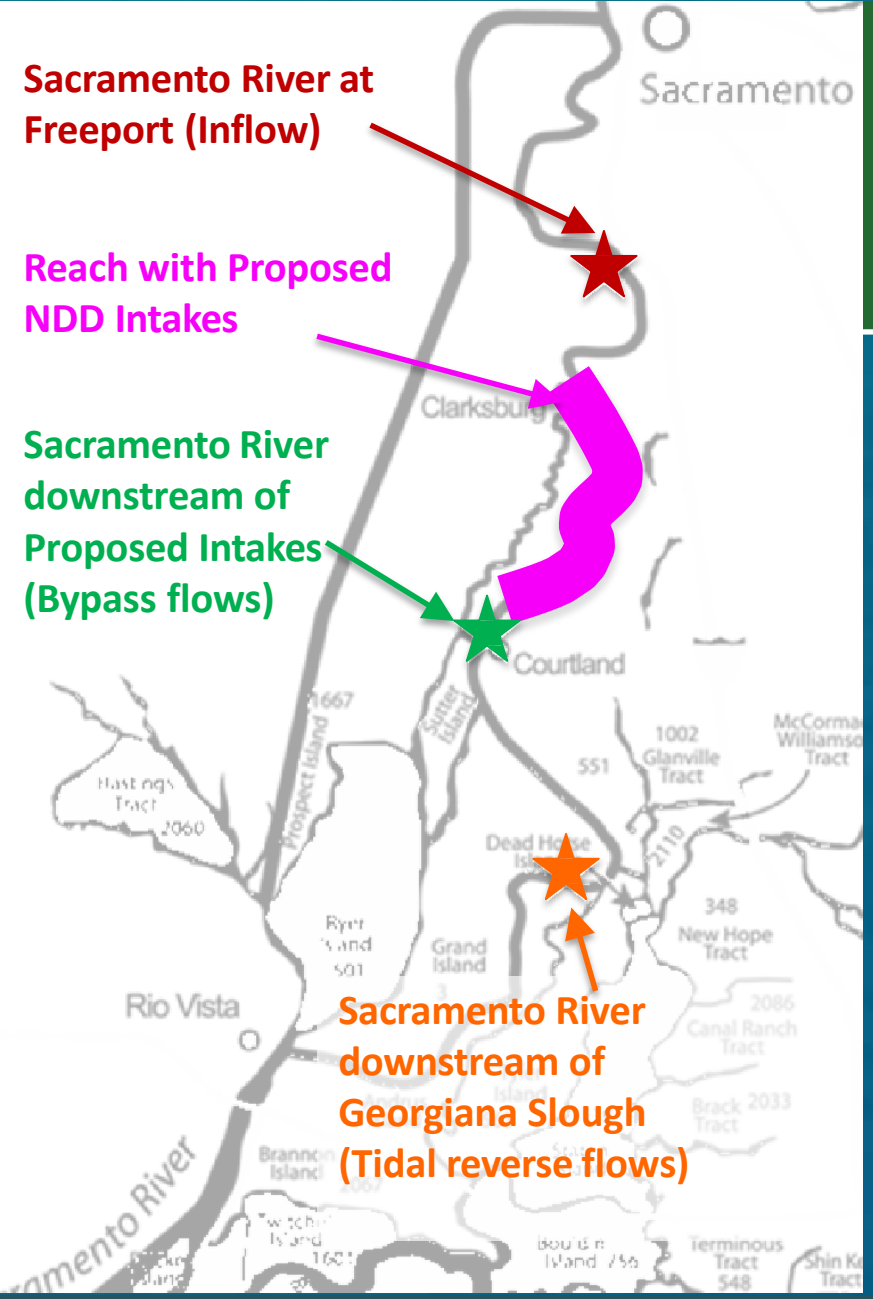
New Criteria for the proposed North Delta Intakes



Dual Conveyance Operations

- North Delta Diversion (NDD) intakes would operate in conjunction with the existing south Delta intakes (Dual Conveyance)
- Potential flexibility in using either south or north Delta intakes with proposed NDD
- Current assumptions:
  - Use NDD to augment excess flow diversions on top of permitted diversions at south Delta intakes – winter/spring
  - Use NDD to manage salinity and realize potential carriage water savings – summer/fall
  - Maximizes benefits while minimizing impacts

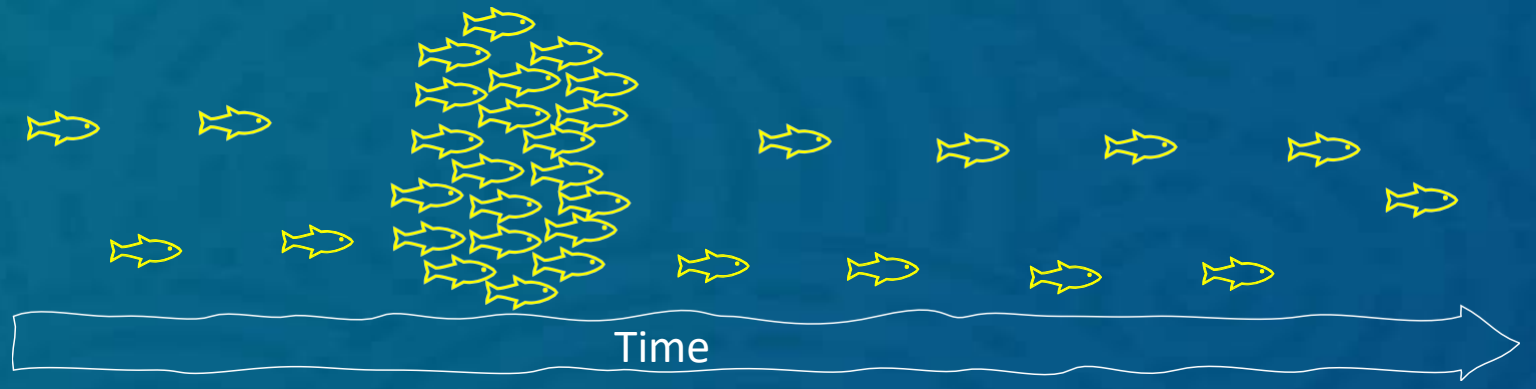
Components of Proposed NDD Operations Criteria



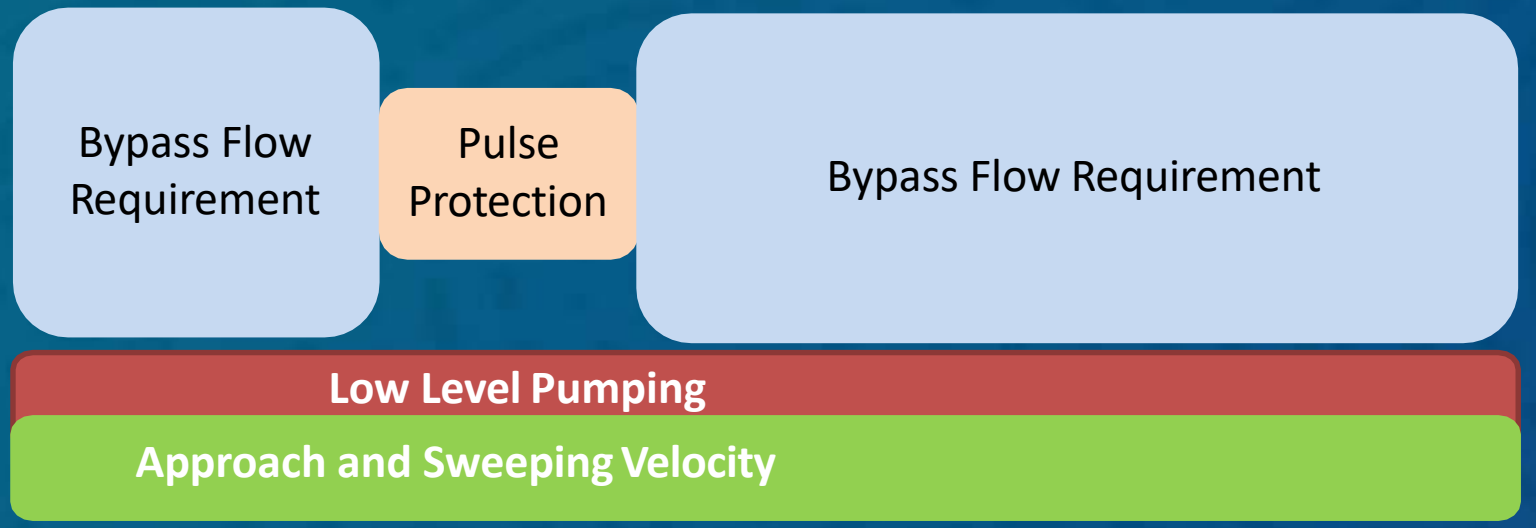
- Fish screen approach/ sweeping velocity criteria: *Minimize near-field effects*
- Bypass flows: *Protect survival in the intakes reach & through-Delta*
- Pulse protection: *Protecting pulse of migrating fish*
- Low level pumping: *Diversion level with minimal effects*

NDD Operations Criteria Concepts

Concept of Fish Migration in the Intake Reach

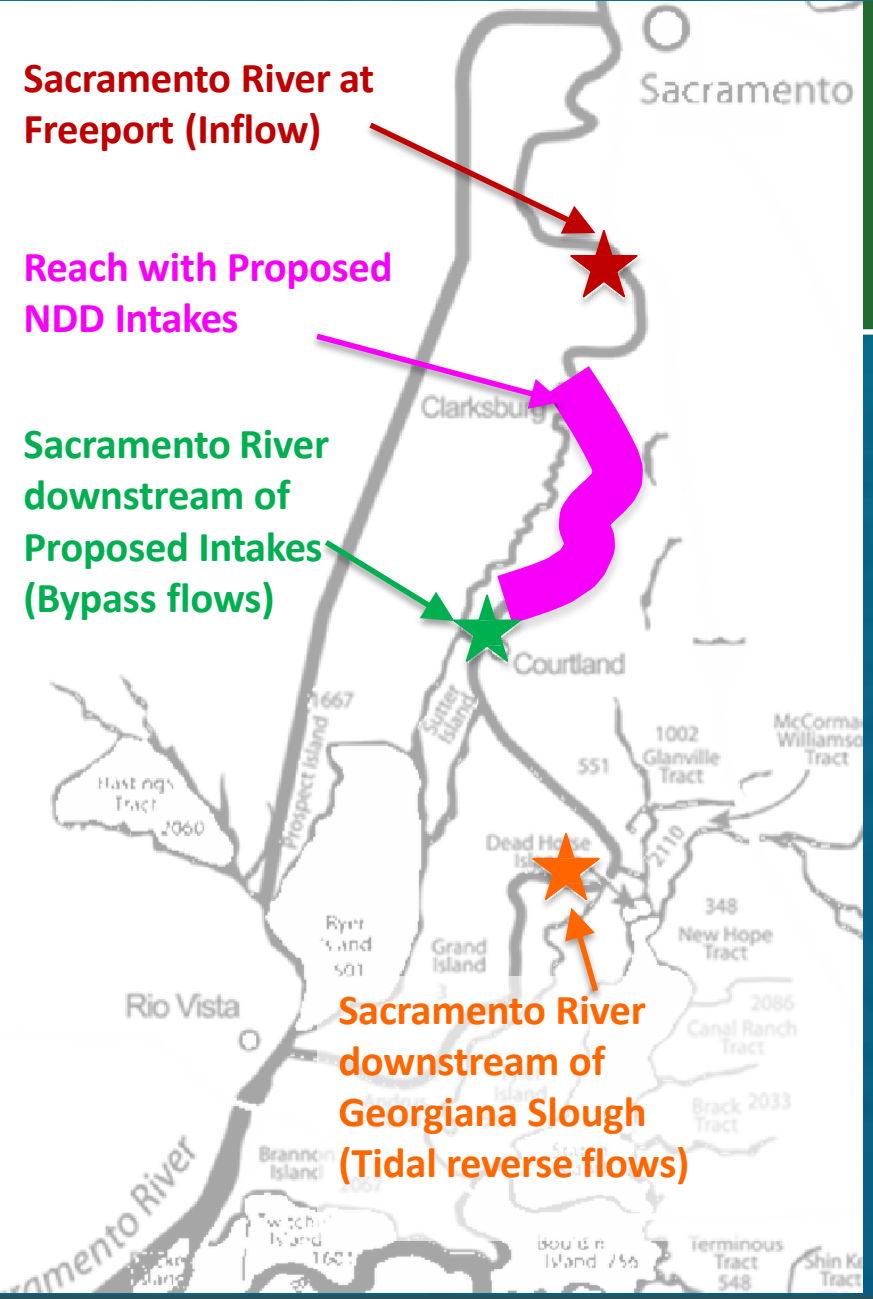


Layering of Protections for NDD Operations



Fish Screen Approach and Sweeping Velocity

- **Approach Velocity:** *Velocity of water perpendicular to and going into the fish screens*
- **Sweeping Velocity:** *Velocity of water parallel to and going past the fish screens*
- Criteria established by NMFS, CDFW, and USFWS to minimize potential entrainment and impingement-related effects



Bypass Flow

- Bypass flow is the flow remaining in the Sacramento River downstream of the proposed North Delta Diversion intakes
- Sufficient to minimize upstream tidal transport at two points of control:
  - Sacramento River upstream of Sutter Slough, and
  - Sacramento River downstream of Georgiana Slough

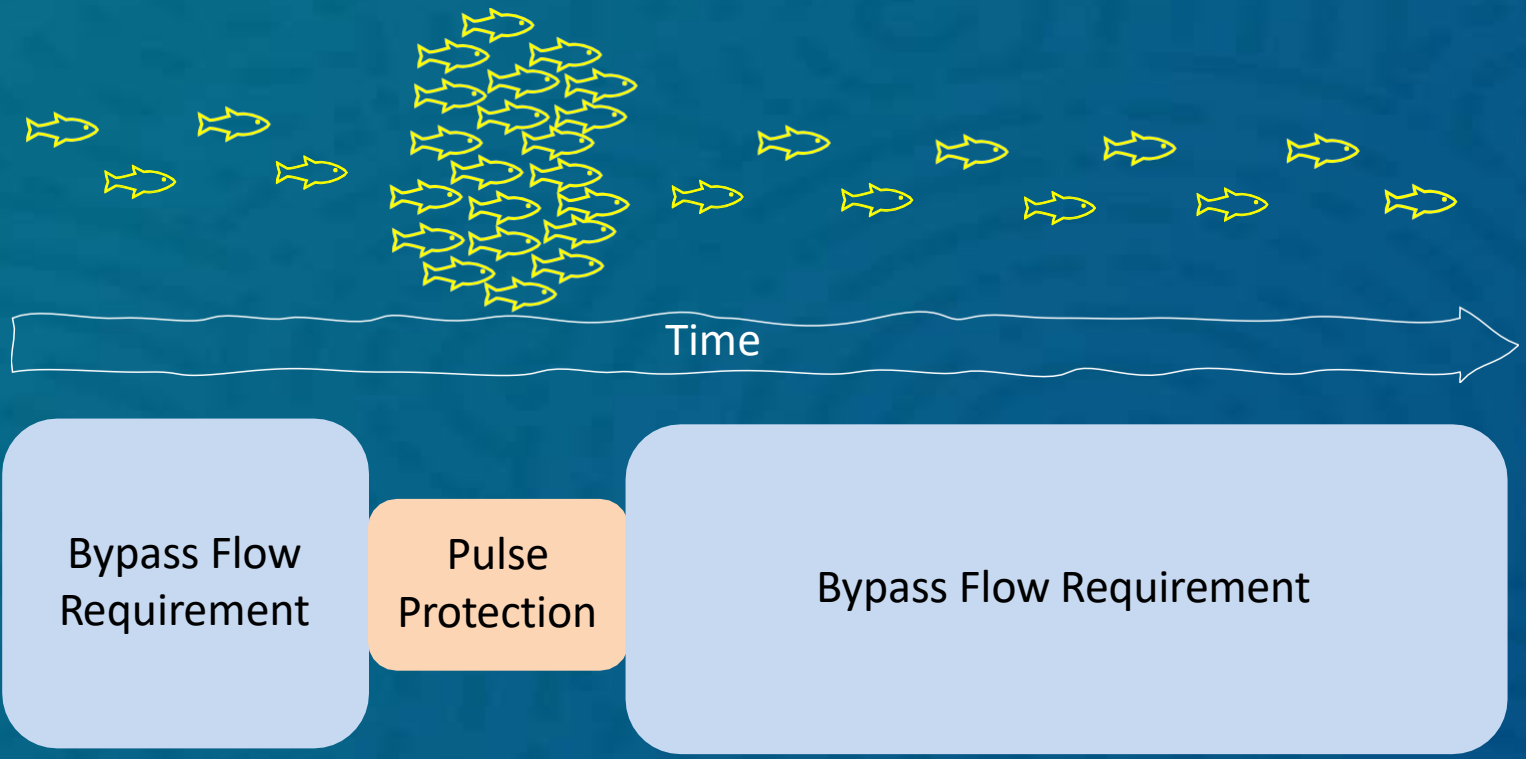
Preliminary Bypass Flow Criteria

- Percent of flow that could be diverted at new intakes increases as Sacramento River flow increases
- Bypass flow criteria include “Levels” that change based on seasonal hydrology
  - Move from Level 1 to Level 2 after 15 total days of bypass flows over 20,000 cfs
  - Move from Level 2 to Level 3 after 30 total days of bypass flows over 20,000 cfs

	Level 1	Level 2	Level 3
River flows with no diversion	0 – 5,000 cfs	0 – 5,000 cfs	0 – 5,000 cfs
River flows with only low-level pumping	5,000 – 15,000 cfs	5,000 – 11,000 cfs	5,000 – 9,000 cfs
Approx. river flows when allowable diversion ramps up to 6,000 cfs (Dec – Apr)	26,285 cfs	22,375 cfs	18,750 cfs

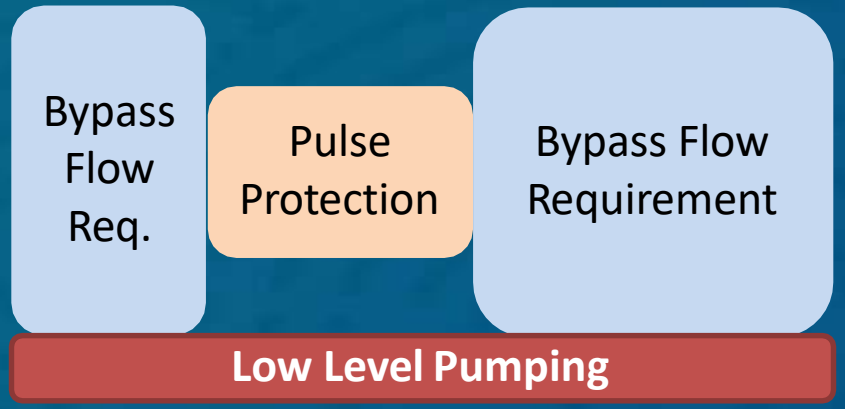
Preliminary Pulse Protection

- Provides additional protection when a large number (pulse) of fish migrating
- Preliminarily proposing to protect up to 2 pulses

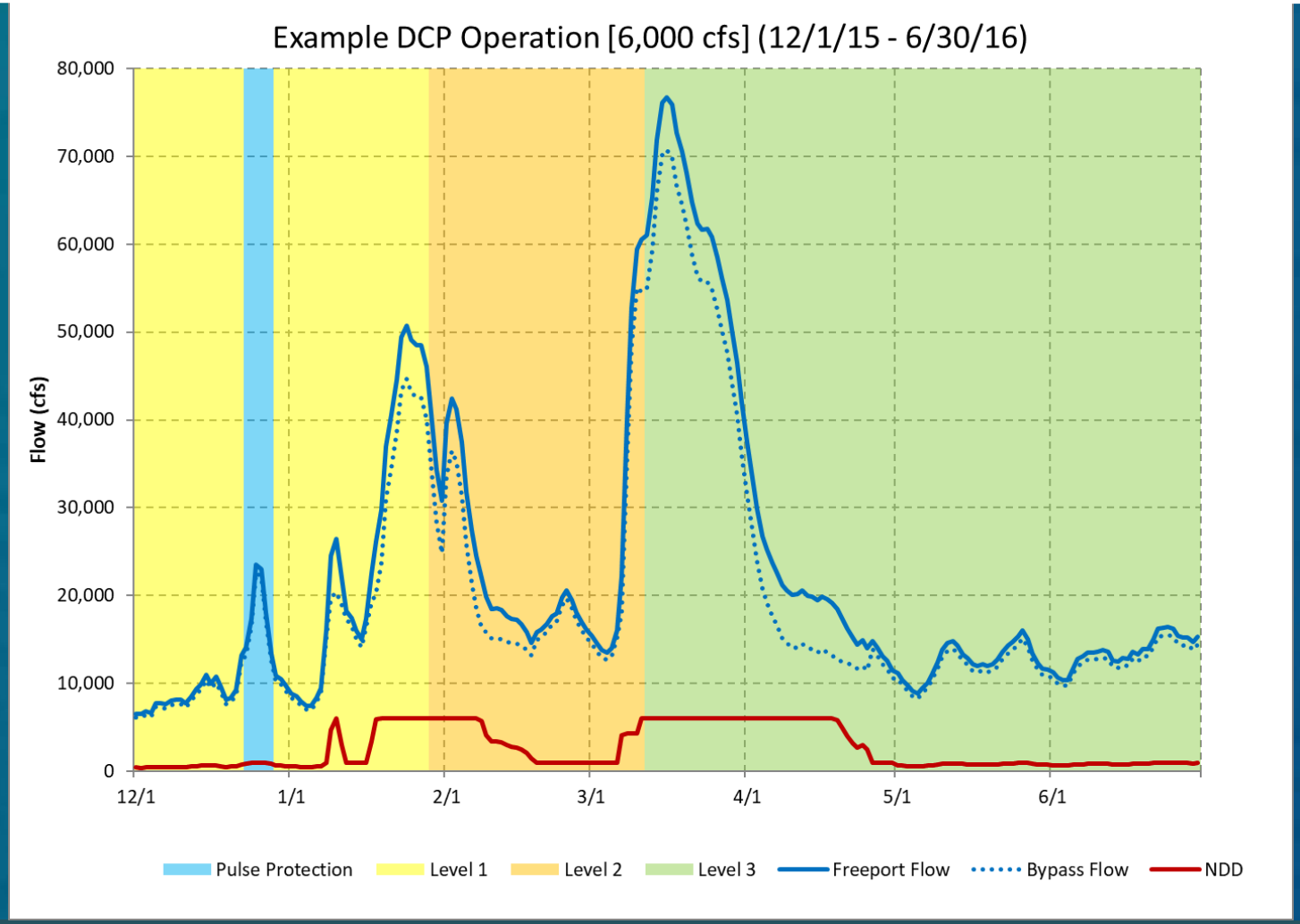


Low Level Pumping

- Low level pumping: *Diversion level with minimal effects*
  - Proposed up to 900cfs total across all NDD



Example 6000 cfs NDD Ops - WY 2016



Questions

QUESTIONS

Via Zoom: Use Raise Hand feature

Via Phone: Press ***9** to **raise hand** and ***6** to **unmute**

QUESTIONS

00:02:00

Thank You for Attending

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