Where Central Valley Salmonids Hit the Road

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Department of Water Resources
CALFED Ecosystem Restoration Program

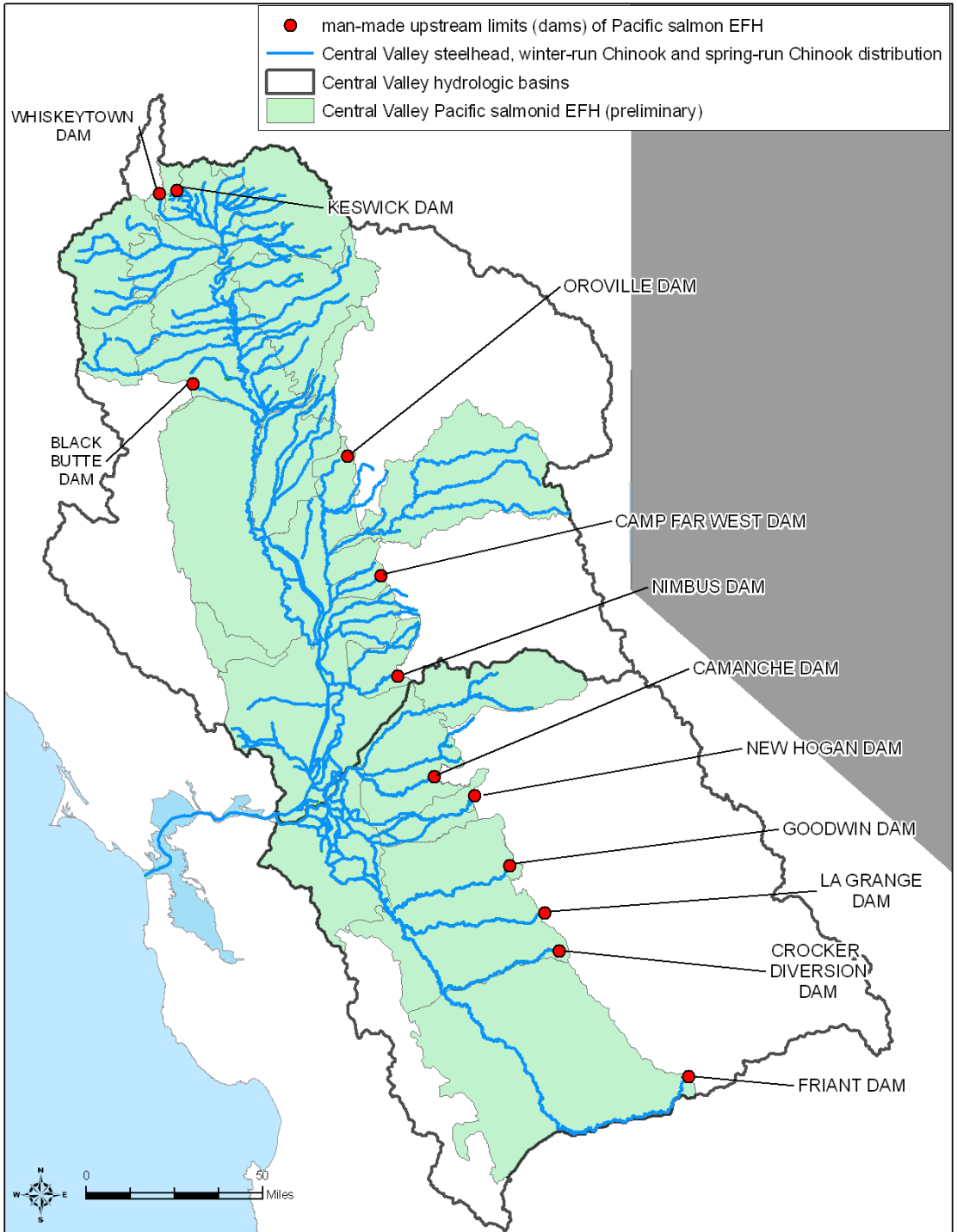
What are we going to cover?

- Background
- Where do surveys need to be done?
- Project examples
- Conclusions and recommendations

Why assess fish passage in the Central Valley?

Photo by Doug Killam

Photo by Thomas Dunklin


man-made upstream limits (dams) of Pacific salmon EFH
Central Valley steelhead, winter-run Chinook and spring-run Chinook distribution
Central Valley hydrologic basins
Central Valley Pacific salmonid EFH (preliminary)
WHISKEYTOWN DAM
KESWICK DAM
OROVILLE DAM
BLACK BUTTE DAM
CAMP FAR WEST DAM
NIMBUS DAM
CAMANCHE DAM
NEW HOGAN DAM
GOODWIN DAM
LA GRANGE DAM
CROCKER DIVERSION DAM
FRIANT DAM
N
W
E
S
0
50
Miles

Why assess fish passage in the Central Valley?

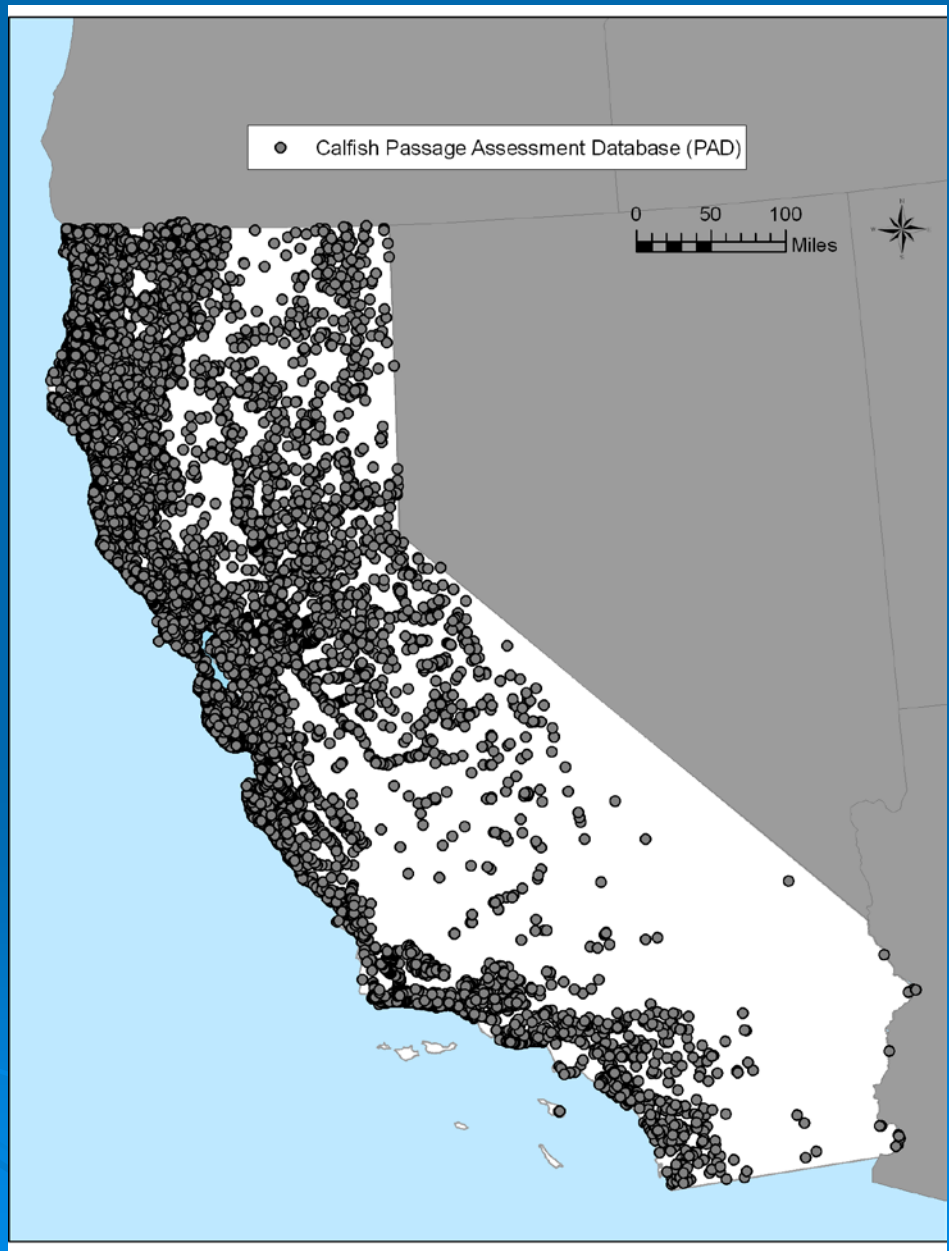
- Critical habitat of Sacramento River Winter-Run Chinook Salmon, Central Valley Spring-Run and Steelhead
- Essential Fish Habitat for Chinook Salmon
- NMFS Recovery Plan for Sacramento River Winter-Run Chinook Salmon, Central Valley Spring-Run Chinook Salmon and Steelhead

Caltrans roads cross many streams in CV EFH, potentially creating barriers to passage for listed anadromous fish species.

The Calfish Passage Assessment Database (PAD)

CalFish (http://www.calfish.org) is a multi-agency cooperative program that gathers, maintains, and disseminates fish and aquatic habitat data and data standards.

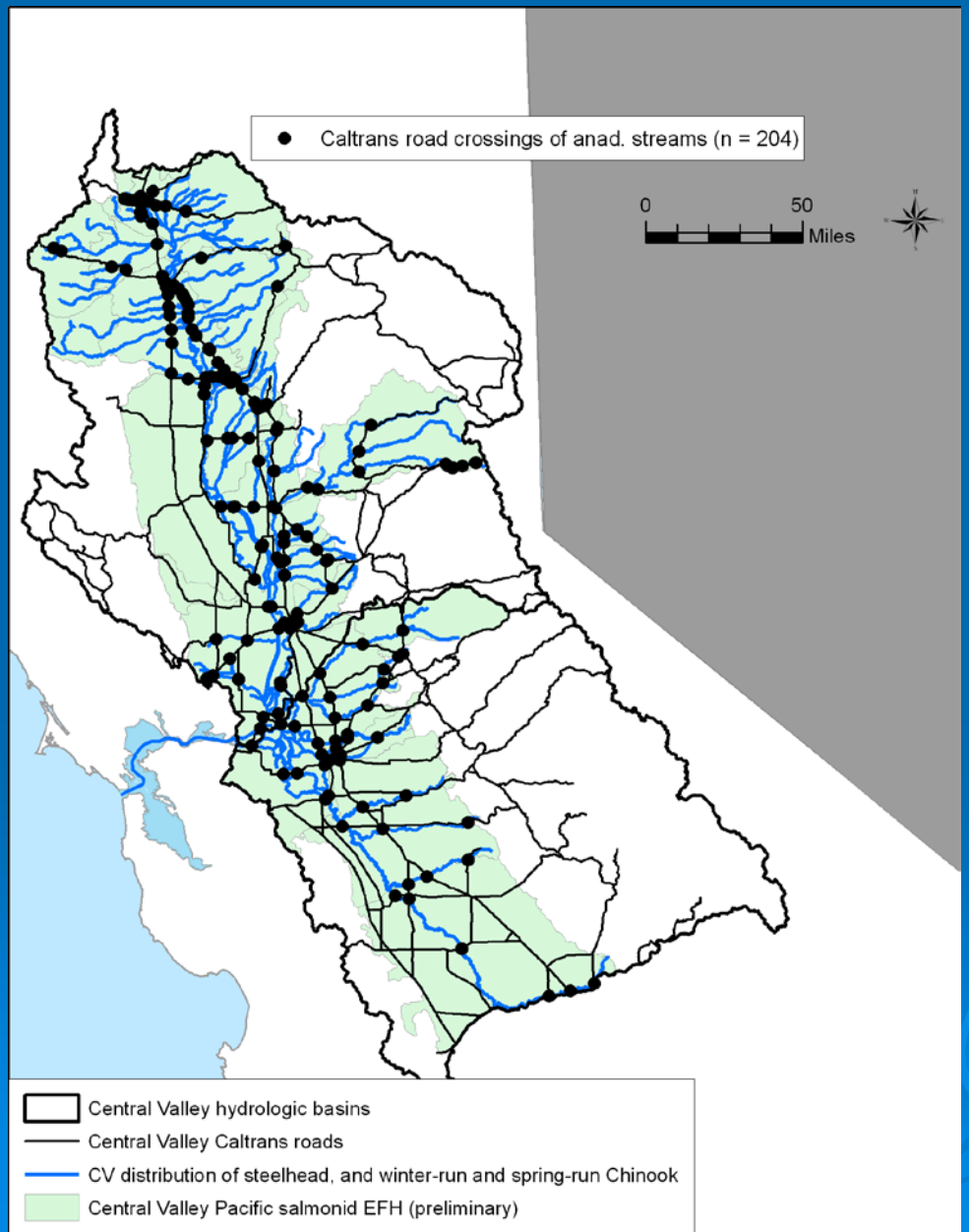
- Caltrans
- DWR
- California Coastal Conservancy
- The Resources Agency
- NOAA
- USFWS
- Pacific States Marine Fisheries Commission



- Using GIS data we can predict/estimate the locations of possible fish passage sites at Caltrans road crossings of anadromous streams

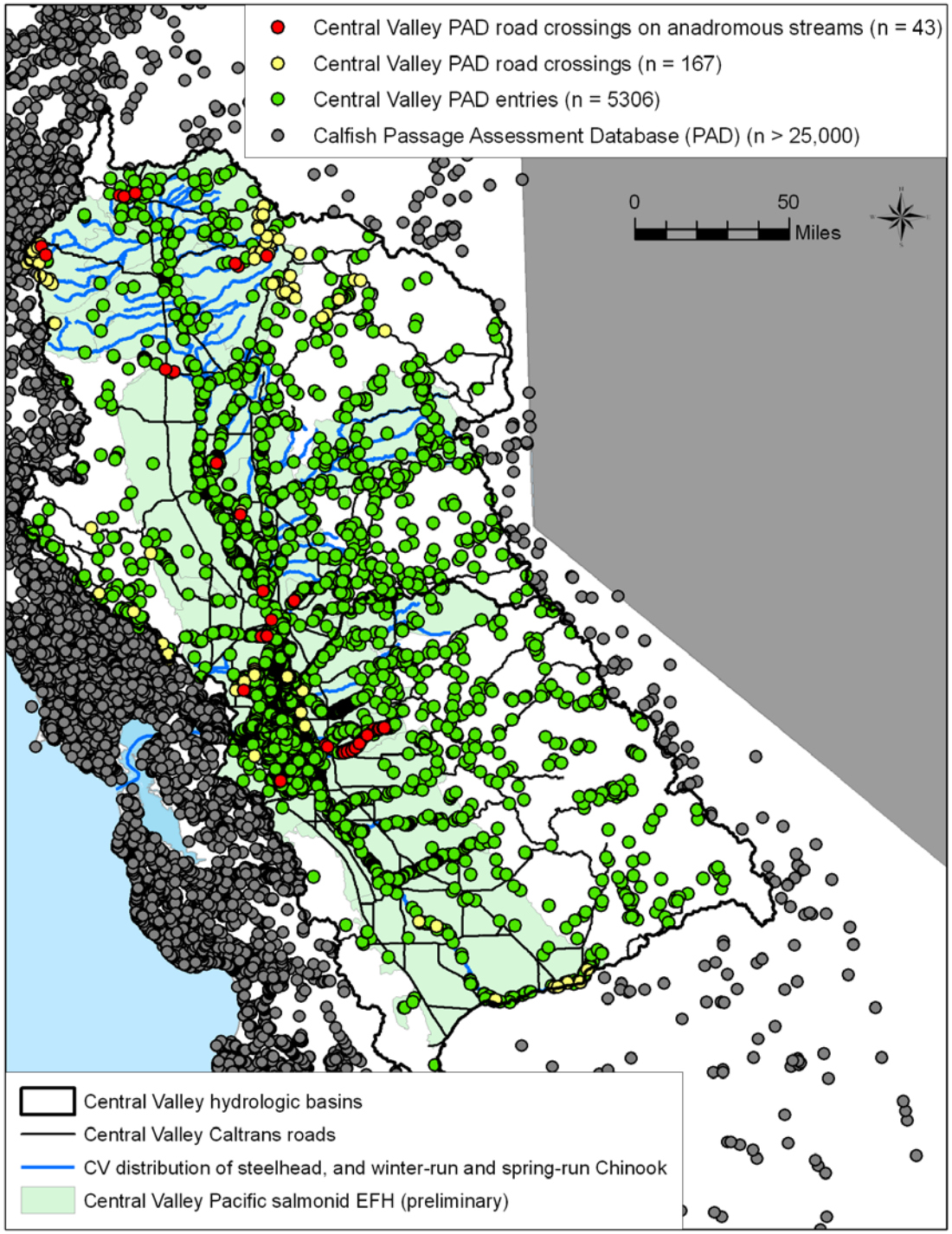
1. Find intersections of Caltrans roads and anadromous streams (potential passage barriers)
   - Caltrans road locations
   - NMFS maps of Essential Fish Habitat, Critical Habitat, and anadromous fish distribution
2. Determine which of those sites have already been assessed
   - Calfish Passage Assessment Database (PAD) of fish passage barrier assessments
3. Attach other available data to each point
   - Caltrans Bridge Log

1. Road-stream intersections: **204** Caltrans road crossings of anadromous streams have been identified in the Central Valley.

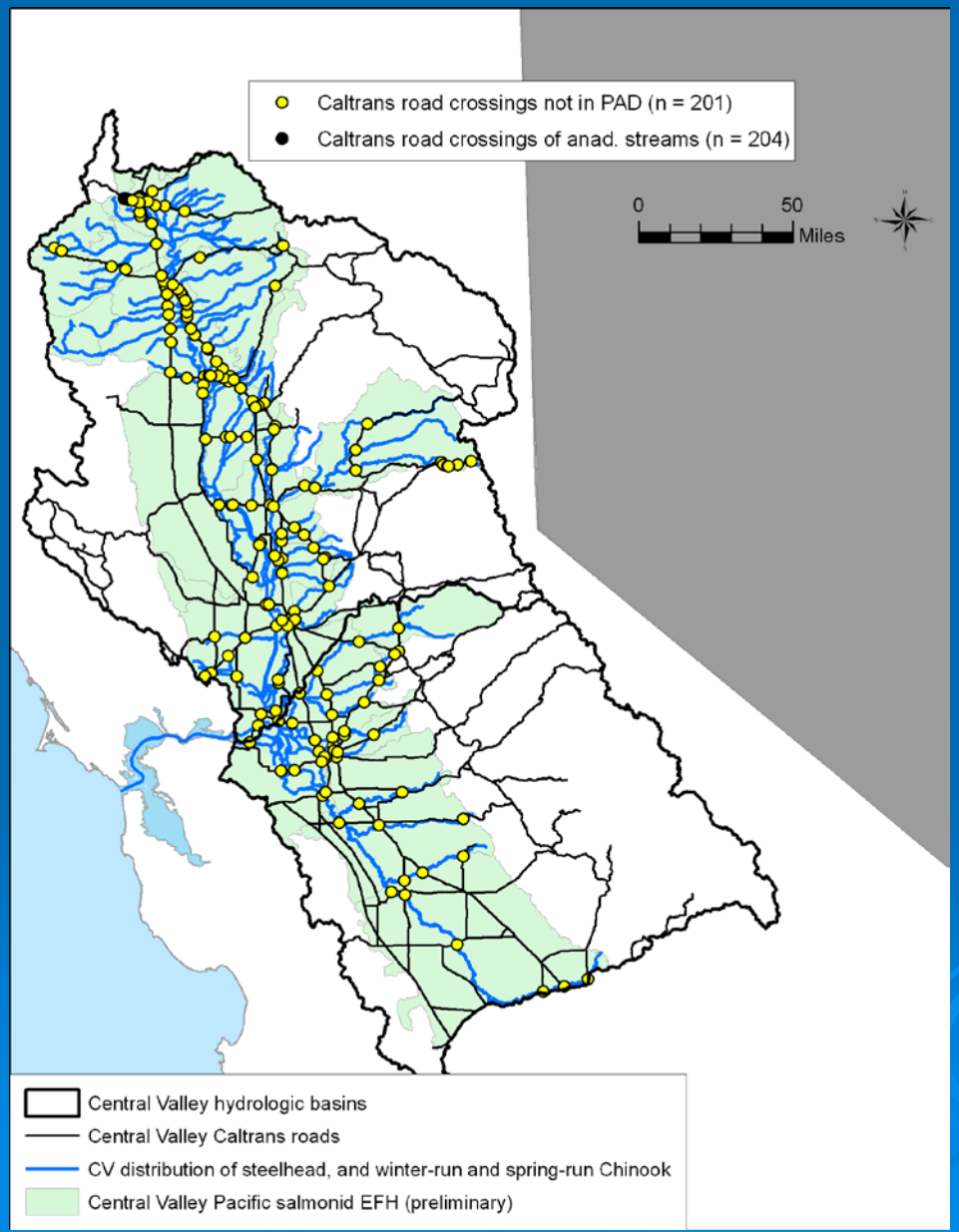


2. Determine which of those sites have already been assessed

- Passage Assessment Database (PAD) is the most complete coverage of fish passage data in the state


Central Valley PAD road crossings on anadromous streams (n = 43)
Central Valley PAD road crossings (n = 167)
Central Valley PAD entries (n = 5306)
Calfish Passage Assessment Database (PAD) (n > 25,000)
0
50
Miles
Central Valley hydrologic basins
Central Valley Caltrans roads
CV distribution of steelhead, and winter-run and spring-run Chinook
Central Valley Pacific salmonid EFH (preliminary)

PAD data indicates that only 3 CT sites correspond to PAD entries (<= 250 feet from recorded data point)



Results

- 201 sites have been identified in the Central Valley where a Caltrans road crosses an anadromous stream within steelhead or Chinook critical or EFH, presenting a potential passage issue that should be evaluated

Other data sources can be used for planning survey logistics, e.g., Caltrans Bridge Log

Structure Maintenance & Investigations

SM&I

Log of Bridges on State Highways

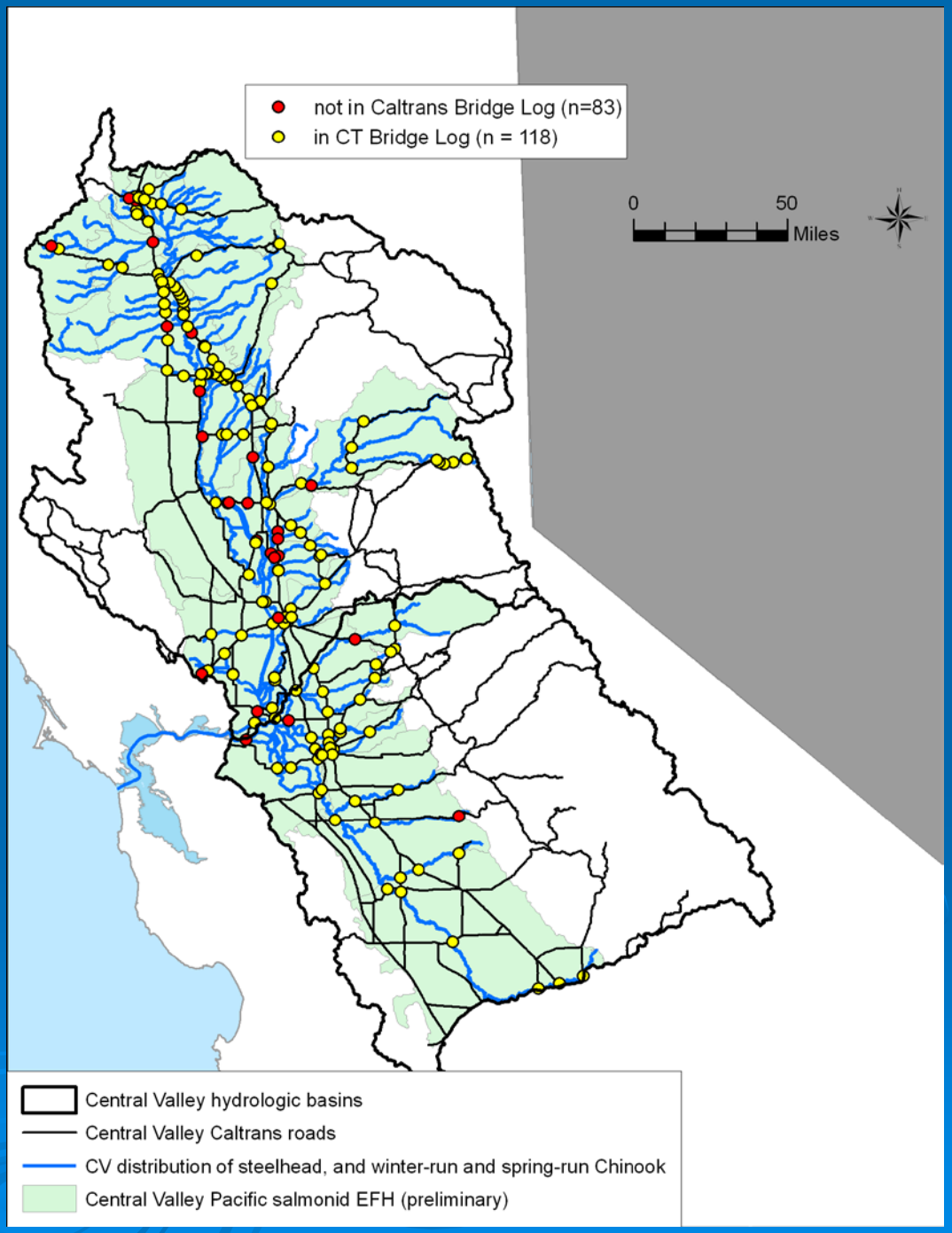
April, 2008

DISTRICT 01

01-MEN-101

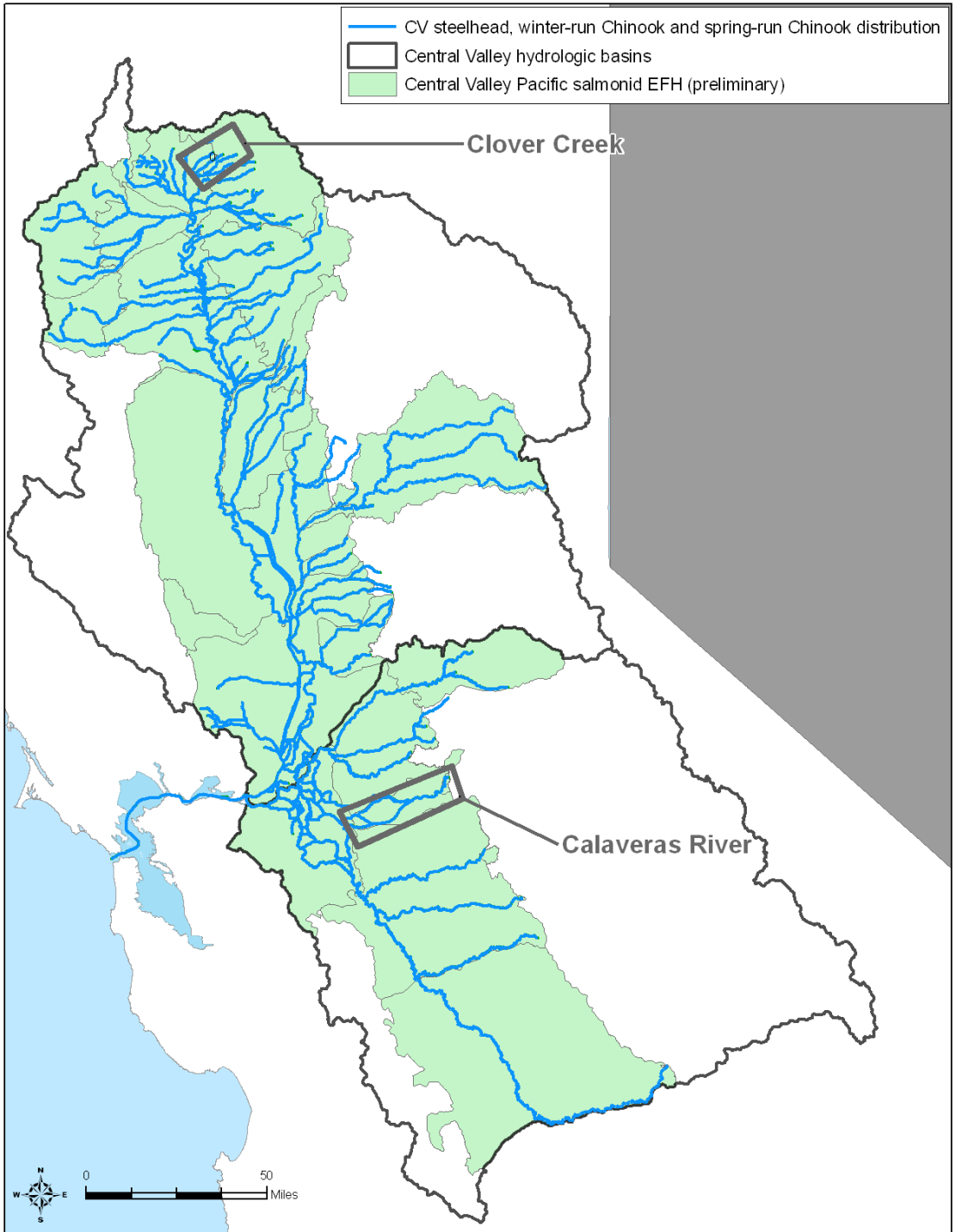
Postmile	Bridge Number	OU	Structure Name or Route Information	Structure Types Main	Appr	City	Bridge Length	Width	Num Spans	Min VC over Rdway	Sidewalk Lt	Sidewalk Rt	Year Built	Year Wid/Ext	Permit Rating	P
R023.82	10 0224	O	AUSTIN CREEK	219			8.2	0.0	2	0			1964		PPPPP	
R024.06	10 0191	U	GOBBI STREET OC	204		UKI	70.4	12.3	4	4.7	1.5		1964		PPPPP	
R024.30	10 0188	U	OAK MANOR SCHOOL POC	505	205	UKI	119.8	4.0	6	5.9	0.2	0.2	1968			
R024.32	10 0192L	O	GIBSON CREEK	101		UKI	8.6	12.2	1	0			1964		PPPPP	
R024.32	10 0192R	O	GIBSON CREEK	101		UKI	8.6	12.2	1	0			1964		PPPPP	
R024.53	10 0193	U	EAST PERKINS STREET OC	204		UKI	71.0	12.3	4	4.6		1.5	1964		PPPPP	
R025.01	10 0194L	O	ORRS CREEK	201		UKI	21.6	12.2	3	0			1964		PPPPP	
R025.01	10 0194R	O	ORRS CREEK	201		UKI	21.6	12.2	3	0			1964		PPPPP	
R025.72	10 0195L	O	PRESSWOOD OH	204			131.0	12.2	10	6.99			1964		PPPPP	
R025.72	10 0195R	O	PRESSWOOD OH	204			131.1	12.2	8	7.01			1964		PPPPP	
R026.16	10 0196L	O	NORTH STATE STREET UC	205			75.3	12.1	4	6.15			1964		PPPPP	
R026.16	10 0196R	O	NORTH STATE STREET UC	205			75.3	13.8	4	4.7		0.6	1964		PPPPP	
_026.37	10 0197	U	MASONITE ROAD OC	205			65.2	11.0	4	4.6	0.6	0.6	1962		PPPPP	
_026.39	10 0198	U	ORRS SPRINGS ROAD OC	204			68.3	10.4	4	6.63	0.6	0.6	1962		PPPPP	
_026.66	10 0199L	O	ACKERMAN CREEK	204			55.5	12.1	5	0	0.1	0.1	1962		PPPPP	
_026.66	10 0199R	O	ACKERMAN CREEK	204			55.5	12.1	5	0	0.1	0.1	1962		PPPPP	
_027.00	10 0200L	O	HENSLEY CREEK	204			62.2	12.1	7	4.52	0.1	0.1	1962		PPPPP	
_027.00	10 0200R	O	HENSLEY CREEK	204			62.2	12.1	5	4.67	0.1	0.1	1962		PPPPP	
_027.41	10 0201L	O	LAKE MENDOCINO DRIVE UC	204			31.4	12.1	3	4.5	0.1	0.1	1962		PPPPP	
_027.41	10 0201R	O	LAKE MENDOCINO DRIVE UC	204			31.4	12.1	3	4.67	0.1	0.1	1962		PPPPP	
_027.92	10 0202	U	PARDUCCI ROAD OC	204			62.4	10.4	4	4.6	0.6	0.6	1962		PPPPP	
_028.26	10 0203L	O	YORK CREEK	204			39.6	12.1	4	0	0.1	0.1	1962		PPPPP	
_028.26	10 0203R	O	YORK CREEK	204			39.6	12.1	4	0	0.1	0.1	1962		PPPPP	
_028.58	10 0105L	O	POMO LANE UC	204			32.9	12.1	3	4.52	0.1	0.1	1962		PPPPP	
_028.58	10 0105R	O	POMO LANE UC	204			32.9	12.1	3	4.78	0.1	0.1	1962		PPPPP	
_029.84	10 0207	U	CENTRAL AVENUE OC	201			59.6	10.3	4	4.55	0.6	0.6	1962		PPPPP	
_030.43	10 0204L	O	MOORE STREET UC	204			32.9	13.8	3	4.55	0.6	0.1	1962		PPPPP	
_030.43	10 0204R	O	MOORE STREET UC	204			32.9	12.1	7	5.18	0.1	0.1	1962		PPPPP	
_030.82	10 0205L	O	ROUTE 101/20 SEPARATION	204			52.4	12.1	3	4.98			1962		PPPPP	
_030.82	10 0205R	O	ROUTE 101/20 SEPARATION	204			52.4	12.1	3	5.08			1962		PPPPP	
_030.83			**JCT RTE 20**	**RIGHT**												
R031.88	10 0269	O	FORSYTHE CREEK	205			72.2	28.0	3	0			1990		PPPPP	
R032.63	10 0270	U	WEST ROAD OC	505			50.9	14.6	1	5.23	1.5		1990		PPPPP	
R033.52	10 0160	O	BAKER CREEK	219			8.2	0.0	2	0			1971	1990	PPPPP	
_042.09	10 0001	O	SOUTH WILLITS OVERHEAD	302			48.2	19.4	3	7.01	0.6	0.6	1957		PPPPP	
T043.96	10 0125	O	HAEHL OVERHEAD	502			32.0	12.8	1	7.34			1969		PPPPP	
_045.89	10 0013	O	BAECHTEL CREEK	201		WLTS	21.6	25.0	3	0	1.5	1.5	1937	1964	PPPPP	
_046.30	10 0290	U	WILLITS ARCH	300		WLTS			1	4.6			1995			
_046.36			**JCT RTE 20 LT**			WLTS										
_046.64	10 0014	O	BROADDUS CREEK	104		WLTS	25.6	20.7	3	0	1.8	2.3	1926	1973	PPPPP	
_047.15	10 0015	O	WILLITS CREEK	104		WLTS	8.2	23.4	1	0	2.7	2.7	1923		PPPPP	
_048.14	10 0070	O	UPP CREEK	219			7.0	0.0	2	0			1918	1960	PPPPP	
_050.66	10 0016	O	OUTLET CREEK	205			111.6	13.3	6	0			1979		PPPPP	

- 118 identified road crossings correspond to entries in the CT Bridge Log (<=250 ft. from Bridge Log entry)



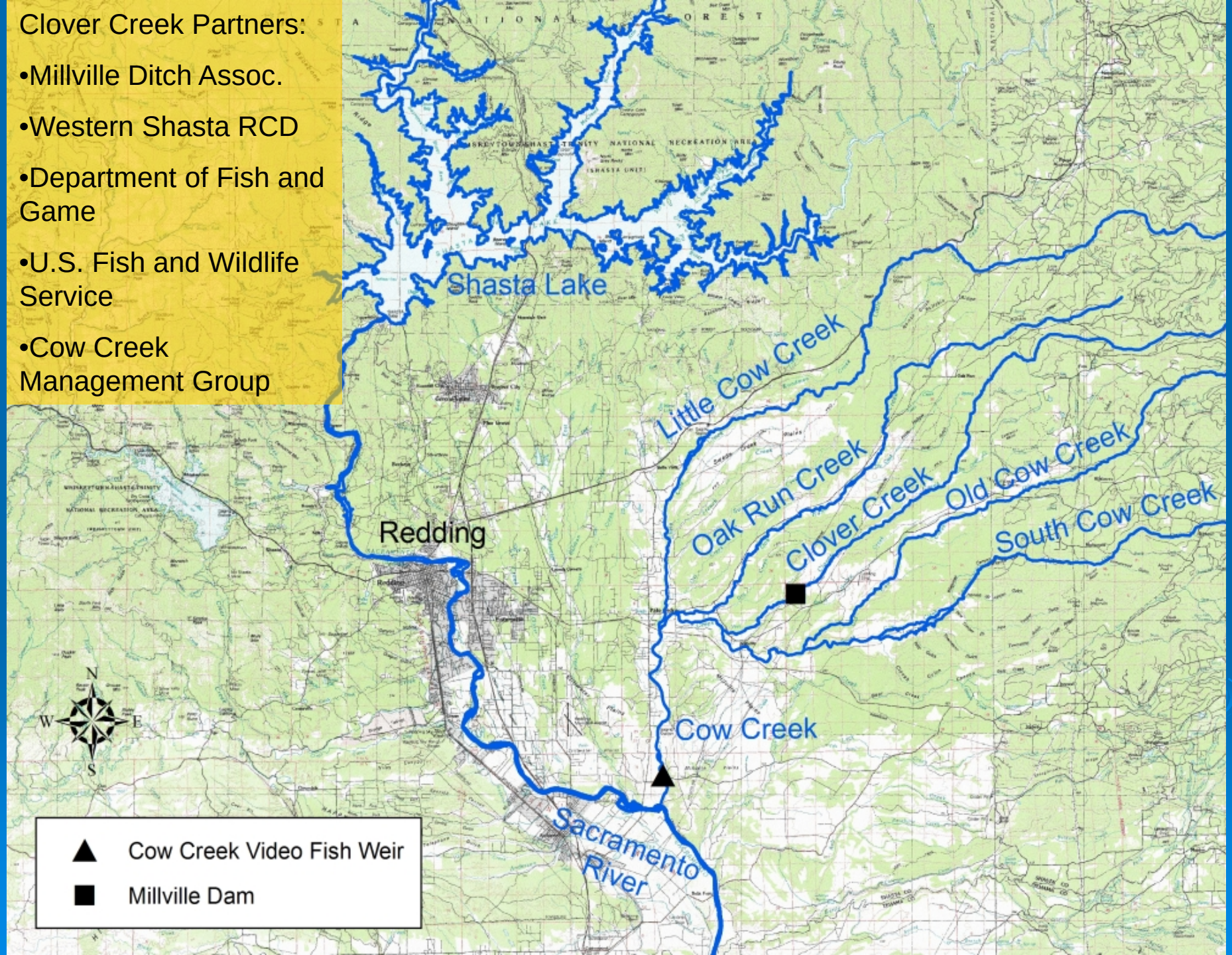
Other data sources are also available for planning and analysis, such as aerial photographs and the Caltrans Culvert Log

CLOVER CREEK FISH PASSAGE IMPROVEMENT PROJECT


CV steelhead, winter-run Chinook and spring-run Chinook distribution
Central Valley hydrologic basins
Central Valley Pacific salmonid EFH (preliminary)
Clover Creek
Calaveras River
N
W
E
S
0
50
Miles

Clover Creek Partners:

- Millville Ditch Assoc.
- Western Shasta RCD
- Department of Fish and Game
- U.S. Fish and Wildlife Service
- Cow Creek Management Group



Clover Creek – Millville Dam

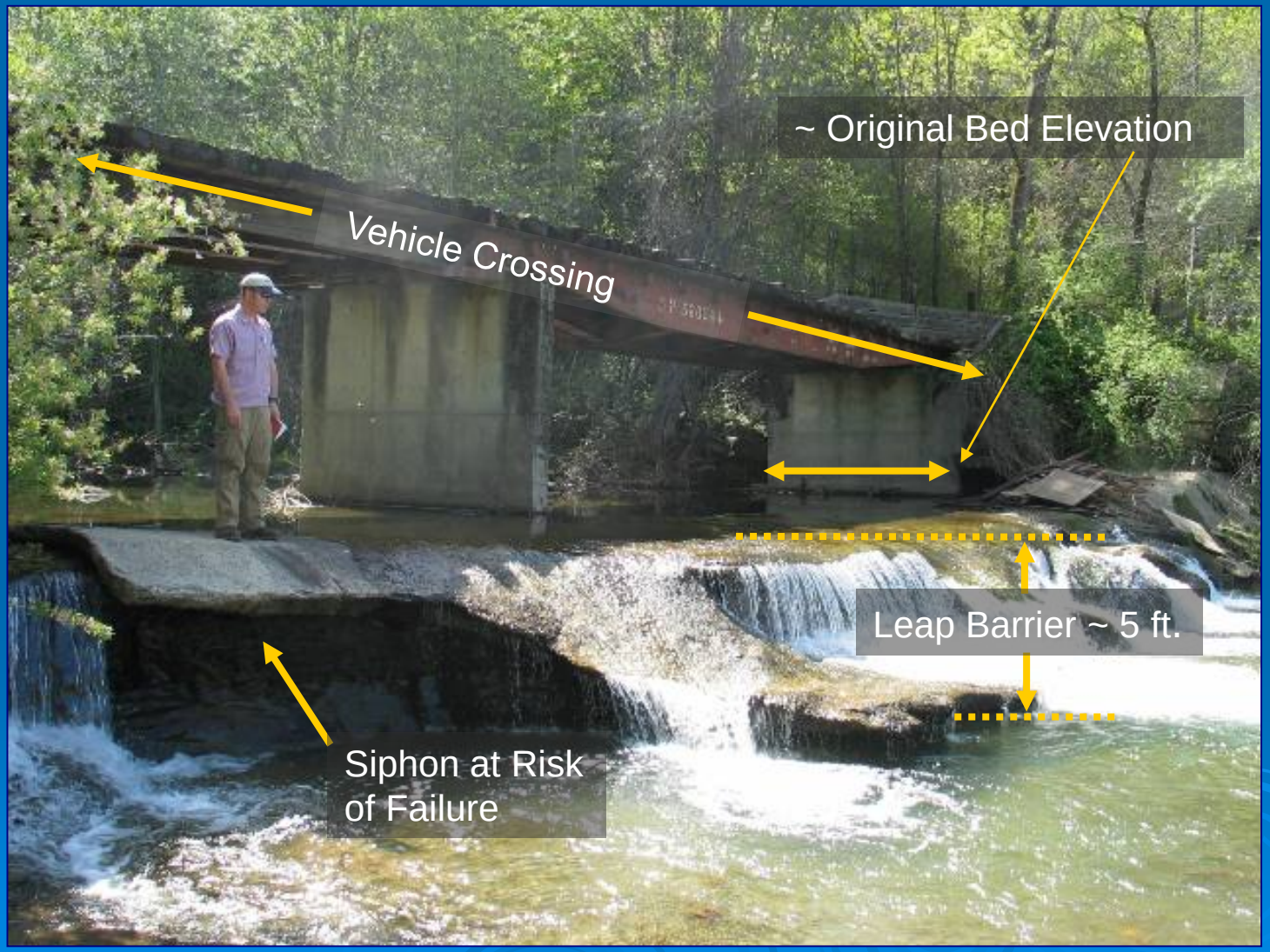
Millville Dam (June, 1959)

Source: Glen Campbell 2006

Millville Dam – March 2008 (~ 30 cfs)

Millville Dam - January 2009 (~ 80 cfs)

Millville Siphon and Bridge



Permanent Dam with Fish Screen and Ladder

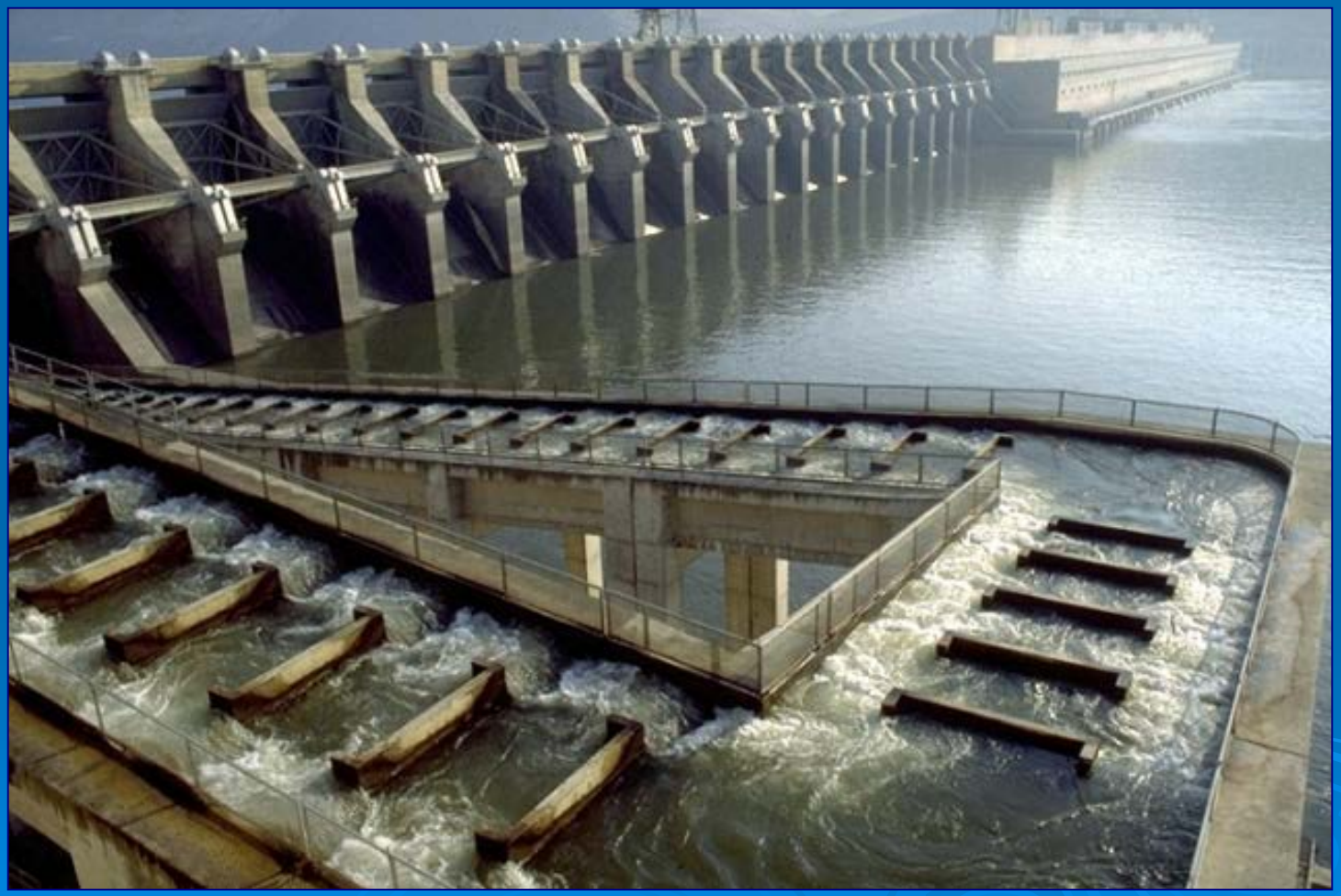


Photo from One Green Generation Website

Seasonal Dam with Fish Screen and Ladder

Photo by DWR

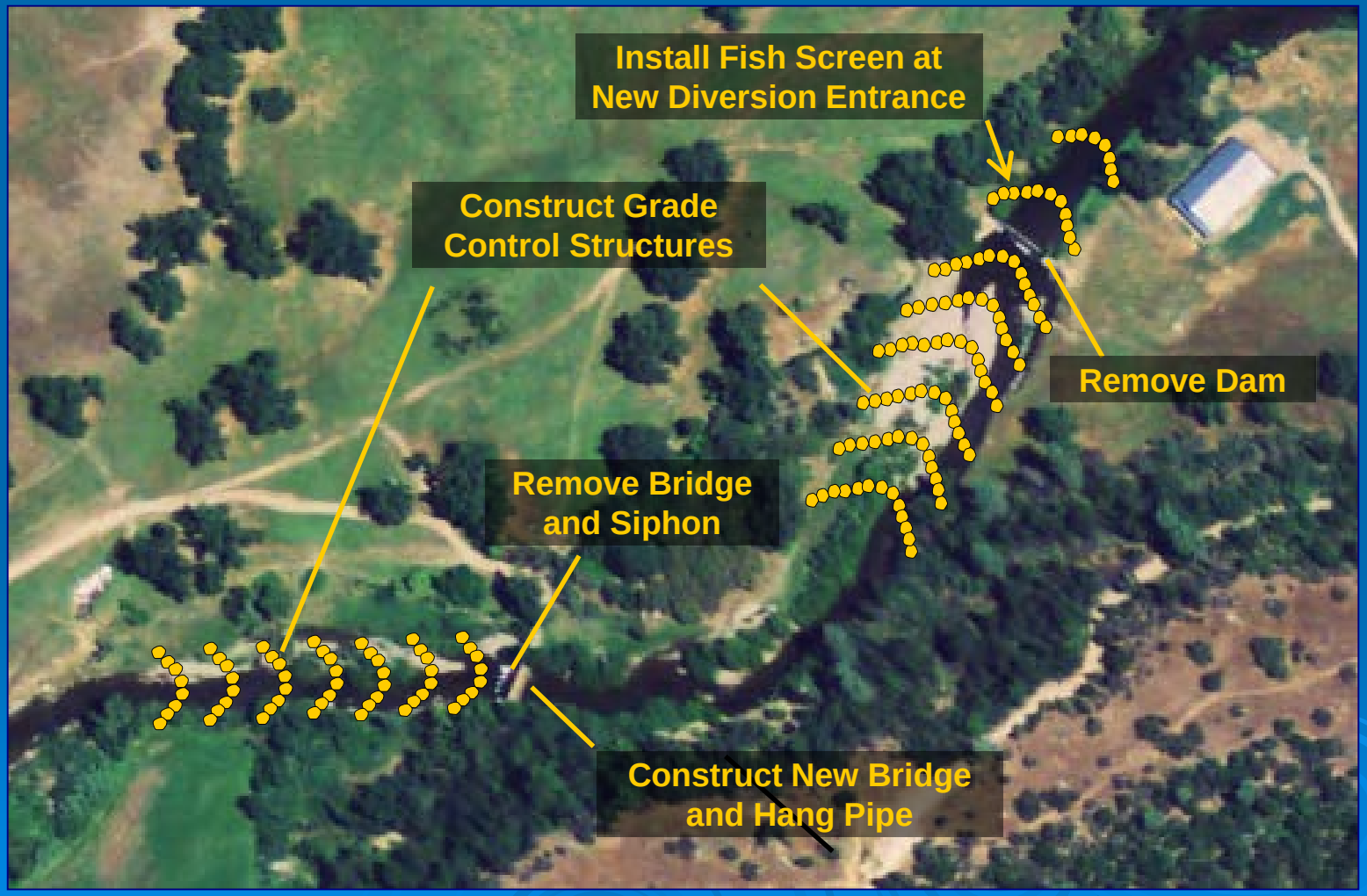
Groundwater Pumping

Photo from Brown County, Wisconsin Website

Pump from Bank through Conical Fish Screen

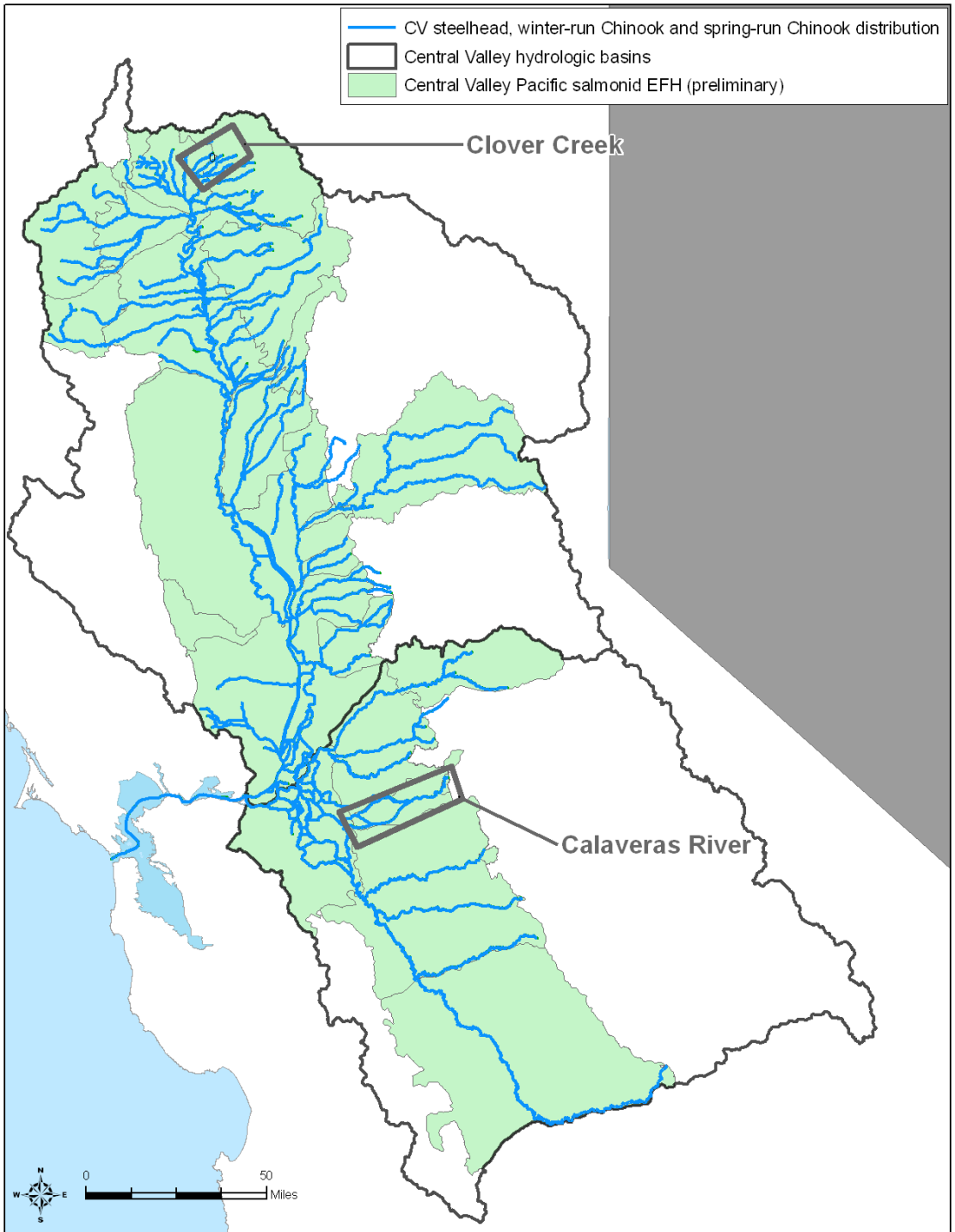
Photo courtesy of ISI

Proposed Project



Lessons Learned – So Far

- Expertise to match the problem
- Question assumptions made by others
- Involve decision makers early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0
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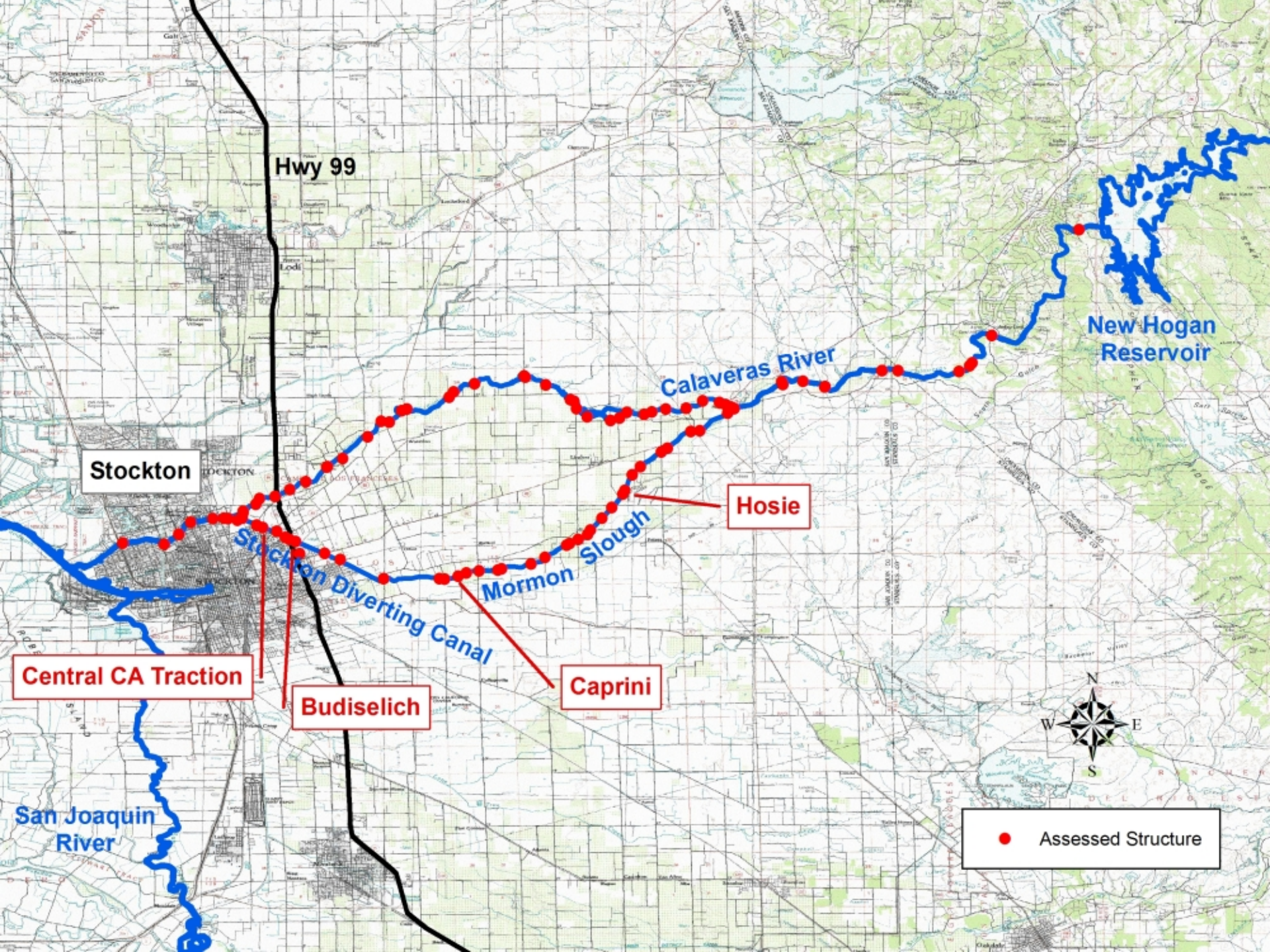
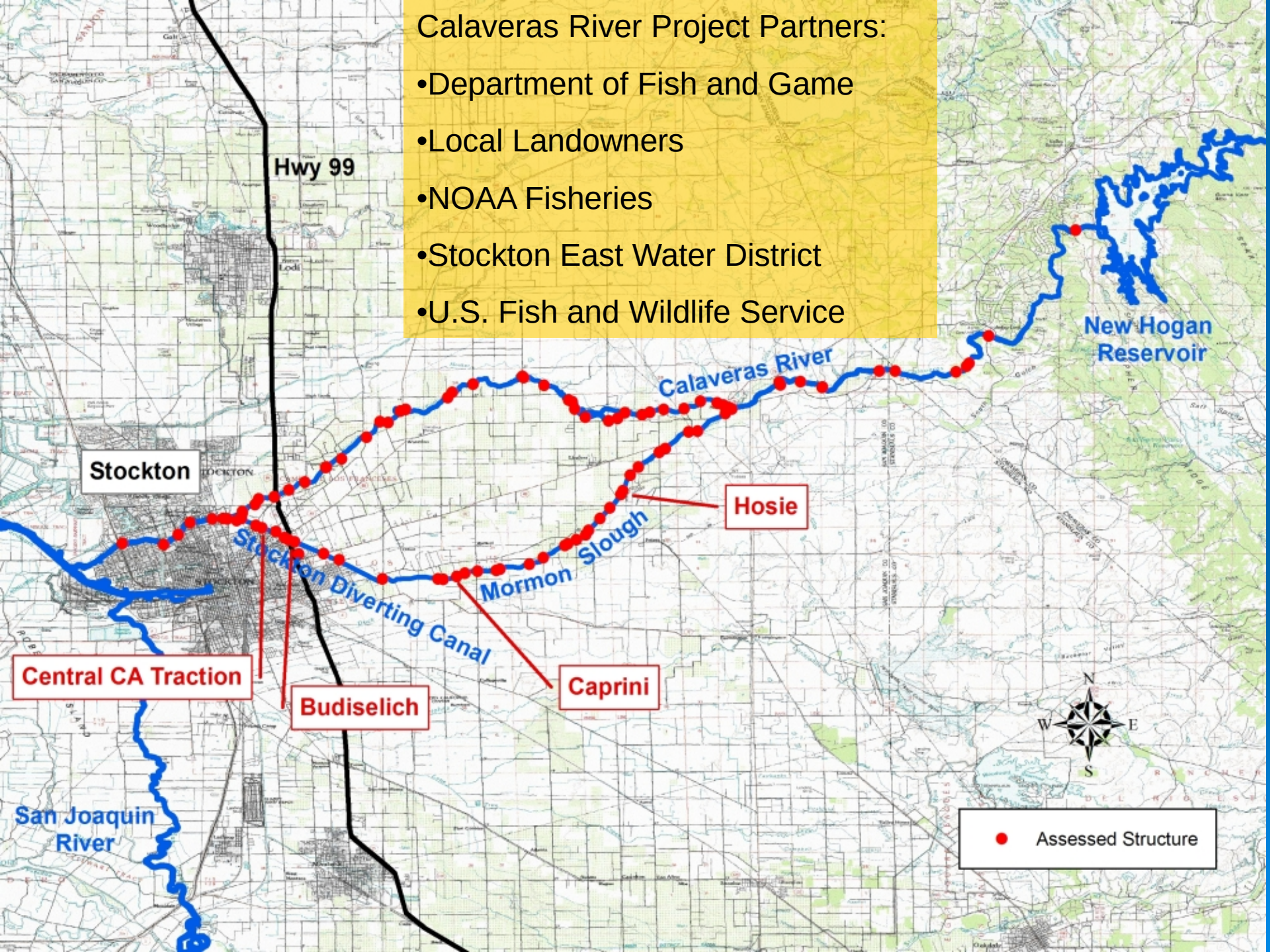

Hwy 99
Stockton
Calaveras River
New Hogan Reservoir
Hosie
Mormon Slough
Stockton Diverting Canal
Central CA Traction
Budiselich
Caprini
San Joaquin River
N
W
E
S
Assessed Structure

Calaveras River Downstream of New Hogan Dam

Photo by J.D. Wikert

Calaveras River Project Partners:

- Department of Fish and Game
- Local Landowners
- NOAA Fisheries
- Stockton East Water District
- U.S. Fish and Wildlife Service

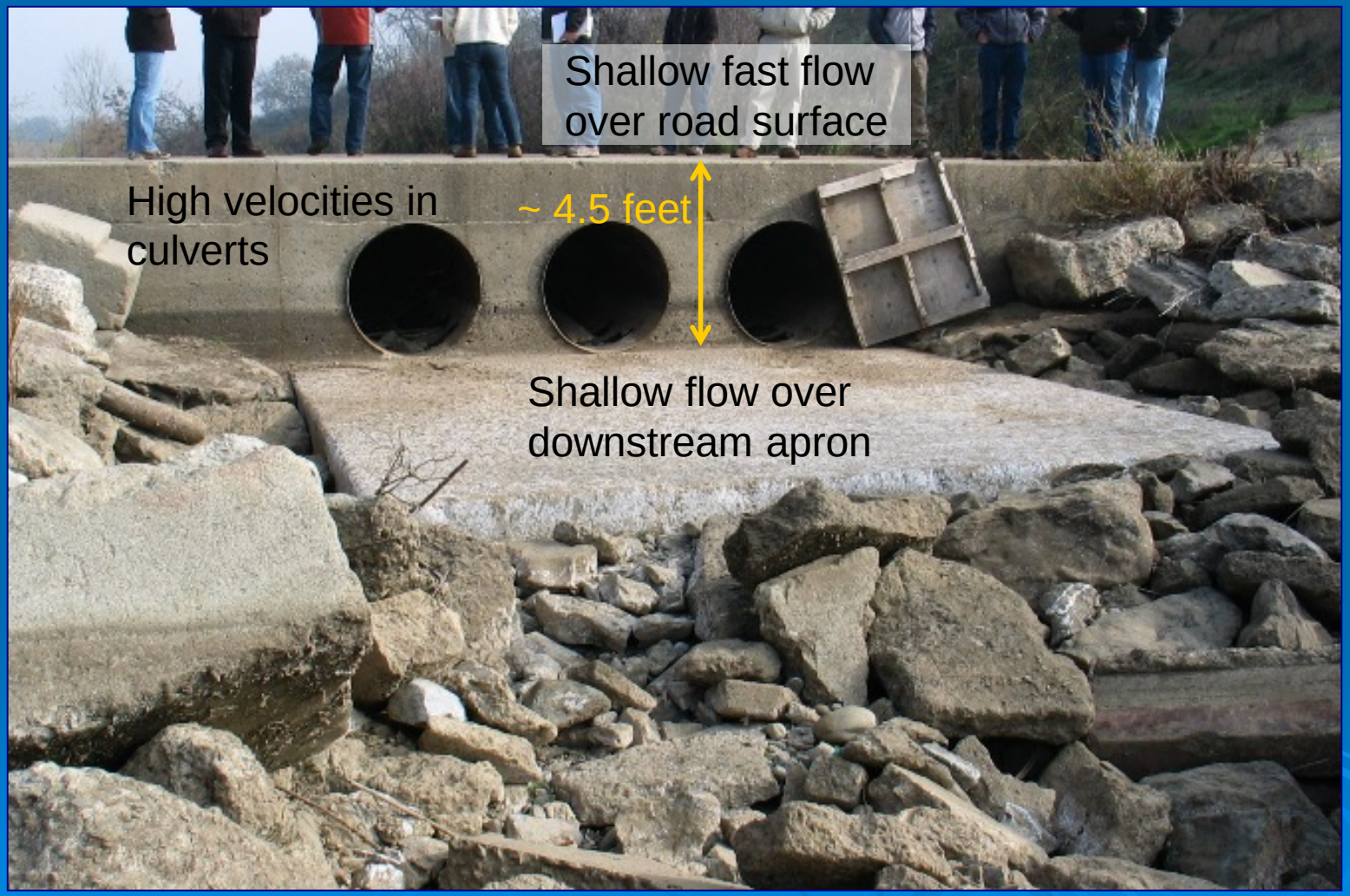


Hosie Low-flow Road Crossing

Hosie Low-flow Road Crossing

Caprini Low-flow Road Crossing

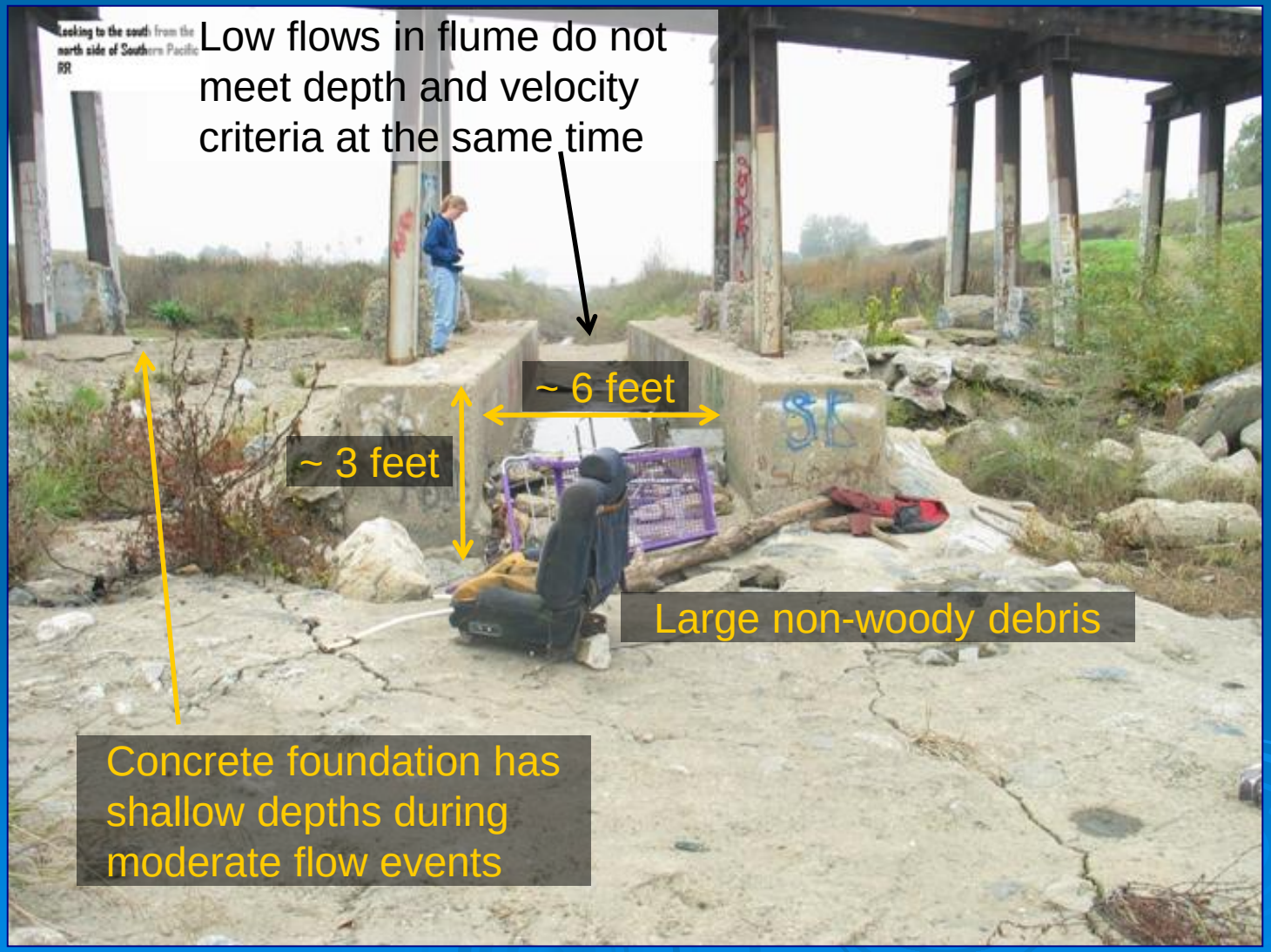
Caprini Low-flow Road Crossing



Caprini Low-flow Road Crossing

Central CA Traction RR

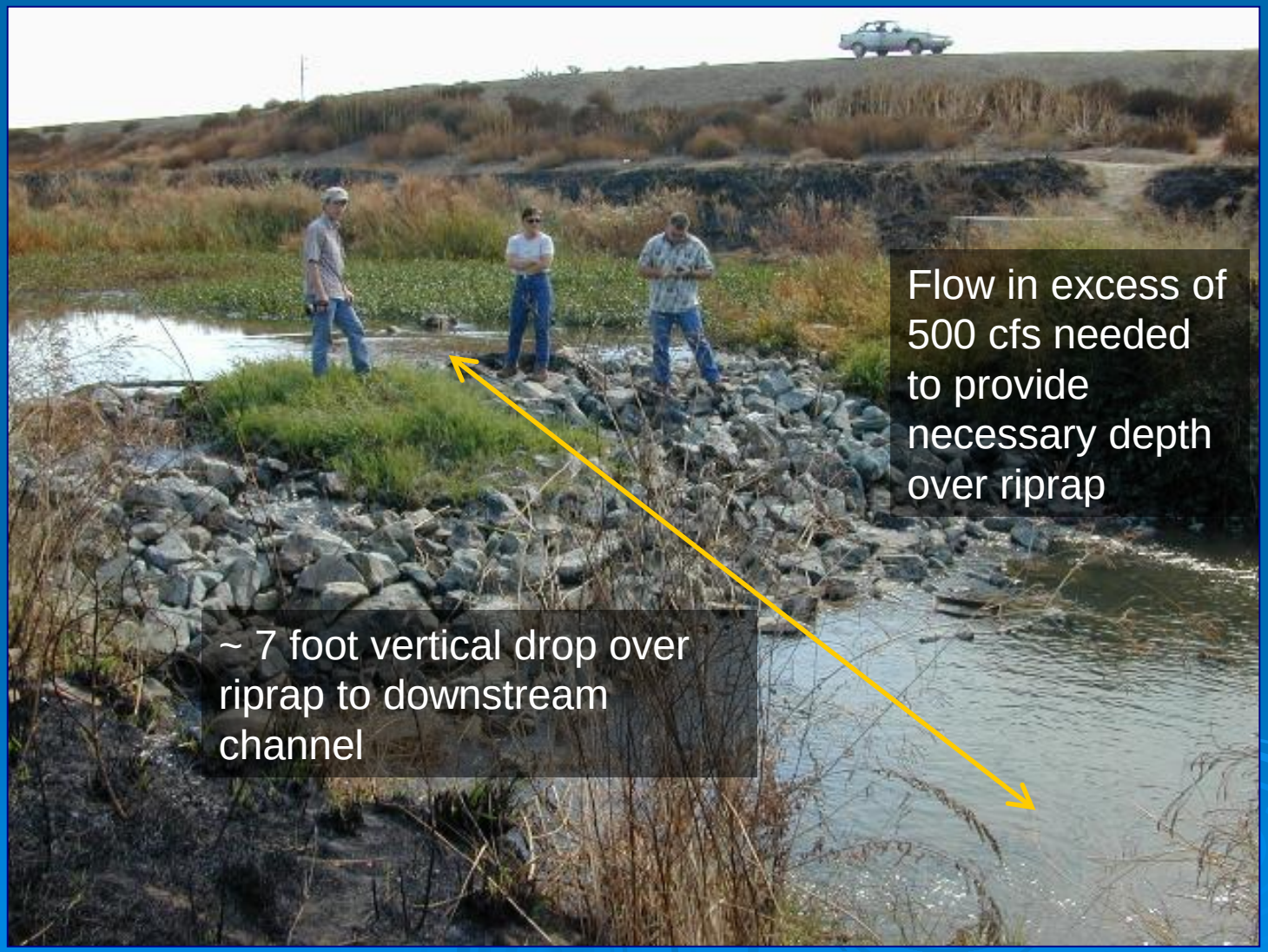
Central CA Traction RR



Central CA Traction RR

Budiselich Flashboard Dam

Budiselich Flashboard Dam



Passage Results for Calaveras Structures

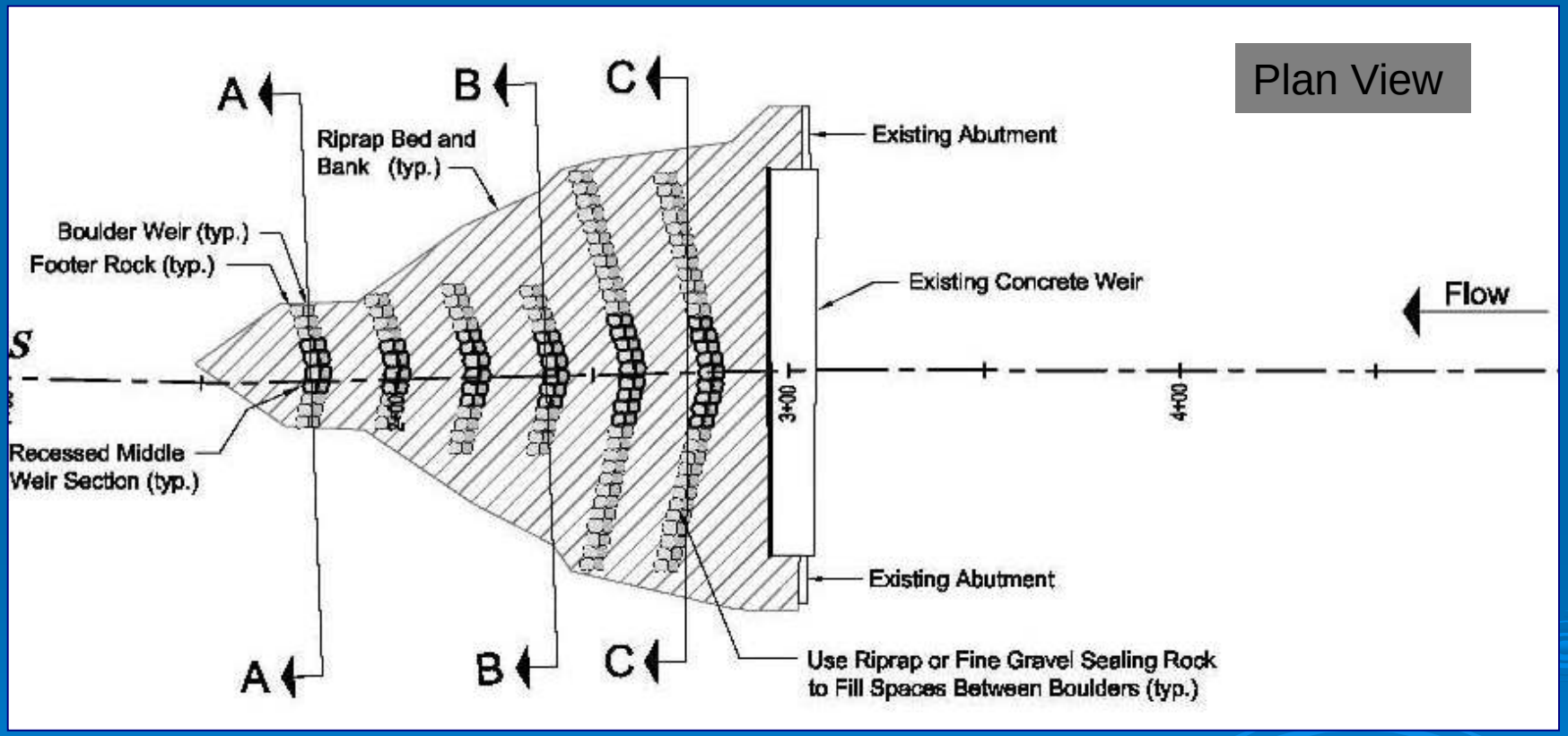
		Hosie LFC		Caprini LFC		Central CA Traction RR		Budiselich	
		Adult	Juv	Adult	Juv	Adult	Juv	Adult	Juv
Flow for unimpaired passage		460	100	730	120	210	11	570	170
% of time flow occurs	Chinook	3	30	1	20	5	46	2	18
	Steelhead	14		10		18		12	

Budiselich Flashboard Dam

Alternatives Considered

- Removing the structure was not considered since it may be needed for water diversion in the future
- Several fish ladders were ruled out because of problems with routing flow to the ladder, attracting fish, stabilizing the structure, and handling debris

Proposed Design



Lessons Learned – So Far

- Rip rap is bad
- Competing interests can limit your ability to provide passage

Conclusions

- There are 201 Caltrans road crossings on anadromous streams that have not been assessed for fish passage.
- Solutions are possible with competing interests
- Don’t put riprap in the water way

Are there any questions?

Thanks to Randy Beckwith, Thomas Dunklin, Trevor Greene, Doug Killam, James Newcomb, J.D. Wikert, and all the Fish Passage Improvement Program staff.

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