Caltrans Fish Passage and FishPAC Status Update

Dec. 7, 2022 | 9-10:30 a.m.

PARTNERSHIP EXCELLENCE

Lisa DeBruyckere

for excellence in partnerships and development of statewide Fish Passage Advisory Committees (FishPAC): providing support to initiate the Central Coast and Central Valley FishPACs, creating the FishPAC website for information sharing and providing member access, organizing prioritization and assessment needs, and statewide coordination and facilitation of quarterly meetings for six FishPACs consisting of over 200 members.

In collaboration with Caltrans and FishPAC, she organized and facilitated the Science and Innovation Team, the Engineering Work Group, and the Leadership Action Team. Her efforts have led to fish passage and wildlife connectivity program and FishPAC partnership improvements that will benefit aquatic and terrestrial connectivity in California for decades to come.

LEADERSHIP EXCELLENCE

Mary Larson, California Fish and Wildlife (retired)

for excellence in leadership and development of the Southern Steelhead Fish Passage Advisory Committee (FishPAC), including leading prioritization for Southern Steelhead assessment needs, and managing Pacific States Marine Fisheries Commission (PSMFC) biologists performing detailed survey work, which led to a new statewide data collection partnership with PSMFC.

In collaboration with Caltrans and FishPAC she led needed stream assessment work in critical fire and mud slide damaged areas to aid recovery actions. Her 35 years of leadership orchestrated numerous projects and programs with the goal to recover Steelhead Trout, and in doing so improved science and data for FishPAC and all statewide fish passage practitioners.

Ground Rules & Reminders

- Meeting is being recorded
- All attendees automatically muted upon entry
- Chat box deactivated for duration of meeting
- Opportunity to comment/ask questions during facilitated Q&A session
    - ***Participation inactive until Q&A session begins. Instructions will be displayed onscreen***
        - Type questions/comments into Q&A box
- Time Limit: 2 minutes

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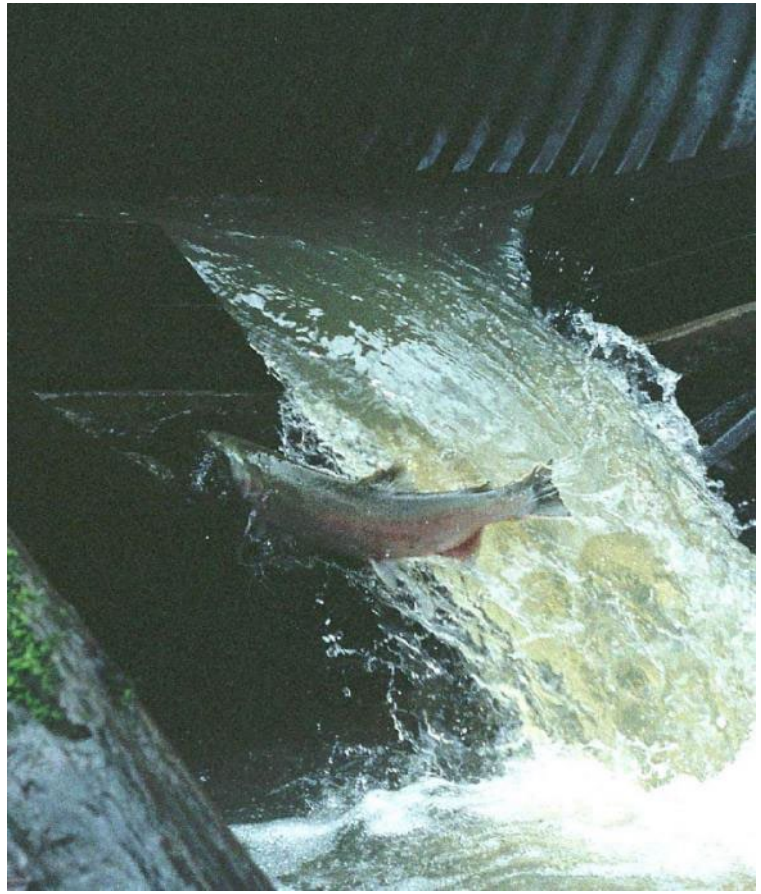
SB 857 - Sec 3. Article 3.5 (Streets & Highways Code)

- Prohibits actions that extend the service life of a road/stream barrier to salmon or steelhead.
- Projects may not create new barriers.
- Report annual progress to Legislature;
  - **Priority** barriers for species recovery,
  - **Completed** remediation locations,
  - **Active** projects in delivery, and
  - **Assessments** of road/stream crossings, and
  - **Funding** for current and planned projects.

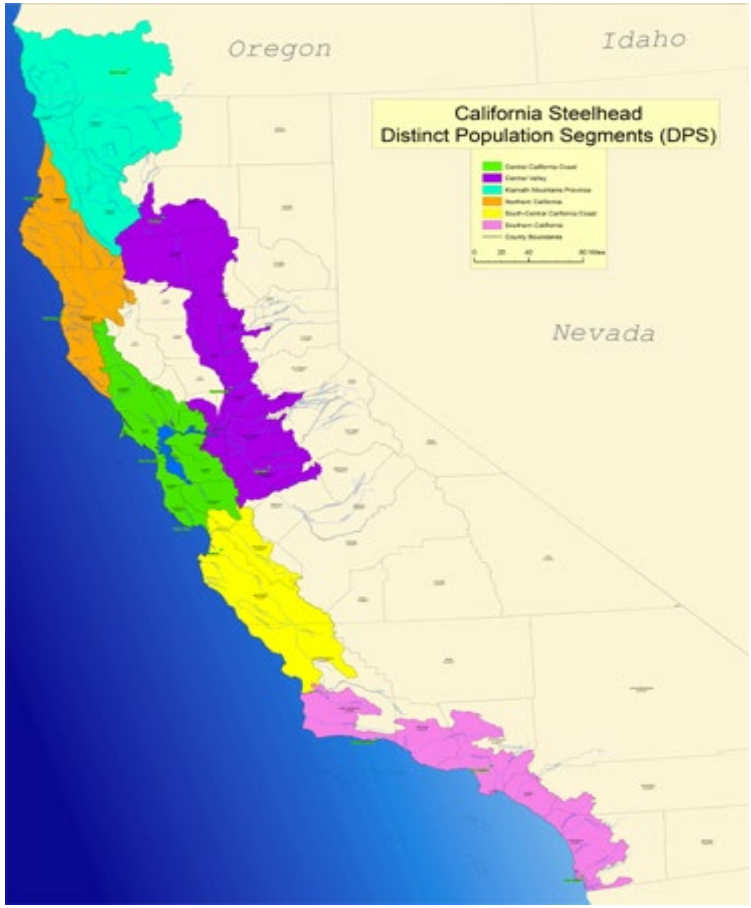


Salmon and Steelhead in California

Coho and Chinook Salmon, Steelhead Trout (Coastal Rainbow Trout)

Photo: National Park Service

NMFS; range of Steelhead in CA



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Examples State Highway Barriers

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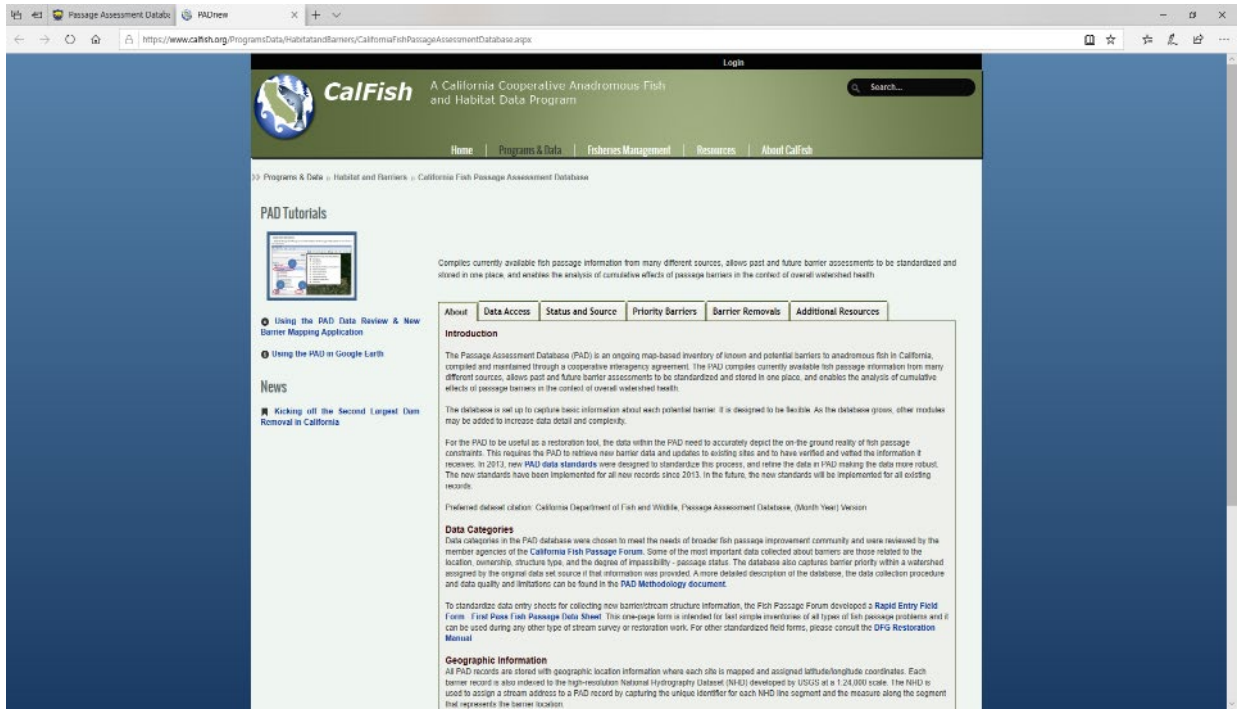
Passage Assessment Database – Caltrans' Inventory

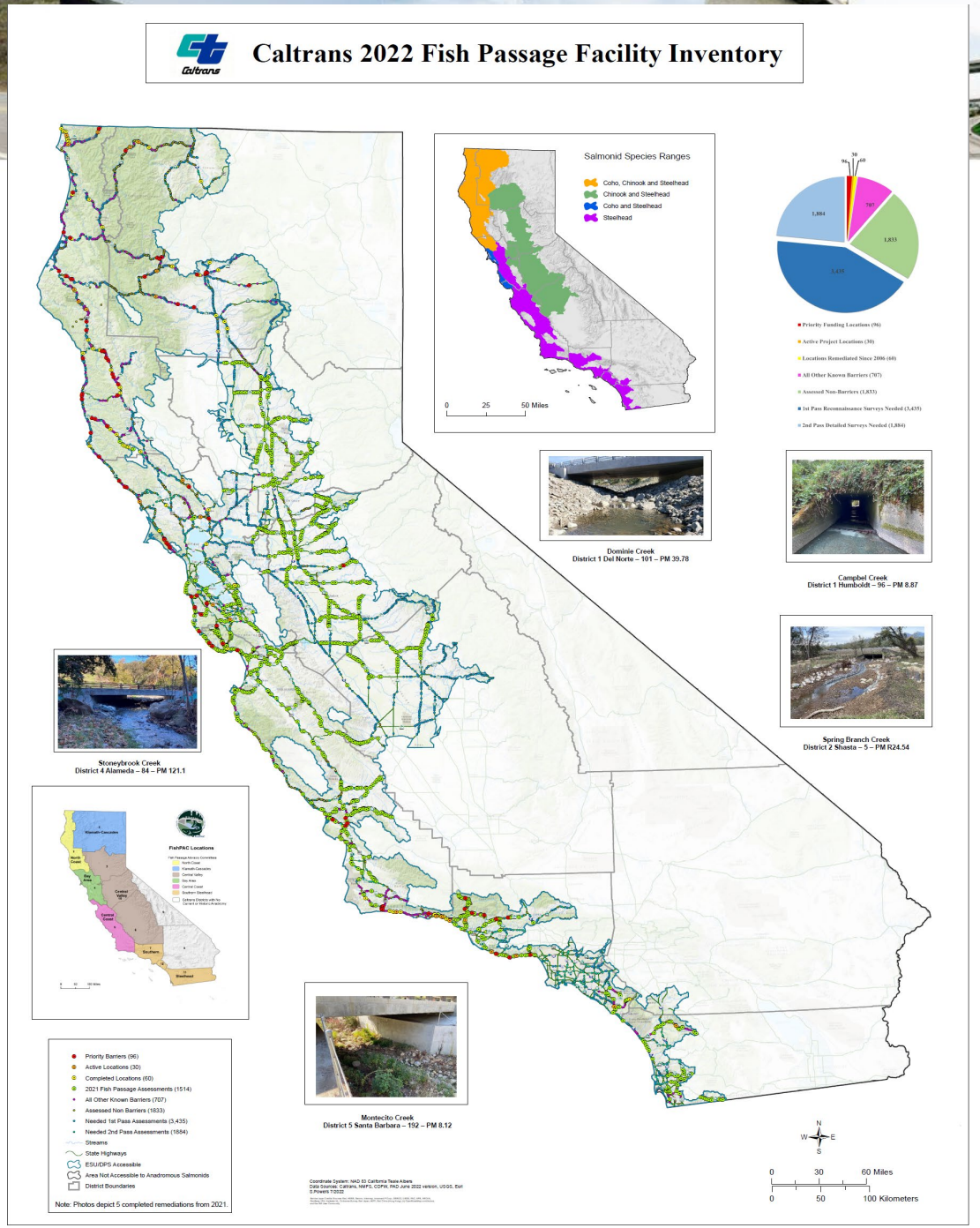


- **2014** - Caltrans and Pacific States Marine Fisheries Commission completed a QA/QC of PAD of the State Highway System.
- **2015** – Caltrans and PSMFC completed a gap analysis and identified **5,110** needed assessments.
  - FishPAC's prioritized the assessment work that is ongoing.
- **2019** - Caltrans and the California Conservation Corps initiated a partnership to perform 1st pass (Reconnaissance) assessments and other related data collection.

Inventory of State Highway System Barriers

- **60** barriers remediated (2006 to 2021)
  - Estimated 910 stream miles of improved access.
- **30** Active Fish Passage Remediation Locations
- **96** Funded and Unfunded Priorities
  - **25** pre-project, funding 2021 SHSMP
  - **71** unfunded, evaluated in 2023 SHSMP
- **621** Other Known Barriers
  - Prioritization of Barriers Ongoing

= Total ~747 barriers on the SHS (June 2022)



California Conservation Corps (3C's) Partnership

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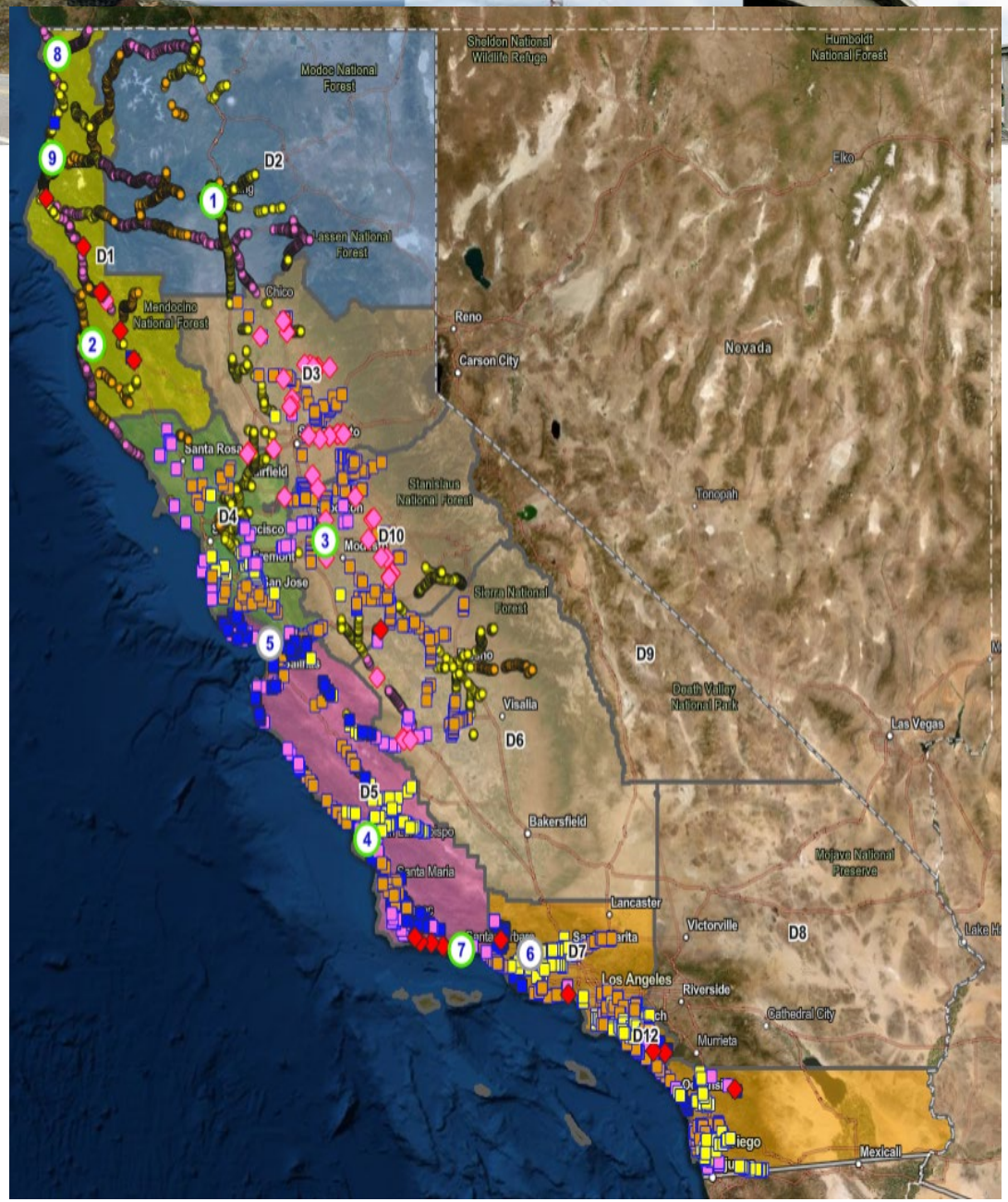
CALIFORNIA CONSERVATION CORPS CCC EST. 1976

Hard Work, Low Pay,
Miserable Conditions and More

California Conservation Corps (3C's) Assessment Progress

- Teams operational in 2021;
  - San Luis Obispo
  - Los Angeles/Pomona
  - Monterey
  - Stockton
  - Ukiah



Hard Work, Low Pay, Miserable Conditions and More

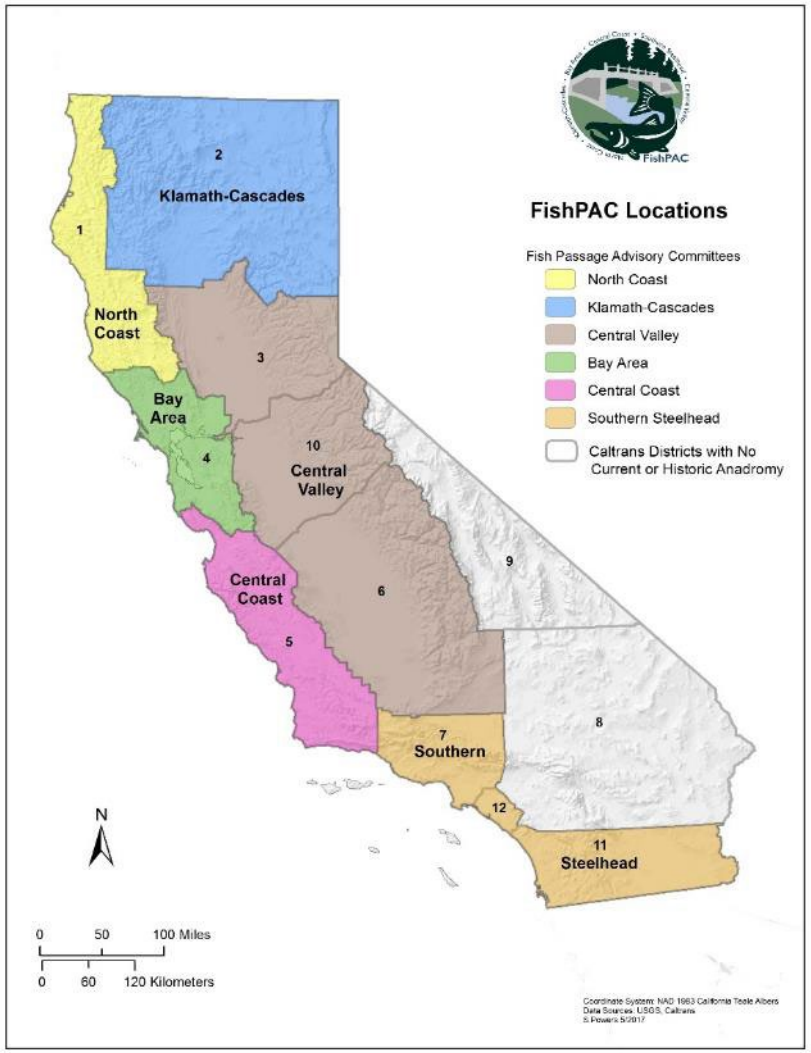
District/FishPAC	Counties	Total Assessments	Assessed Non-Barriers	Detailed Assessments Needed	New Identified Barriers
District 1 (Eureka) – North Coast FishPAC	Del Norte, Humboldt, Mendocino	448	223	174	2
District 2 (Redding) – Klamath-Cascades FishPAC	Siskiyou, Trinity, Tehama, Modoc, Lassen, Shasta, Plumas	46	15	37	0
District 3 (Marysville) – Central Valley FishPAC	Butte, El Dorado, Glenn, Nevada, Sacramento, Sutter, Yolo, Yuba	262	178	104	30
District 4 (Oakland) – Bay Area FishPAC	Alameda, Contra Costa, Marin, Napa, San Mateo, Santa Clara, Solano, Sonoma	269	108	163	0
District 5 (San Luis Obispo) – Central Coast FishPAC	Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz	572	225	342	3
District 6 (Fresno) – Central Valley FishPAC	Fresno, Kings, Madera, Tulare	234	159	111	1
District 7 (Los Angeles) – Southern Steelhead FishPAC	Los Angeles, Ventura	246	53	214	3
District 10 (Stockton) – Central Valley FishPAC	Amador, Calaveras, Mariposa, Merced, San Joaquin, Stanislaus, Tuolumne	382	203	191	29
District 11 (San Diego) – Southern Steelhead FishPAC	San Diego	136	7	130	1
District 12 (Orange) – Southern Steelhead FishPAC	Orange	119	1	115	2
Totals		2714	1172	1581	71

External Partnering

Fish Passage Advisory Committees (FishPAC's)

- Currently over **200** member partners;
  - D1 – North Coast (2003)
  - D2 – Klamath-Cascades (2007)
  - D4 – Bay Area (2016)
  - D7, D11, D12 – Southern Steelhead (2017)
  - D5 – Central Coast (2017)
  - D3, D6, D10 – Central Valley (2018)
- Statewide
  - Interagency Engineering Working Group (2015)
  - FishPAC Leadership Action Team (Jan 2020)
  - Science and Innovation Team (May 2020)

Caltrans supports FishPAC facilitation, GIS/mapping, science and data to include the Passage Assessment Database, Story map Creation and Assessments.



FishPAC Mission - Collaboration

- **Science and Data** – Improve PAD, prioritize assessments and barriers for T&E species, monitor success, training
- **Engineering** – Effective, long-term solutions, research on efficacy, monitoring design solutions, training
- **Permitting** – Efficiencies for long-term, high quality design solutions
- **Funding** – Support funding priority barrier remediation projects
- **Project delivery** – support delivery and implementation of successful projects

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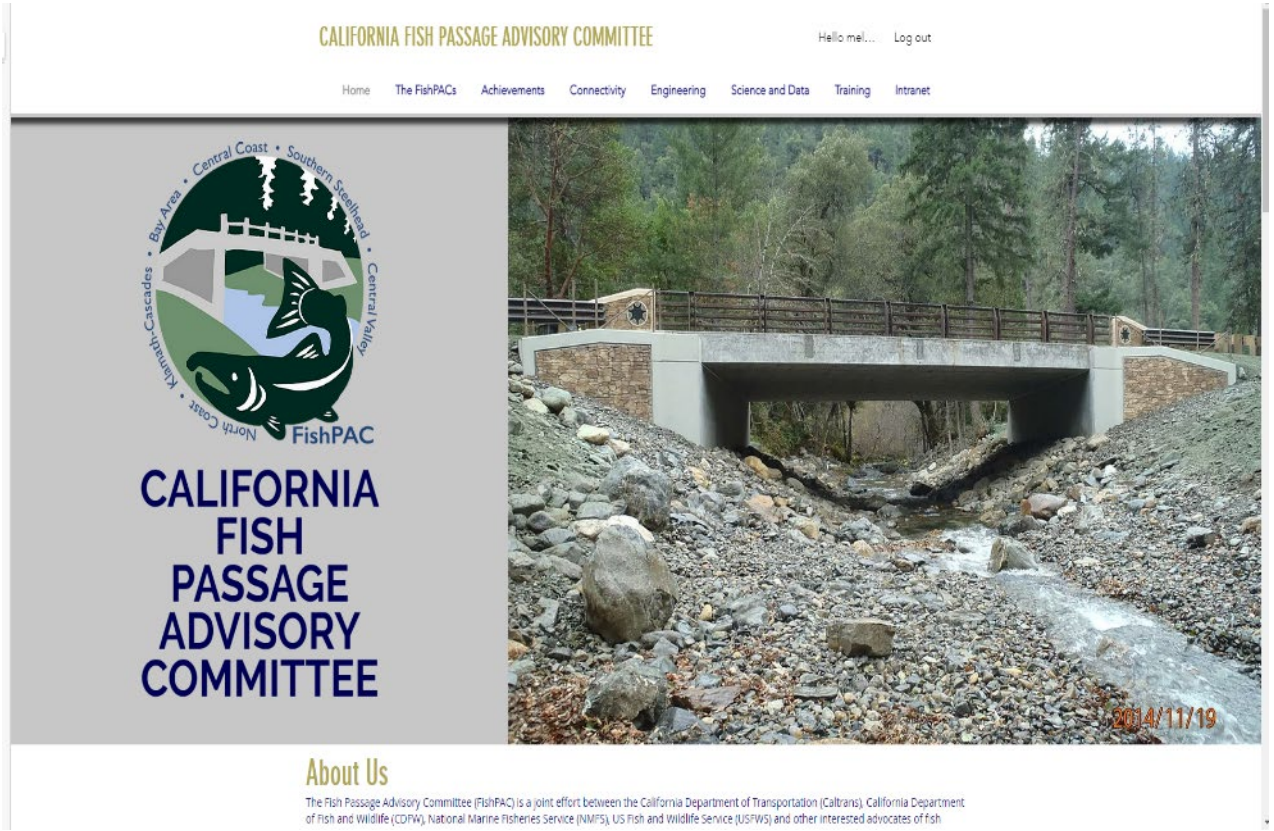
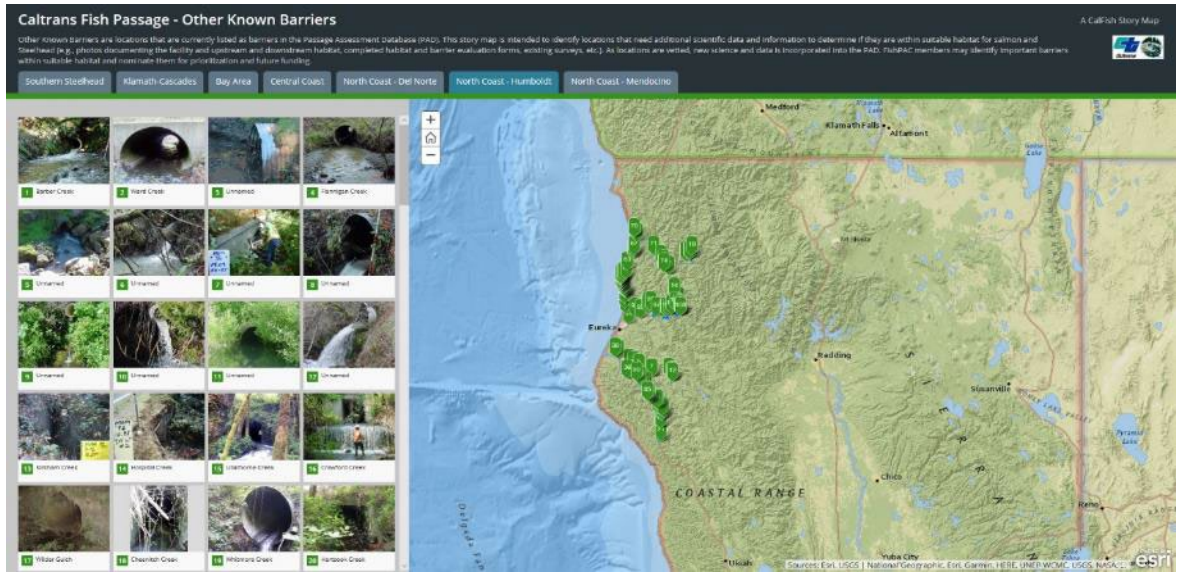
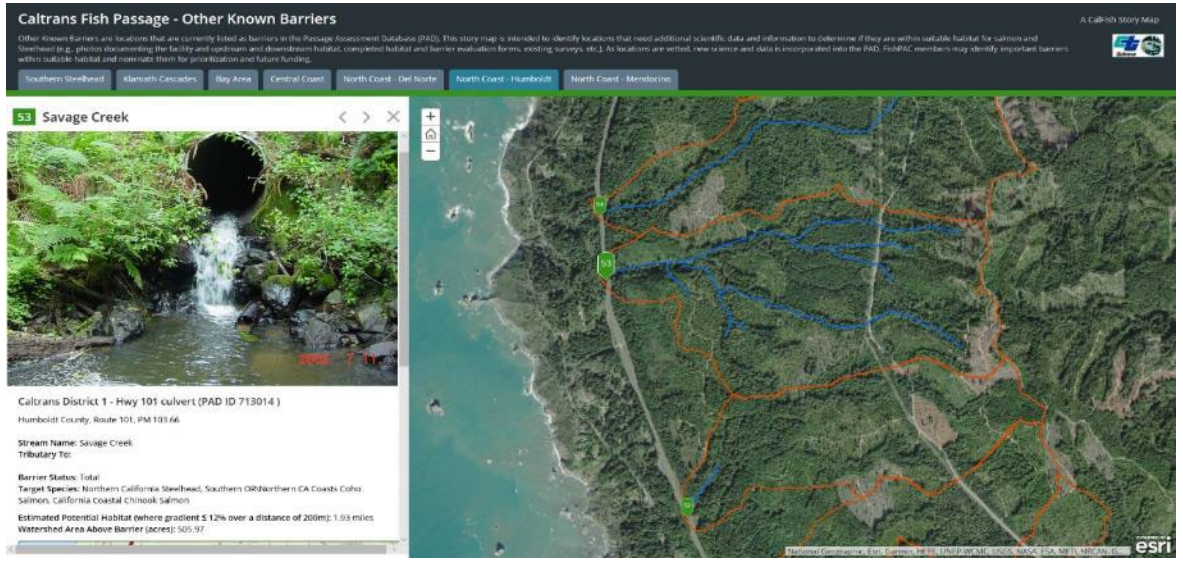
Tools for Prioritizing Fish Barriers







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https://www.cafishpac.org

Barrier and Habitat Evaluation Form

(Habitat Assessment Form)

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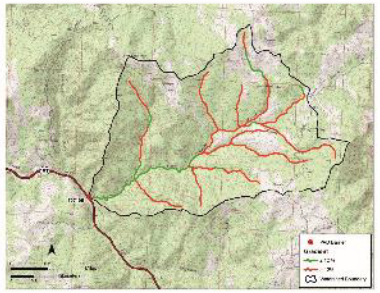
FISHPAC

Fish Passage Barrier and Habitat Evaluation Form

This evaluation form is intended for use by Caltrans staff and state and federal Fish Passage Advisory Committees (FishPAC) partners, to evaluate habitat and other information specific to field reviews and information for Caltrans fish passage barriers. This form can be used for evaluating an identified barrier or a location identified for an assessment, in order to evaluate the suitability of habitat in relation to the road/stream crossing or barrier. This form will provide information in consideration of the biological potential of up and downstream habitat in relation to either suitable or unsuitable habitat. Findings will be submitted to the Passage Assessment Database.

Investigator and Location Information			
Evaluator: *(name and contact information)*	M. Molnar, J. Miller-Schulze	**Date:**	6/18/19
Project Location: *(county-route-post mile)*	MEN - 101 - PM 80.75	**PAD ID:**	707105
Site/Stream/Tributary Name: *(creek or project name)*	Twin Rocks Creek/Hwy 101	**Temperature:** (note if C/F)	unknown
Fish Passage Barrier Location Description: *(fully describe existing facility)*	Reinforced Concrete Box (RCB) ~10 ft in width, and a squashed Corrugated Metal Pipe (CMP) overflow system north of the creek.		

Watershed Map: *(to include run/rise model of entire watershed area to estimate likely accessible habitat)*



1)	Is there any visual evidence of damage to the existing culvert or bridge? *(if yes, take photos and briefly explain in notes)*	Yes ○ No ◉
2)	Is there an accumulation of sediment or debris in, or upstream, of the facility? *(if yes, take photos)*	Yes ◉ No ○
3)	If applicable, are there any associated grade, or velocity, control structures? If yes, are any of them damaged, or impaired? *(Please provide notes to describe fish facilities, or damage)*	Yes ○ No ◉

FISHPAC

SPECIES OBSERVATIONS:
(note: lack of presence during review is not indicative of absence)

List all aquatic and terrestrial species observed
(e.g., steelhead, coho, Chinook, other fish, amphibians, invertebrates, mammals, etc.)

List species observed above barrier:
~3 yoy steelhead observed in pool above the inlet

List species observed below barrier:
>10 yoy steelhead observed in pool below outlet.

HABITAT VALUES
(check all that apply and provide other information in notes)

Mature native riparian	✓	Frequent pools and riffles	✓	Spawning areas	✓	Thermal refugia	✓
Velocity refugia	✓	Channel complexity	✓	Juvenile rearing	✓	Smolt migration pathways	✓

Notes:

This barrier is close to the confluence of Tenmile Creek, which has some clean gravel pools and good shade. This system has a lot of vegetation and seems healthy, except the barrier.

(Please indicate any additional current information that is relevant to habitat quality, or quantity, above or below the fish passage barrier to include any fish or aquatic species present, scour in, or adjacent, fallen trees, failing RSP, accumulated, or depleted sediment, etc.)

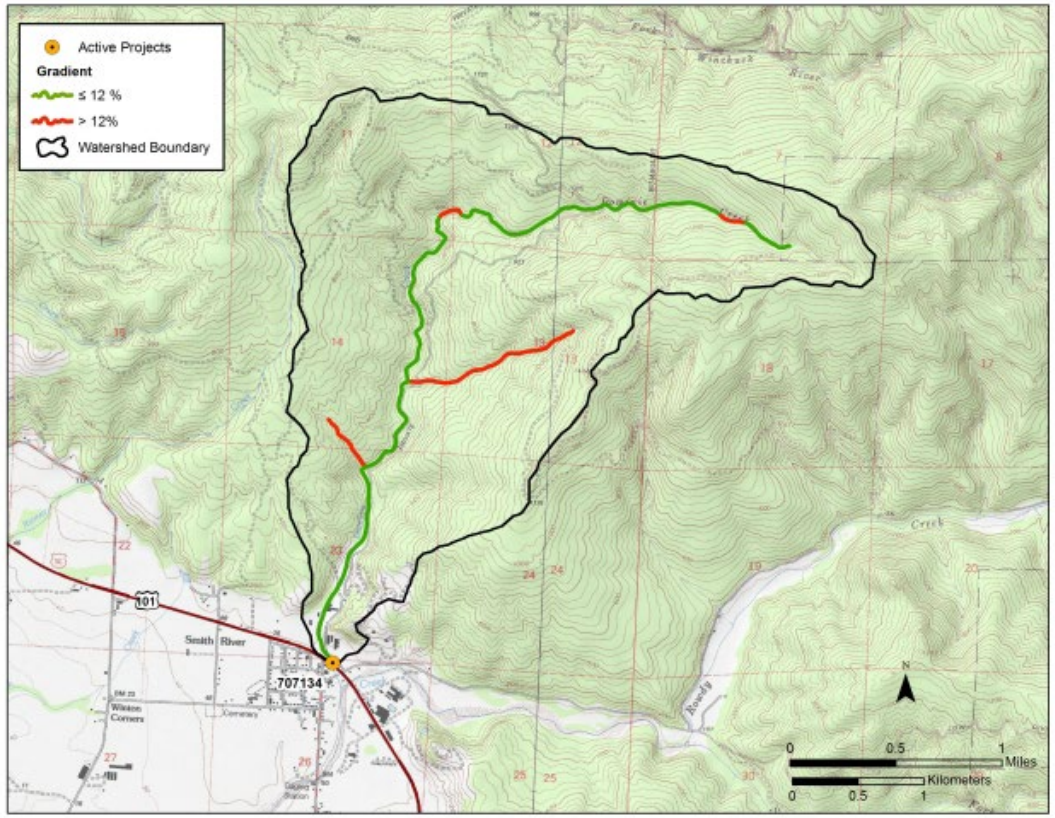
PHOTOS: *Please take photos as a record and to inform other fish passage staff. Four photos of basic locations should be taken, at a minimum, to demonstrate: 1) upstream section of channel above culvert or structure, 2) the culvert or structure inlet, 3) the culvert or structure outlet, and 4) the downstream section of the channel, below the facility.*

1) Upstream section of channel above facility

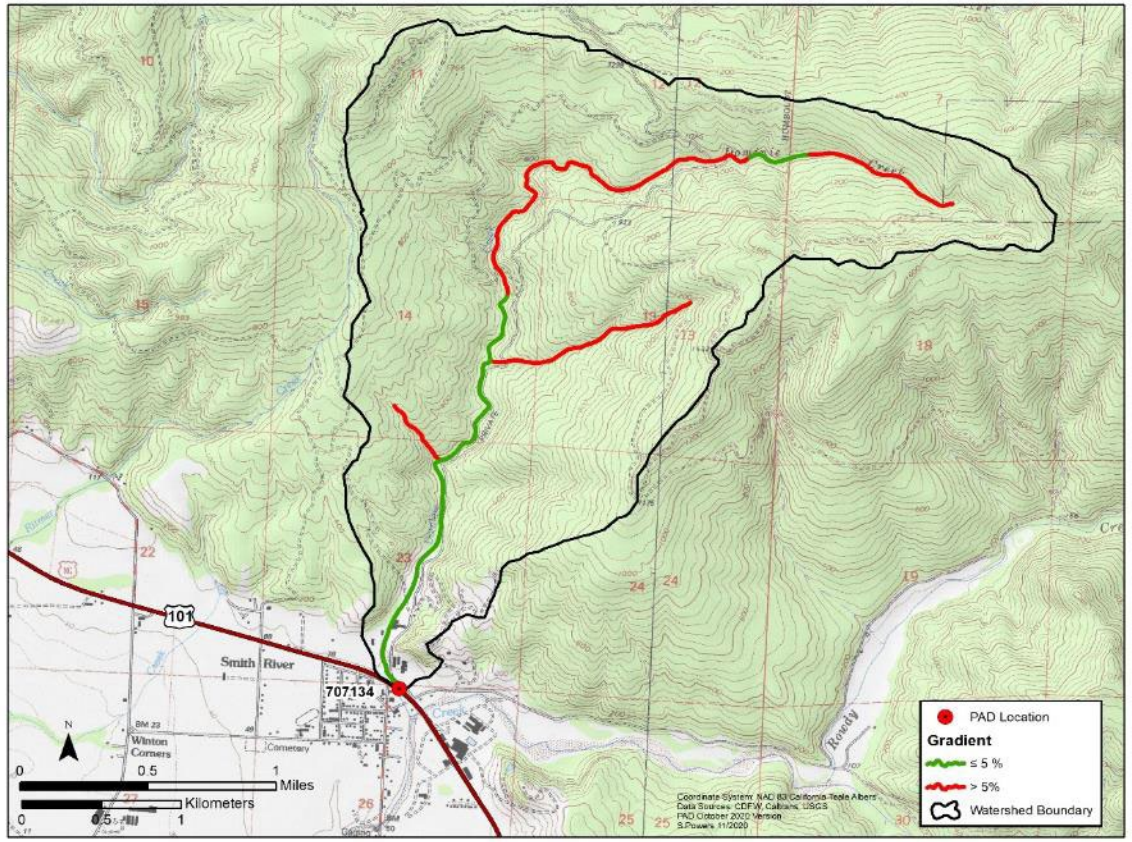
2) Culvert, or structure inlet

Habitat Quantity – Modeling Estimated Accessibility

Steelhead – 12%/200 meters ~2.49 miles



Coho – 5%/200 meters ~1.86 miles



Dominie Creek – Del Norte 101, pm 39.78

Habitat Quality

- Clean gravel,
- Deep pools,
- Woody debris for spawning and rearing,
- Watershed conditions (e.g., current and planned land use),
- Shade and riparian habitat,
- Water temperature levels,
- Water quality and availability,
- Velocity or thermal refugia, and
- Other natural or man-made barriers,

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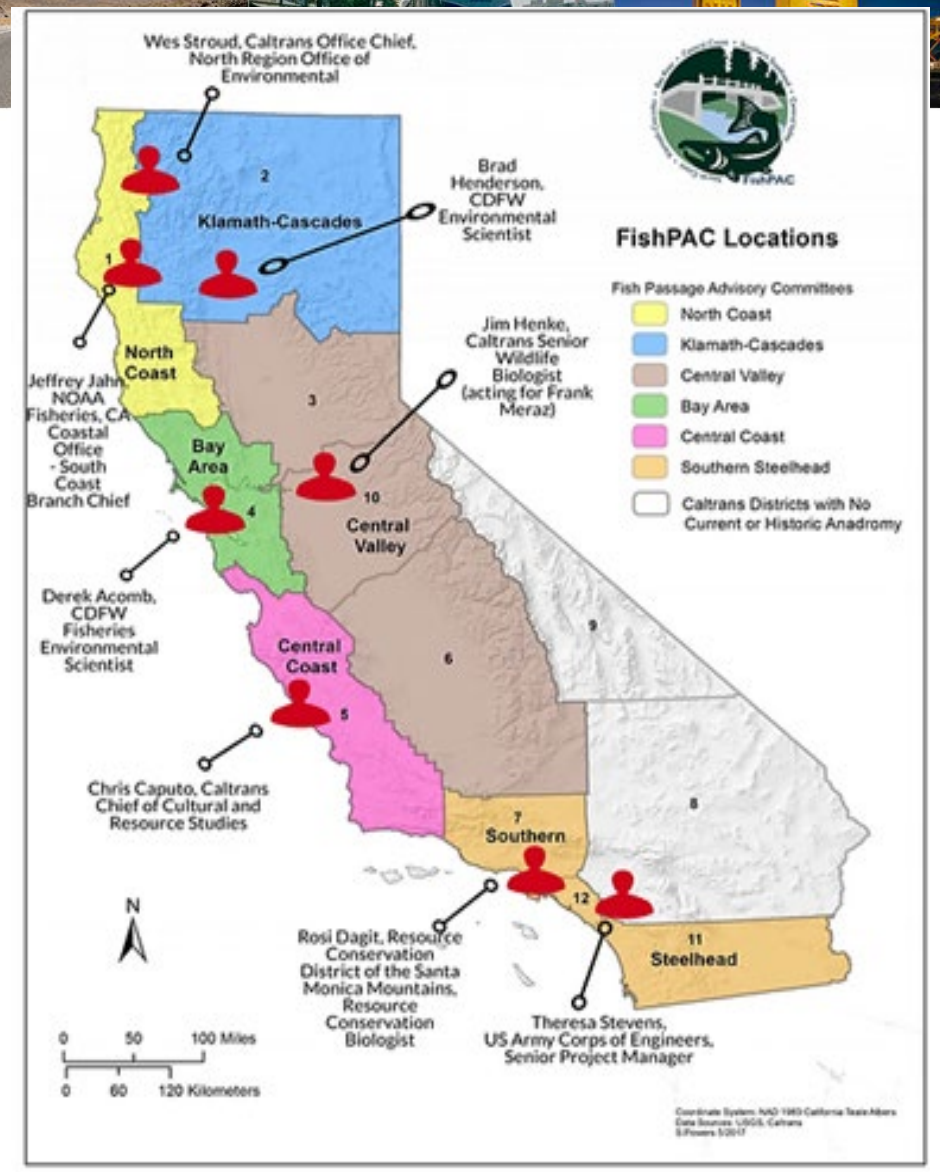

Leadership Action Team

- Support members
- Advocate for progress
- Develop future leaders
- Challenge yourself and others
- Say things that need to be said
- Support one another

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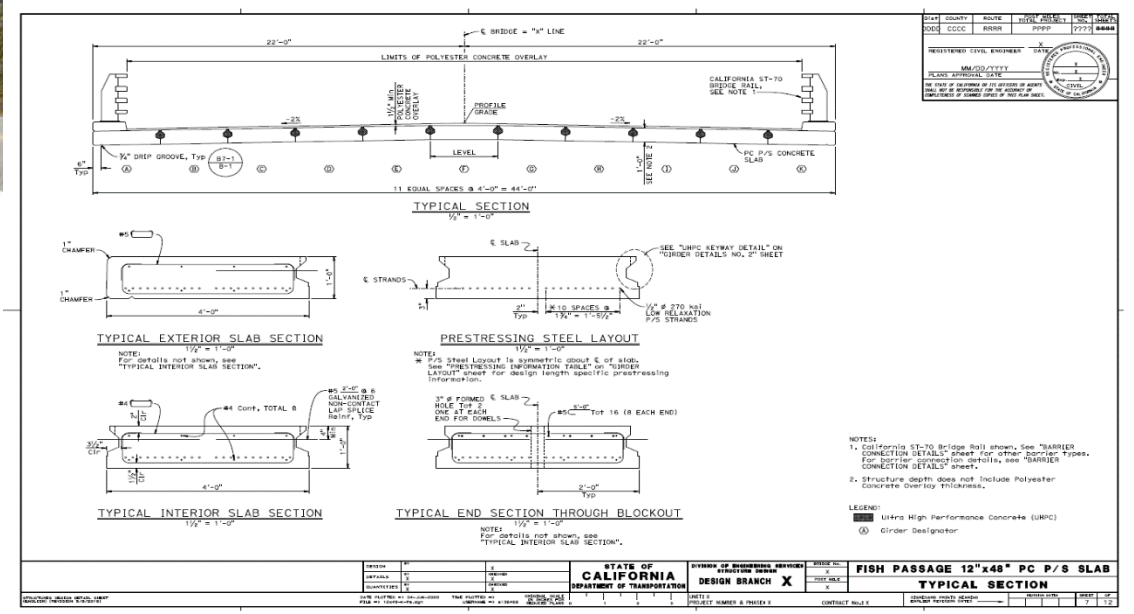
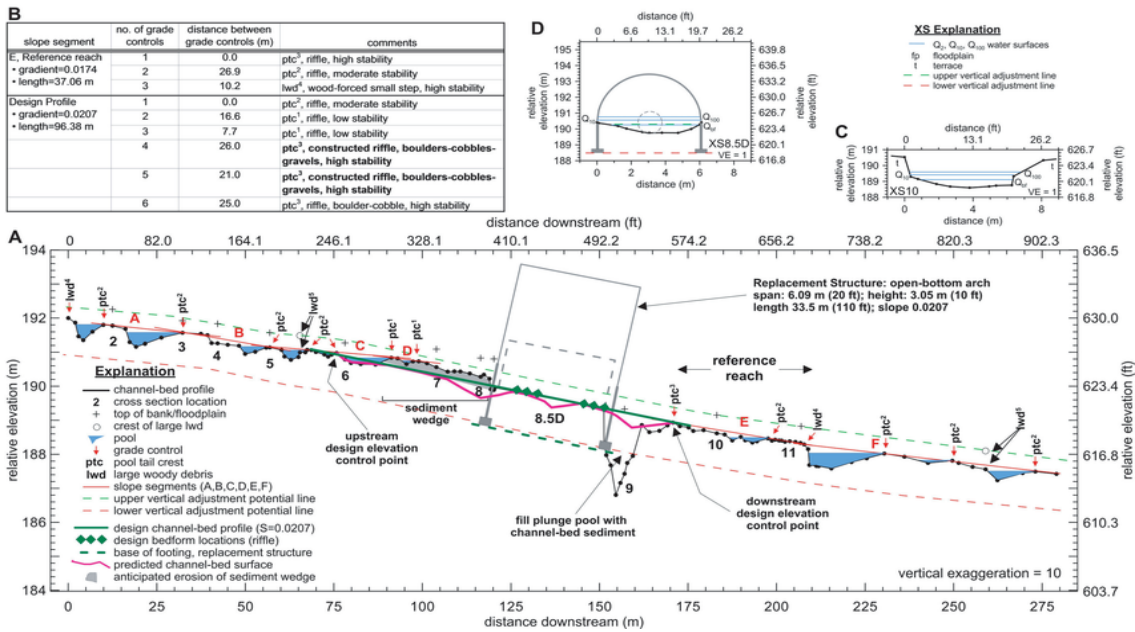
Engineering Working Group

- Collaborate on guidance, policy, training, and project delivery support
- ~40 fish passage engineering members from Caltrans, CDFW, and NMFS
- Cal Poly Humboldt engineering efficacy research finalized July 2022
- Fact Sheets: long profile surveys, watershed modeling





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CAL POLY HUMBOLDT

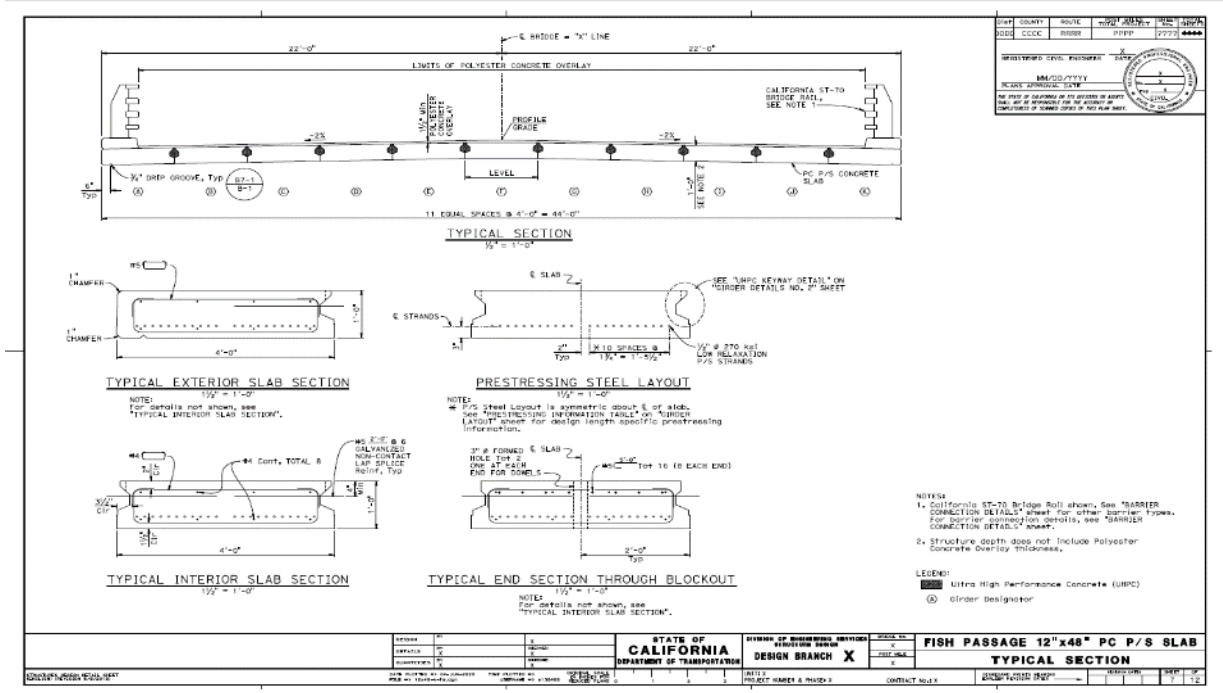
CALIFORNIA DEPARTMENT OF FISH & WILDLIFE

NOAA FISHERIES

DES PROJECT DELIVERY DIVISION OF ENGINEERING SERVICES

ABC Pre-Design Fish Passage Bridges

- 2020 - Caltrans completed pre-design for standard small ABC bridges
  - 11 bridges to 65% design (20 to 116.5-foot)
- 2-12 ft lanes, 2-8 ft shoulders, min width of 24-ft to allow for staged construction
- Abutments can skew up to 45 degrees to match stream alignment
- Long-term fish and wildlife solutions
- 9 Deep water, scour resistant foundations
  - reduce long-term maintenance



Doug Menzmer

Caltrans

DES PROJECT DELIVERY
DIVISION OF ENGINEERING SERVICES

Fish Passage Engineering Research Project (DRISI)

- Researchers - Margaret Lang PhD, P.E., Dept. of Environmental Resources Engineering, Cal Poly Humboldt, and Michael Love P.E., Michael Love and Associates, Inc.
  - Evaluated the performance of recent Caltrans fish passage remediation projects
  - Compared performance
  - Identify project elements that worked well, and lessons learned from project elements that underperformed, and
  - Provide recommendations based on project findings.

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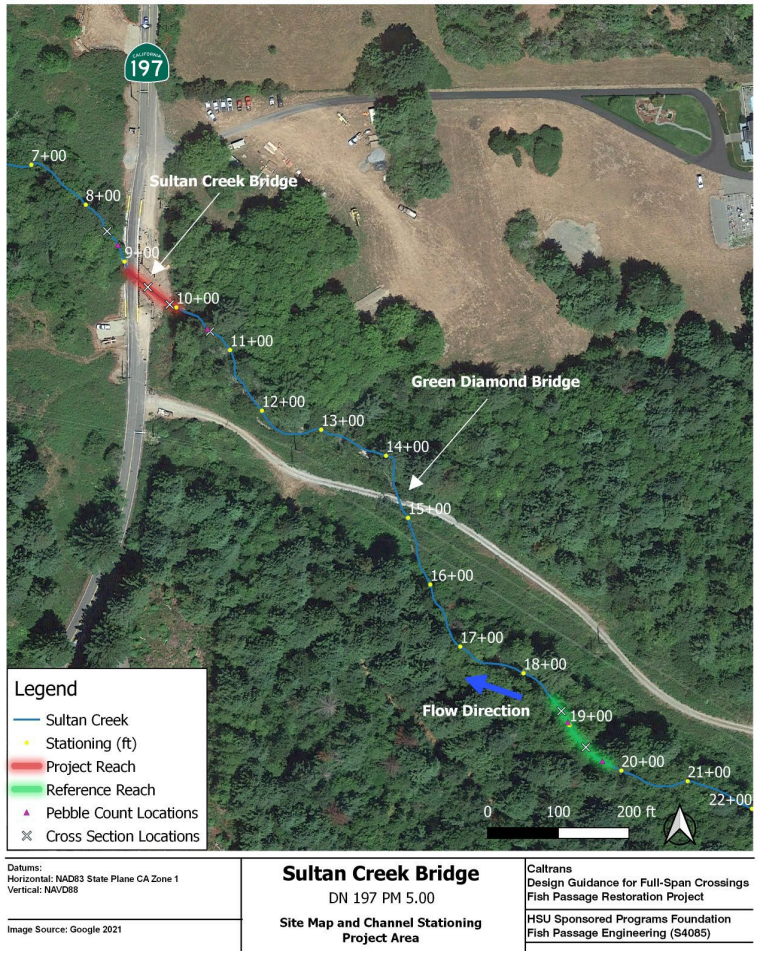

Datums:
Horizontal: NAD83 State Plane CA Zone 1
Vertical: NAVD88

Image Source: Google 2021

Sultan Creek Bridge
DN 197 PM 5.00
Site Map and Channel Stationing Project Area

Caltrans
Design Guidance for Full-Span Crossings
Fish Passage Restoration Project

HSU Sponsored Programs Foundation
Fish Passage Engineering (S4085)

- Field surveys included;
  - thalweg profiles, channel cross sections, measured channel widths, and pebble counts
- Analysis included;
  - thalweg profile interpretation, comparison of natural channel and project channel widths, and evaluation of bed materials at crossing and natural channel.

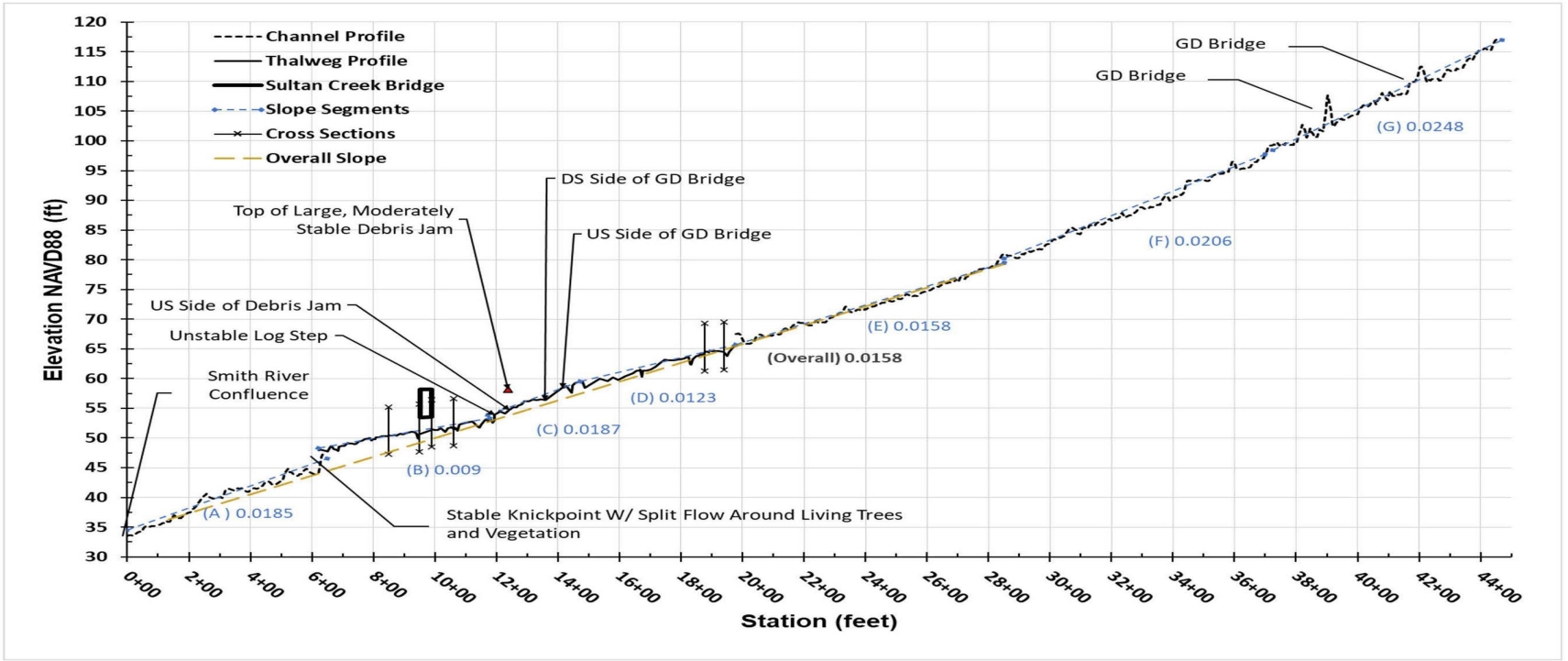

FIGURE 2-3. CHANNEL PROFILE THROUGH PROJECT REACH GENERATED FROM COMBINED LIDAR DEM AND GROUND SURVEY POINTS, WITH CHANNEL SLOPE SEGMENTS DEFINED.

Engineering Research - Summary Highlights

- **What worked well?**
  - Full-span bridges
  - Fish Baffles and Fishway Retrofits
- **Lessons Learned**
  - Some designs did not anticipate post-project channel profile adjustments
- **Recommendations**
  - Institute Geomorphic Site Assessments as a Standard Study for Project Development

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Caltrans Fish Passage Program -Priority Inventory

Sustainability: Fish Passage Priorities

Overview

The goal of Fish Passage Priority barrier remediation on the State Highway System, is to aid in the recovery of salmon and Steelhead species listed as threatened and endangered by the California Endangered Species Act (CESA).

Streets and Highways Code, Section 156.1 (SB 857, Kuehl, Chapter 589, Statutes of 2005), prohibits the new construction or continued maintenance or upgrades of State Highway System facilities that prevent or impede the passage of salmon and Steelhead from gaining access to upstream or downstream habitats.

Caltrans maintains and constructs new road/stream crossings on thousands of stream crossings on the State Highway System. As of August 2020, approximately 556 unresolved barriers to salmon and Steelhead have been identified on the State Highway System, blocking access to hundreds of miles of salmon and Steelhead habitat in California.

To meet the requirements of Streets and Highways code, Section 156.1, Caltrans prepares an annual report to the Legislature describing the status of progress in assessing, funding, and remediating barriers to fish passage. The bill requires Caltrans to report:

- Completed assessments of potential barriers to anadromous fish prior to commencing any project using state or federal transportation funds;
- Submit assessments to the Passage Assessment Database; and
- Construct all new projects in a way that does not pose or create a barrier to fish passage.

Assets Management

Table 1. Fish Passage Performance Metrics

Performance Metrics	
Condition	**Criteria**
Good	Deficiency has been addressed
Fair	N/A
Poor	Deficient Location


SONIC

ABC Bridges (20-116.5-foot span) – 75-year service life

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Little Mill Creek – Del Norte 197, PM 6.15

Bottomless Arch Culvert – 35-to-50-year service life

Ritmer Creek – Del Norte 101, PM 41.41

Long-term Hydraulic Solution – 35-Year Service Life

Cedar Creek – Mendocino 101, PM 89.24

Bridge Solutions

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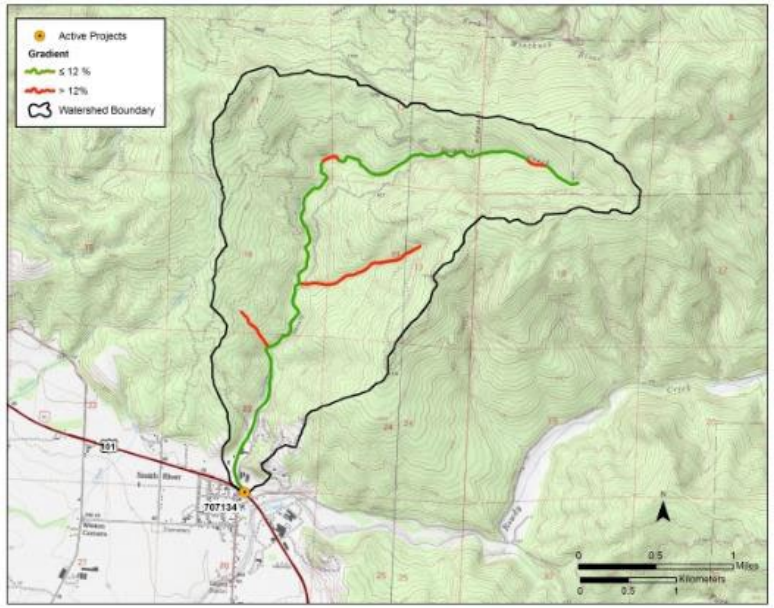
Hydraulic/ Partial Solutions

Dominie Creek – Del Norte 101, PM 39.78



Species	**Southern Oregon/Northern California Coast Coho (Threatened), Northern California Steelhead (Threatened)**
Habitat	Improved access to an estimated 2.49 miles of upstream habitat.

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Dominie Creek – Project Construction

Innovative sheet pile isolation and building the new ABC bridge over the existing RCB allowed for work outside of the standard low-flow season

Half Width Bridge Construction

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Dominie Creek – Isolation and Dewatering

Install double block net

Dewatering pipe inlet

Photos: Zach Larson

Dominie Creek – Species Relocation

Steelhead Trout

Chinook Salmon

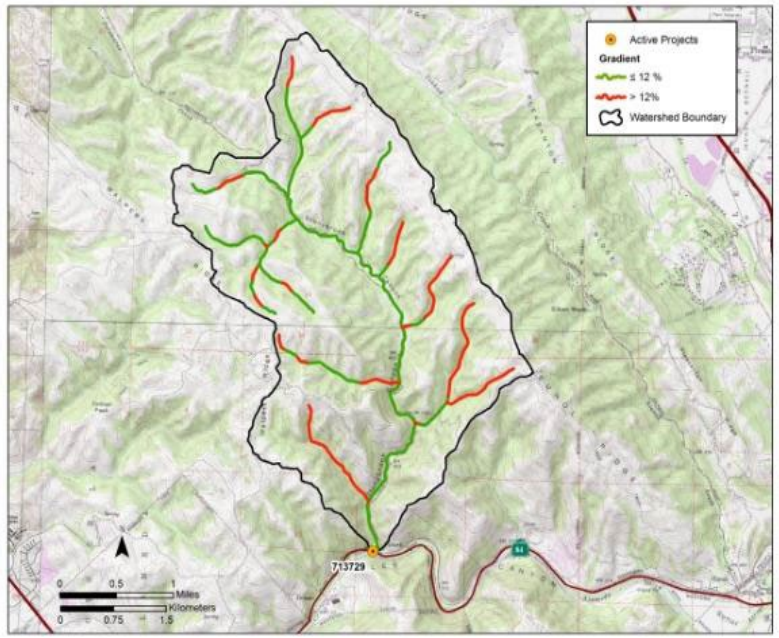
YOY Chinook and trout

Pacific Giant Salamander

Tailed frog

Photos: Zach Larson

Stonybrook Creek – Alameda 84, PM 121.1



Species	**Northern California Steelhead Trout (Threatened), Central California Coast Coho (Endangered), California Coastal Chinook (Threatened).**
Habitat	Improved access to an estimated 7.01 miles of upstream habitat

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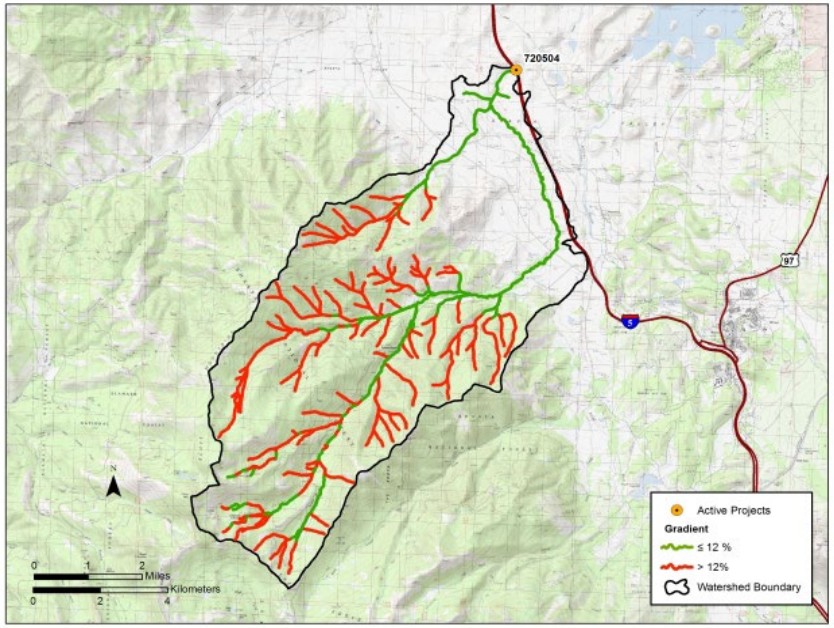
Parks Creek – Siskiyou 5, PM 27.2



Species	**Southern Oregon/Northern California Coast Coho (Threatened).**
Habitat	Improved access to an estimated 19.1 miles of upstream habitat.

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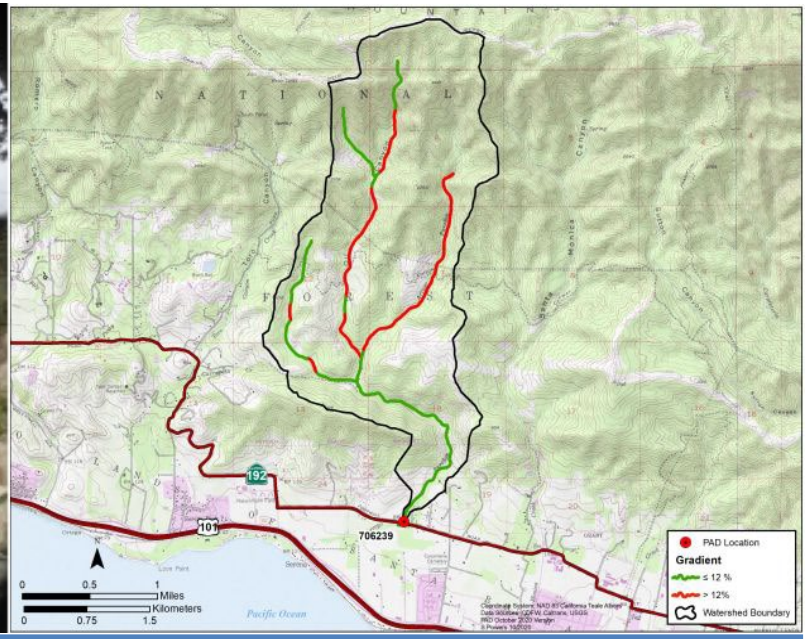
Arroyo Paredon Creek – Santa Barbara 192, PM 15.55



Species	**Southern California Coast Steelhead (Endangered)**
Habitat	Improved access to an estimated 1.2 miles of upstream habitat.

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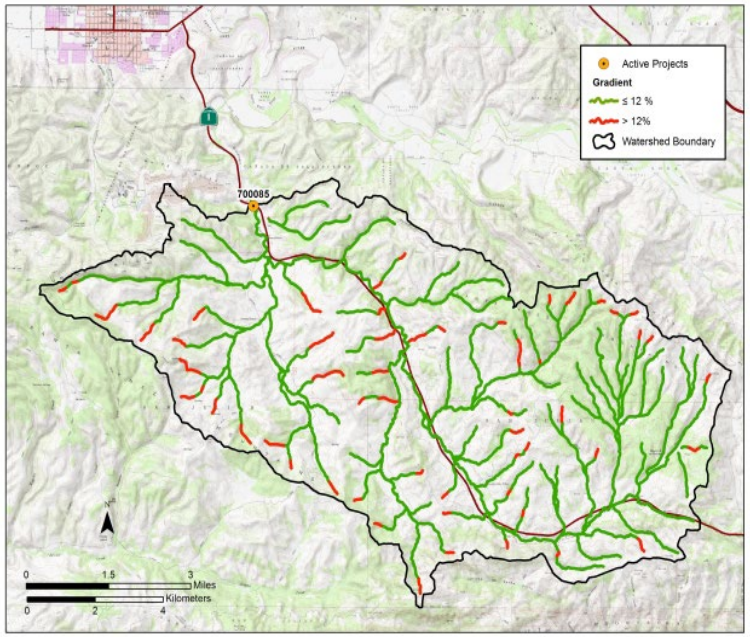
Salsipuedes Creek – Santa Barbara 1, PM 15.61



Species	**Southern California Coast Steelhead (Endangered).**
Habitat	Improved access to an estimated 101.81 miles of upstream habitat

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Monitoring Success

GoPro photo - juvenile Coho Salmon upstream of remediated barrier at Little Lost Man Creek

Adult Chinook Salmon carcass confirms successful spawning upstream of remediated barrier at Cedar Creek

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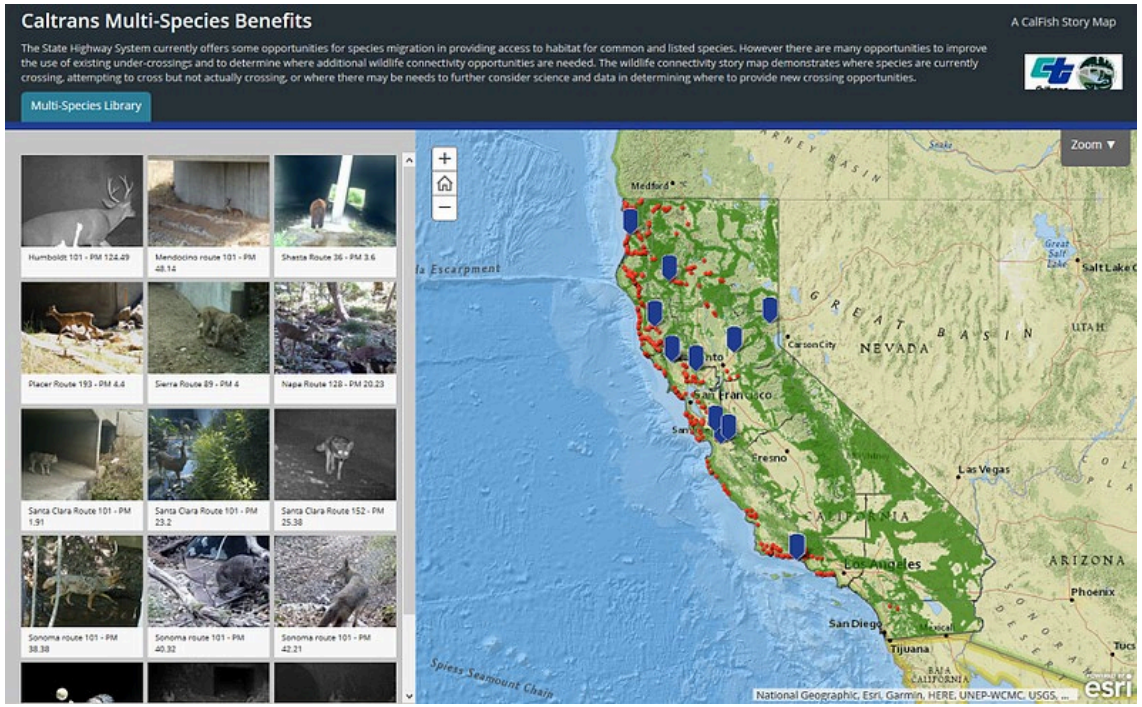
Multi-Species Camera Project



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Little Lost Man Creek – District 1

Little Lost Man Creek Multi-Species Camera Study

Black bear

Roosevelt elk

Fox

Mountain lion

Example Photos – Multi- Species Camera Project

Mountain Lion – D5
Salsipuedes Creek

Deer – D1 Upp Creek

Black bear – D5
Gaviota Creek

1ST PASS (RECONNAISSANCE) ASSESSMENT DATASHEET

D- Reconnaissance Assessment Survey Form

PAD ID *(if Known)*:

County _____
Route _____
PM _____

	YES	NO	UNK
1.0 Survey Information			
1.1 Date: Time:	1.2 Agency Performing Survey:		
1.3 Data Recorder:	1.4 Survey Team:		
2.0 Site Information			
2.1 GPS Data			
2.1.1 Latitude *(DMS or Decimal Degrees)*:			
2.1.2 Longitude *(DMS or Decimal Degrees)*:			
2.1.3 Location of GPS Point Taken: ☐Above inlet ☐Below inlet ☐ At postmile paddle marker (PM)			
2.2 Natural Stream Channel			
2.2.1 Stream Name:	2.2.2 Stream Source:	2.2.3 Stream Confluence:	
2.2.4 Is there a definable channel upstream of the crossing? *(if "No", indicate in section 4.1 that no Detailed Fish Passage Assessment is needed)*			
2.2.5 Is the primary function for storm water runoff or road drainage? *(if "Yes", indicate in section 4.1 that no Detailed Fish Passage Assessment is needed)*			
2.3 Fish Bearing Stream			
2.3.1 Does the site contain an active channel width >2 feet?			
2.3.2 Is the stream gradient <20%			
(if "No" to either question, indicate in section 4.1 that no Detailed Fish Passage Assessment is needed)			
2.4 Historic Anadromous Reach			
2.4.1 Has the stream reach upstream of the crossing supported an anadromous fish population? Source: *(if "No," indicate in section 4.1 that no Detailed Fish Passage Assessment is needed)*			
2.5 Crossing Type			
2.5.1 Is this facility used for flood control?			
2.5.2 Crossing Type: *(required. include the number of culvert/pipes at each location and include a general description)* ☐Bridge w/potential passage constraints ☐Bridge w/out passage constraints ☐Arch Culvert (x___) ☐Reinforced concrete box Culvert (x___) ☐Corrugated Metal Pipe Culvert (x___) ☐Other:_____ *(must include a description)* General Description: *(if crossing is "bridge w/o passage constraints", indicate "No" in section 4.1.)*			
3.0 Photos Taken			
3.1 Upstream looking upstream Photo ID:			
3.2 Upstream looking downstream Photo ID:			
3.3 Downstream looking upstream Photo ID *(required for all sites)*:			
3.4 Downstream looking downstream Photo ID:			
4.0 Detailed Fish Passage Assessment Survey Requirement			
4.1 Detailed Fish Passage Assessment Required? *(if "Yes," continue to section 5.0)*			

Version Date: 04/02/19

D- Reconnaissance Assessment Survey Form

PAD ID *(if Known)*:

County _____
Route _____
PM _____

	YES	NO	UNK
5.0 Access Information *(Continue if Detailed Fish Passage Assessment is required)*			
5.1 Accessibility from Road			
5.1.1 Upstream? *(if "No," indicate the nature of the limitation)* Limitations:			
5.1.2 Downstream? *(if "No," indicate the nature of the limitation)* Limitations:			
5.2 Vegetation Removal			
5.2.1 Upstream? *(if "Yes," comment and take a photograph)* Photo ID: Comment:			
5.2.2 Downstream? *(if "Yes," comment and take a photograph)* Photo ID: Comment:			
5.3. Maintenance Assistance			
5.3.1 Upstream? *(if "Yes," comment and take a photograph)* Photo ID: Comment:			
5.3.2 Downstream? *(if "Yes," comment and take a photograph)* Photo ID: Comment:			
6.0 Additional Notes			
(please note additional information that is relevant to access above the fish passage facility: fish or aquatic species present, scour or incision in or adjacent to the facility, fallen trees, failing RSP, accumulated or depleted sediment, etc.)			

Version Date: 04/02/19

DETAILED FISH PASSAGE ASSESSMENT SURVEY

County: | Route: | PM: | PAD ID:

Assessment Information

Date: | Time: | Surveying Agency:

Crew Members:

Crossing Facility Information

Type of Facility:

Number of Culverts: | Number of Bays: | Number of Segments:

Base Lining Material: ☐ Concrete ☐ Steel ☐ Plastic ☐ Other:_____

Side Wall Lining Material: ☐ Concrete ☐ Steel ☐ Plastic ☐ Other:_____

Corrugated Lining: ☐ No ☐ Unknown ☐ Yes (☐ Annular ☐ Spiral Width_____" X Rise_____")

Existing Fish Passage Facilities Present: ☐ No ☐ Yes ☐ Type of Facility:_____

Facility Description:

Facility Dimensions and Information

Segment (list from inlet to outlet)	Mean Height (ft)	Mean Width (ft)	Length (ft)	Shape	Material	Orientation Change (from upstream segment)
Inlet Apron						
Facility Inlet						
Facility Outlet						
Outlet Apron						
Facility Segments						

Weir Presence

Weirs Present: Yes No | **Number of Weirs:** _____

Weir Material(s): ☐ Concrete ☐ Logs ☐ Boulders ☐ Wood ☐ Sheet ☐ Steel ☐ Other:_____

Weir Description:

Facility Inlet Information

Inlet Configuration: ☐ Projecting ☐ Headwall ☐ Wingwall (Flared or Parallel) ☐ Mitered ☐ Flared end

Inlet Apron: ☐ Present (Material:_____) ☐ Not Present ☐ Unknown

Inlet Alignment to Upstream Channel: ☐ < 30° ☐ 30-45° ☐ >45°

Inlet Description:

Upstream Channel Conditions

Active Channel Margins: ☐ Well Defined ☐ Moderately Defined ☐ Poorly Defined ☐ No margins Visible

Mean Active Channel Width:_____ft.

Substrate Types Present (circle dominant type):

☐ silt/clay ☐ sand(<0.08") ☐ gravel(0.08-2.5") ☐ cobble(2.5-10") ☐ boulder(>10") ☐ bedrock ☐ Unknown

Streamflow Conditions: ☐ Strong Flow ☐ Moderate Flow ☐ Low Flow ☐ Trickle ☐ Stagnant ☐ None

Man-Made Channel Lining: ☐ Present ☐ Not Present

If yes, circle all appropriate options for describing channel lining material, location, and extent.

Lining Material: Concrete Riprap Boulders/Cobble Bricks Wood Other_____

Lining Location: River Left River Right Bottom of Channel

Lining Extent (distance extending from crossing location):

River Left: < 100 ft 100ft – 1,000 ft >1,000 ft NA or_____ (ft)

River Right: < 100 ft 100ft – 1,000 ft >1,000 ft NA or_____ (ft)

Channel Bottom: < 100 ft 100ft – 1,000 ft >1,000 ft NA or_____ (ft)

Downstream Channel Conditions

Active Channel Margins: Well Defined ☐ Moderately Defined ☐ Poorly Defined ☐ No margins Visible

Substrate Types Present (circle dominant type):

☐ silt/clay ☐ sand(<0.08") ☐ gravel (0.08-2.5") ☐ cobble(2.5-10") ☐ boulder(>10") ☐ bedrock ☐ Unknown

Streamflow Conditions: ☐ Strong Flow ☐ Moderate Flow ☐ Low Flow ☐ Trickle ☐ Stagnant ☐ None

Man-Made Stream Channel Lining: ☐ Present ☐ Not Present

If man-made channel lining is present, circle all appropriate options for describing channel lining material, location, and extent.

Lining Material: Concrete Riprap Boulders/Cobble Bricks Wood Other_____

Lining Location: River Left River Right Bottom of Channel

Lining Extent (distance extending from crossing location):

River Left: < 100 ft 100ft – 1,000 ft >1,000 ft NA or_____ (ft)

River Right: < 100 ft 100ft – 1,000 ft >1,000 ft NA or_____ (ft)

Channel Bottom: < 100 ft 100ft – 1,000 ft >1,000 ft NA or_____ (ft)

Tailwater Control Point (Downstream of weirs if present):

☐ No control point ☐ Poolтail out ☐ Bedrock control ☐ Large debris control ☐ Small debris control ☐ Unknown

Tailwater Control Point Dominant Substrate:

☐ silt/clay ☐ sand (<0.08") ☐ gravel (0.08-2.5") ☐ cobble (2.5-10") ☐ boulder (>10") ☐ bedrock ☐ Unknown

Additional Crossing Facility Conditions

Does the crossing facility contain embedded substrate between its inlet and outlet?:

Yes ☐ No ☐ Unknown If YES, embedded: ☐ Fully (entire facility length) ☐ Partially ☐ Unknown

Mean Depth of Embedded Substrate: Facility Inlet:_____ Facility Outlet:_____

Dominant Embedded Substrate:

☐ Silt/Clay ☐ Sand(<0.08") ☐ Gravel(0.08-2.5") ☐ Cobble(2.5-10") ☐ Boulder(>10") ☐ Bedrock ☐ Unknown

Facility Outlet Information

...adwall ☐ Wingwall (Flared or Parallel) ☐ Mitered ☐ Flared ☐

...Cascade over riprap ☐ Freefall to apron

...) ☐ Not Present ☐ Unkn...

...: ☐ < 30° ☐ 30-45° ☐ >45°

Longitudinal Profile

(Along the veg from first resting unit upstream of crossing facility to stop break downstream of tailwater control)

*List points from upstream to downstream of facility. Include upstream and downstream extents of facility aprons, inlet and outlet of facility, facility segment change points, and plunge or cascade points causing a change in slope.

POINT	STATION (0.1 ft)	BS (+)	HI (0.01 ft)	FS (-)	ELEVATION (0.01 ft)	Station Notes & Conditions
Upstream Resting Unit Tailwater Control						

Restrictions and Limitations:

Tailwater Control Cross Section

(Points begin at river left and move to river right)

* Minimum 8 Points required for TWC. Include all active channel margins, thalweg, and changes in slope

POINT	STATION (0.1 ft)	BS (+)	HI (0.01 ft)	FS (-)	ELEVATION (0.01 ft)	Vegetation and Substrate Conditions
River Left Bankfull Margin						

Restrictions and Limitations

2ND PASS (DETAILED) ASSESSMENT DATASHEET

Caltrans

2ND PASS (DETAILED) ASSESSMENT DATASHEET (CONT.)

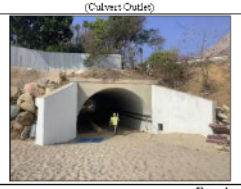
Crossing Site Information for PAD 705781						
County	Route	Post Mile	Location (at inlet)	Location Error	Stream Miles Inland from Ocean	Elevation (above sea level)
Los Angeles	Hwy 1	50.36	34.033373, -118.742952	± 9 ft	0.03	12 ft

Pictures

Upstream Looking Upstream

Upstream Looking Downstream (Culvert Inlet)

Downstream Looking Upstream (Culvert Outlet)



Downstream Looking Downstream

Errosion on Base of Culvert

Hydrologic Information				
Stream Name & Drainage Area (upstream of crossing)	Mean Gradient (from sea level to structure)	Tributary To	Estimated Annual Mean Peak Streamflow (at structure)	Salmonid Presence?
Solstice Creek 4.4 mi²	400 ft/mi	Pacific Ocean	487.5 ft³/s	Records of historical *O. mykiss* presence exist for Solstice Creek, with the most recent documentati presence being in the mid-1940s. (NMFS Southern California Steelhead Recovery Plan 2012; Center for Ecosystem Manageme & Restoration 2008).

Survey Information		
Survey Date	Type of Survey Performed	Agencies Performing Survey
12/3/2021	Caltrans Detailed Fish Passage and Habitat Assessments	PSMFC & CCC

Crossing Structure Information				
Structure Type	Number of Culverts	Number of Segments	Aprons Present	Fish Passage Structure(s) Pre
Concrete Reinforced Arch Culvert	1	1	Yes (at inlet and outlet)	No

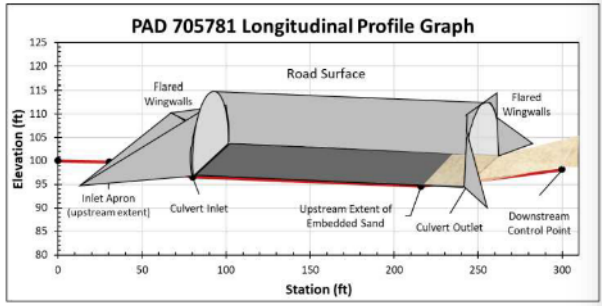
Crossing Structure Description and Condition

This crossing structure is a large concrete reinforced top arch culvert located under shallow road fill. The inlet of the culvert contains flared concrete wingwalls with a concrete apron located between them. The outlet of the culvert also flared concrete wingwalls. The existing photo of this culvert in the Passage Assessment Database shows a concrete apron between the outlet wingwalls. At the time of assessment, the outlet apron was buried under beach sand and wa not visible. Additionally, the sand extends a short distance into the culvert suggesting extreme high tides may enter t culvert at times. The culvert is stamped with the date 1947 above its inlet and outlet. At the time of assessment, the b of the culvert contained minor erosion damage down its center, which will cause slight streamflow concentration at t center of the culvert.

Crossing Structure Dimensions					
Segment	Mean Inlet Height (ft)	Mean Outlet Height (ft)	Mean Width (ft)	Length (ft)	Mean Sl
Inlet Apron	n/a (open channel)	n/a (open channel)	28	49.6	6.6 %
Culvert	14	14	21	164.5	1.5 % (assum
Outlet Apron	n/a (open channel)	n/a (open channel)	30	Unable to measure	Unable measu

Stream Channel Conditions	
Stream Channel Characteristics	Mean Upstream Active Channel Margins Width
Upstream of the culvert the channel contains well defined active channel margins with sand, gravel, cobble, and boulder substrates and woody debris in extended riffle units with areas of minor scour creating shallow flatwater units. The channel banks are steep, tall, and contain moderate brush and large sycamore trees, which provide dense canopy over the channel. A sandy ocean side beach is present directly downstream of this culvert with no defined stream channel margins or estuary present at the time of assessment. Additionally, no vegetation was present on the beach. A defined downstream control point was present in the beach sand.	13 ft

Longitudinal Profile Measurements			
Point	Station (ft)	Elevation (ft)	Notes
Upstream Resting Unit Point 1	0	100	Points located within shallow flatwater resting unit
Upstream Resting Unit Point 2	30.4	99.73	
Inlet Apron (upstream extent)	30.5	99.83	
Culvert Inlet	80.1	96.57	
Inside Culvert Point 1	216	94.6	Upstream extent of embedded beach sand.
Culvert Outlet	244.6	95.55	Embedded sand present at time of assessment. Depth unable to be measured.
Outlet Apron (downstream extent)	Unable to measure	Unable to measure	
Tailwater Control Point	300	98.17	Located on beach sand. Likely to change when elevated rates of streamflow are occurring.



FishXing Passage Analysis		
Description of Structure Modeling within FishXing	Predicted Passable Streamflow Range (ft³/s)	Predicted Passage Restrictions (under streamflow rates < estimated annual mean peak flow rate)
Passage Analysis for Anadromous *O. mykiss* This culvert was modeled in FishXing as an arch culvert. The measured dimensions and mean slope of the culvert were utilized for the model. The length of the inlet apron was incorporated into the length of the modeled culvert. A roughness coefficient of 0.016 was utilized to represent the eroded concrete on the base of the culvert.	169.2 983.7	Insufficient Streamflow Depth
Passage Analysis for Juvenile *O. mykiss* No changes were made to the FishXing model utilized for juvenile *O. mykiss* passage analysis.	None	Insufficient Streamflow Depth Excessive Streamflow Hydraulics

Crossing Structure Barrier Status for *O. mykiss*

Temporal & Partial Barrier

This culvert was predicted to be passable to strong swimming anadromous *O. mykiss* during specific rates of streamflow, but not passable to juvenile life stages of *O. mykiss* at any rate of streamflow. For anadromous *O. mykiss* streamflow rates greater than 169.2 ft³/s were predicted to provide adequate water depth for potential passage. For anadromous *O. mykiss* streamflow rates greater than 983.7 ft³/s were predicted to create impassable velocity hydraulics. For juvenile life stages of *O. mykiss* all rates of streamflow in which adequate water depth would be present for passage were also predicted to create impassable velocity hydraulics.

Assessment and Analysis Limitations

The only limitation experienced in the assessment of this culvert was the presence of embedded sand on the culvert outlet apron. This prevented our ability to collect longitudinal profile measurements for the outlet apron and potential plunge point that can exist from it when beach sand is not present, which likely occurs when elevated rates of streamflow are occurring. As a result, the FishXing passage analysis predicated range of potentially passable streamflow range for anadromous *O. mykiss* is likely greater than the range of passable streamflow ranges when elevated rates of streamflow are occurring under the assumption that it exposes the outlet apron and plunge point.

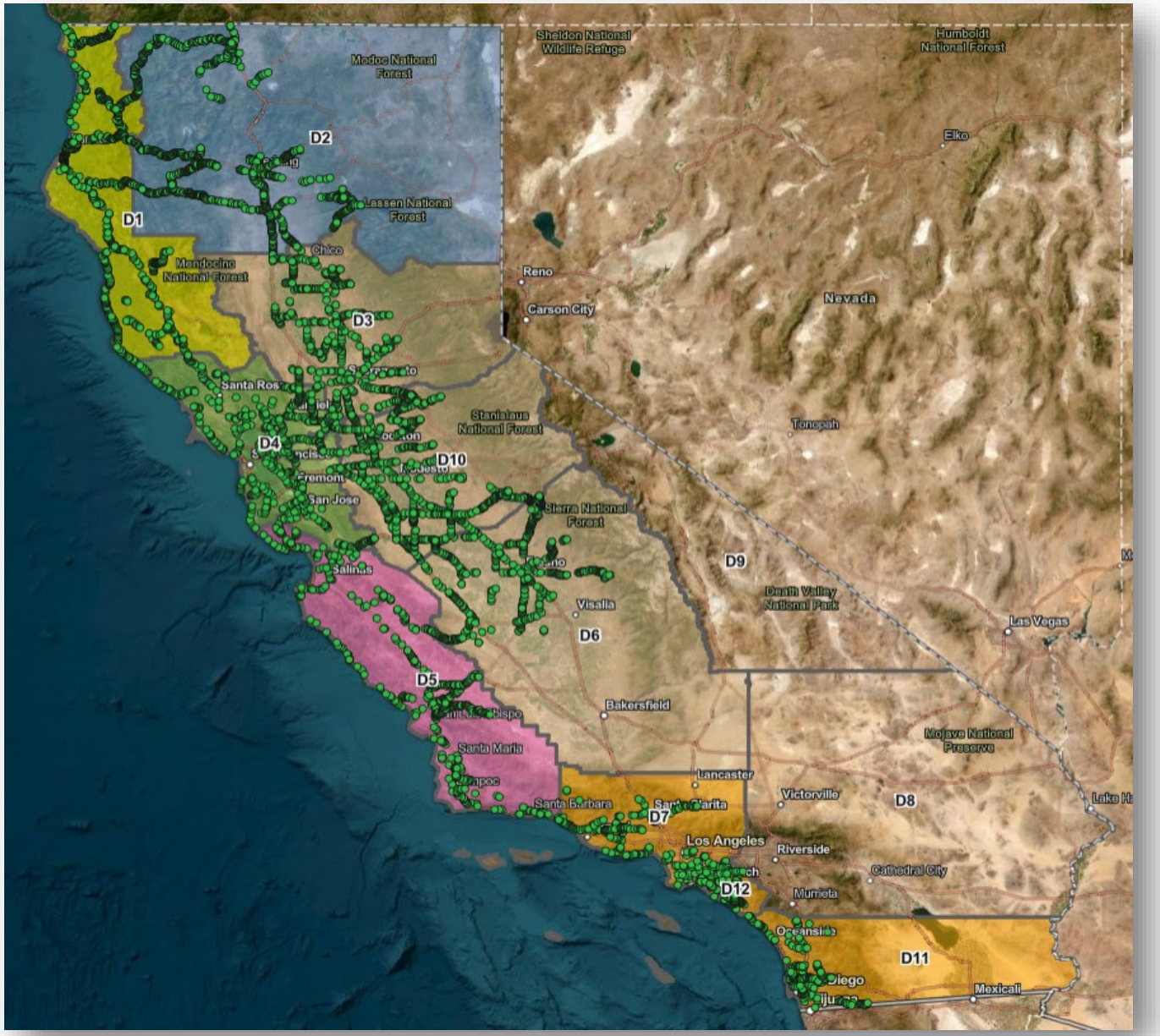
Fish Passage Improvement Recommendations

The most effective remediation option to improve passage conditions at this crossing site would be to replace the culvert with a free spanning bridge over natural streambed substrate.

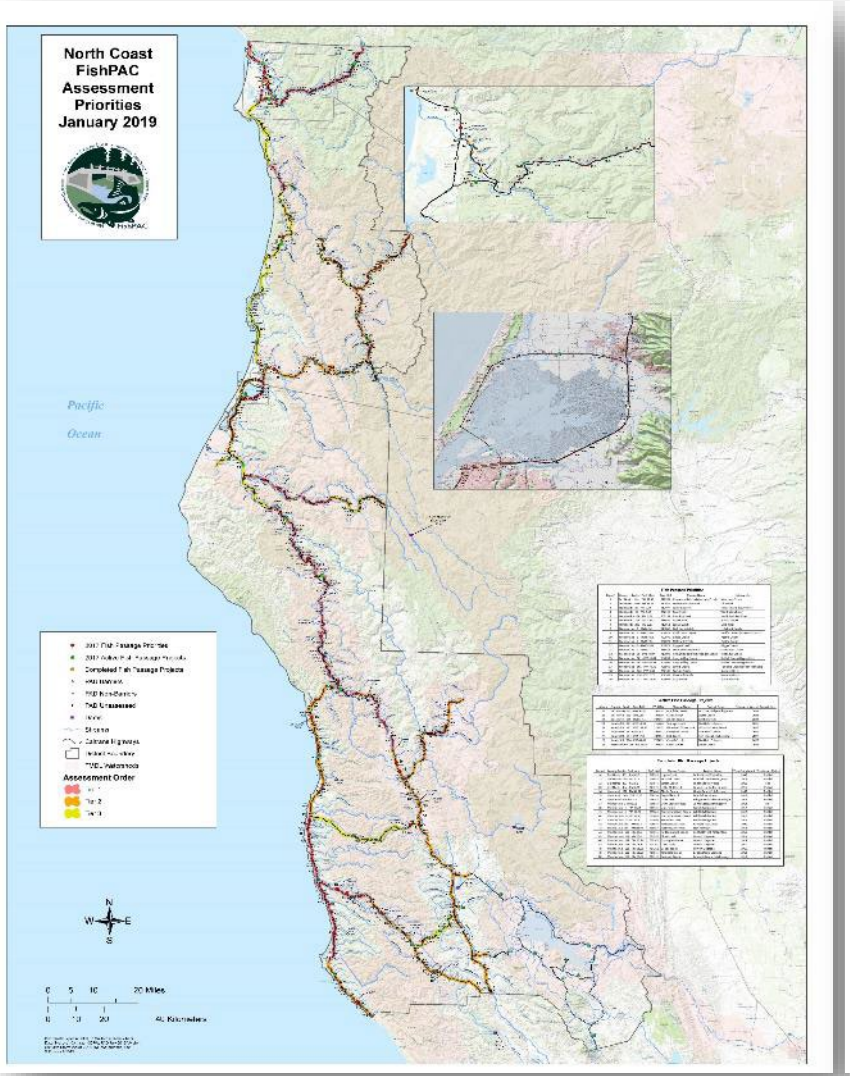
Caltrans

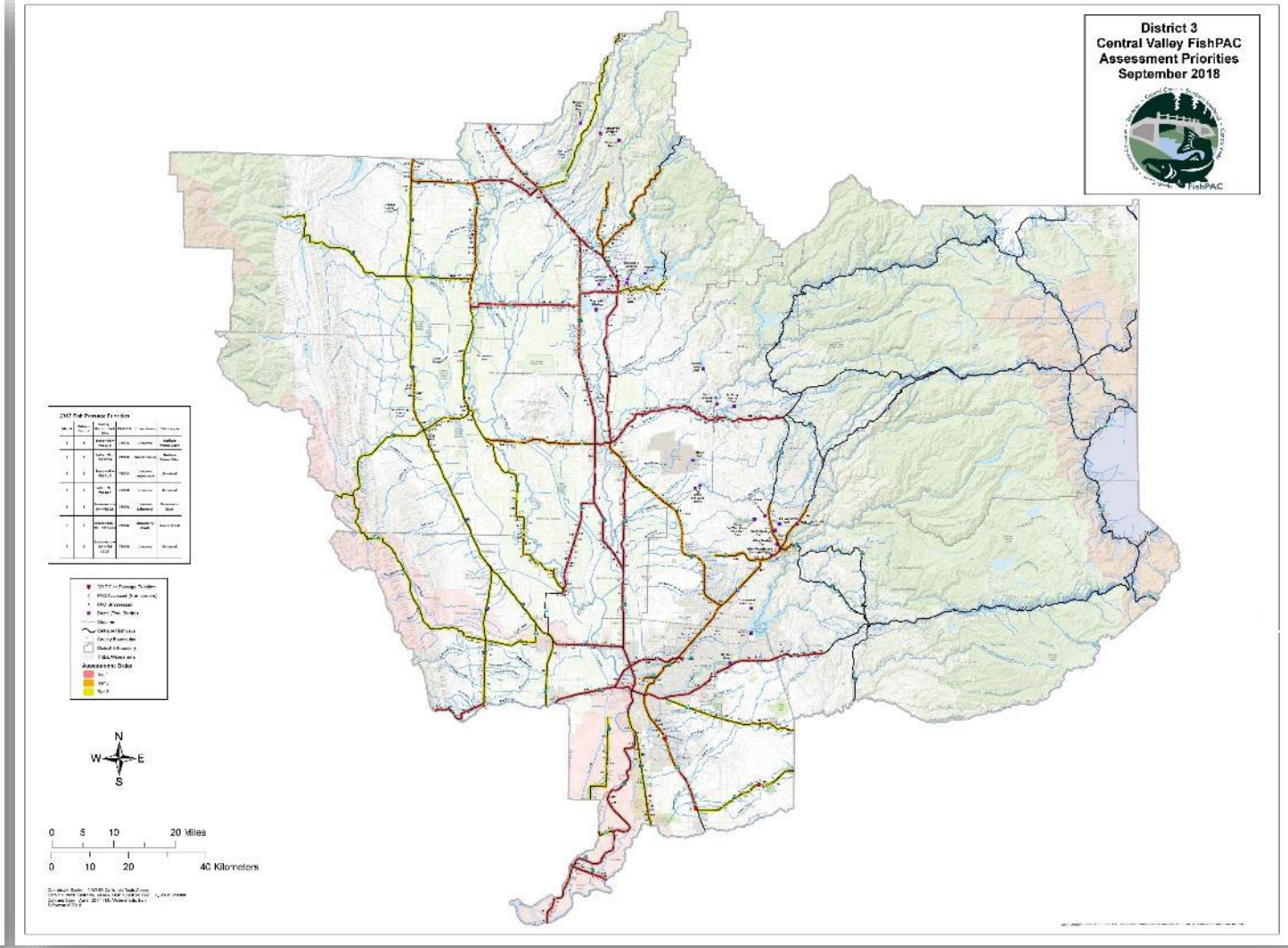
1st Pass Assessment Needs

- 2014 Caltrans and PSMFC performed a QA/QC of all reported Barriers in PAD.
  - Verified 520 barriers on the SHS.
- In 2016 PSMFC completed a gap analysis and identified 5,110 needed assessments.
  - Assessment work prioritized by FishPAC's.



Assessment Priorities

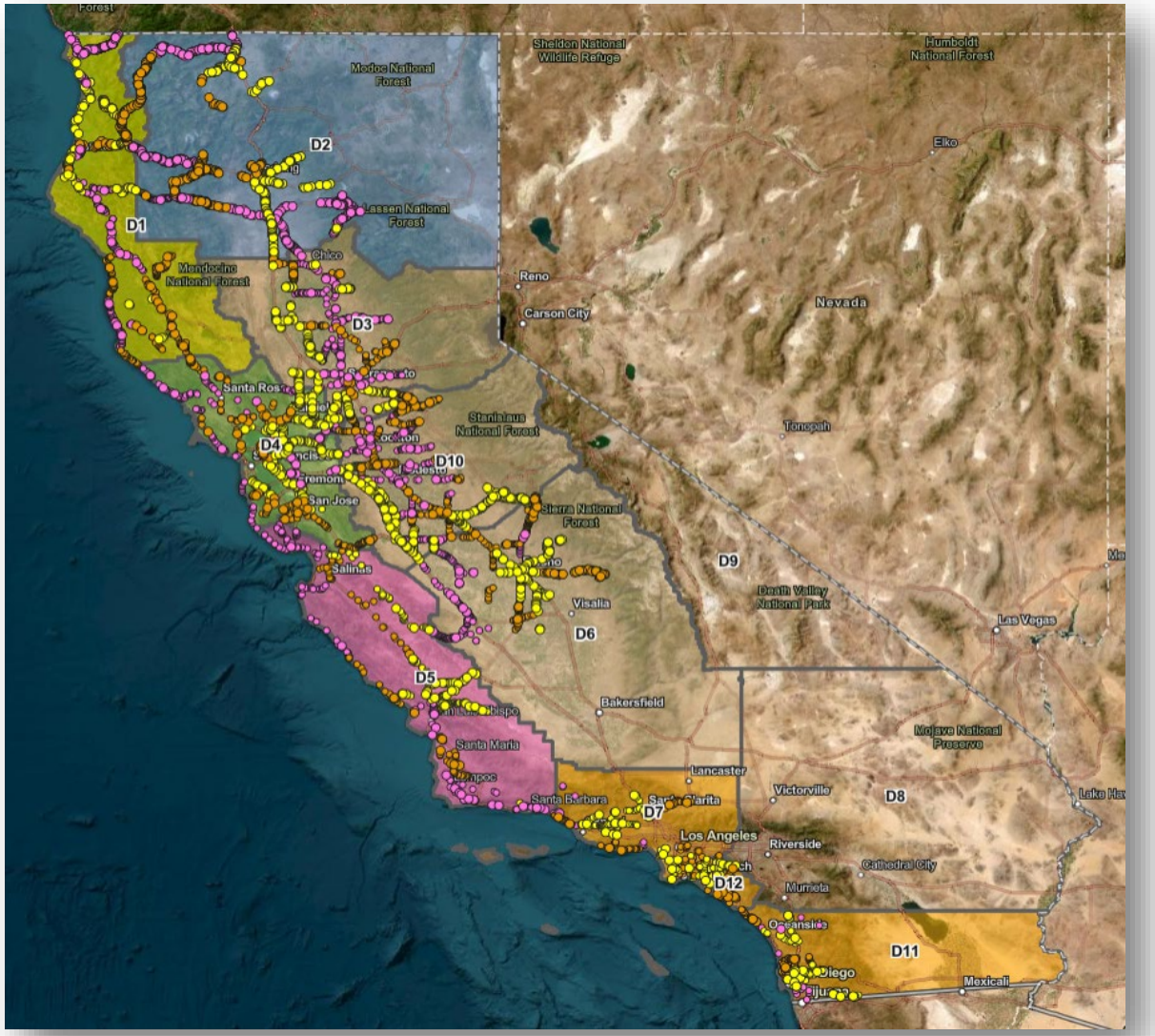




Caltrans

Assessment Priorities

District (Office) - FishPAC	Total	Tier 1	Tier 2	Tier 3
District 1 (Eureka) – North Coast FishPAC	856	282	336	238
District 2 (Redding) – Klamath-Cascades FishPAC	978	375	334	269
District 3 (Marysville) – Central Valley FishPAC	486	216	113	157
District 4 (Oakland) – Bay Area FishPAC	554	126	175	253
District 5 (San Luis Obispo) – Central Coast FishPAC	478	164	92	222
District 6 (Fresno) – Central Valley FishPAC	471	137	235	99
District 7 (Los Angeles) – Southern Steelhead FishPAC	251	0	132	119
District 10 (Stockton) – Central Valley FishPAC	724	189	268	267
District 11 (San Diego) – Southern Steelhead FishPAC	166	0	59	107
District 12 (Orange) – Southern Steelhead FishPAC	146	0	97	49
Totals	**5110**	**1489**	**1841**	**1780**



Time Savings Estimate - 1st Pass Assessment Work

Activity	Analog (Minutes)	Digital (Minutes)
Assignments to Field Crews	5	<1
Assessment by Field Crew	45	25
Manual Transcription of Datasheets	15	0
Photo Processing	15	0
GPS Processing	5	0
QA/QC of Data	15	5
Total Time per datasheet	**100**	**30**

Caltrans

HABITAT ASSESSMENT DATASHEET

18 November 2020

FISHPAC

Fish Passage Habitat Assessment Form

This evaluation form is intended for use by Caltrans staff and Fish Passage Advisory Committee (FishPAC) partners, to evaluate habitat suitability during field reviews at Caltrans fish passage locations. This form can be used for evaluating a location identified for an assessment, or in order to evaluate the suitability for FishPAC priority ranking consideration. This form provides information in consideration of the biological potential of upstream and downstream habitat, as either suitable or unsuitable for salmon and Steelhead. Findings will be submitted to the Passage Assessment Database (PAD).

Investigator and Location Information			
Evaluator: *(name and contact information)*		Date:	
Project Location: *(county-route-post mile)*		PAD ID:	
Site/Stream/Tributary Name: *(creek or project name)*		Temperature: (note if C/F)	
Fish Passage Barrier Location Description: *(fully describe existing facility)*			
Estimated miles of habitat based on run/rise model:			
Watershed Map: *(include run/rise model of entire watershed area to estimate likely accessible habitat)*			

1) Is there any visual evidence of damage to the existing culvert or bridge? *(if yes, take photos and briefly explain in notes)*	Yes ◯ No ◯
2) Is there an accumulation of sediment or debris in, or upstream, of the facility? *(if yes, take photos)*	Yes ◯ No ◯
3) If applicable, are there any associated grade, or velocity, control structures? If yes, are any of them damaged, or impaired? *(Please provide notes to describe fish facilities, or damage)*	Yes ◯ No ◯

FISHPAC Fish Passage Habitat Assessment Form

SPECIES OBSERVATIONS:
(note: lack of presence during review is not indicative of absence)
List all aquatic and terrestrial species observed
(e.g., steelhead, coho, Chinook, other fish, amphibians, invertebrates, mammals, etc.)

List species observed above barrier:

List species observed below barrier:

HABITAT VALUES
(check all that apply and provide other information in notes)

Mature native riparian ☐	Frequent pools and riffles ☐	Spawning areas ☐	Thermal refugia ☐
Velocity refugia ☐	Channel complexity ☐	Juvenile rearing ☐	Smolt migration pathways ☐

Notes:

(Please indicate any additional current information that is relevant to habitat quality, or quantity, above or below the fish passage barrier to include any fish or aquatic species present, scour in, or adjacent, fallen trees, failing RSP, accumulated, or depleted sediment, etc.)

PHOTOS: *(Please take photos as a record and to inform other fish passage staff. Your photos of basic locations should be taken, at a minimum, to demonstrate: 1) upstream section of channel above culvert or structure, 2) the culvert or structure inlet, 3) the culvert or structure outlet, and 4) the downstream section of the channel, below the facility.*

1) Upstream section of channel above facility	2) Culvert, or structure inlet

FISHPAC Fish Passage Habitat Assessment Form

3) Culvert, or structure outlet	4) Downstream section of channel below facility
5) Additional photos *(if necessary)*	6) Additional photos *(if necessary)*

3

FISHPAC Fish Passage Habitat Assessment Form

Summary of Findings:
(Please provide a short summary of your findings that includes information about prior barrier assessments, the current status/condition of the barrier, the quality of the habitat upstream, and likely use by anadromous fish species)

Habitat Suitability for Salmon and Steelhead	
1) Does this location have upstream habitat that is suitable for salmon and Steelhead? *(if Unknown*, please explain the type of information, surveys, or access needed to determine habitat suitability)*	Yes ◯ No ◯ Unknown* ◯

4

Fish Passage Assessment Workflow

1st Pass Assessment Needs (HQ, FP)

1st Pass Assessment (3C, CT)

GIS QA/QC & Photo Composite (GIS)

Update Assessment Form (PAD, HQ, GIS)

1st Pass Re-survey (HQ)

Habitat Assessment

Yes

Recommend Detailed Survey?

No

Update PAD

Update PAD (PAD)

No Further Action

Duplicate Record

Potential Barrier

Not a Barrier

Delete Survey (GIS)

Habitat Assessment Needs (HQ, FP)

Habitat Assessment (PB, CT)

GIS QA/QC & Photo Composite (GIS)

Suitable

Not Suitable

Unknown

Duplicate Record

More Data Needed

Unknown

No Further Action

Update PAD

No

Suitable Habitat Upstream?

Yes

2nd Pass Assessment

Habitat Re-survey (HQ)

Update Assessment Form (PAD, HQ, GIS)

Delete Survey (GIS)

Update PAD (PAD)

2nd Pass Assessment Needs (HQ)

2nd Pass Assessment (PB)

GIS QA/QC & Photo Composite (GIS)

Update Record

No Further Action

Update PAD

More Data Needed

Duplicate Record

2nd Pass Re-survey (HQ)

Update Assessment Form (PAD, HQ, GIS)

Update PAD (PAD)

Delete Survey (GIS)

Key

- Needs List
- QA/QC outcomes
- Survey Question
- Disputed Survey result
- Assessment Form
- Data Action

Responsibilities

- FP — Fish Passage Advisory Committee
- HQ — CT HQ Fish Passage Biologist
- CT — CT District Biologist
- PAD — PAD Administrator
- 3C — 3Cs Field Worker
- PB — Professional Biologist
- GIS — GIS Specialist

ArcGIS Workforce Web App (Dispatchers)

Workforce

arcgis.com/apps/workforce/projects/3f24ad15f5fd45fb84c19e7ca27321e5/dispatch/workers

My Projects > Fish Passage Assessment Project

Resources | Caltrans

Filter by name, status or job title

Sort

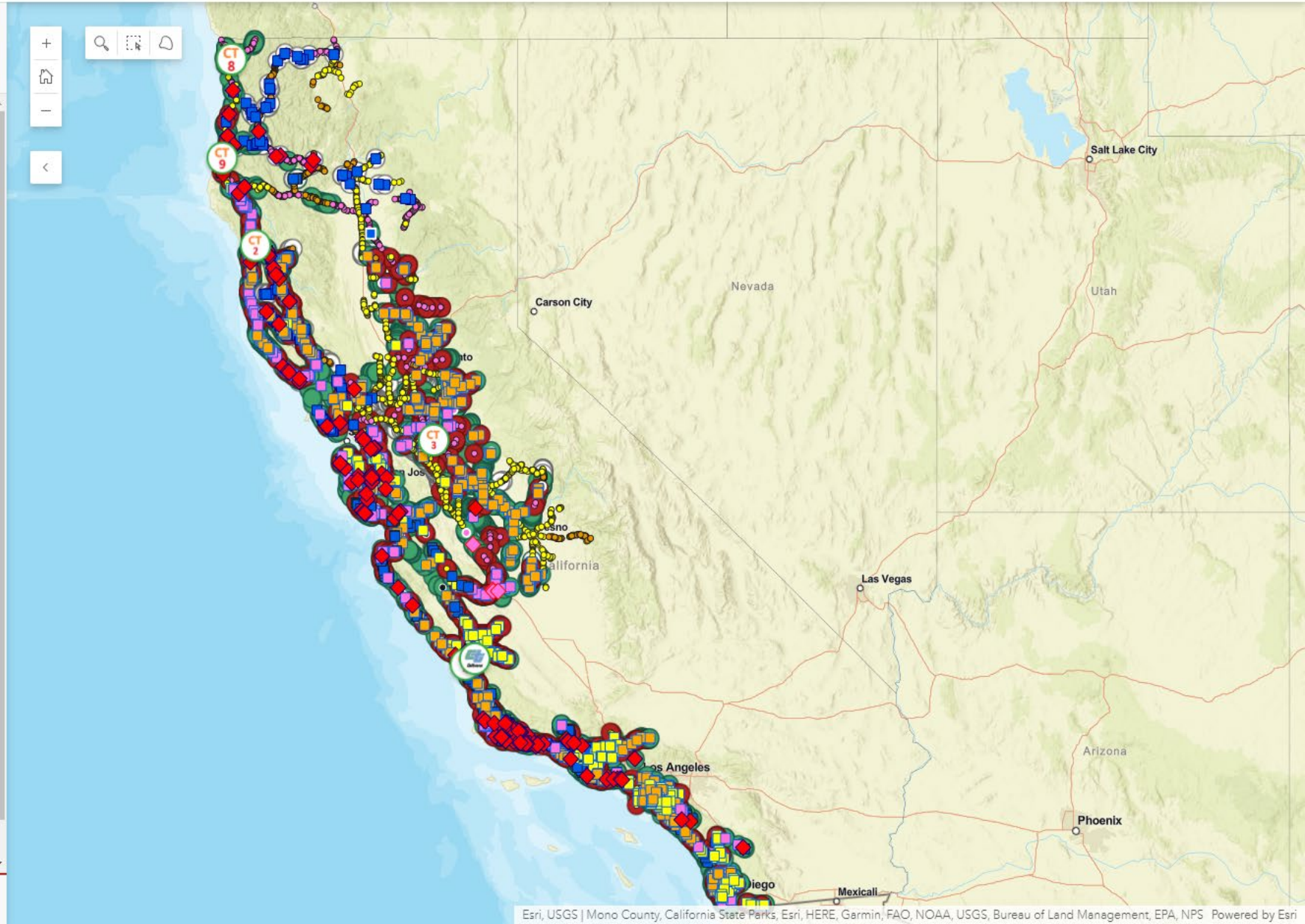
Working

- Caltrans Survey9 — PSMFC Monika Larson — 335 — Show notes — 2 minutes ago
- Caltrans Survey2 — CCC Ukiah — 38 — 2 minutes ago
- CCC4 (San Luis Obispo) — 84 — 16 days ago
- Caltrans Survey8 — CT HQ Melinda Molnar — 12 — Show notes — 2 months ago
- Caltrans Admin1 — CT HQ Jim Walth — 0 — Show notes — 2 months ago
- Caltrans Survey3 — CCC Stockton — 336 — Show notes — 4 months ago

Not Working

- Sarah Sandstrom — CT D05 Fish Passage Coordin... — 0 — No location
- Jimmy Walth — 0

Assignments | Workers



ArcGIS Workforce Web App (Dispatchers)

Workforce | Environmental Analysis | Caltrans

arcgis.com/apps/workforce/projects/3f24ad15f5fd45fb84c19e7ca27321e5/dispatch/assignments

My Projects > Fish Passage Assessment Project

Resources | Caltrans

Assign | Filter by type, location or ID | + Assignments

Status | Due | Priority | Assignee | Sort

4838 assignments — Showing 1-50

1st Pass Assessment
763132
Medium
CT 4

1st Pass Assessment
713408
Medium
CT 4

1st Pass Assessment
763137
Medium
CT 4

1st Pass Assessment
763126
Medium
CT 4

1st Pass Assessment
763134
Medium
CT 4

1st Pass Assessment
763119
Medium
CT 4

1st Pass Assessment
763143
Medium
CT 4

1st Pass Assessment
763146
Medium
CT 4

1st Pass Assessment
763130
Medium
CT 4

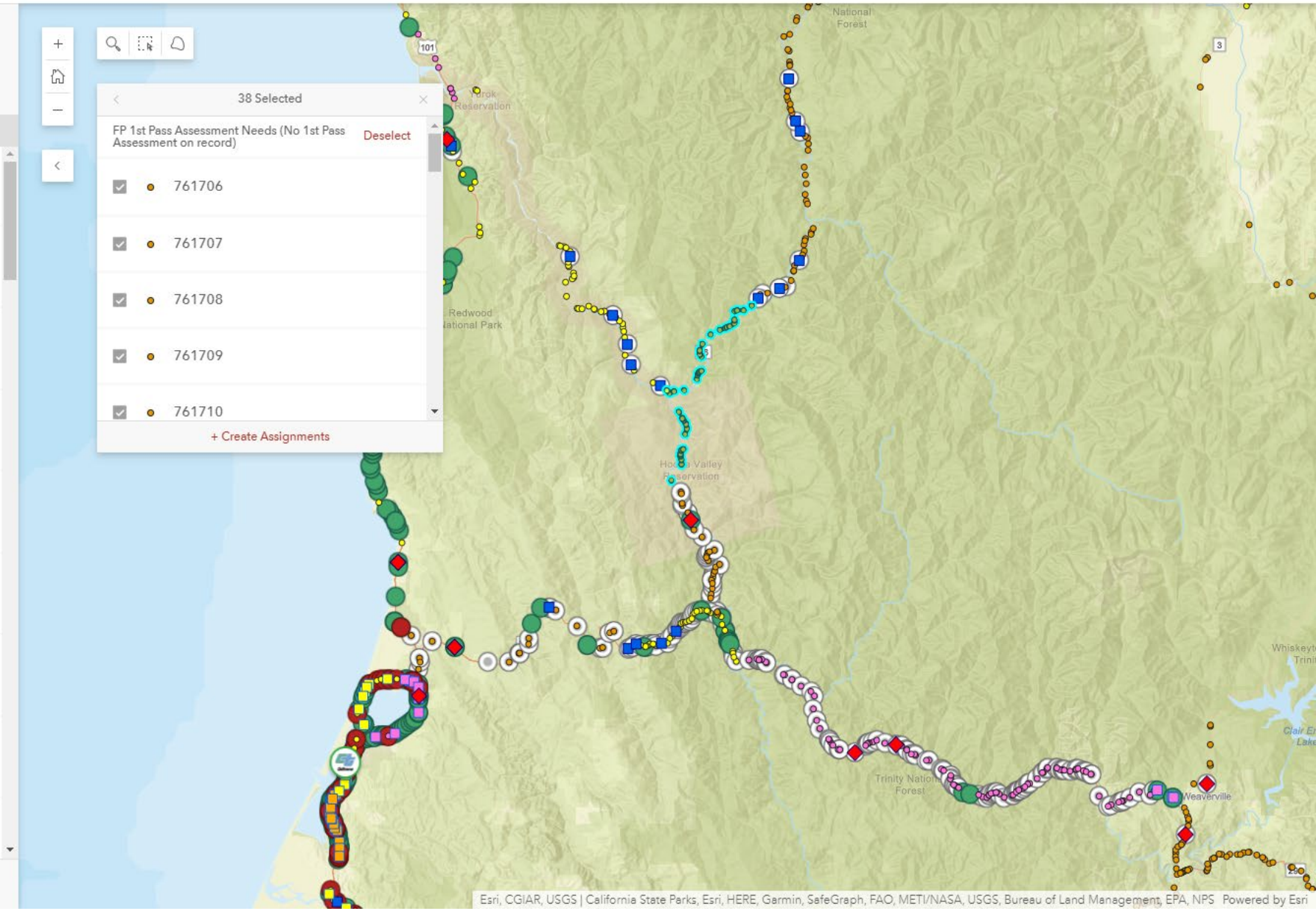
Assignments | Workers

38 Selected

FP 1st Pass Assessment Needs (No 1st Pass Assessment on record) — Deselect

761706
761707
761708
761709
761710

+ Create Assignments



Workforce | Environmental Analysis | Caltrans

arcgis.com/apps/workforce/projects/3f24ad15f5fd45fb84c19e7ca27321e5/dispatch/assignments/new

ArcGIS Workforce Web App (Dispatchers)

My Projects > Fish Passage Assessment Project

Resources | Caltrans

Create Assignments

Assignment Type *

1st Pass Assessment

Location *

Search for an address or click on the map to add new locations.

761706

761707

761708

761709

761710

761711

Assigned to

Caltrans Survey2

Priority: Medium

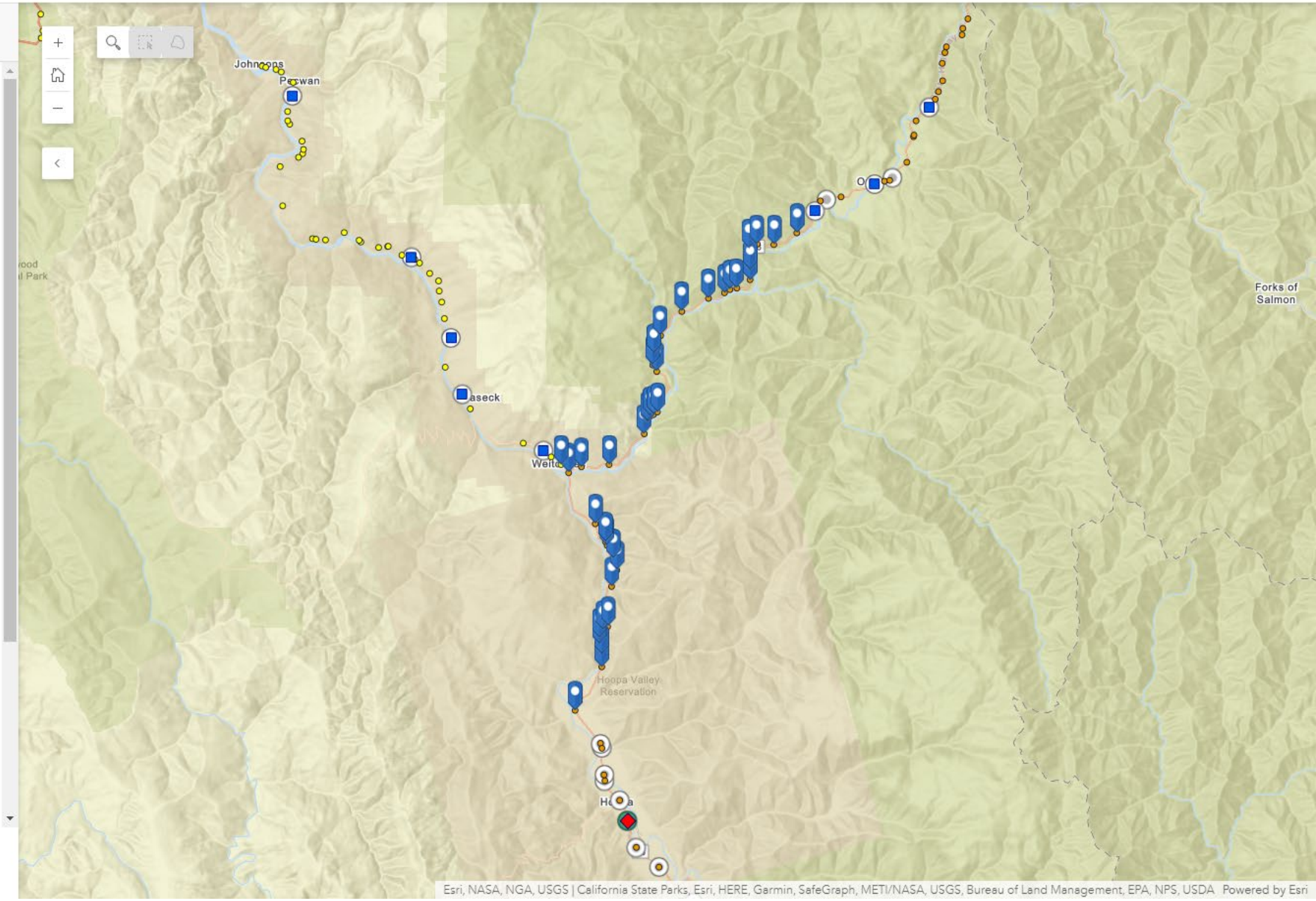
Due Date

Time

ID

Description

Create Assignments | Cancel

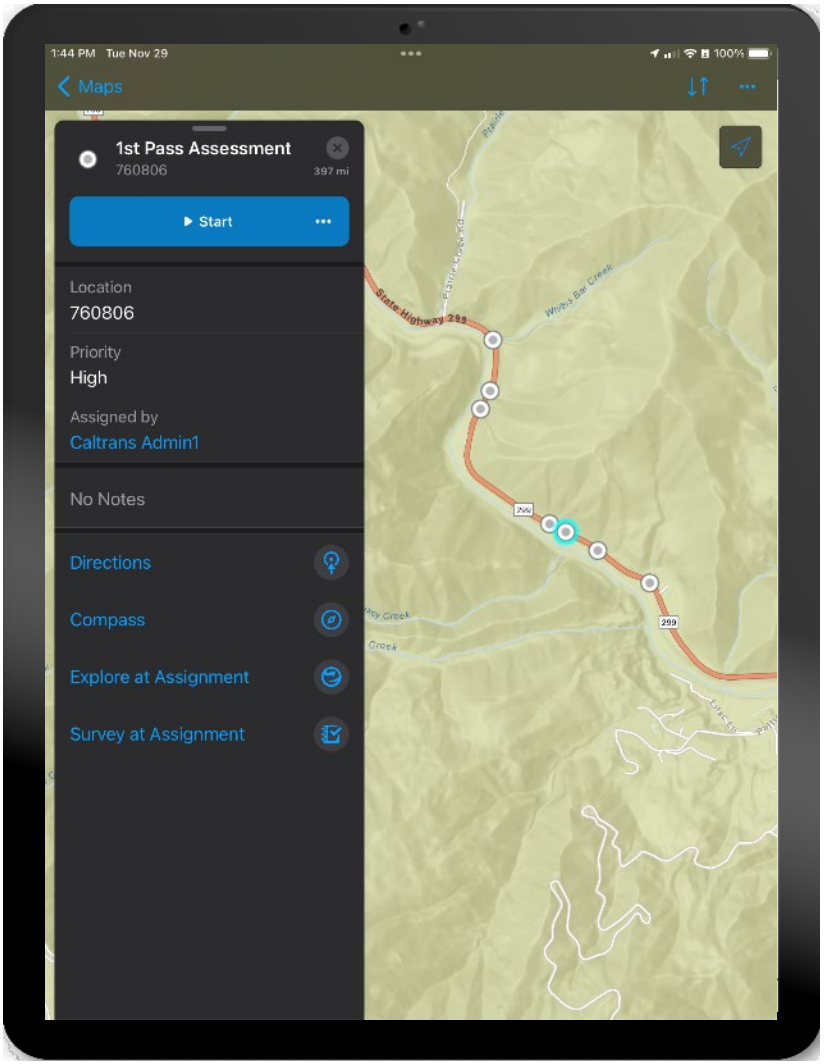


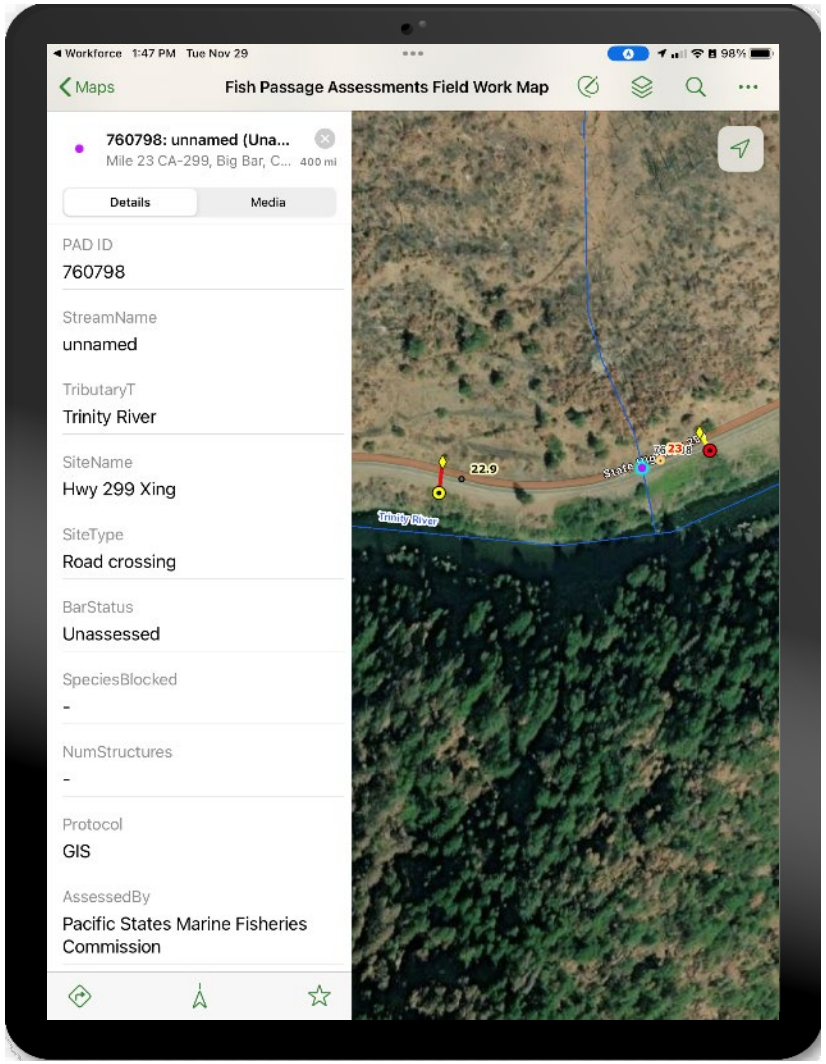
Esri, NASA, NGA, USGS | California State Parks, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA Powered by Esri

ArcGIS Workforce App (Field Workers)

ArcGIS Explorer App

ArcGIS Survey123 App

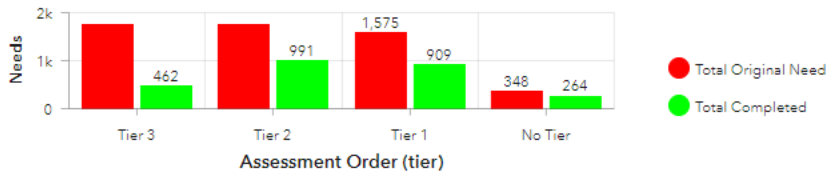




Fish Passage Assessment Progress

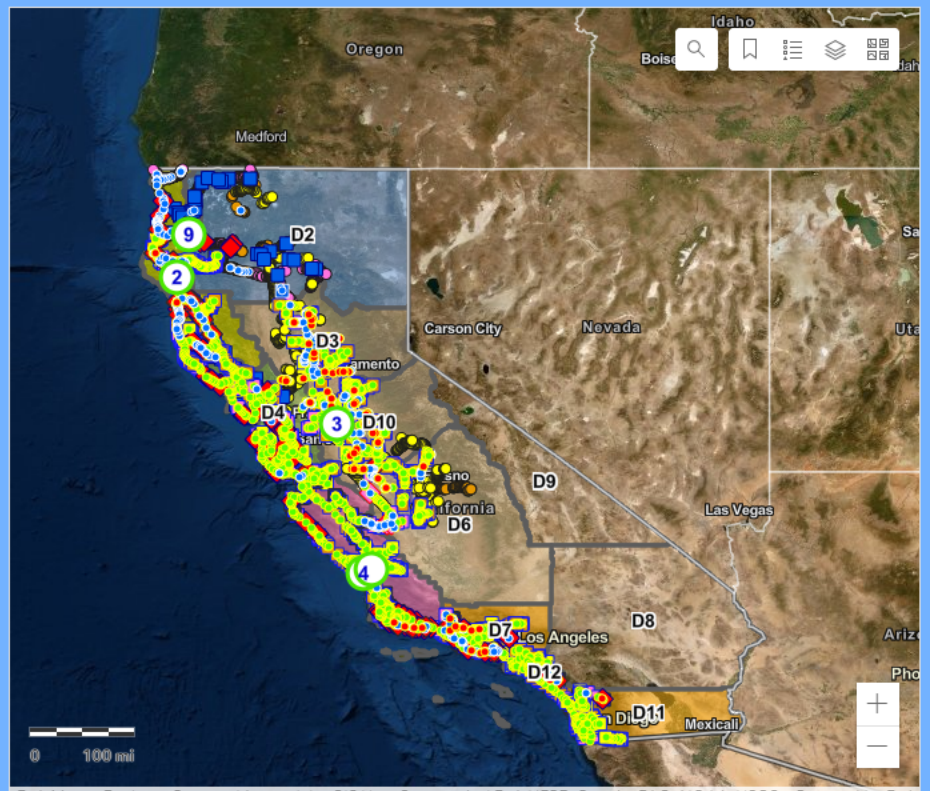
Date Range: Select date range | Tier: Select one or more | Team: Select one or more | Worker ID: Select one or more | District: Select one or more | FishPAC: Select one or more

Completed 1st Pass Assessments by Tier



Last update: 18 seconds ago

Tiered Needs | by District | by FishPAC | Assignments



1st Pass Assessment Progress

5,434 Needs (2,827 remaining)
2,607 Completed Surveys (48%)

Detailed Survey Needed = 1,810 (69%)

No Detailed Survey Needed = 799 (31%)

Habitat Assessment Progress

1,796 Needs (1,262 Remaining)
534 Completed Surveys (30%)

Suitable Habitat = 185 (35%)

No Suitable Habitat = 289 (54%)

Unknown Suitability = 62 (12%)

2nd Pass Assessment Progress

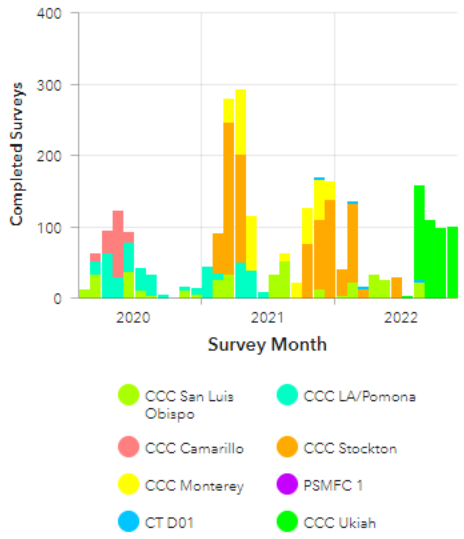
229 Needs (151 Remaining)
78 Completed Surveys (34%)

Verified New Barriers = 70 (90%)

Verified Non-Barriers = 6 (8%)

Unverified Barriers = 2 (3%)

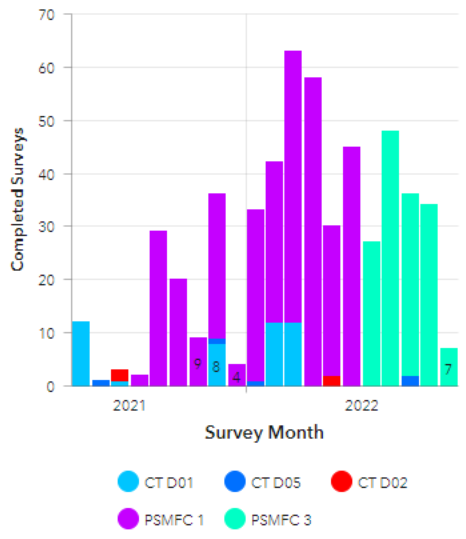
Fish Passage 1st Pass Assessments



Last update: 14 seconds ago

Month | Teams | Districts | FishPACs

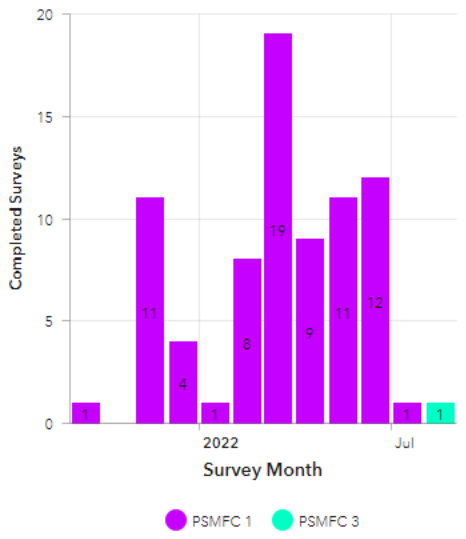
Fish Passage Habitat Assessments



Last update: 14 seconds ago

Month | Teams | Districts | FishPACs

Fish Passage 2nd Pass Assessments



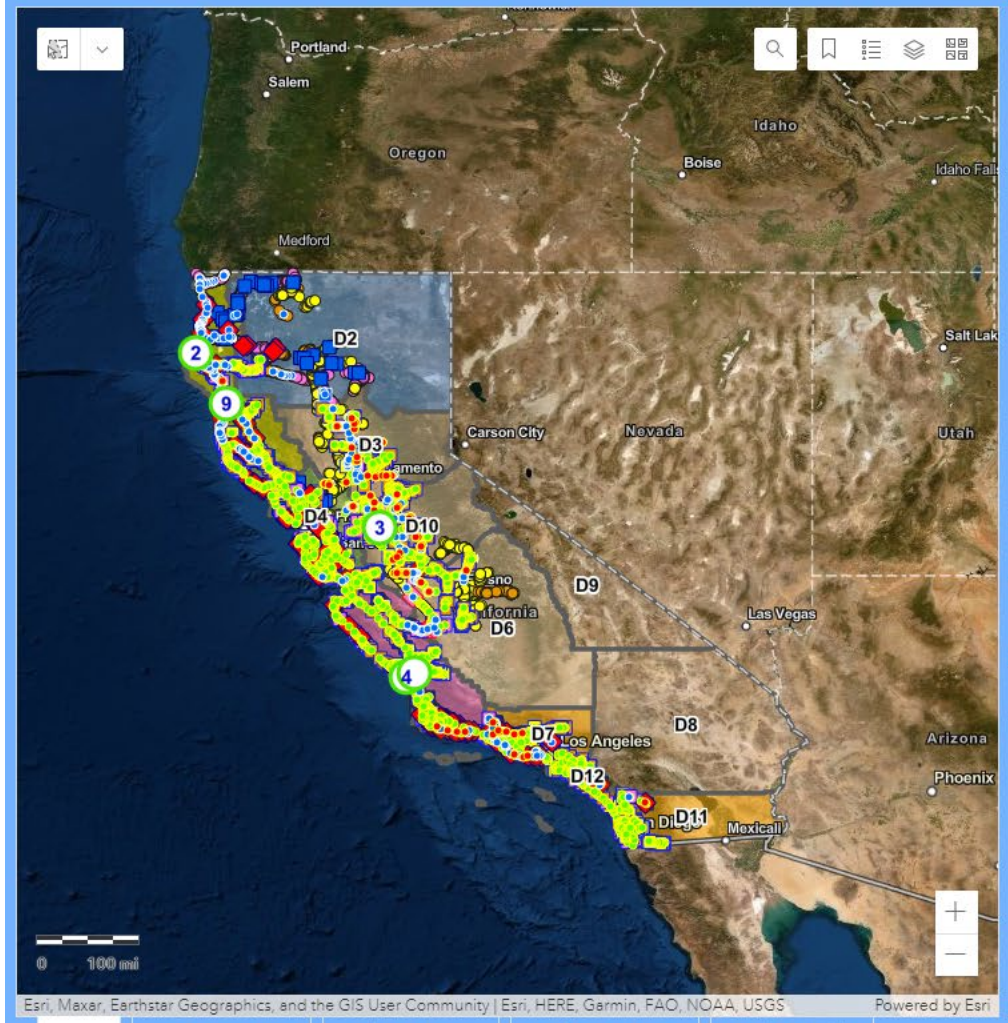
Last update: 16 seconds ago

Month | Teams | Districts | FishPACs

Fish Passage Assessment QA/QC

Date Range: All | Recommendation All | QA/QC Complete All | Photo Composite All | Tier: All | Team: All | Worker ID All | FishPAC: All | District: All | County All | Route All

Assignments 863 Active | Assignments 3,145 Completed | Assignments 631 Declined



Map | 1st Pass QA/QC | Habitat QA/QC | 2nd Pass QA/QC | 2nd Pass (old)

Attachment Results:

1 of 2665

1st Pass Assessments: 731028

731028_In_11082022.jpg

Last update: now

1st Pass | Habitat | 2nd Pass | 2nd Pass Report

Record Selection Tables:

1st Pass Assessments (by Date Completed)

PADID	District	County	Route	PM	Survey Recommendation	Date	QAQC Completed
731028	1	HUM	255	3.53	update pad	Nov 8, 2022	no
731030	1	HUM	255	3.77	habitat	Nov 8, 2022	no
731032	1	HUM	255	4.13	habitat	Nov 8, 2022	no
731034	1	HUM	255	4.51	habitat	Nov 8, 2022	no
731036	1	HUM	255	4.75	habitat	Nov 8, 2022	no
731042	1	HUM	255	6.37	habitat	Nov 8, 2022	no
731044	1	HUM	255	6.45	update pad	Nov 8, 2022	no
731050	1	HUM	255	7.68	habitat	Nov 8, 2022	no
731051	1	HUM	255	7.86	update pad	Nov 8, 2022	no
731052	1	HUM	255	8.16	habitat	Nov 8, 2022	no
761865	1	HUM	255	8.5	habitat	Nov 8, 2022	no
731017	1	HUM	101	85.8	update pad	Nov 8, 2022	no
731016	1	HUM	101	85.6	update pad	Nov 8, 2022	no

Last update: 1 second ago

1st Pass | Habitat | 2nd Pass | (Old)

Detailed Survey Tables:

(select a 2nd pass record to view)

Facility Segments

Selection required on one or more elements

Last update: 17 minutes ago

Facility | LP | TW | FishXing

QA/QC Tracking:

1st Pass Assessments

Survey Recommendation	Count
Update PAD (Not a Barrier)	627
Re-Survey	37
No Further Action (PAD Updated)	153
Habitat Assessment (Update PAD)	1,782
Duplicate Record (Delete)	63
Delete Record (or Archive)	3
Total	**2,665**

Last update: 7 seconds ago

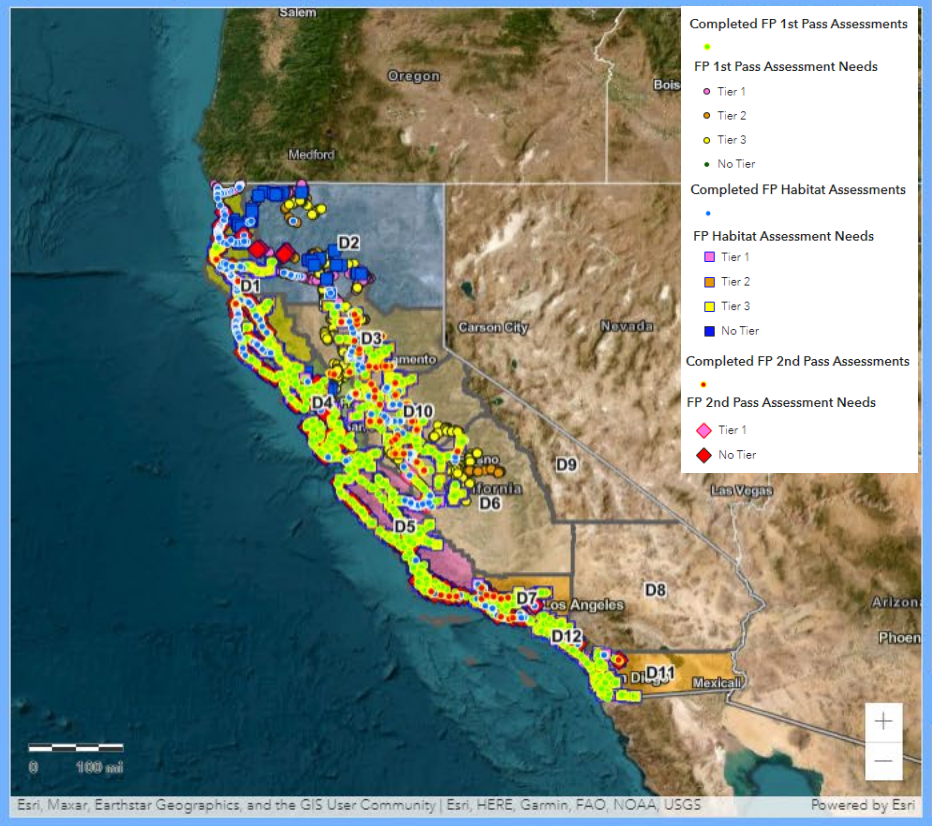
1st Pass | Habitat | 2nd Pass | (Old)

State-Wide

Completed 1st Pass Assessments by Tier

Last update: 1 minute ago

Tiered Needs | by District | by FishPAC | Assignments



1st Pass Assessment Progress

5,434 Needs (2,741 remaining)

2,693 Completed Surveys (50%)

Detailed Survey Needed = 1,838 (68%)

No Detailed Survey Needed = 857 (32%)

Habitat Assessment Progress

1,824 Needs (1,278 Remaining)

546 Completed Surveys (30%)

Suitable Habitat = 188 (34%)

No Suitable Habitat = 298 (55%)

Unknown Suitability = 62 (11%)

2nd Pass Assessment Progress

230 Needs (150 Remaining)

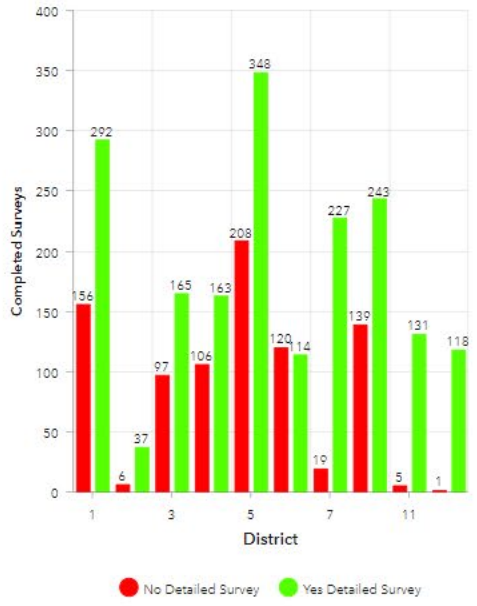
80 Completed Surveys (35%)

Verified New Barriers = 70 (90%)

Verified Non-Barriers = 6 (8%)

Unverified Barriers = 3 (4%)

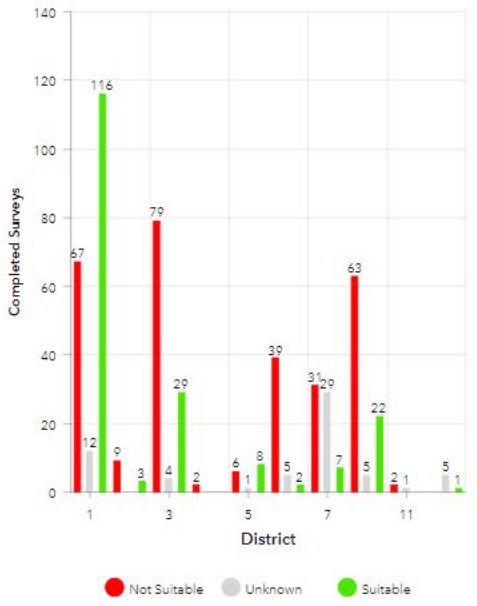
Fish Passage 1st Pass Assessments



Last update: 5 seconds ago

Month | Teams | Districts | FishPACs

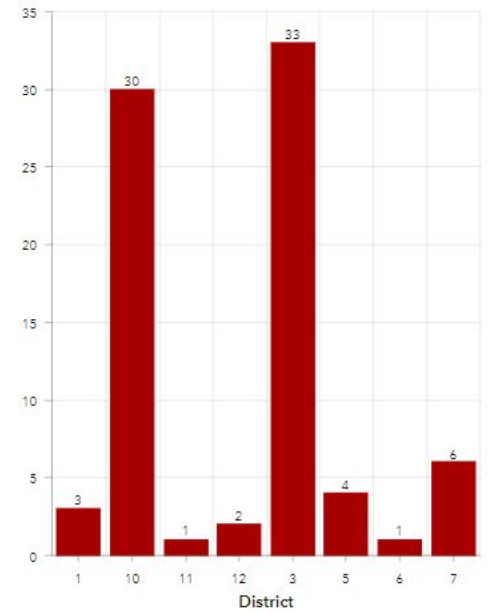
Fish Passage Habitat Assessments



Last update: 5 seconds ago

Month | Teams | Districts | FishPACs

Fish Passage 2nd Pass Assessments



Last update: 5 seconds ago

Month | Teams | Districts | FishPACs

Discussion and Questions

How to Participate During Q&A Session

SUBMIT QUESTIONS VIA Q&A BOX

- Select appropriate icon
  - **Internet Browser:** select
  - **WebEx Software:** select "Q&A"
  - **Mobile App:** select , then
- Type question/comment into Q&A box then click "Send"
- Moderators will read question/comment out loud

RAISE YOUR HAND

Select raise hand

- **Internet Browser:** then
- **WebEx Software:** then
- **Mobile App:** then

- Lower hand after speaking

Caltrans

Thank you for your interest and participation!

For additional information about the California Fish Passage Advisory Committee, visit:
cafishpac.org

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