



Restoration Goal Technical Feedback Group Meeting

San Joaquin River Restoration Program

April 21, 2011

CSU Stanislaus, Turlock, CA



Agenda

- Introductions
- Program Background
- Technical Feedback Group Context
- TFG Meeting Purpose
- Program Updates
- Presentation monitoring/analysis studies
- Next Meeting



Introductions

- Name
- Agency or Affiliation



Settlement Background

- 1988 Lawsuit filed challenging Reclamation's renewal of the long-term contracts with Friant Division contractors
- 2004 Federal Judge rules Reclamation violated Section 5937 of the Fish and Game Code
- 2005 Settlement negotiations reinitiated to avoid remedy phase
- 2006 Settlement Agreement reached, implementation begins
- 2009 Federal legislation enacted



Settlement Goals

- **Restoration Goal**
 - To restore and maintain fish populations in “good condition” in the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally reproducing and self-sustaining populations of salmon and other fish.
- **Water Management Goal**
 - To reduce or avoid adverse water supply impacts to all of the Friant Division long-term contractors that may result from the Interim Flows and Restoration Flows provided for in the Settlement.

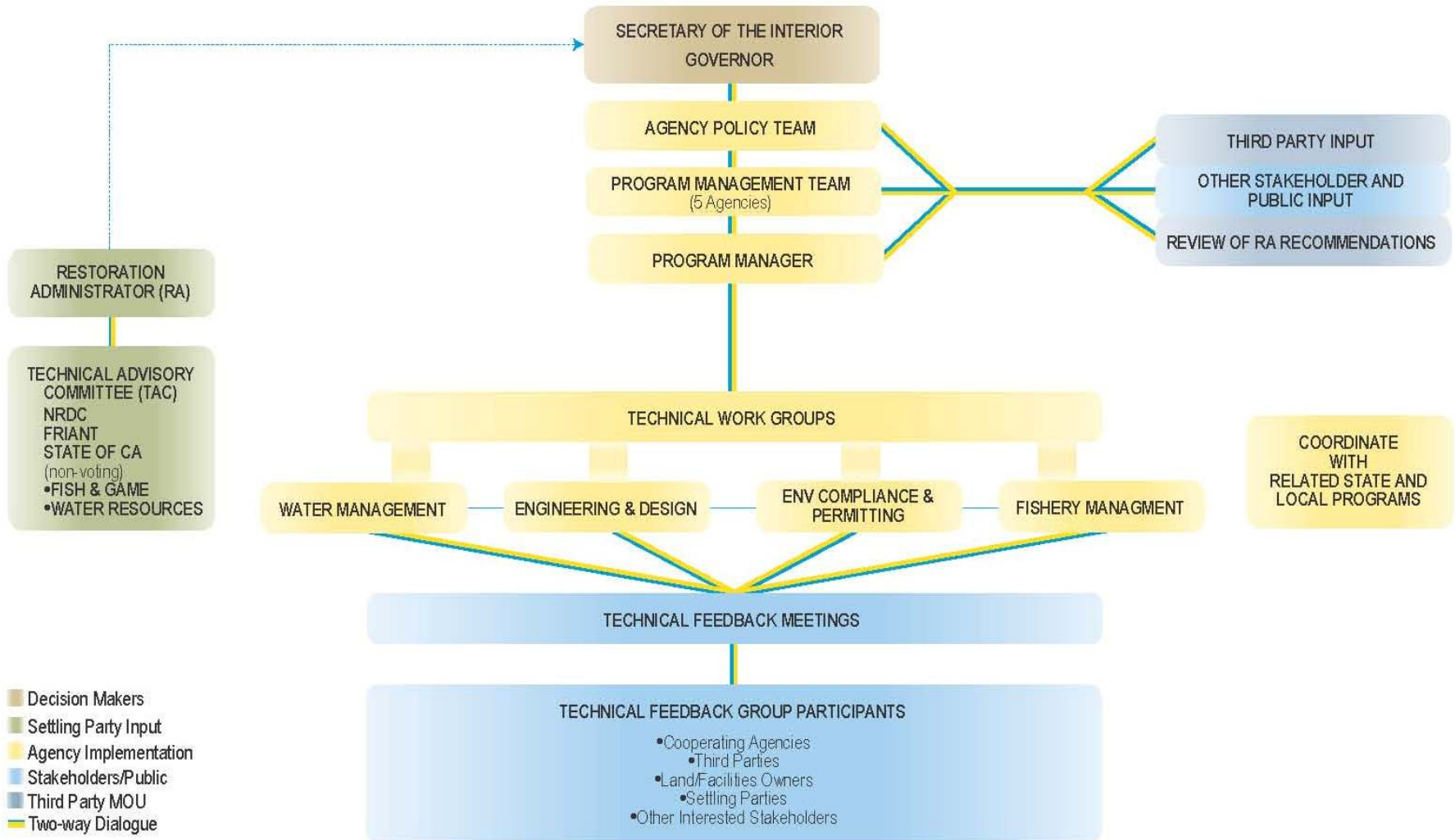


Implementing Agencies

- **Federal Agencies:**
 - Bureau of Reclamation
 - Fish and Wildlife Service
 - National Marine Fisheries Service
- **State Agencies:**
 - Department of Water Resources
 - Department of Fish and Game

Technical Feedback Meetings

SJRRP Organizational Chart

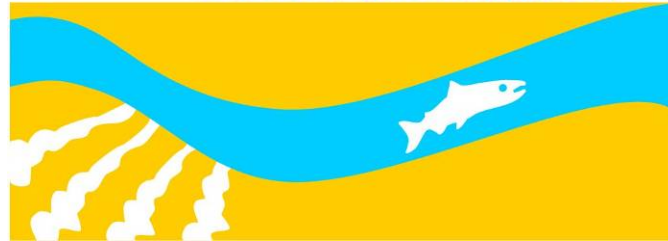




Restoration TFG Meeting Purpose

- Exchange of restoration technical information between the Implementing Agencies, Cooperating Agencies, Settling Parties, Third Parties, landowners, and other interested stakeholders.
- Today's meeting: presentation of select monitoring/analysis results from the 2010 Annual Technical Report.

SAN JOAQUIN RIVER
RESTORATION PROGRAM



Juvenile Chinook Telemetry Study

Kim Webb

U.S. Fish and Wildlife Service

April 21, 2011

Restoration Goal Technical Feedback Group Meeting
Turlock

Study Goals and Objectives

- Track movement of juvenile chinook salmon through the Restoration Area
- Develop information that will inform reintroduction efforts in 2012





Methods

- Feather River Fall Run Chinook salmon

- 1200 fish to be released at two locations in 4 release groups.

- Acoustic Telemetry

- Vemco 180 kHz receivers at key locations

- Above and below mine pits, decision points for fish migration (bypasses, structures)

- Range = 75 m radius.



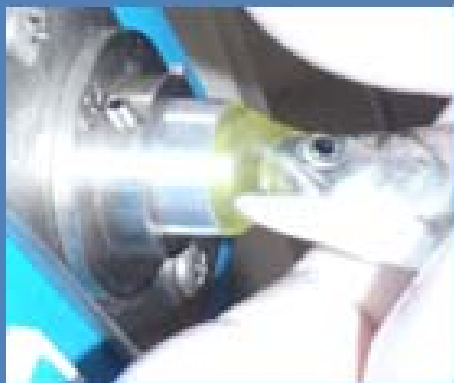
Methods (cont)



Each fish is adipose clipped, coded wire tagged

~ Every 10th fish is surgically implanted with an acoustic tag

Recovered and held for 24 hours minimum





Methods (cont)



Fish recovering and holding in circular tanks at the Interim Conservation Facility

Fish anaesthetized with 50mg/l MS-222

Water treated with baking soda (to control pH) and stress coat (artificial fish slime)

Temperature and DO monitoring continuously



Methods (cont)

- Acoustic Telemetry (cont)
 - Release locations
 - Below Friant Dam (2 replicate groups)
 - Below Chowchilla Bypass (2 replicate groups)
 - Release Groups
 - Four groups – 250 coded wire tagged fish +48 acoustic tagged fish
 - 2 acoustic tagged fish from each group will be held in the hatchery to determine tag life





Methods (cont)

Acoustic Telemetry (cont)

- **Mobile Tracking**

To compliment stationary receiver data

- **Download stationary receivers**

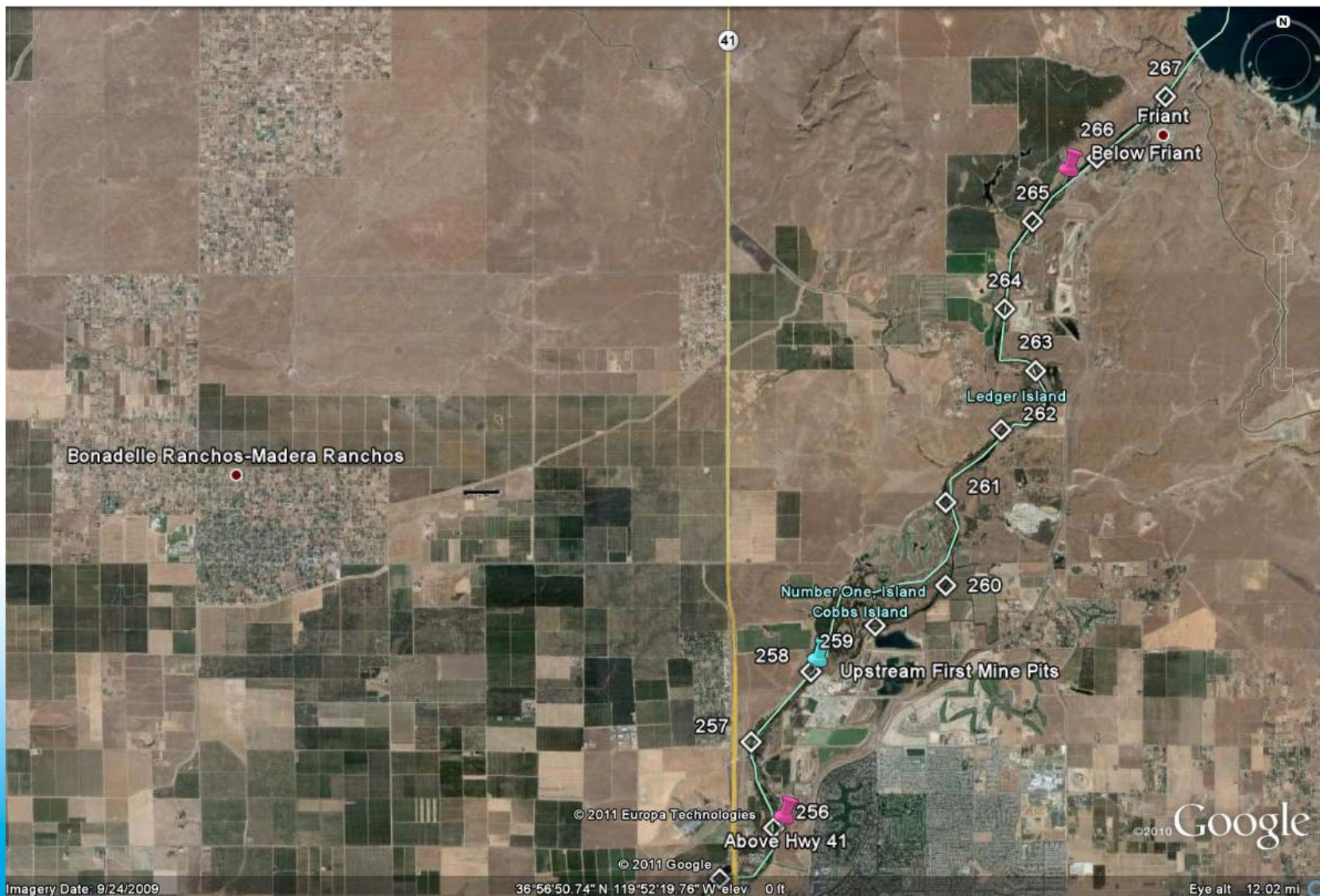
- Tag specifications

- ~ 63 days life

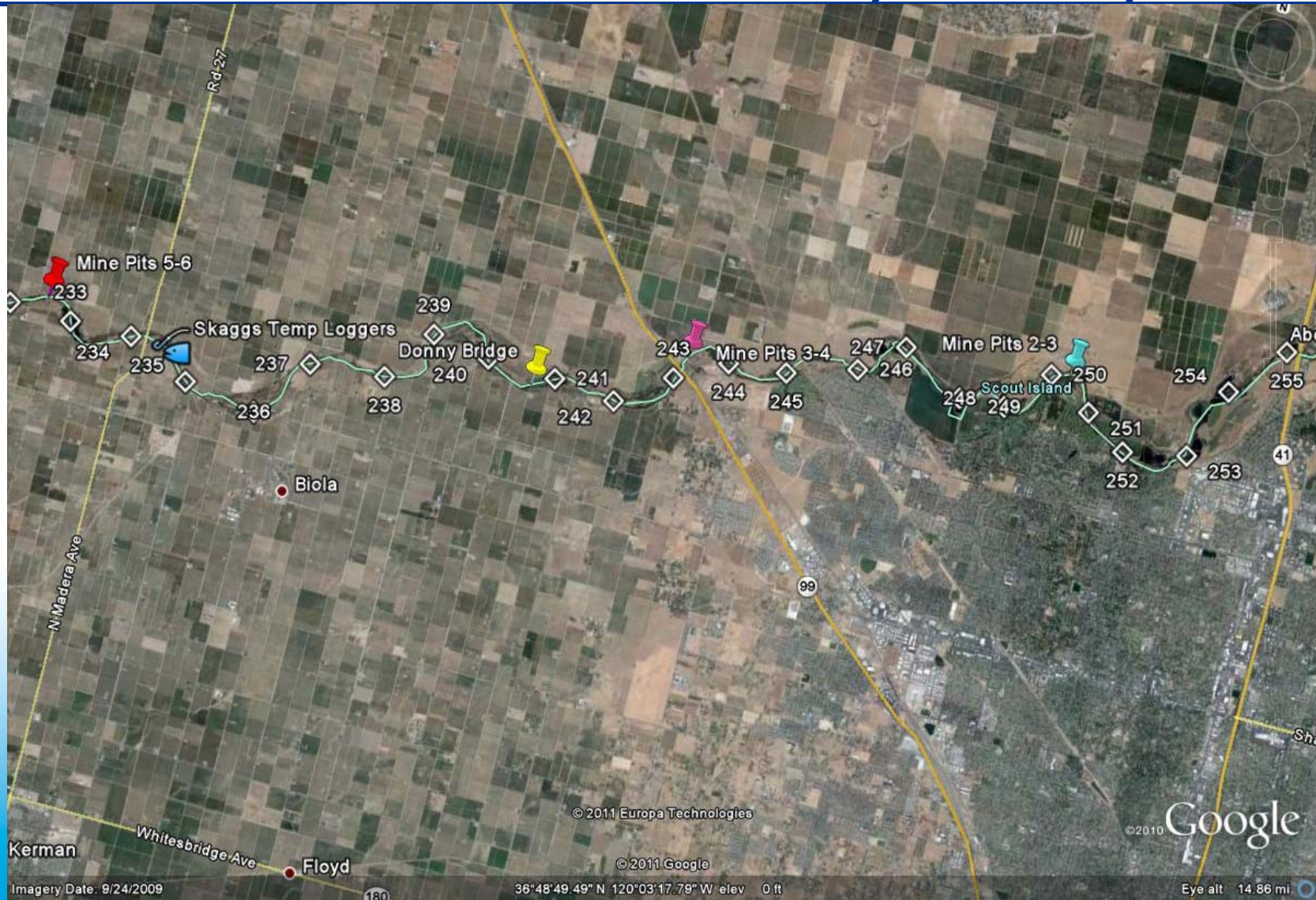
- Ping rate 30 second random delay



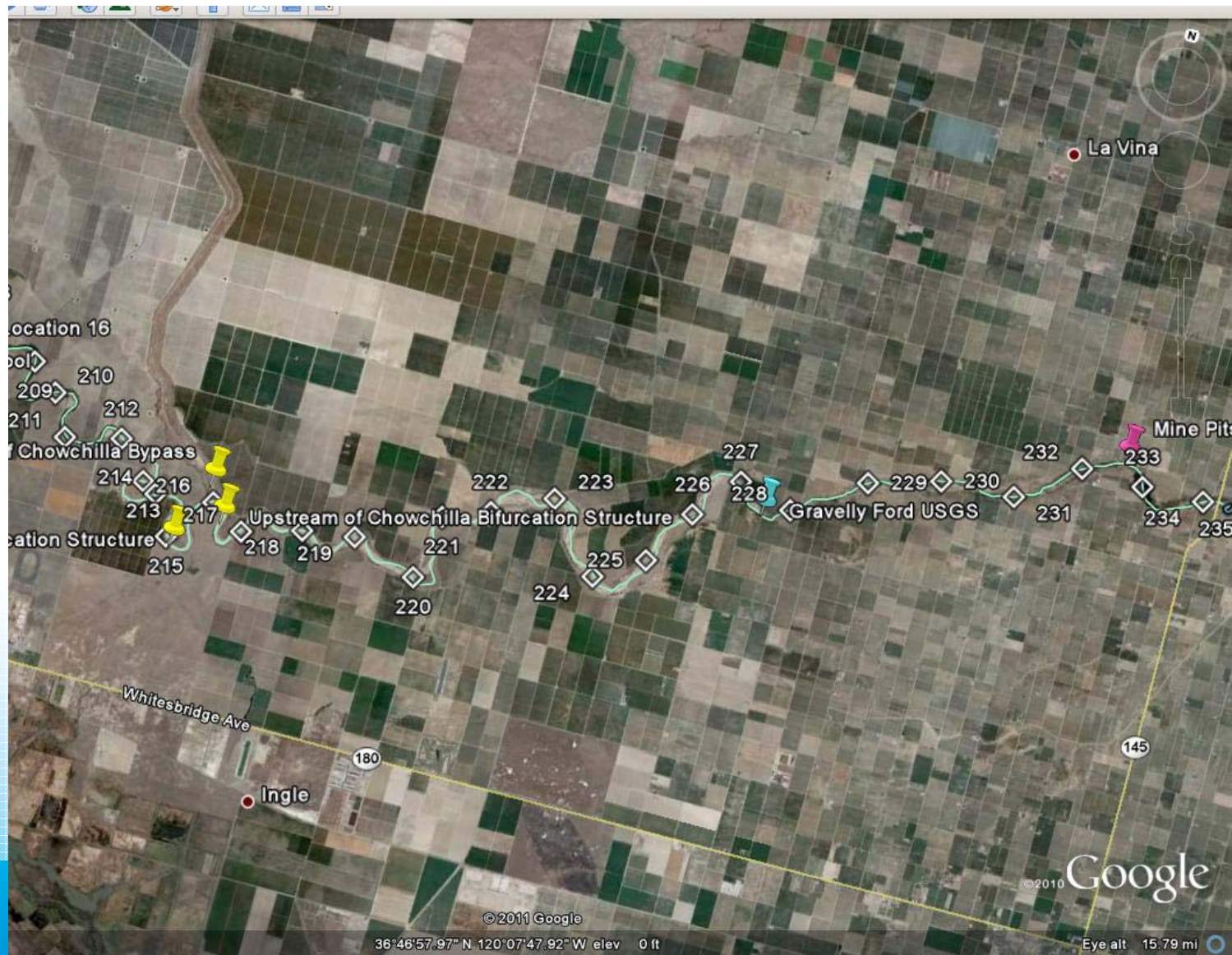
Receiver locations – Friant to Hwy 41



Receiver locations –Hwy 41- Hwy 99

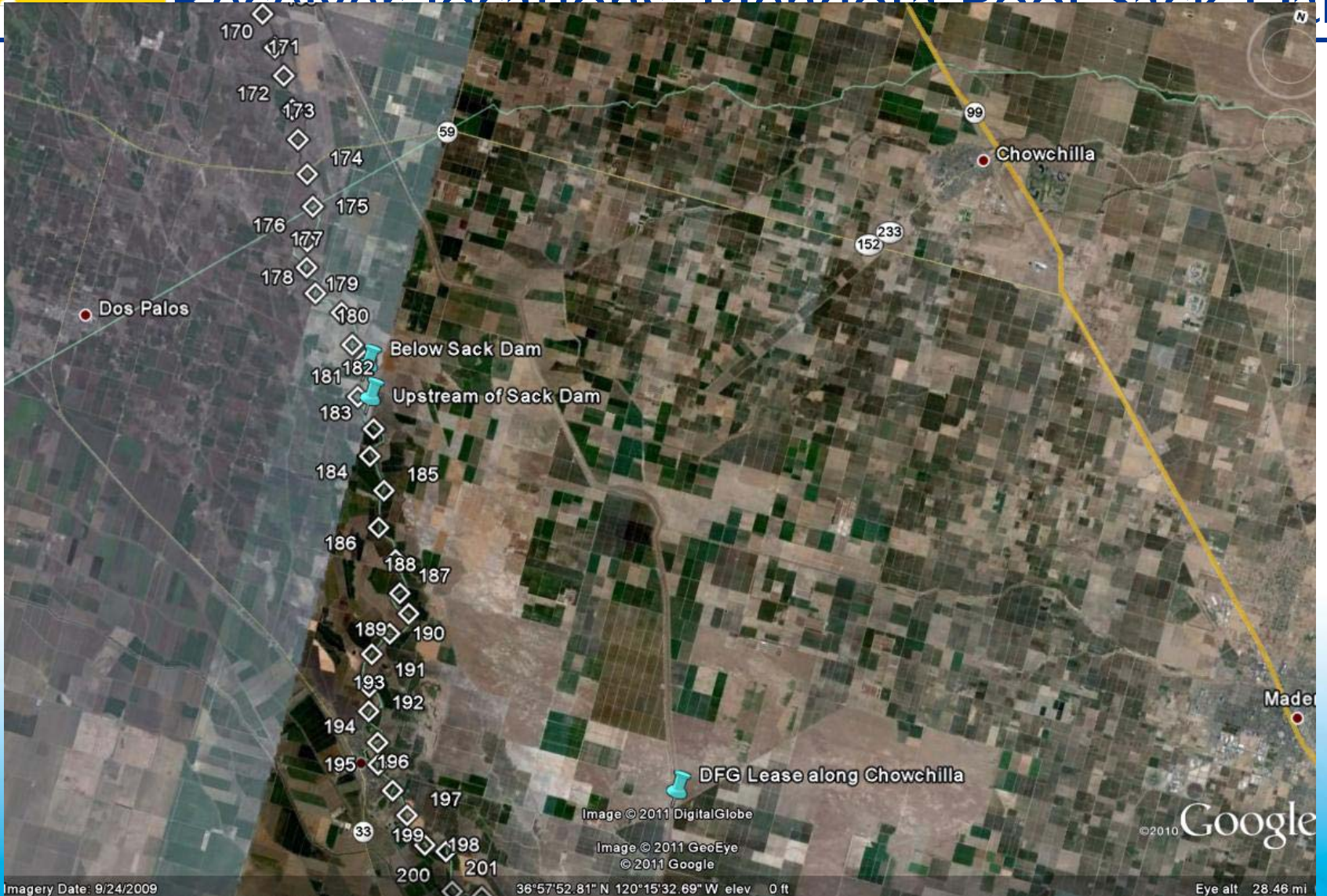


Receiver locations –Hwy 145- Chowchilla

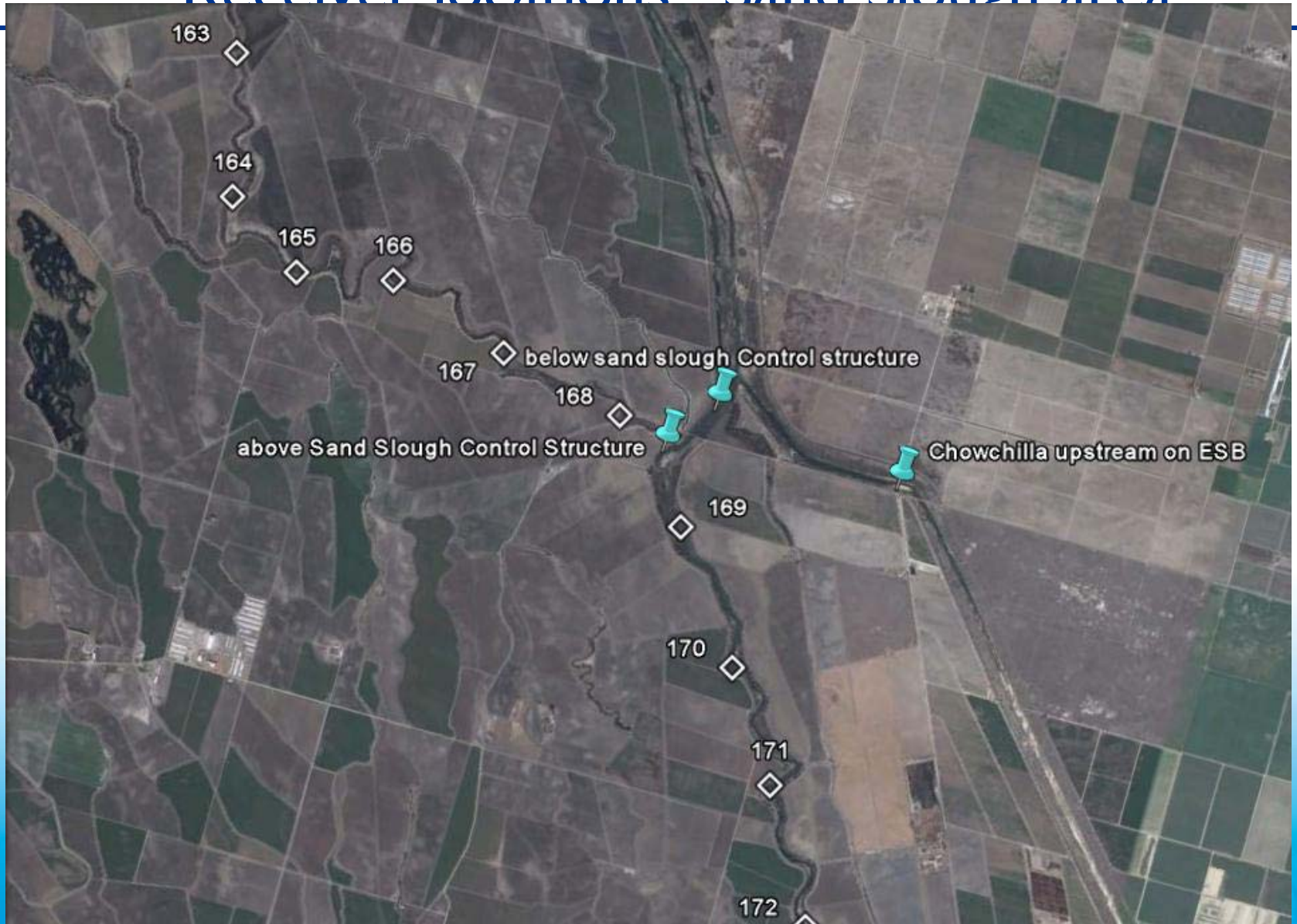




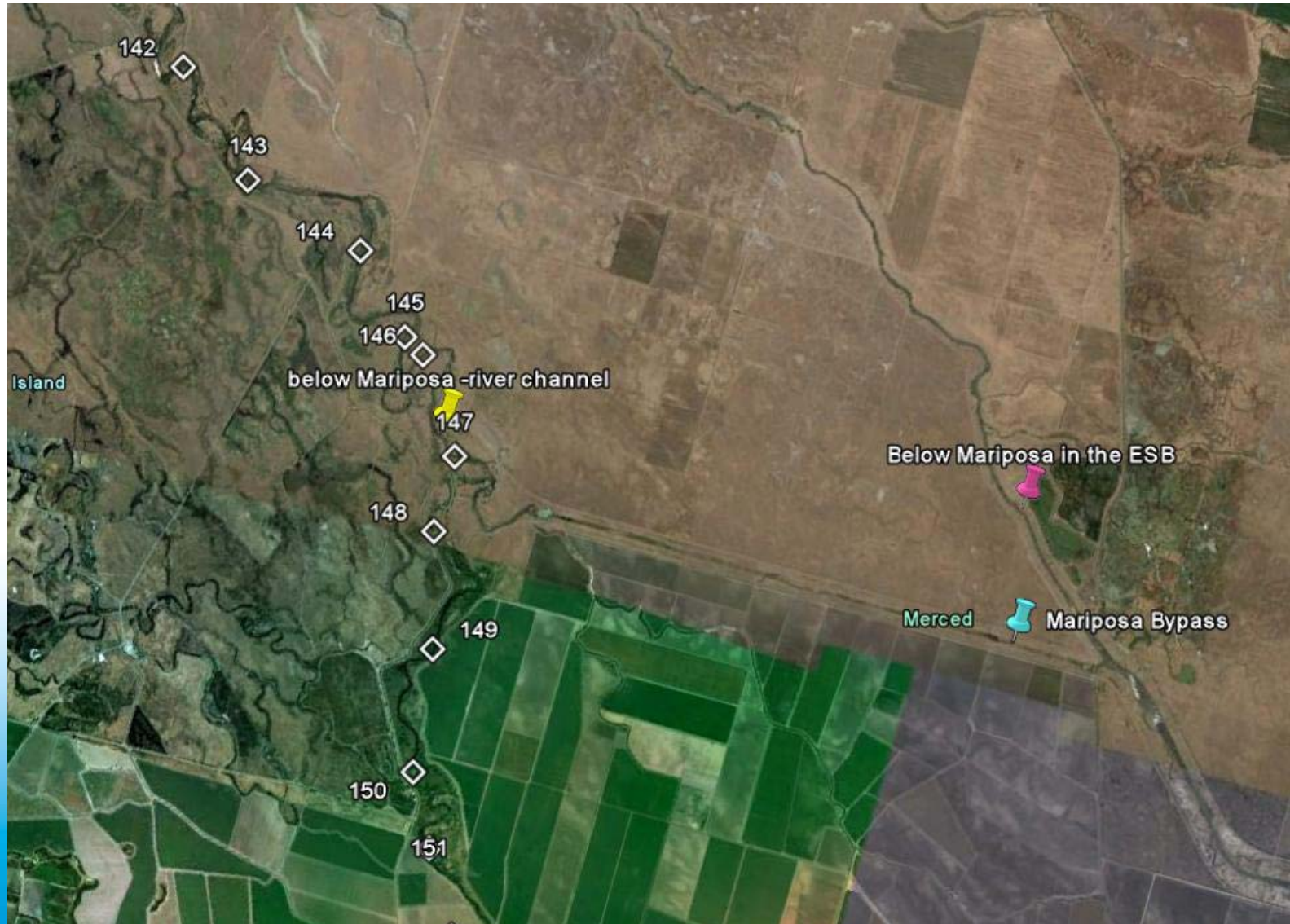
Receiver Locations: Mendota Pool Sack Dam



Receiver locations – Sand Slough area



Receiver locations: East Side and Mariposa





Status

- Complete tagging and receiver deployment

Target: Wednesday evening

- Releases

Target: All releases Thursday (today!)



Program Updates

Interim Flows/ Flood Control Operations

Dave Mooney
Reclamation

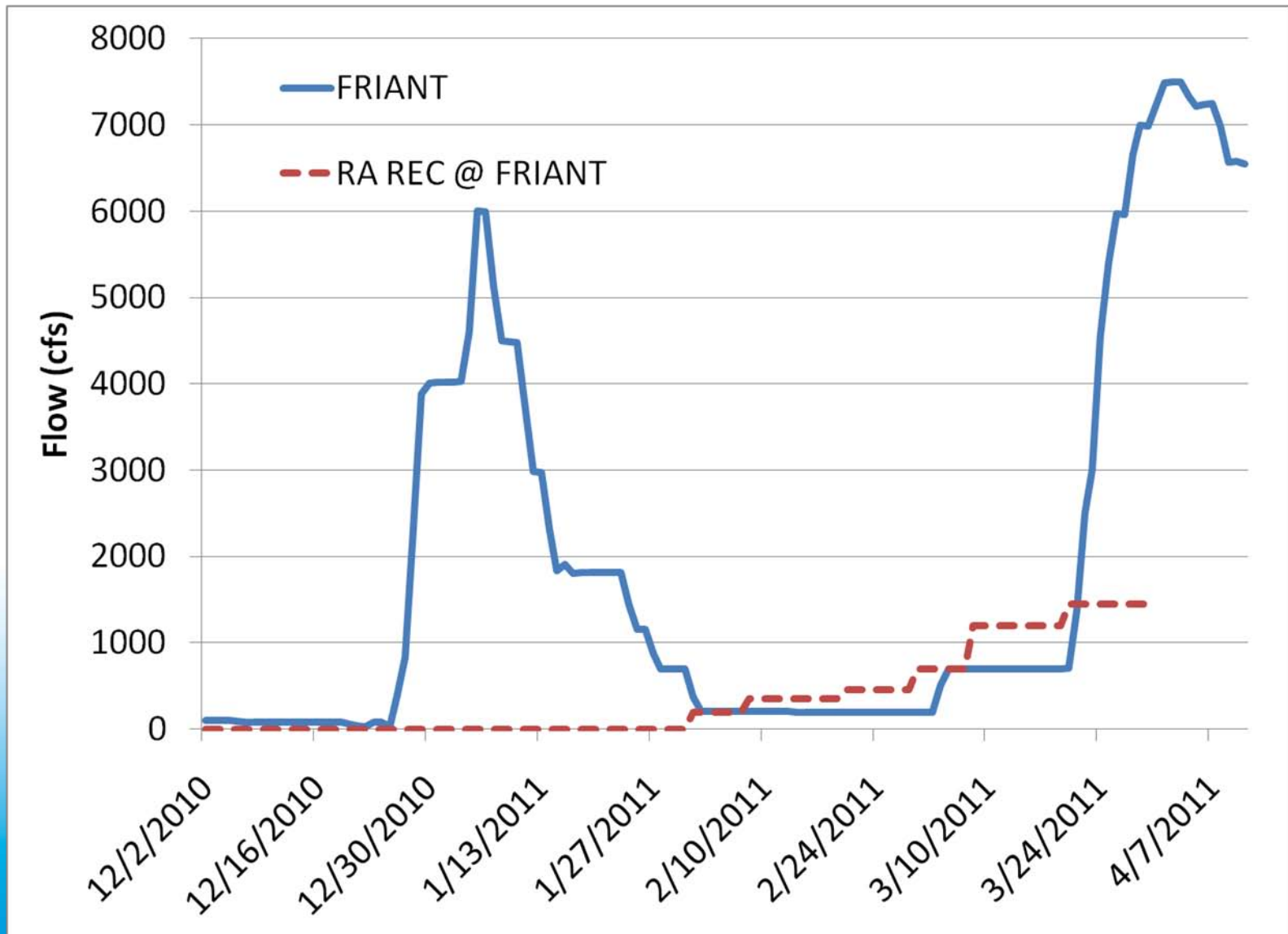
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Purpose

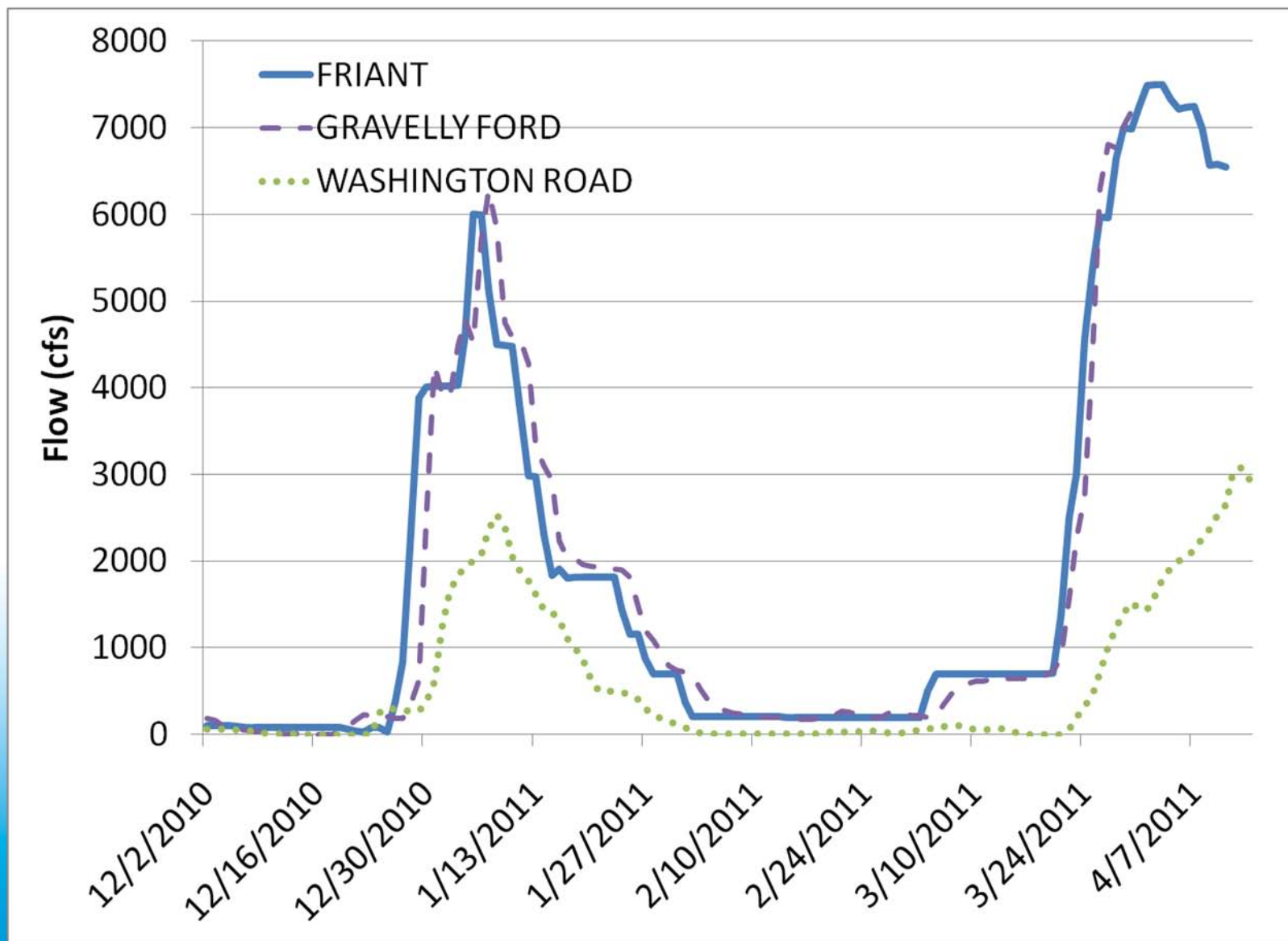
- To collect relevant data concerning flows, temperatures, fish needs, seepage losses, recirculation, recapture and reuse.
- Current Data Collection includes:
 - Flow Measurements
 - Water Surface Profile Surveys
 - Groundwater Measurements
 - Temperature Measurements
 - Water Quality Measurements
 - Sediment Studies
 - Aerial Photos
 - Fish Tagging Study

Friant Releases compared to initial RA Recommendation



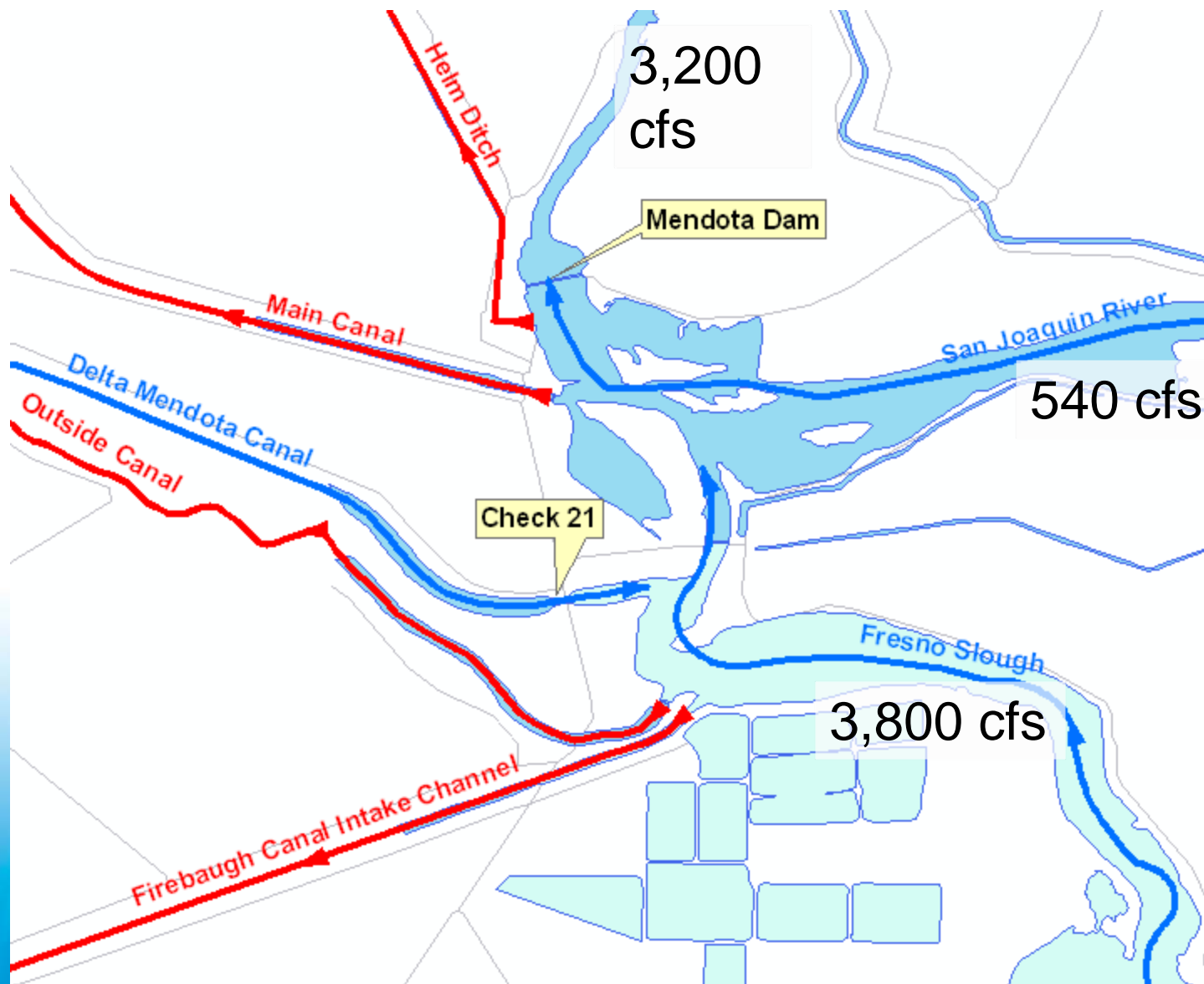


Downstream Flows





Mendota Pool 4/20/2011





Reach 4B Headgates





Questions?



Program Updates

Program EIS/R

Michelle Banonis
Reclamation

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Program Environmental Document

Release & Distribution:

- April 22, 2011 : Release of Program Environmental Impact Statement/Environmental Report (PEIS/R)
- The document will be sent to interested parties, federal agencies, state and local agencies, elected officials, and tribal entities
- Public notice of the document's availability will be through media, on the SJRRP web site, and via mailings
- Start of 60-day comment period (June 21, 2011)

Program Environmental Document

Public Hearings:

- Visalia: Tuesday, May 24 @ 10:00 a.m.
- Fresno: Tuesday May 24 @ 6:00 p.m.
- Los Banos: Wednesday, May 25 @ 6:00 p.m.
- Sacramento: Thursday, May 26 @ 1:30 p.m.



Program Environmental Document

Public Comment & Response

- Written comments may be provided at any time during the comment period
- Oral comments may be provided at any of the public hearing venues
- Comments become part of the PEIS/R public record
- DWR and Reclamation have a responsibility to address substantive comments

Additional Information

Public meeting information and documents will be available at:

www.restoresjr.net

or contact:

For Process, Comment, or Review
Questions:

Michelle Banonis

Natural Resources Specialist

mbanonis@usbr.gov

916-978-5457

For Distribution or Outreach Questions:

Margaret Gidding

Outreach Coordinator

mgidding@usbr.gov

916-978-5461



Annual Technical Report

Erin Rice
Reclamation

April 21, 2011
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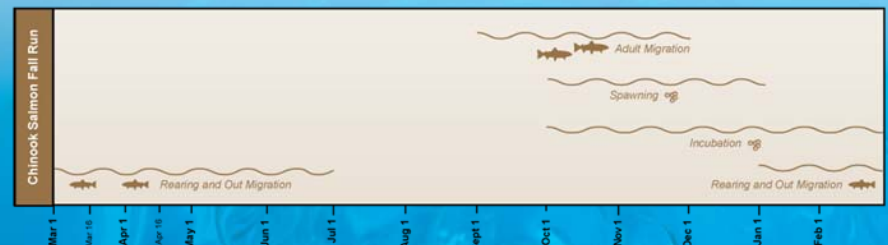
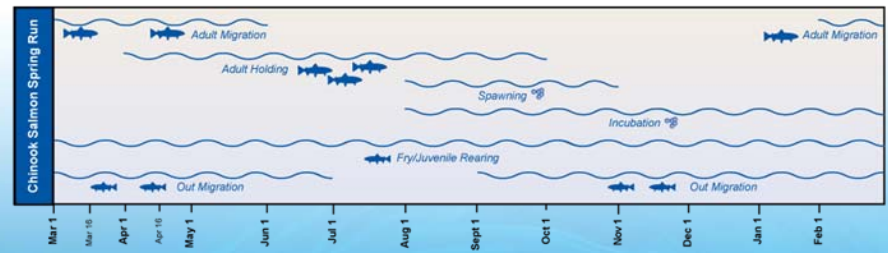
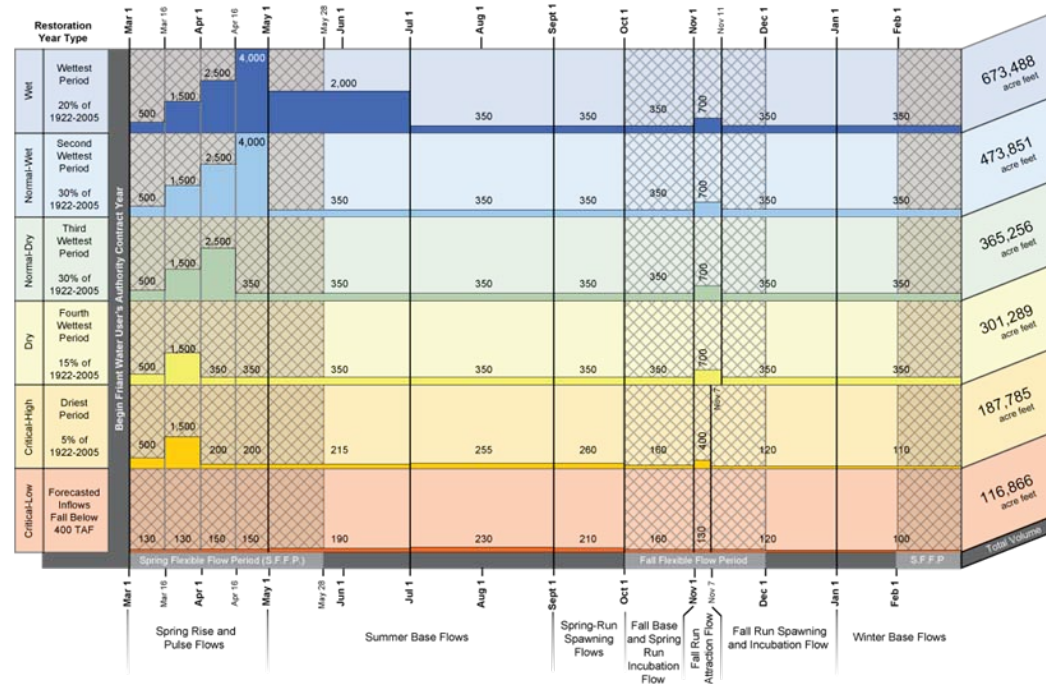


Outline

- Background/ Settlement Requirements
- Annual Planning/Reporting Schedule
- Documents
- Conclusions

Background

- SJRRP is a comprehensive long-term effort to restore:
 - flows
 - self-sustaining Chinook salmon fishery
 - while reducing or avoiding adverse water supply impacts





Settlement Requirements

- Channel and Structural Improvements
- Restoration Flows
- Reintroduction of Salmonids
- Interim Research Program and Releases
- Water Management

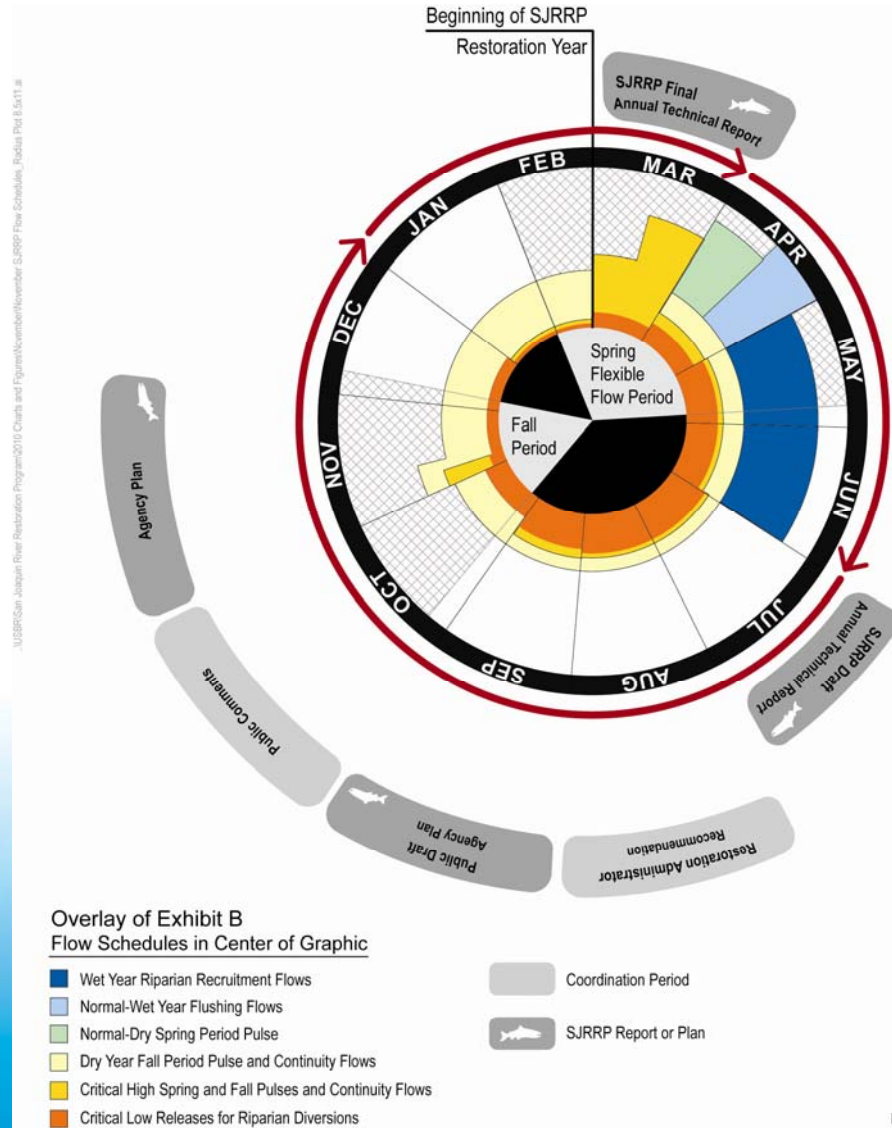


Interim Flows Monitoring

- Interim Flows to collect relevant data concerning physical and biological parameters.
 - Install monitoring network
 - Develop studies
 - Data collection
 - Data analysis
 - Reporting



Planning and Reporting Schedule





Planning

Monitoring and Analysis Plan (Agency Plan)

- Presents the Implementing Agencies' monitoring and analysis activities(**Studies**) for the next year of SJRRP.



Reporting

Annual Technical Report

- Reports monitoring and analysis results (**Reports**)
- Develops and tracks long-term strategies for SJRRP implementation (**Problem Statements**)
- Identifies uncertainties to resolve in order to implement SJRRP (**Information Needs**)



Conclusions

Planning/Reporting documents assist SJRRP to:

- coordinate monitoring/analysis activities
- report on a regular schedule to a common location
- make information from the Interim Research Program available to inform Settlement implementation



Fisheries Habitat Monitoring

Eric Guzman
*CA Department of Fish
and Game*

April 21, 2011
Restoration Goal Technical Feedback Group Meeting
Turlock



Fisheries Habitat Monitoring

Monitoring – Biological Parameters

- Temperature Monitoring
- Meso-Habitat Mapping



Temperature Monitoring

Goal

- Collect sufficient data to determine if instream temperatures are adequate to support all life-history needs for spring and fall-run Chinook salmon



Temperature Monitoring

Objectives:

- Identify potential warm water sources.
- Collect reliable water temperature data in both reservoir and stream environments at time and space intervals.
- Evaluate Millerton Reservoir flow releases.
- Calibrate models
- Investigate yet to be defined water management alternatives.
- Evaluate restoration flows.



Temperature Monitoring

Methods

- HOBO Water Temp.
Pro v2 by Onset





Temperature Monitoring

Methods

- Loggers arrayed to evaluate all life history stages of Chinook salmon
- Deployed within the thalweg of the river
- Requires a stable anchor point



Temperature Monitoring - Methods



Temperature Monitoring - Methods



Temperature Monitoring - Methods

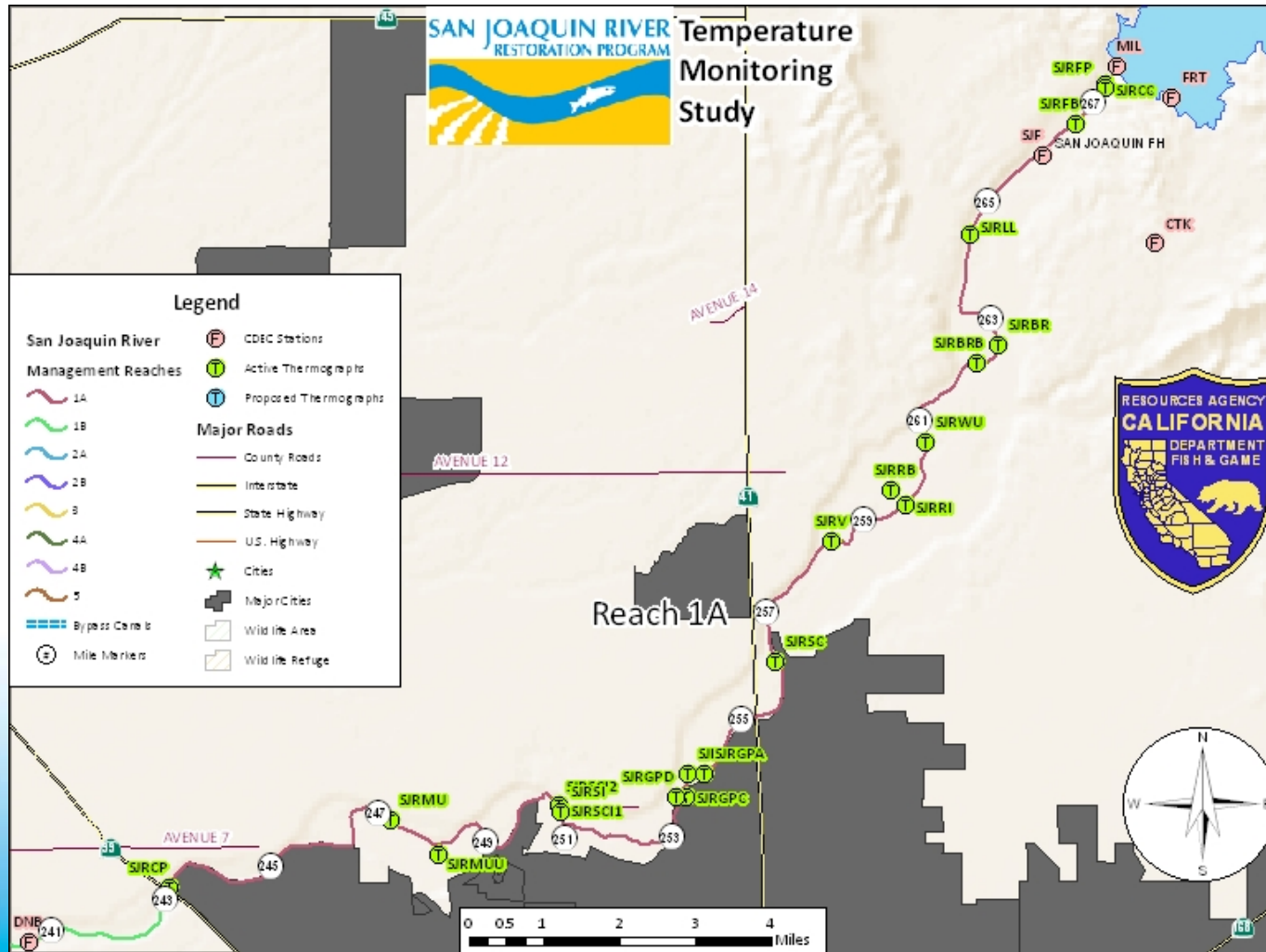




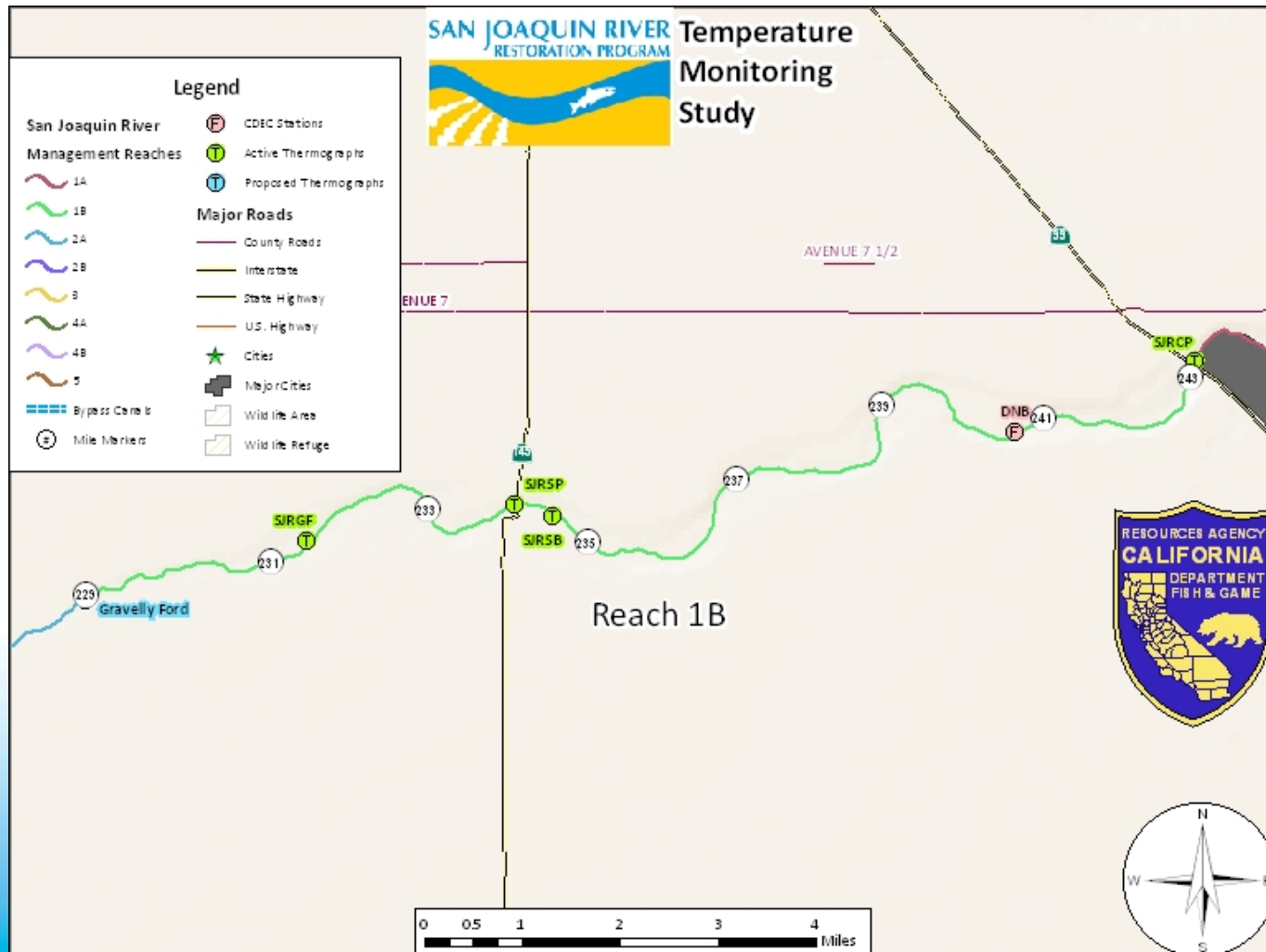
Temperature Monitoring - Methods



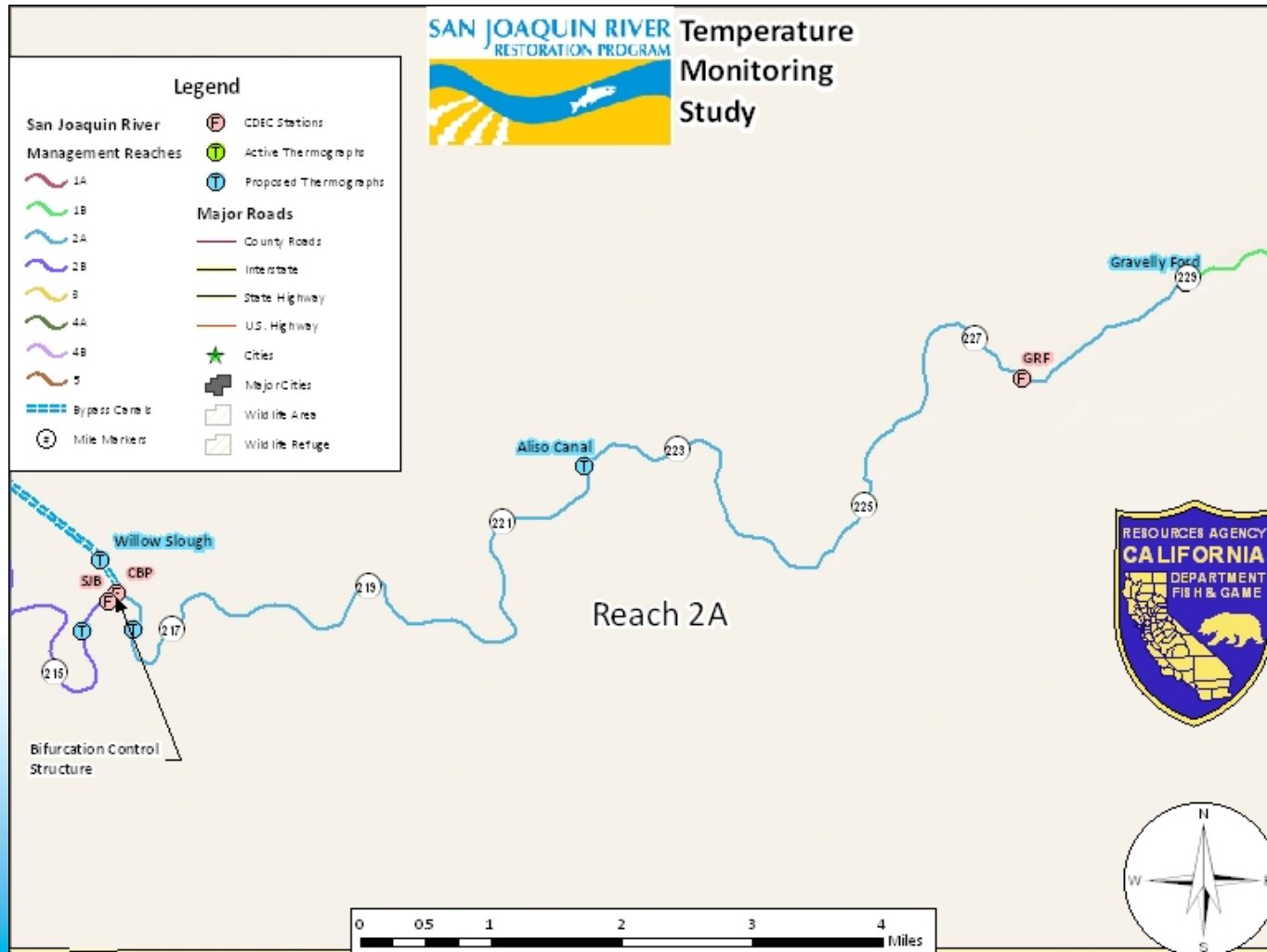
Temperature Monitoring Locations IA



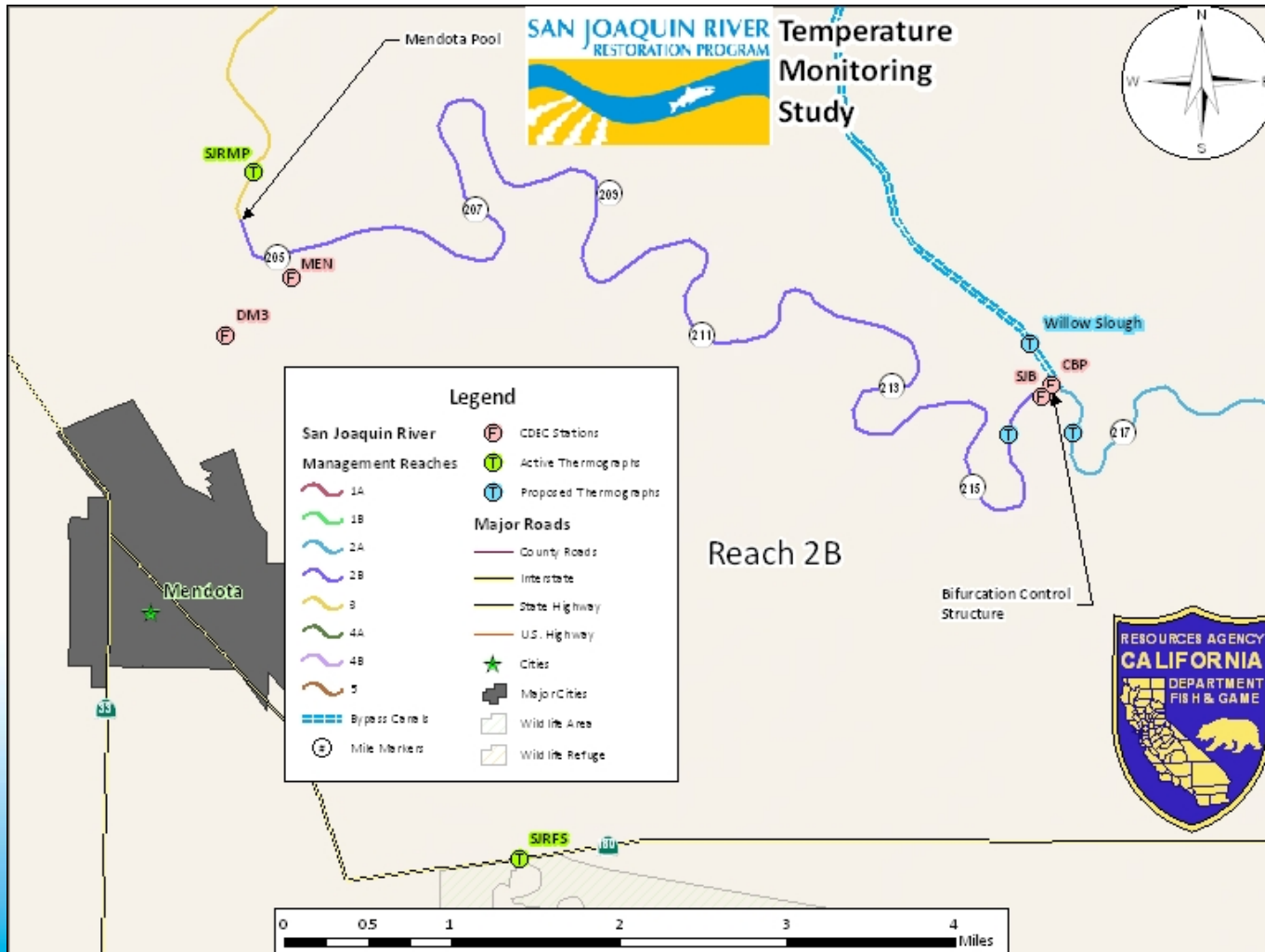
Temperature Monitoring Locations I B



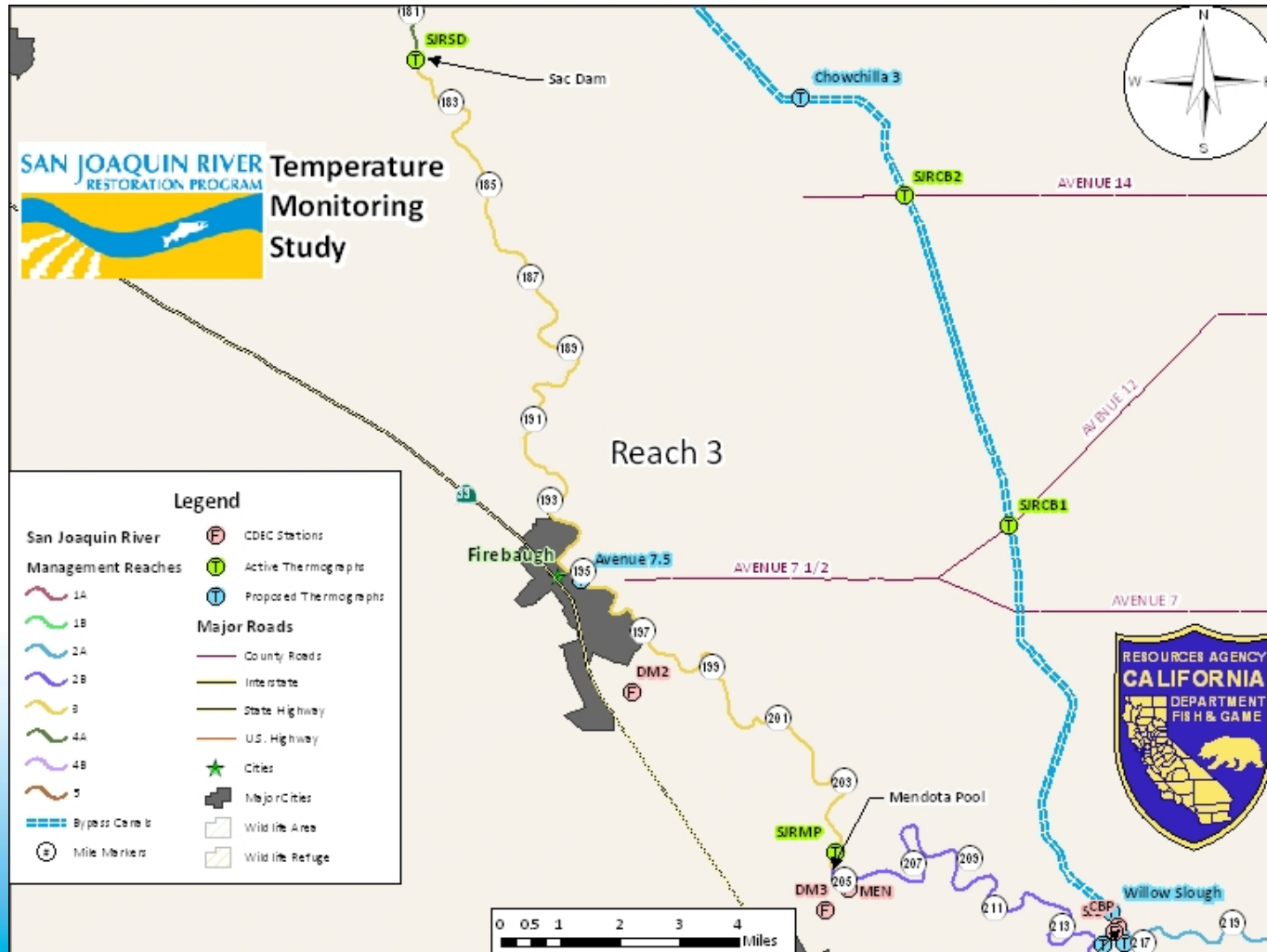
Temperature Monitoring Locations 2A



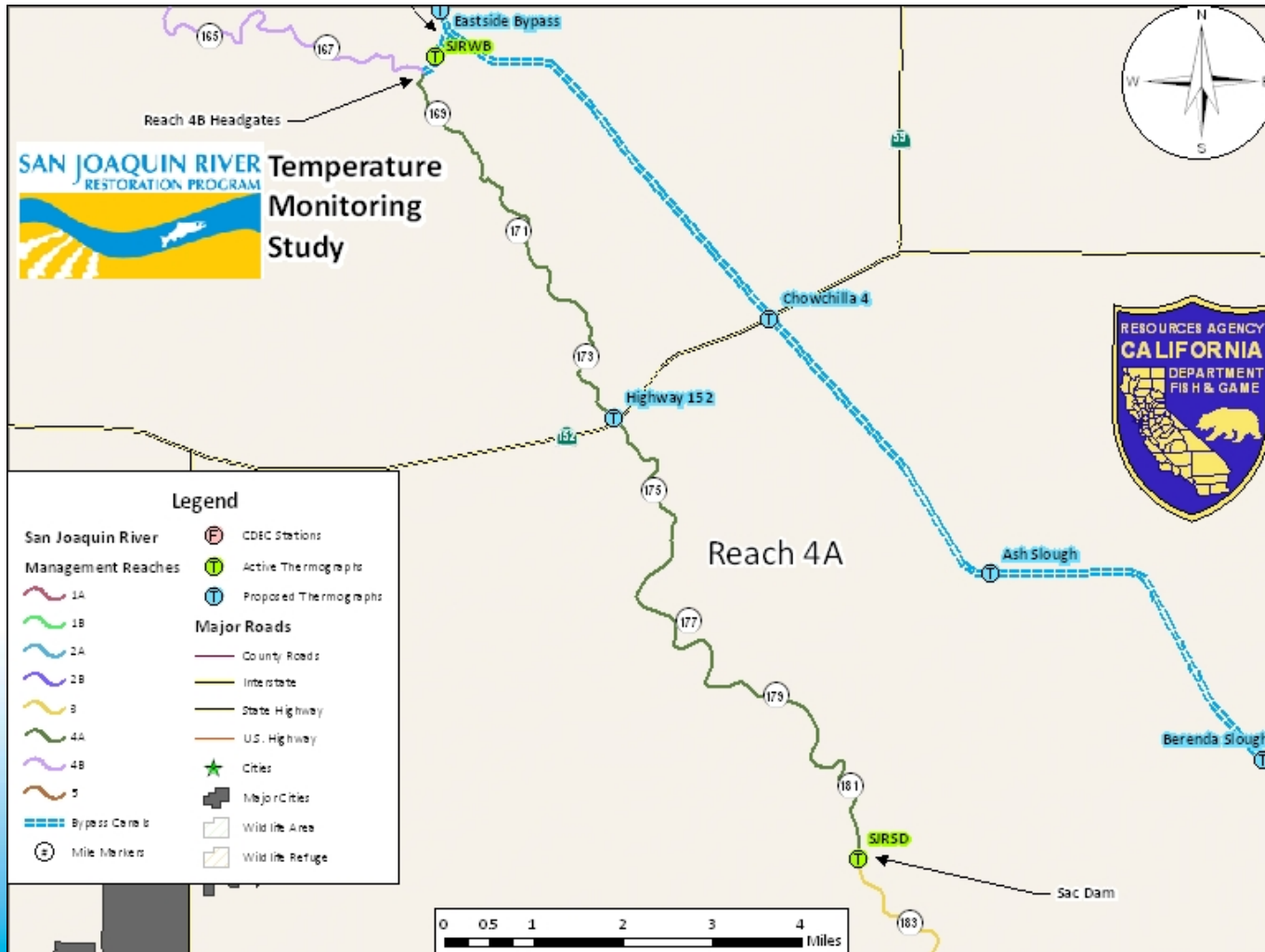
Temperature Monitoring Locations 2B



Temperature Monitoring Locations 3



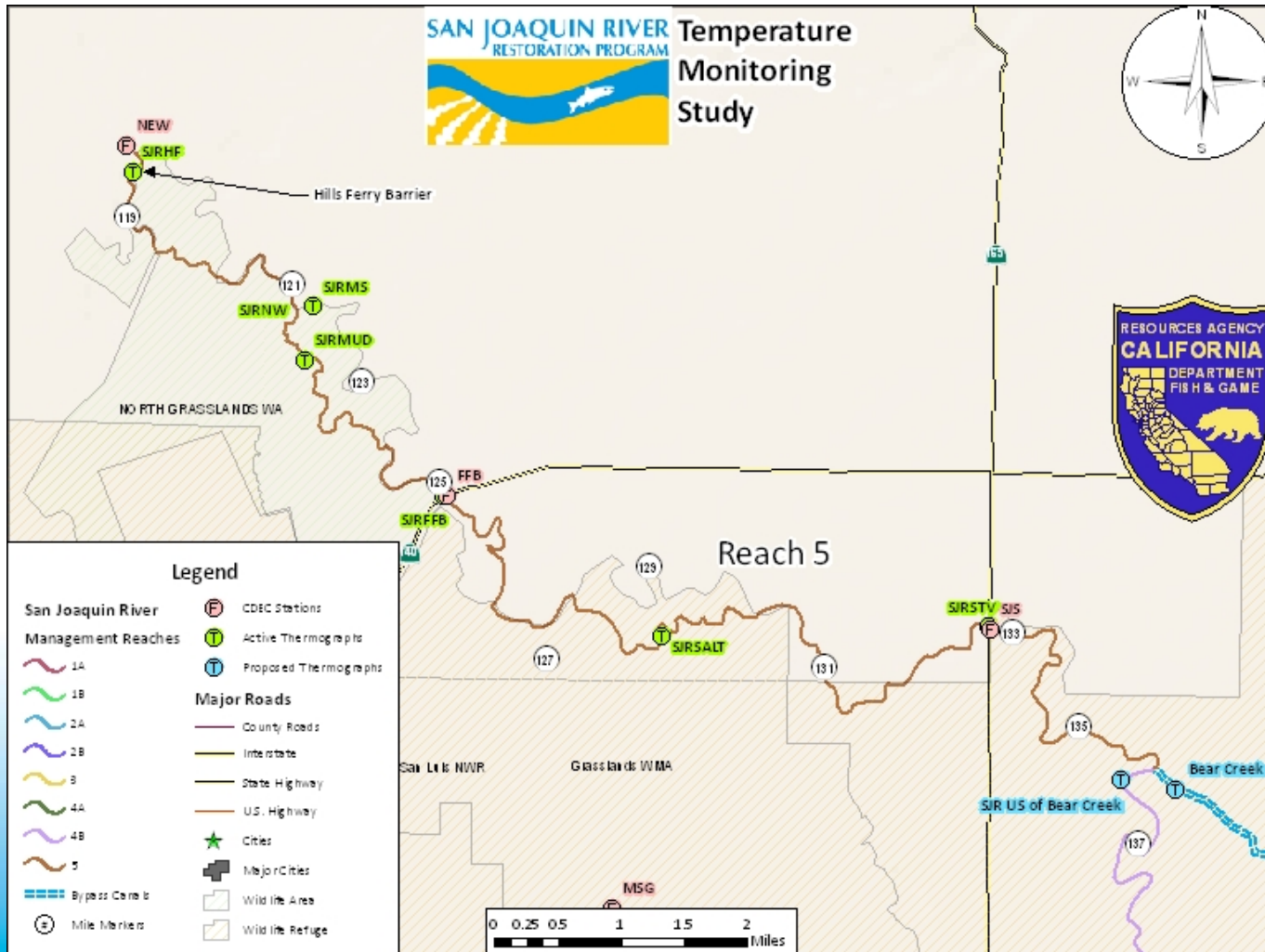
Temperature Monitoring Locations 4A



Temperature Monitoring Locations 4B



Temperature Monitoring Locations 5





Temperature Monitoring

Constraints

- Access
- Vandalism
- High Flows



Temperature Monitoring

Next Steps

- Continue monitoring
- Increase reliability for mining pits
- Evaluate temperature as it relates to restoration flows



Meso-Habitat Mapping

Goal

- Document the longitudinal distribution of habitat units



Meso-Habitat Mapping

Objectives:

- Quantify habitat
- Develop an understanding of how instream habitat responds to flows
- Track habitat changes through time



Meso-Habitat Mapping

Time window	Reach	Friant Dam Release	Local CDEC Site Release
Oct 1-31, 2009	1A	350 cfs	348-353 cfs (MIL)
Jul 12-14, 2010	1B	350 cfs	164-175 cfs (GRF)
Jul 28-29, 2010 Aug 3, 2010	2A+2B	347-355 cfs	121-137 cfs (GRF)
Nov 8, 2010 Nov 10, 2010	4A	353-355 cfs	220-292 cfs (MEN)



Meso-Habitat Mapping

Methods

- Habitat units identified by visually estimating flow, depth, and substrate
- Measure wetted width and depth
- GPS and photo document



Meso-Habitat Mapping



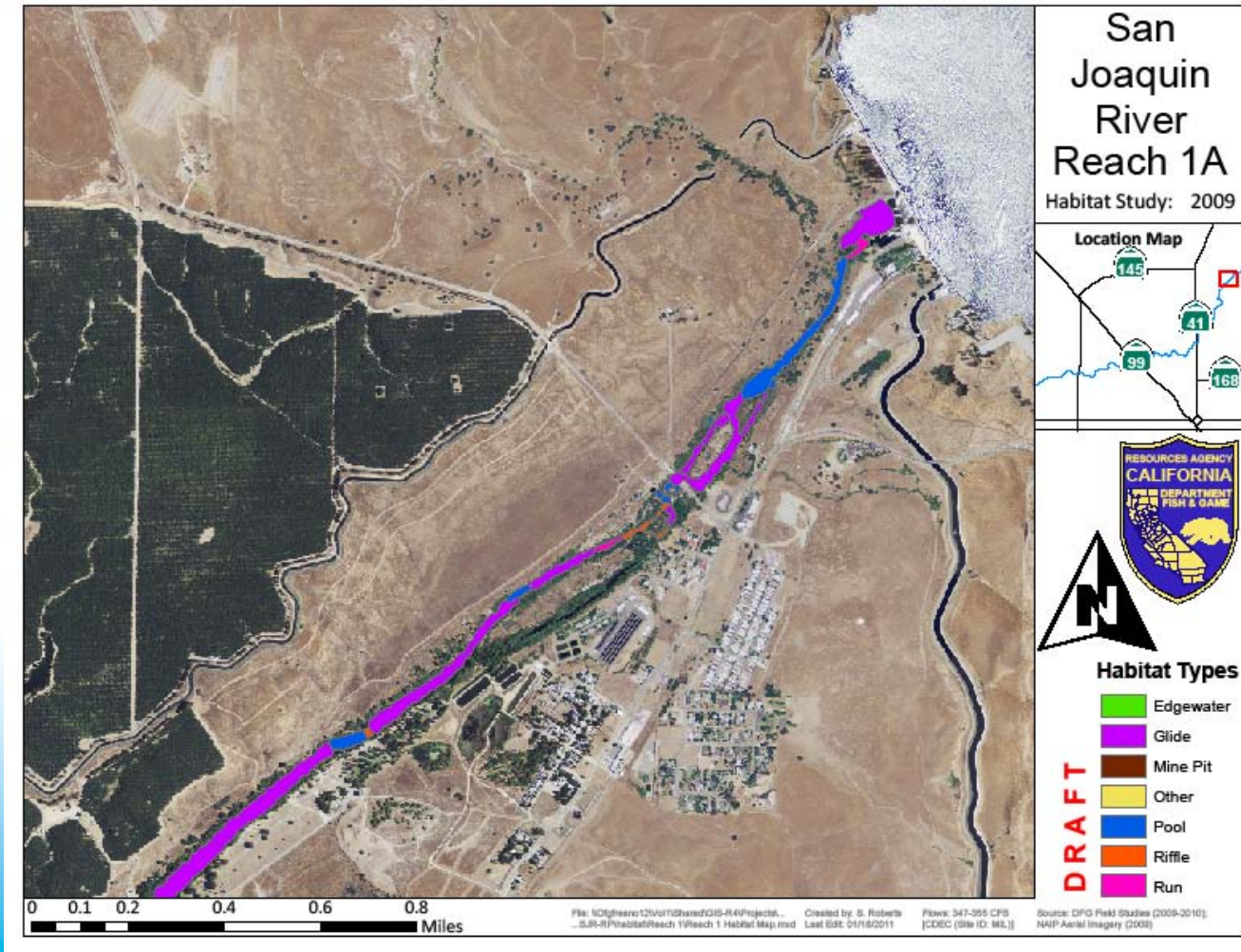


Meso-Habitat Mapping

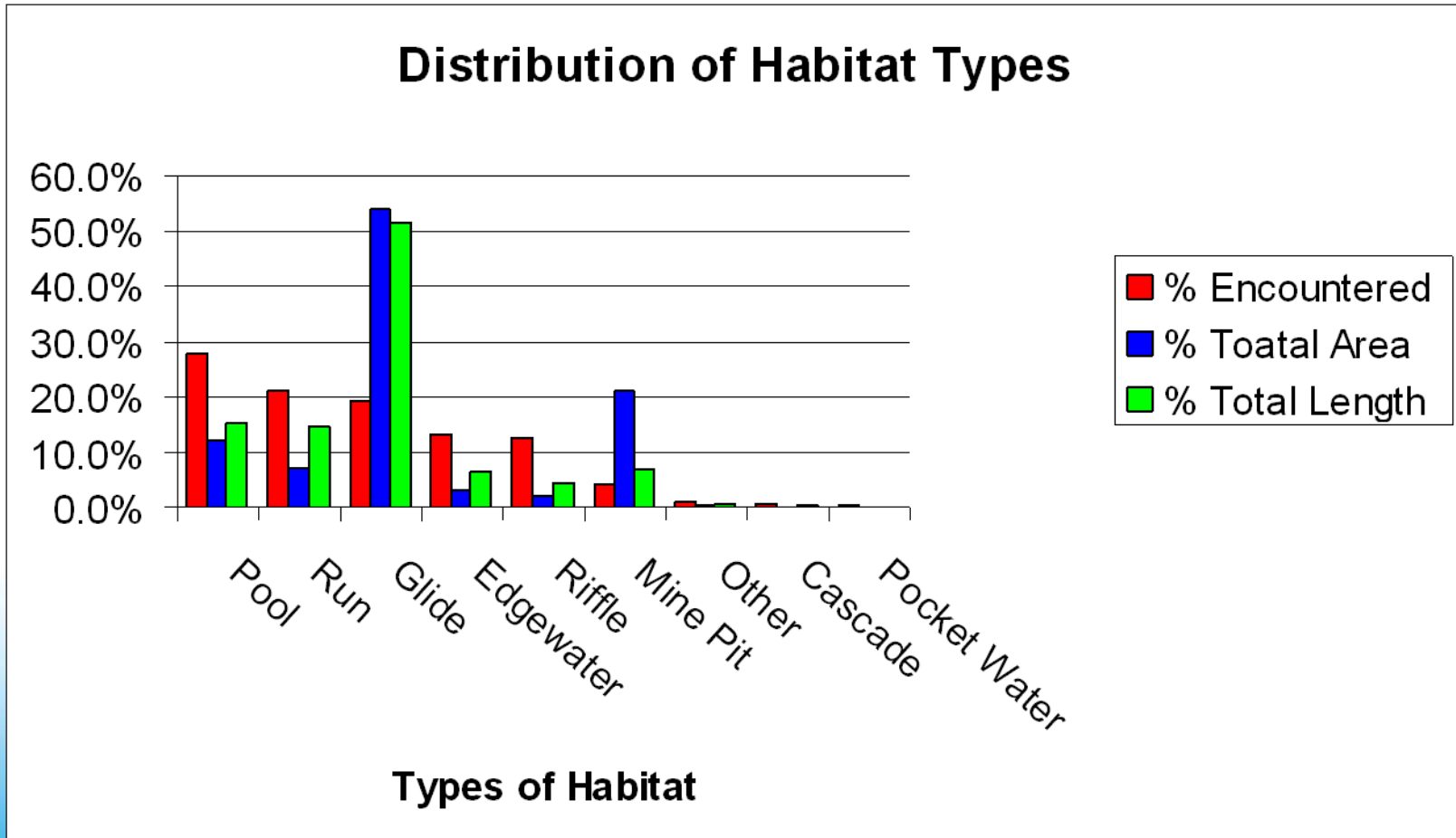




Meso-Habitat Mapping – Reach 1A

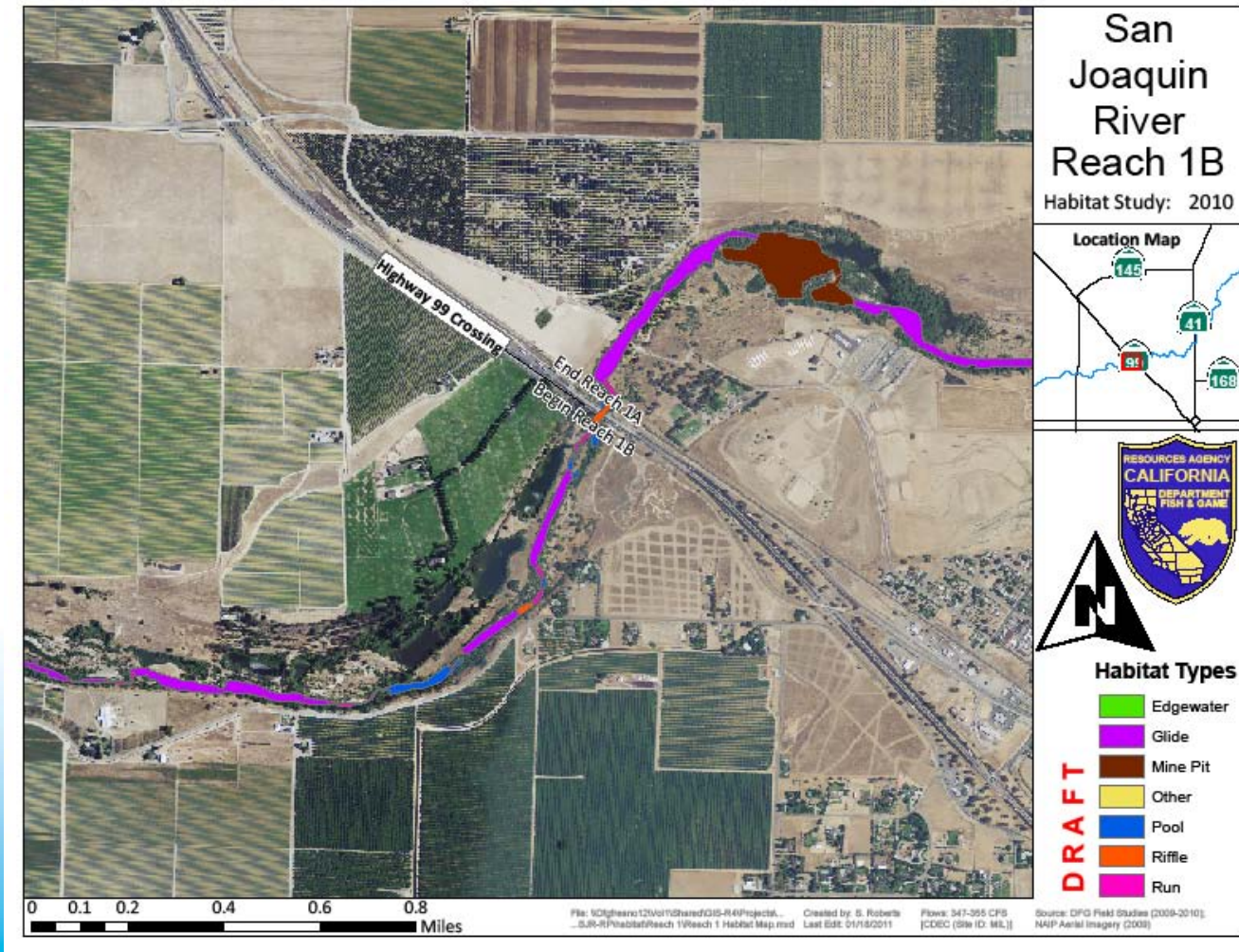


Meso-Habitat Mapping – Reach IA



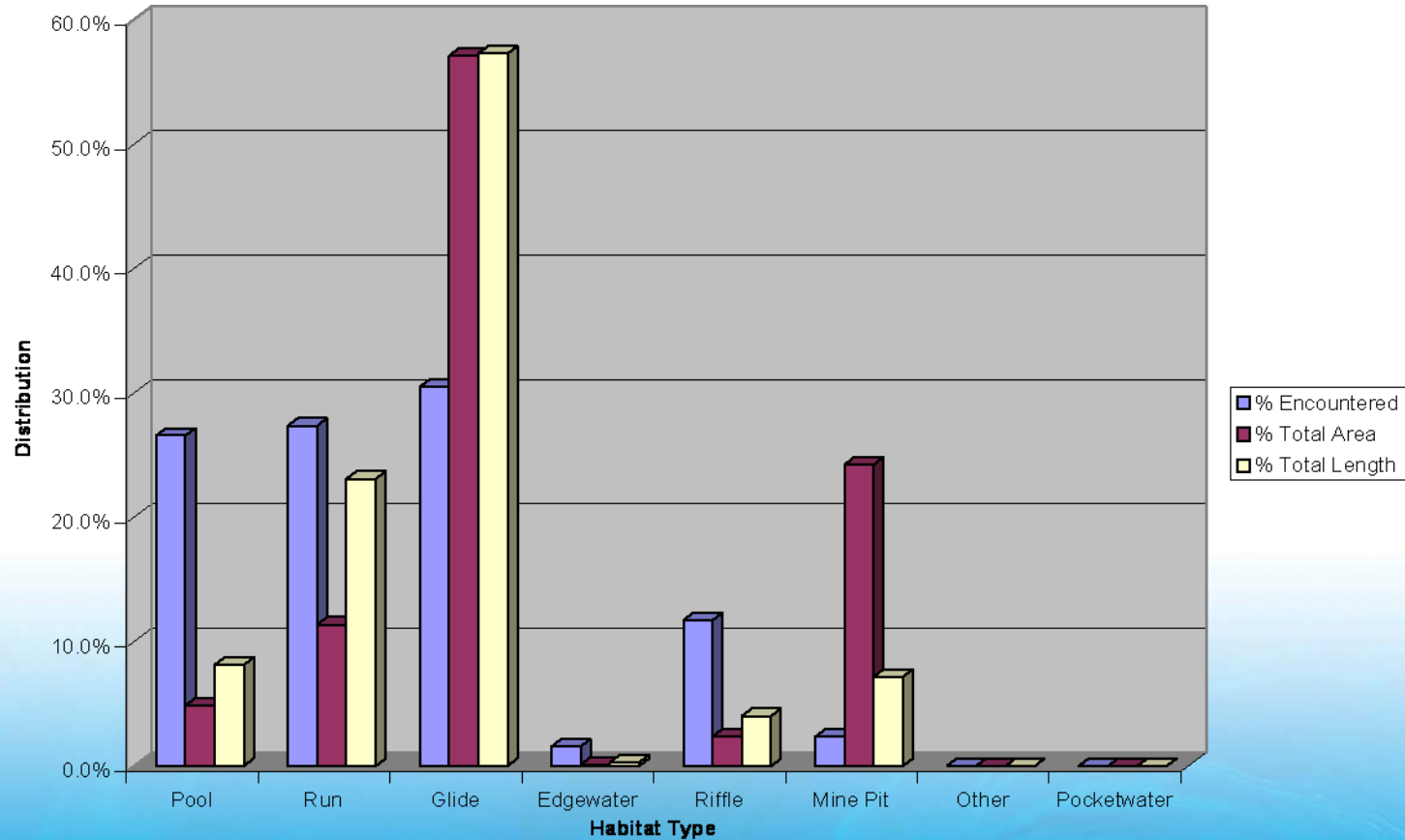


Meso-Habitat Mapping – Reach 1B



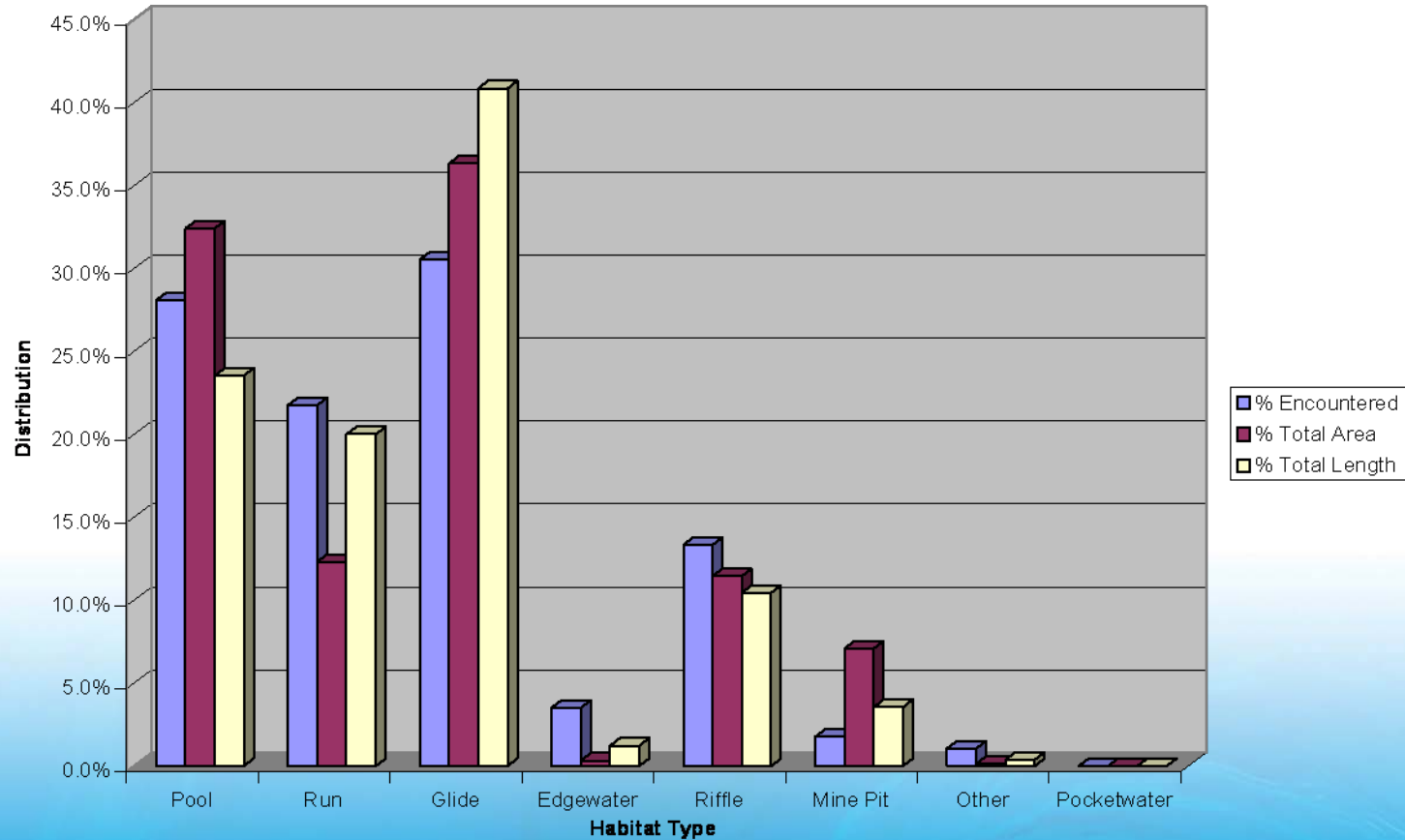
Meso-Habitat Mapping – Reach 1B

Figure 1: Distribution of Habitat Types in Reach 1B



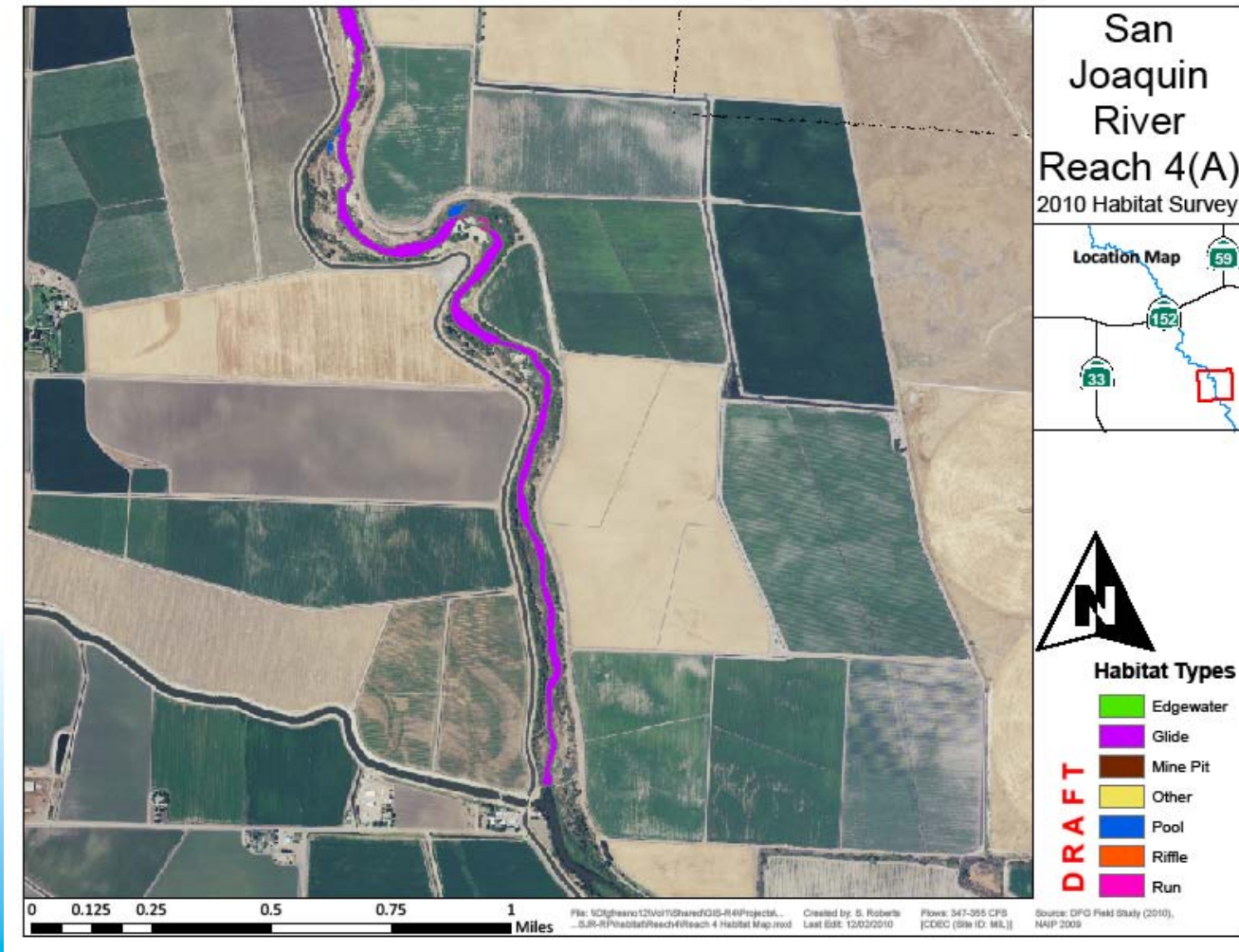
Meso-Habitat Mapping – Reach 2

Figure 2: Distribution of Habitat Types in Reach 2



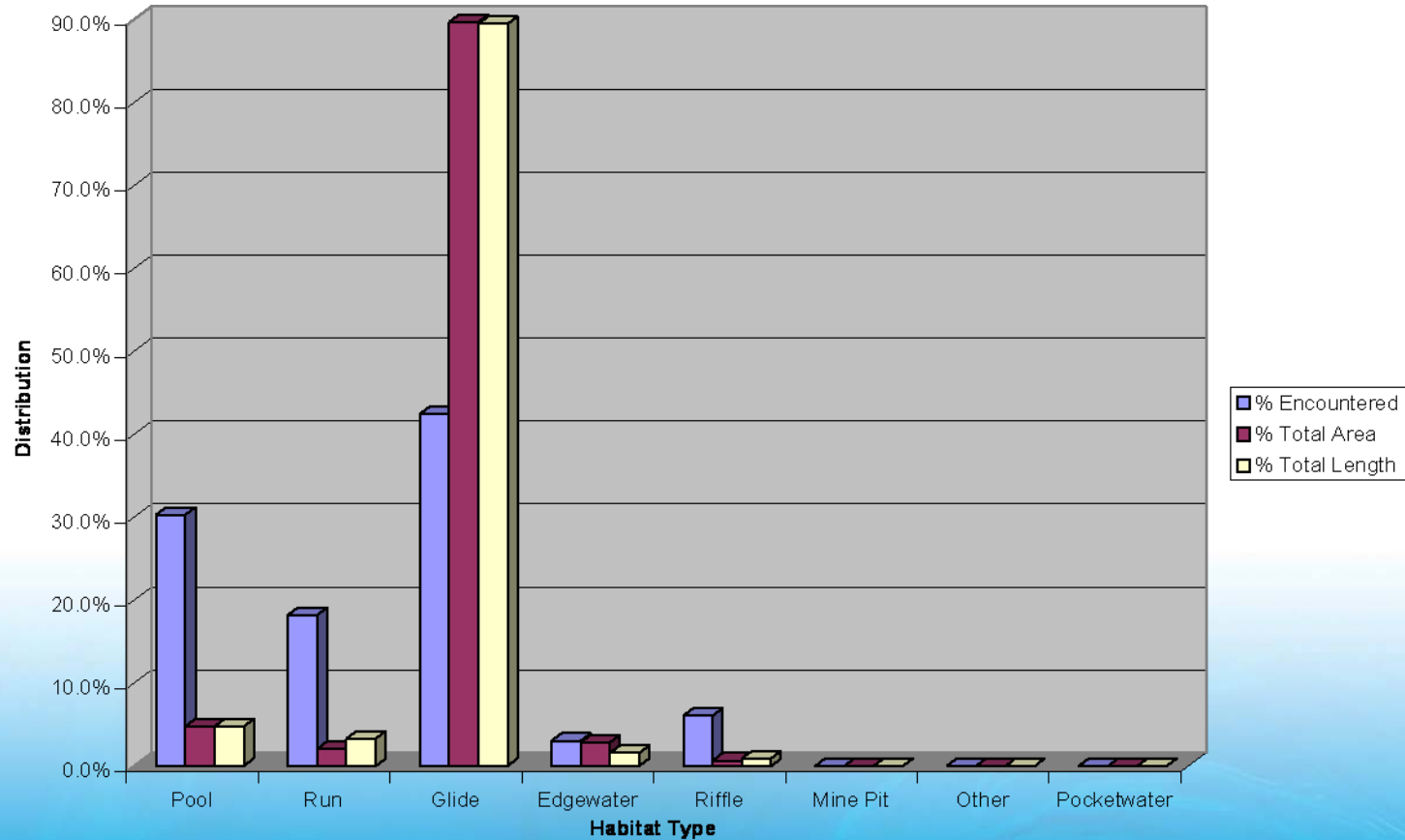


Meso-Habitat Mapping – Reach 4A



Meso-Habitat Mapping – Reach 4A

Figure 3: Distribution of Habitat Types in Reach 4A



Fish Passage Evaluation

Amanda Peisch-Derby, P.E.
California Department of Water Resources
South Central Regional Office, Fresno
Hydrology, Hydraulics & Flood Management





Restoration Goal

- Settlement Restoration Goal
 - Paragraph 11 – modifications to structures
 - Paragraph 12 – enhance the success
- Fisheries Management Plan
 - Section 5.2.1
 - Appendix H of the Fisheries Implementation Plan 2009-2010



Fish Passage Evaluation Purpose

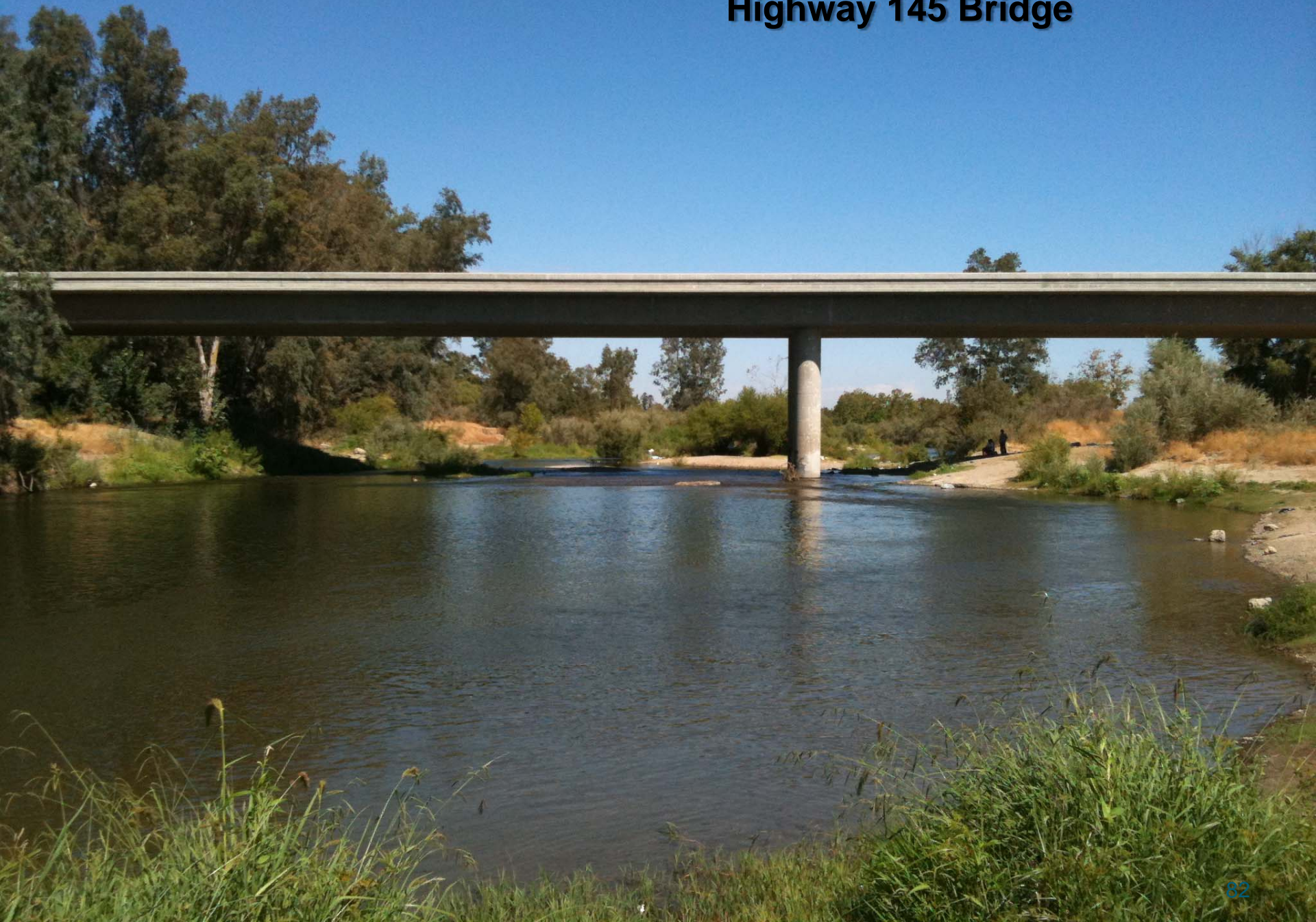
- Develop alternatives for unimpeded fish passage
- Access to suitable spawning areas
- Determine obstructions
 - Water velocities
 - Physical barriers
 - Inlet contraction
 - Low flows



Fish Passage Evaluation Plan

- Objectives
 - Identify potential channel and structural barriers
 - Evaluate passage impairment of potential barriers using common passage criteria
 - Develop a prioritized list of channel and structural barriers
 - Provide alternative designs
- Divided into Tasks
 - Task 1 – First Pass
 - Task 2 – Second Pass
 - Task 3 – Develop alternatives

Highway 145 Bridge



Natural Barrier



San Joaquin River Control



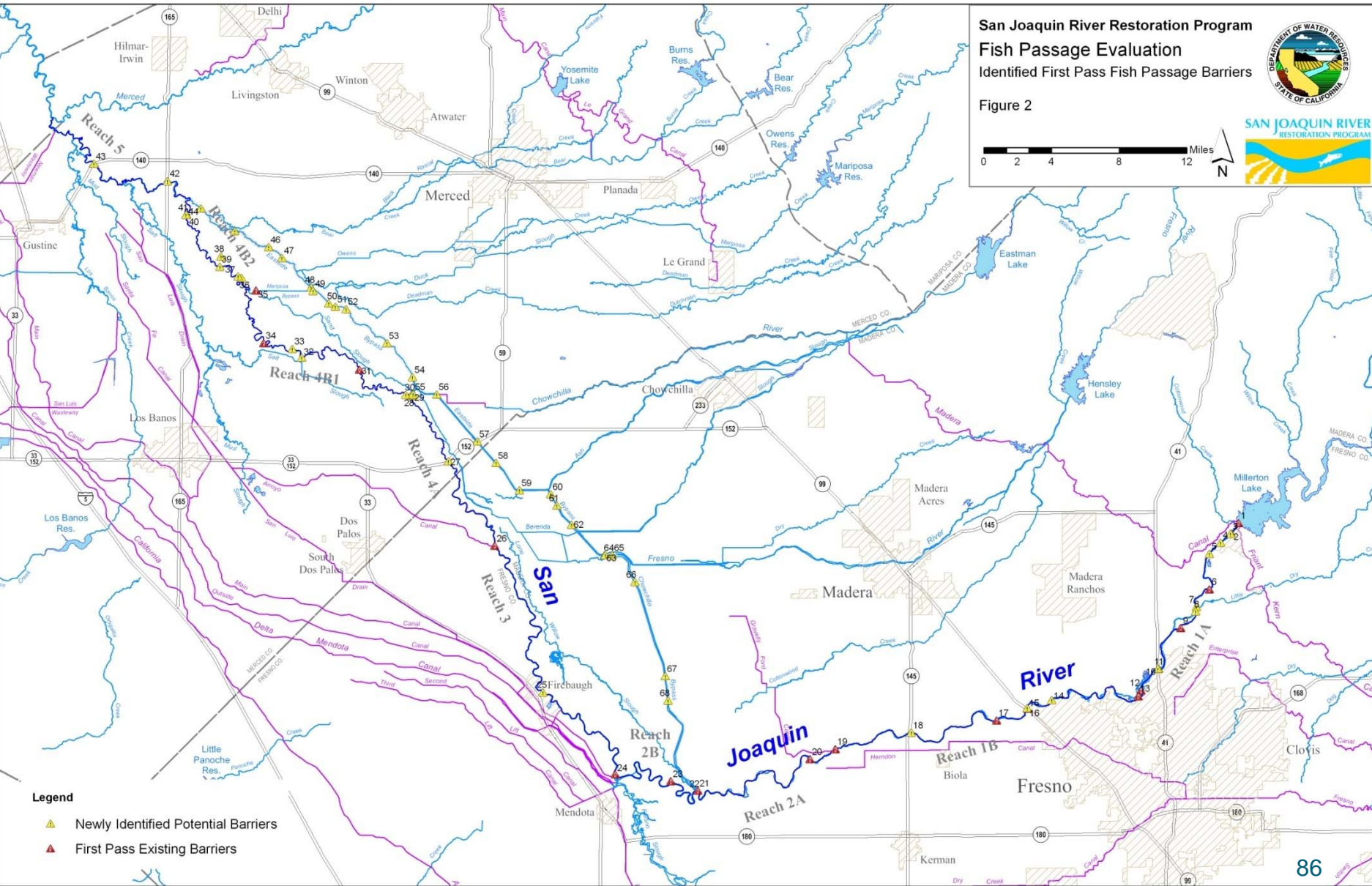
Task 1 Report

- 68 potential barriers
- First Pass Surveys
 - Physical Measurements
 - Length
 - Width
 - Height/Drop
- Rank
 - **Green** – not a barrier
 - **Gray** – need more info
 - **Red** – definite barrier

**San Joaquin River Restoration Program
Fish Passage Evaluation
Identified First Pass Fish Passage Barriers**



Figure 2



- Legend**
- ▲ Newly Identified Potential Barriers
 - ▲ First Pass Existing Barriers

Task 1 Results

- 45 structures were surveyed
 - 49 were ranked
- Initial Ranking
 - 28 Green
 - Bridges, removed structures
 - 13 Gray
 - Weirs, low flow crossings, beaver dams
 - 8 Red
 - Dams, control structures



Donny Bridge





Eastside and Mariposa Bypass Bifurcation

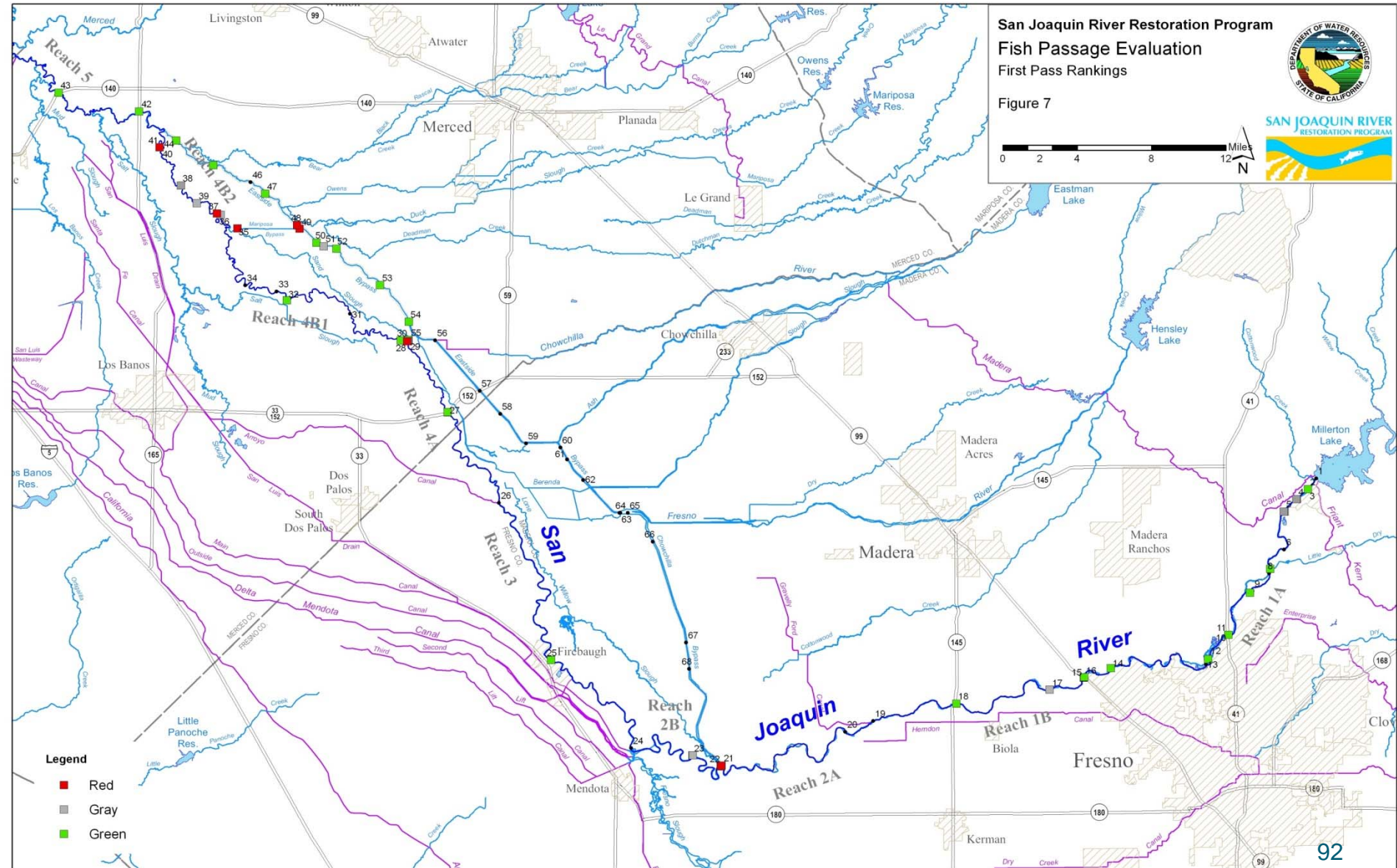


Chowchilla Bifurcation



Vulcan Crossing





Task 2 Summary

Determine percent passage

- Hydraulic Model
- Flow, Velocity and Water Surface Elevations
- Topographic Survey
- Passage Criteria
- Prepare fish passage report

Task 2 Locations

- Data Collection for 13 Gray Sites and two additional **Red Sites**

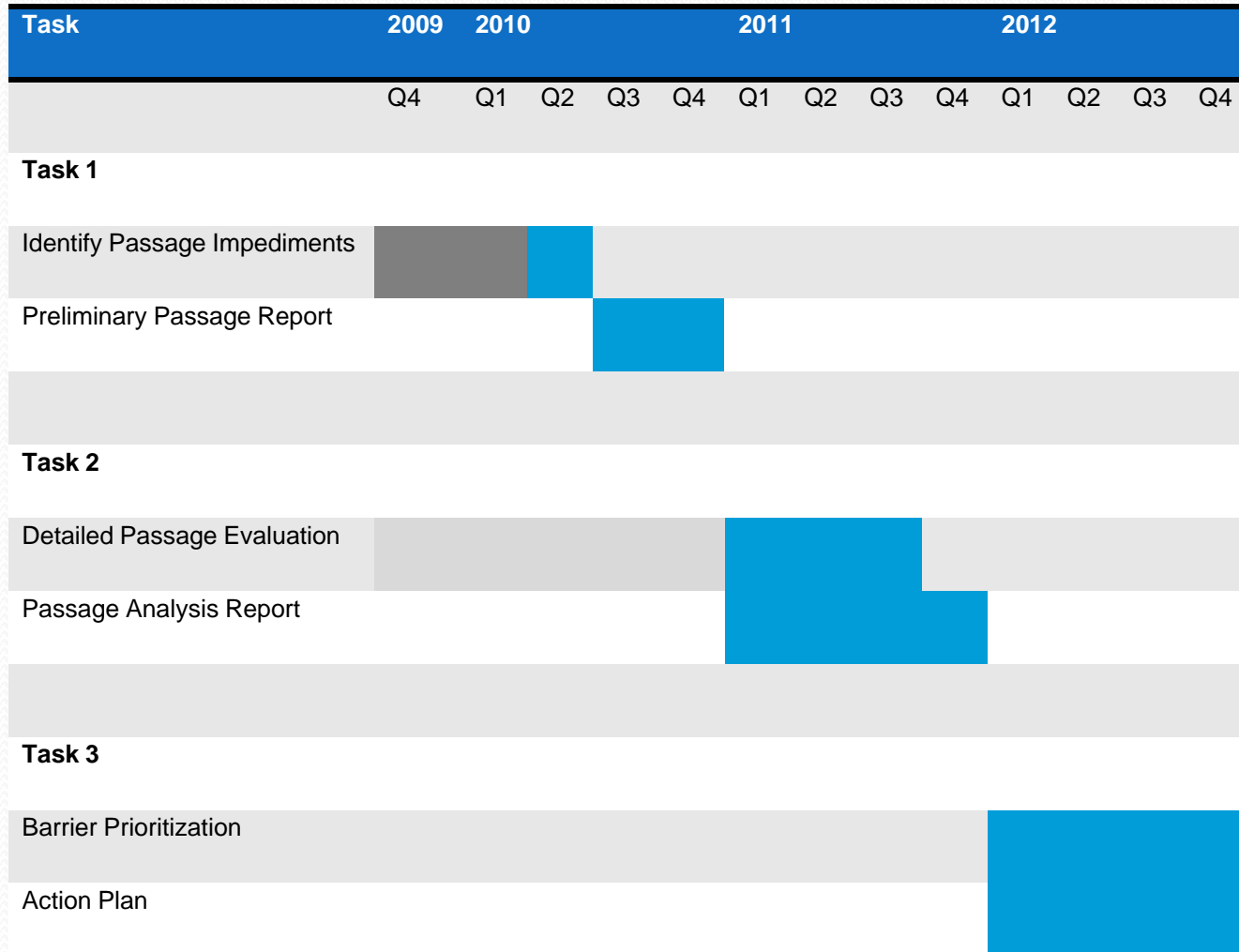
Lost Lake Rock Weirs	Donny Bridge
San Mateo Avenue	Sand Slough Connector
SLWR Beaver Dams	SLWR Low Flow Crossing
Dan McNamara Road	Eastside Bypass Rock Weir
Eastside Bypass Bifurcation	Mariposa Bypass Bifurcation

Task 2 Flows

- Flows for Model Calibration

Reach	Maximum (cfs)	Minimum (cfs)	Interim Flows (cfs)
Reach 1	4,000	350	1,500
Reach 2	3,855	30	1,300
Reach 3	3,655	45	1,300
Reach 4	3,655	45	1,300
Reach 5	3,655	45	1,300

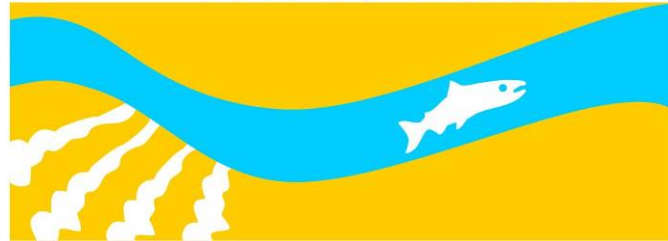
Schedule



Questions?



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RESTORATION PROGRAM

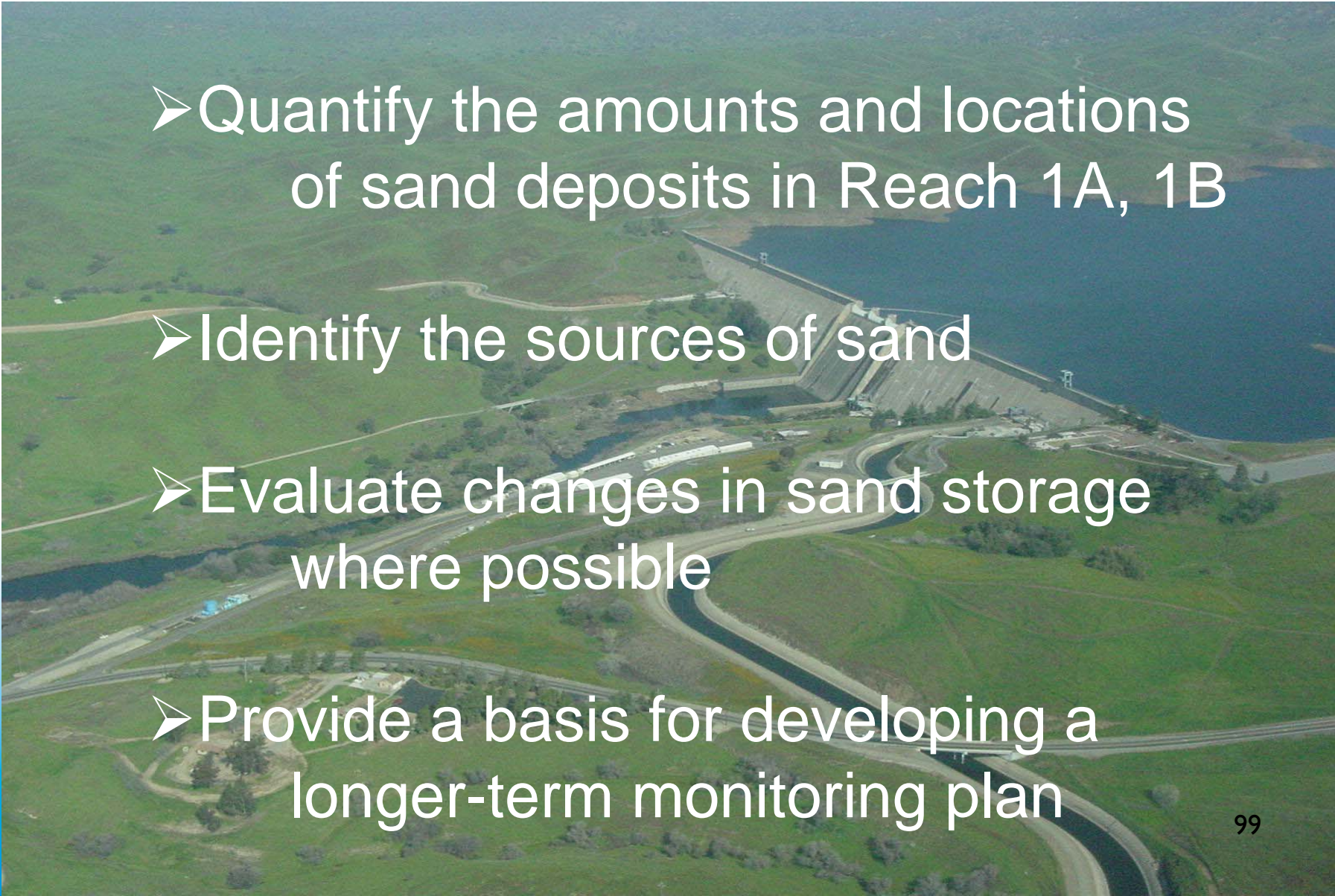


Sand Supply, Storage & Transport in Reaches IA and IB

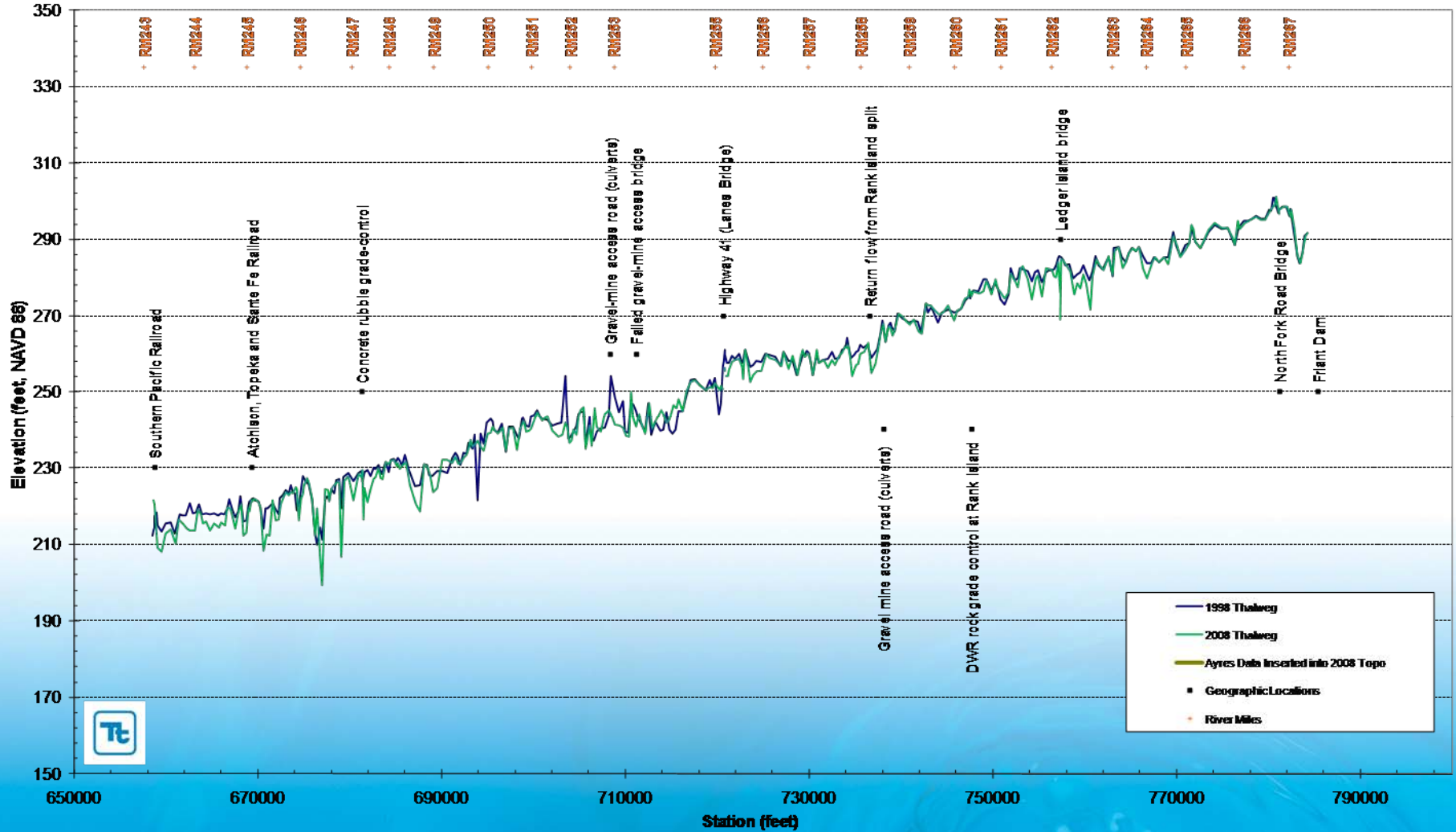
Mike Harvey, PhD, PG
Tetra Tech, Inc.

April 21, 2011
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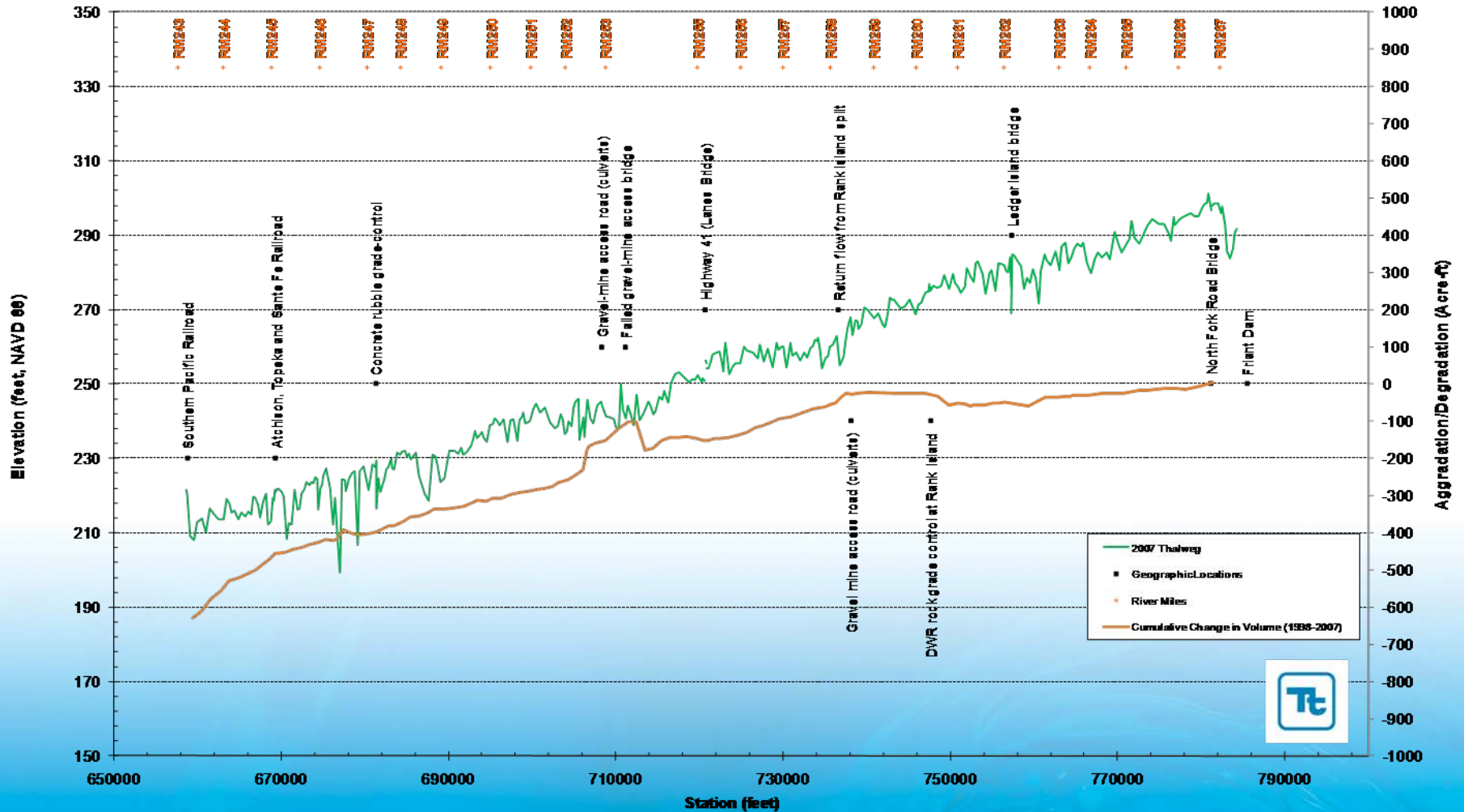
OBJECTIVES

- 
- An aerial photograph showing a large concrete dam with a reservoir behind it. The river flows through a green, hilly landscape. The text of the objectives is overlaid on the image.
- Quantify the amounts and locations of sand deposits in Reach 1A, 1B
 - Identify the sources of sand
 - Evaluate changes in sand storage where possible
 - Provide a basis for developing a longer-term monitoring plan

1998 – 2008 COMPARATIVE PROFILES



1998-2008 CUMULATIVE VOLUME CHANGE





IN-CHANNEL VOLUME CHANGES 1998-2008

Reach	River Mile- River Mile	Volume Decrease (ac-ft)	Unit Decrease (ac-ft/mi)
Friant Dam - Highway 41	267-255	147	12
Highway 41- Highway 99	255-243	481	40
Friant Dam – Highway 99	267-243	628	26

TRIBUTARIES



Cottonwood Creek



Un-named



Un-named

SEDIMENT SOURCES





MAPPED SAND DEPOSITS



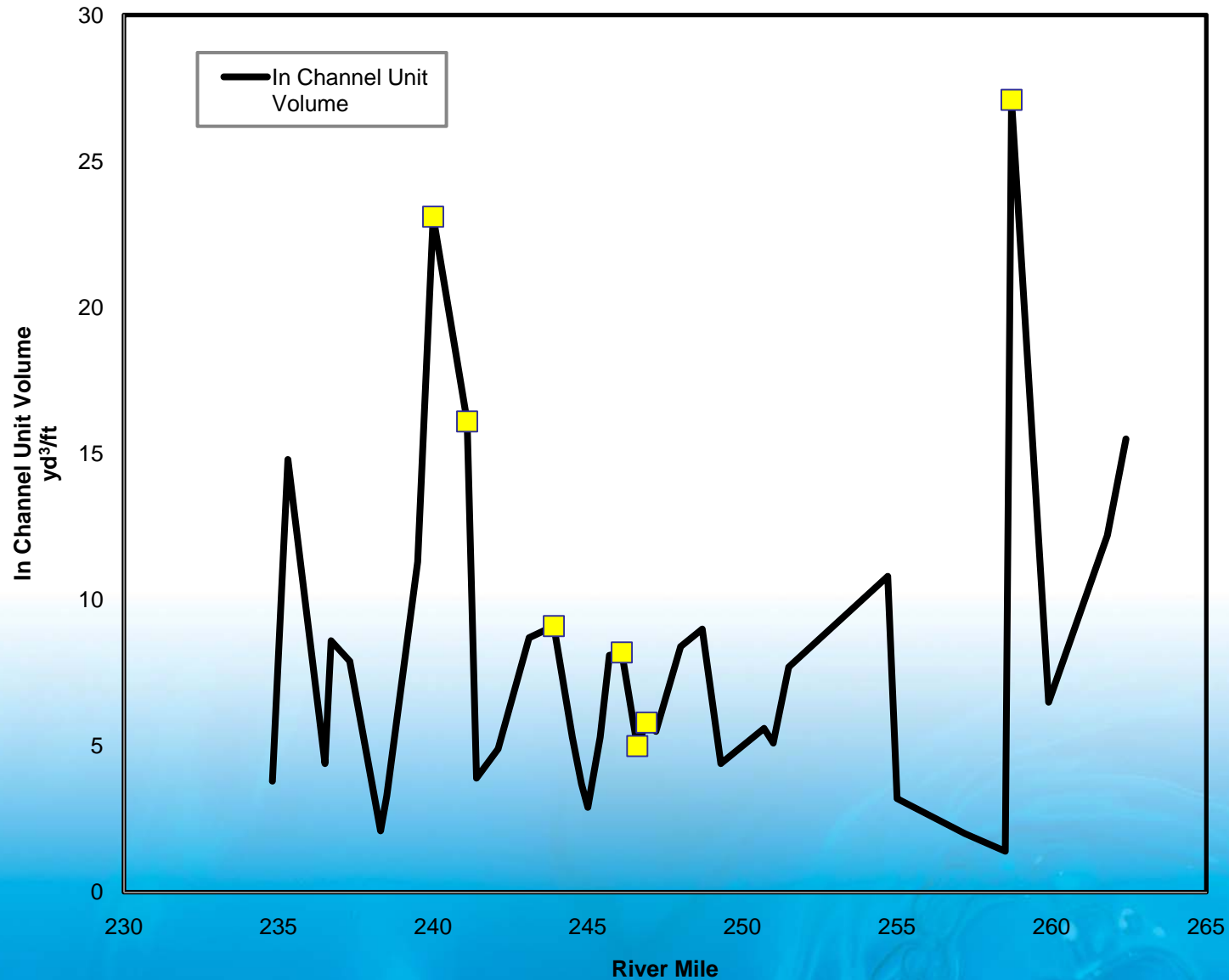
SAND STORAGE SITE CHARACTERISTICS

Reach	River Mile- River Mile	Average Volume/site (yd ³ /ft)	Maximum Volume/site (yd ³ /ft)	Minimum Volume/site (yd ³ /ft)	Number of Sites	Sites per Mile
Friant Dam - Highway 41	267-255	10.9	27.1	1.4	9	0.8
Highway 41- Highway 99	255-243	6.3	10.8	2.9	18	1.5
Highway 99 – Skaggs Bridge	243-234	8.7	23.1	2.1	13	1.4

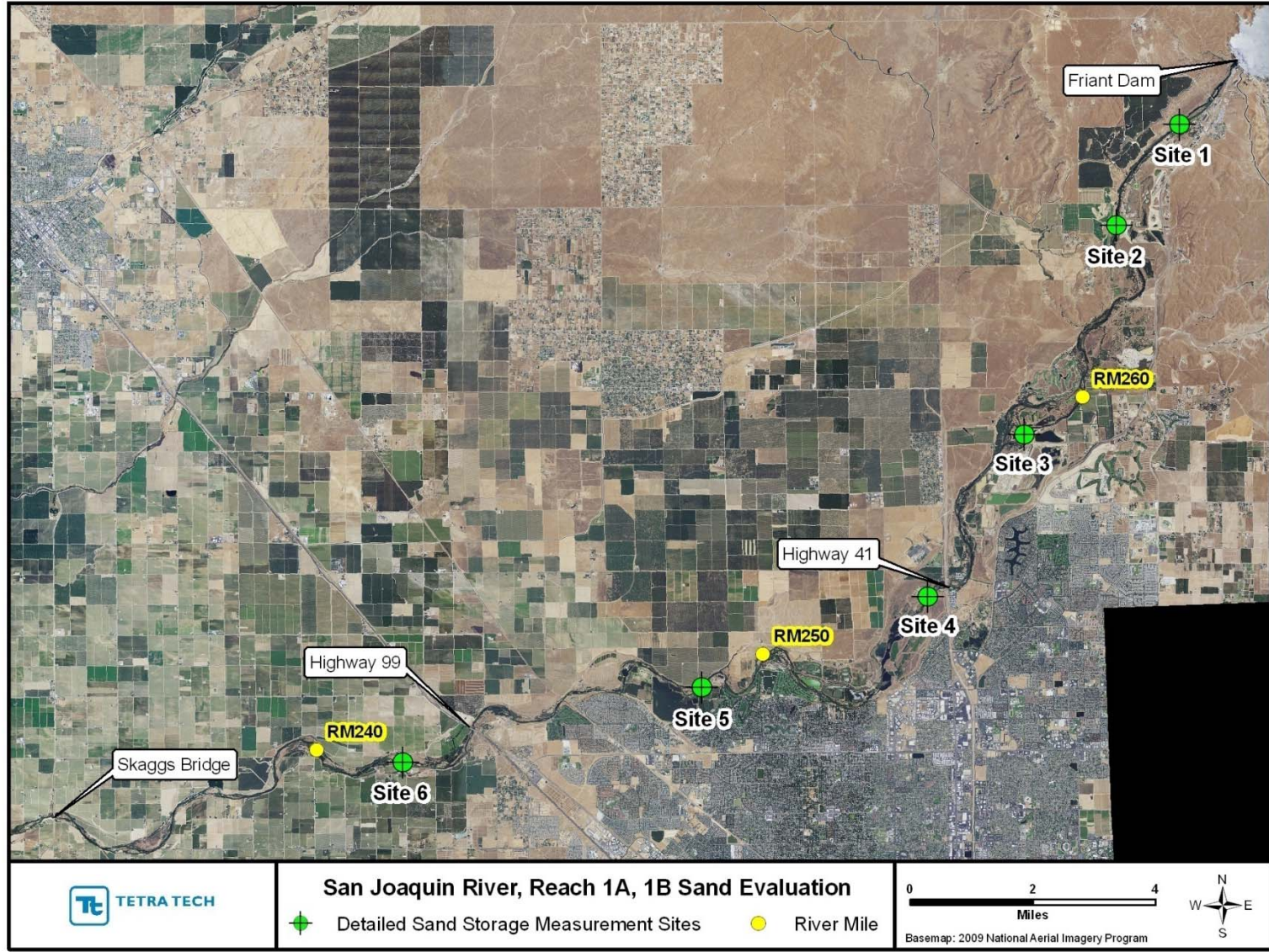
ESTIMATED SAND STORAGE VOLUMES BY SUBREACH

Reach	River Mile- River Mile	Sand Volume (yd³)	Reach Length (ft)	Unit Sand Volume (yd³/ft)
Friant Dam - Highway 41	267-255	77,090	63,360	1.2
Highway 41- Highway 99	255-243	99,980	63,360	1.6
Highway 99 – Skaggs Bridge	243-234	94,590	47,520	1.9

UNIT STORAGE VOLUMES (Table 3)



Locations of detailed sand depth measurement sites in Reaches 1A and 1B





SAND VOLUMES AT DETAILED SITES

Site Number	Location (RM)	Measured Sand Volume (yd³)	Site Length (ft)	Unit Storage (yd³/LF)
1	266.1	16	54	0.3
2	264	4,790	200	24
3	258.7	4,020	210	19
4	254.8	1,250	256	5
5	248.2	1,160	200	6
6	241.5	4,890	250	20



1997 FLOOD DISTURBANCE





1997 FLOOD DISTURBANCE





BY-REACH NON-CHANNEL STORAGE VOLUMES

Reach	Disturbed Area (ft ²)	Area (acres)	Minimum Estimated Storage Volume (ac-ft)	Unit Storage Volume (ac-ft/mi)
Friant Dam to Highway 41 (RM 267 – RM 255)	25,319,500	581	2,325	194
Highway 41 to Highway 99 RM 255 – RM 243)	19,011,600	436	1,744	145
Highway 99 - Skaggs Bridge (RM 243 – RM 234)	17,057,800	392	1,569	174
Total	61,388,800	1,409	5,636	170



1997 FLOOD DEPOSITS



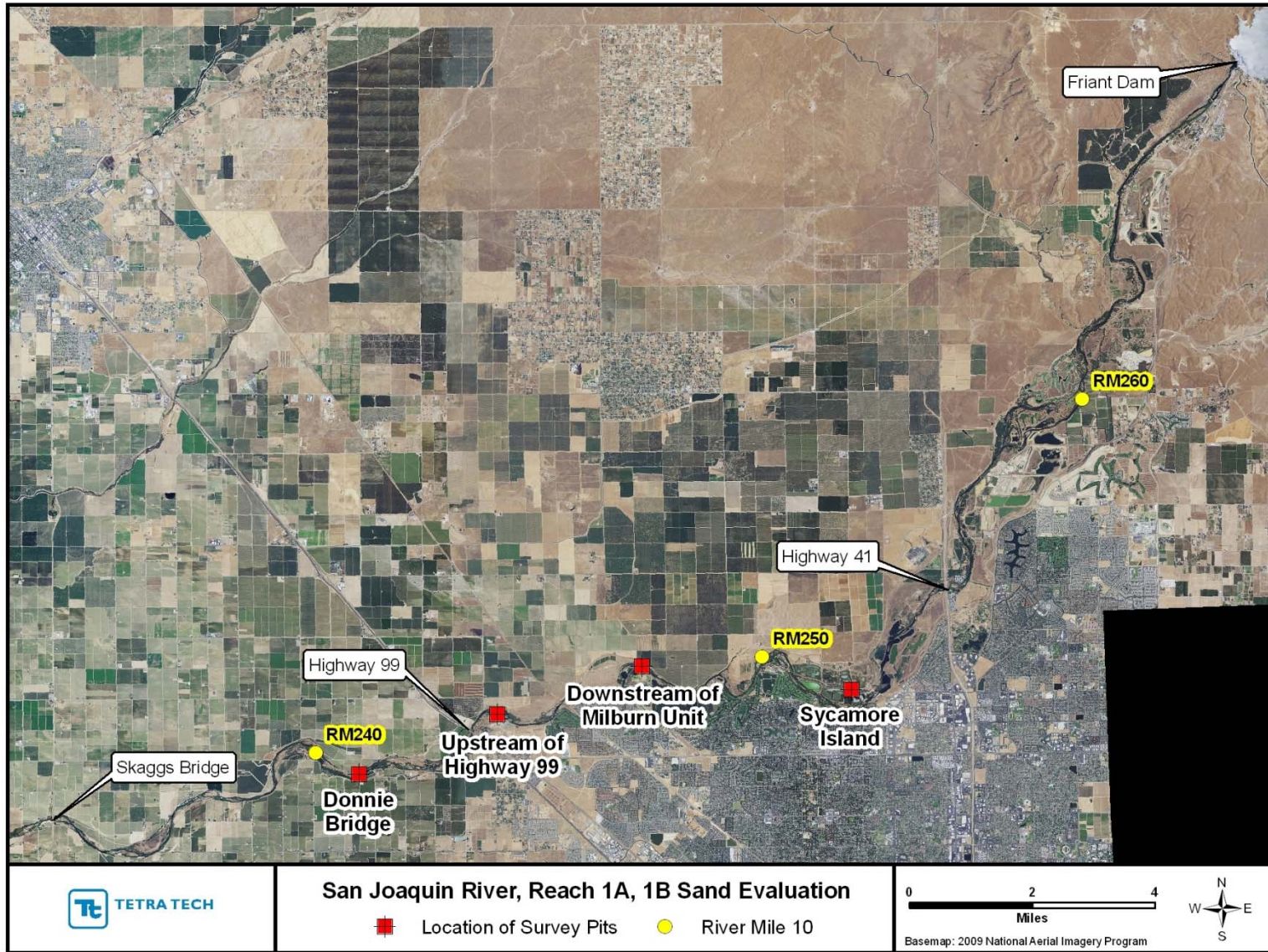


SAND GRADATION DATA

River Mile	D ₅₀ (mm)	D ₈₄ (mm)	D ₁₆ (mm)	Silt/Clay (%)
Bed Material Samples				
266.1	0.75	1.6	0.38	<1
263	1.8	13	0.6	<1
258.8	0.9	2	0.5	<1
250.1	0.75	2	0.36	<1
248.1	1	2	0.6	<1
241.7	1	2	0.6	<1
237.5	1.7	3	0.8	<1
Tributaries				
267	1.3	2	0.68	<1
264.9	0.75	1.5	0.38	2
257.6	0.6	1.3	0.2	7
Floodplain				
252	1.3	50	0.27	2
263	0.17	0.29	<0.075	20



SURVEYED PITS REACH 1B



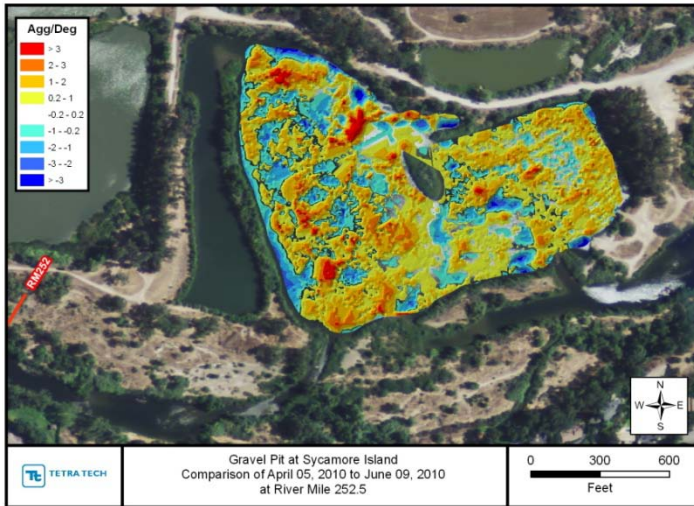
San Joaquin River, Reach 1A, 1B Sand Evaluation

■ Location of Survey Pits ● River Mile 10

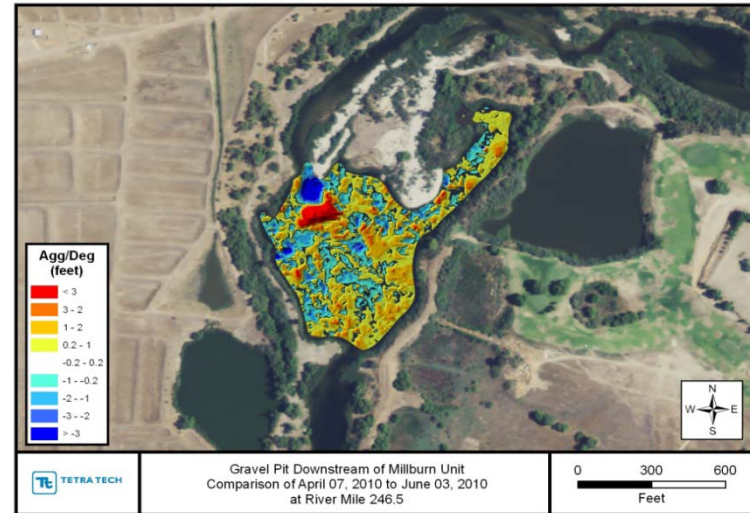


COMPARATIVE PIT SURVEYS

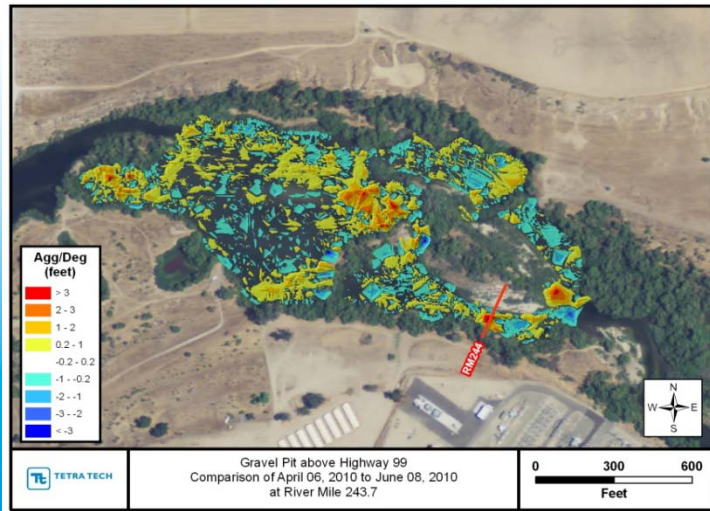
Sycamore: RM 252.5



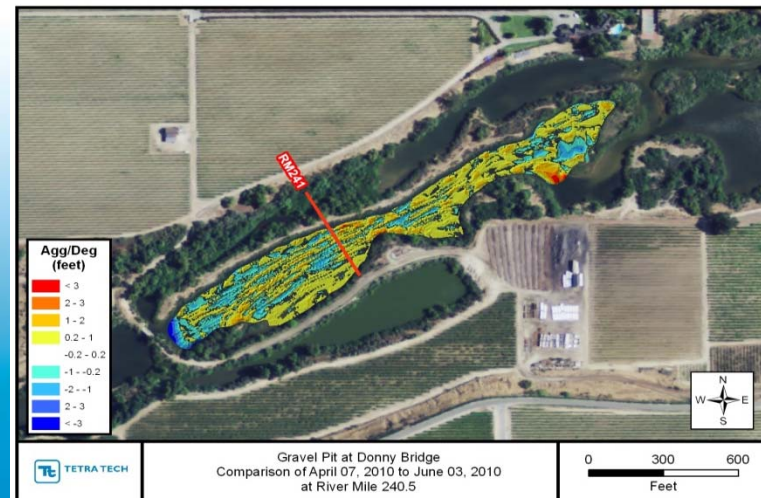
Milburn: RM 246.5



Highway 99: RM 243.7



Donny Bridge: RM 240.5





DEPOSITIONAL VOLUMES IN PITS

General Location	RM	Depositional Volume (yd³)	Average Volume/Day (yd³/day)	Number of Days Between Surveys
Sycamore Island	252.5	19,423	303	64
Downstream of Milburn Unit	246.5	5,860	105	56
Upstream of Highway 99	243.7	3,718	60	62
Donny Bridge	240.5	1,688	30	56



Groundwater Monitoring

Katrina Harrison
Reclamation

April 21, 2011
Restoration Goal Technical Feedback Group Meeting
Turlock



Overview

- Purpose
- Seepage Management Plan
- Monitoring Types & Locations
- Groundwater Response
- Flow Constraints



SEEPAGE MANAGEMENT PLAN



Purpose

- Restoration and Water Management Goals
- To convey Interim and Restoration Flows
- Reduce or avoid adverse seepage impacts

Seepage Management Plan

- Purpose: describe the approach to conveying flows while reducing or avoiding adverse seepage impacts
- Uses for the SMMP include:
 - Disclosure of approaches
 - Guidance for actions
 - Forum for input

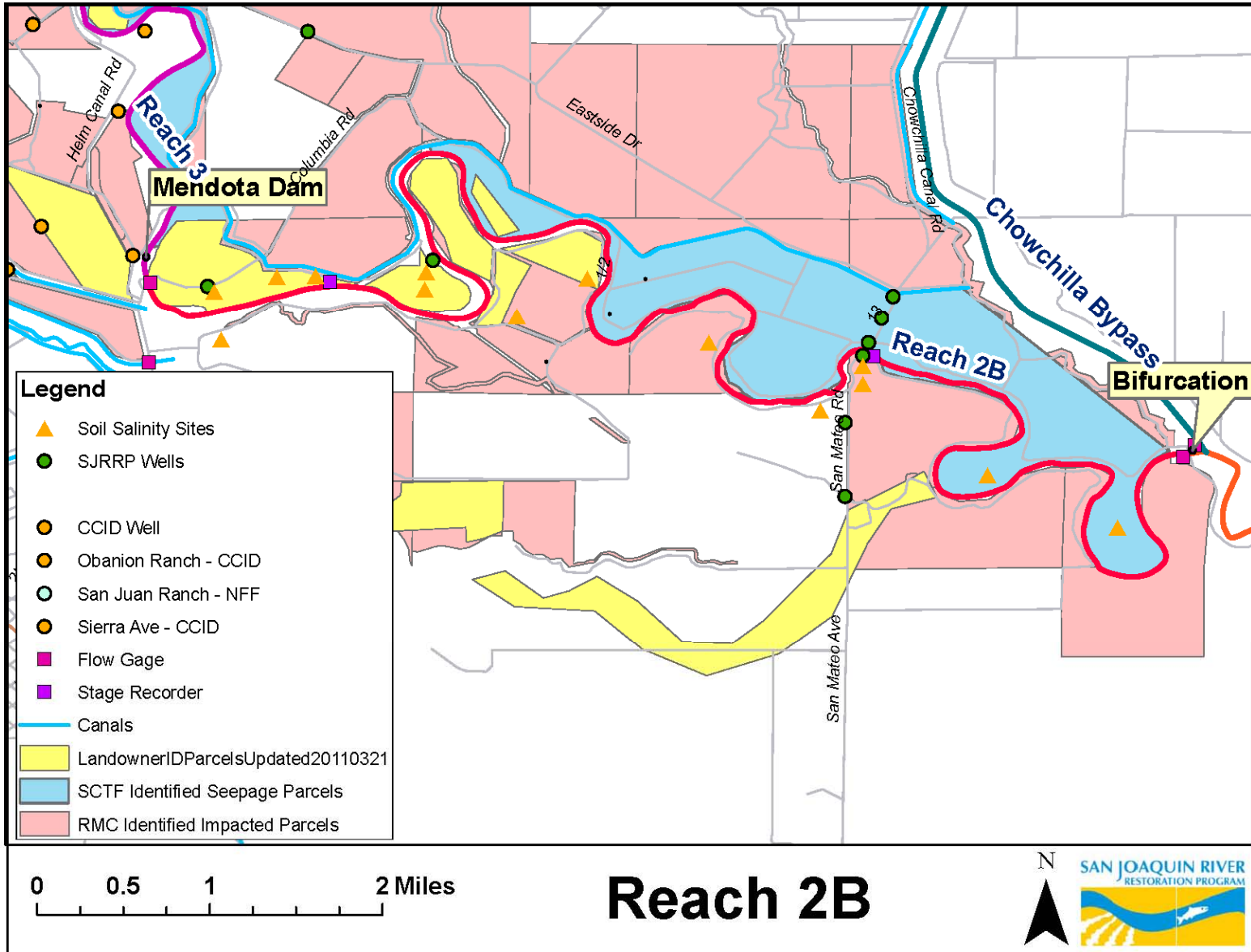


Seepage Impacts

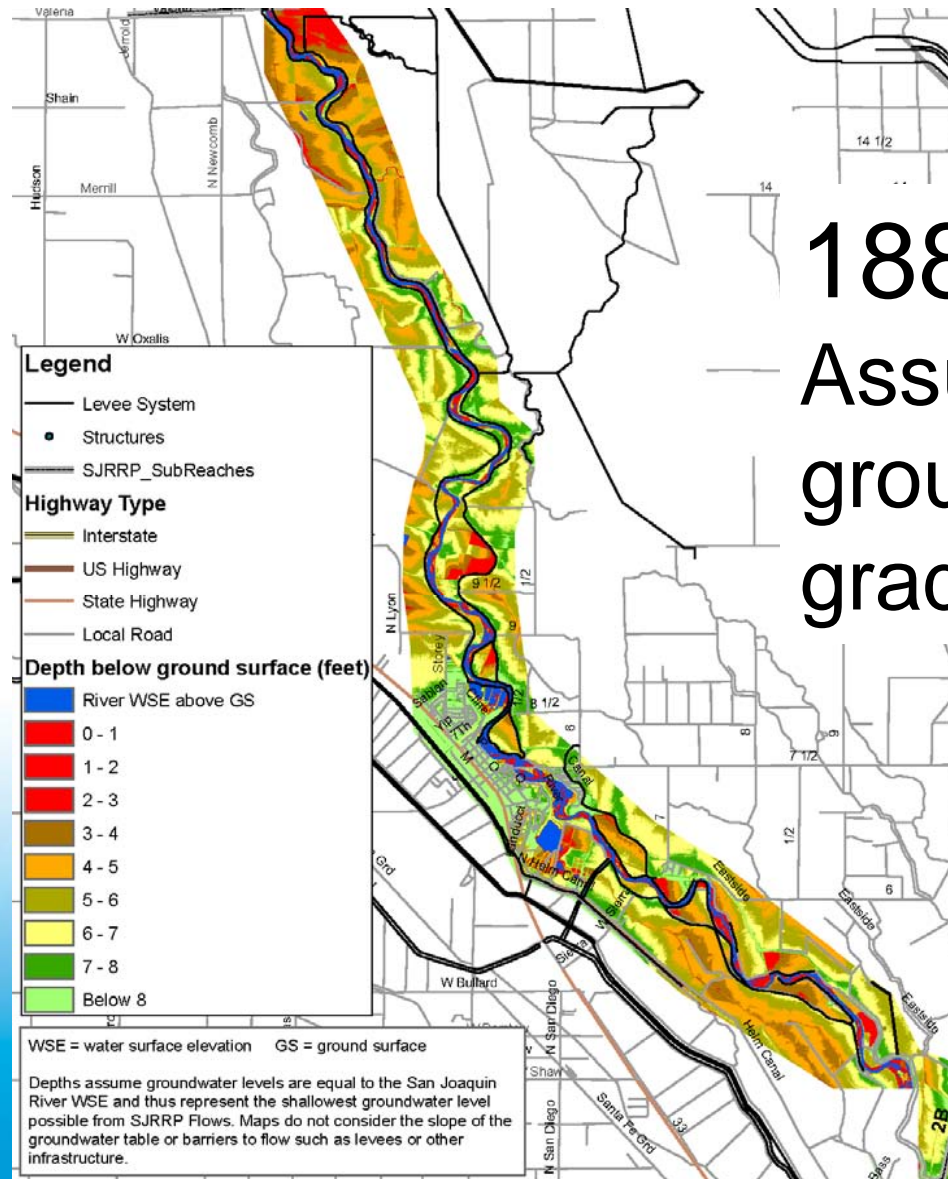
- Water logging
- Root-zone salinity
- Levee instability



Locations of Identified Risks

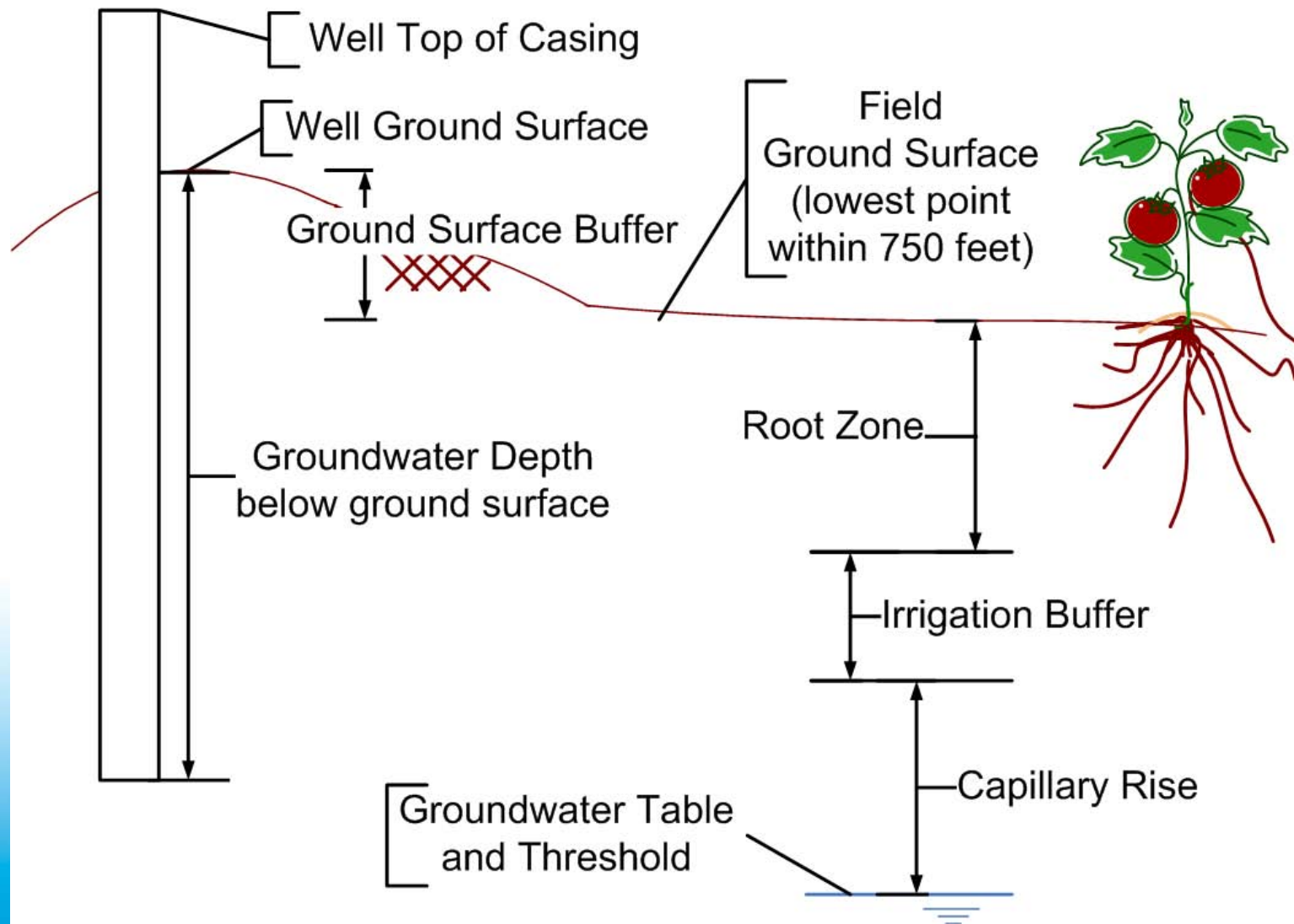


Elevation Analysis – Reach 3





Threshold Components



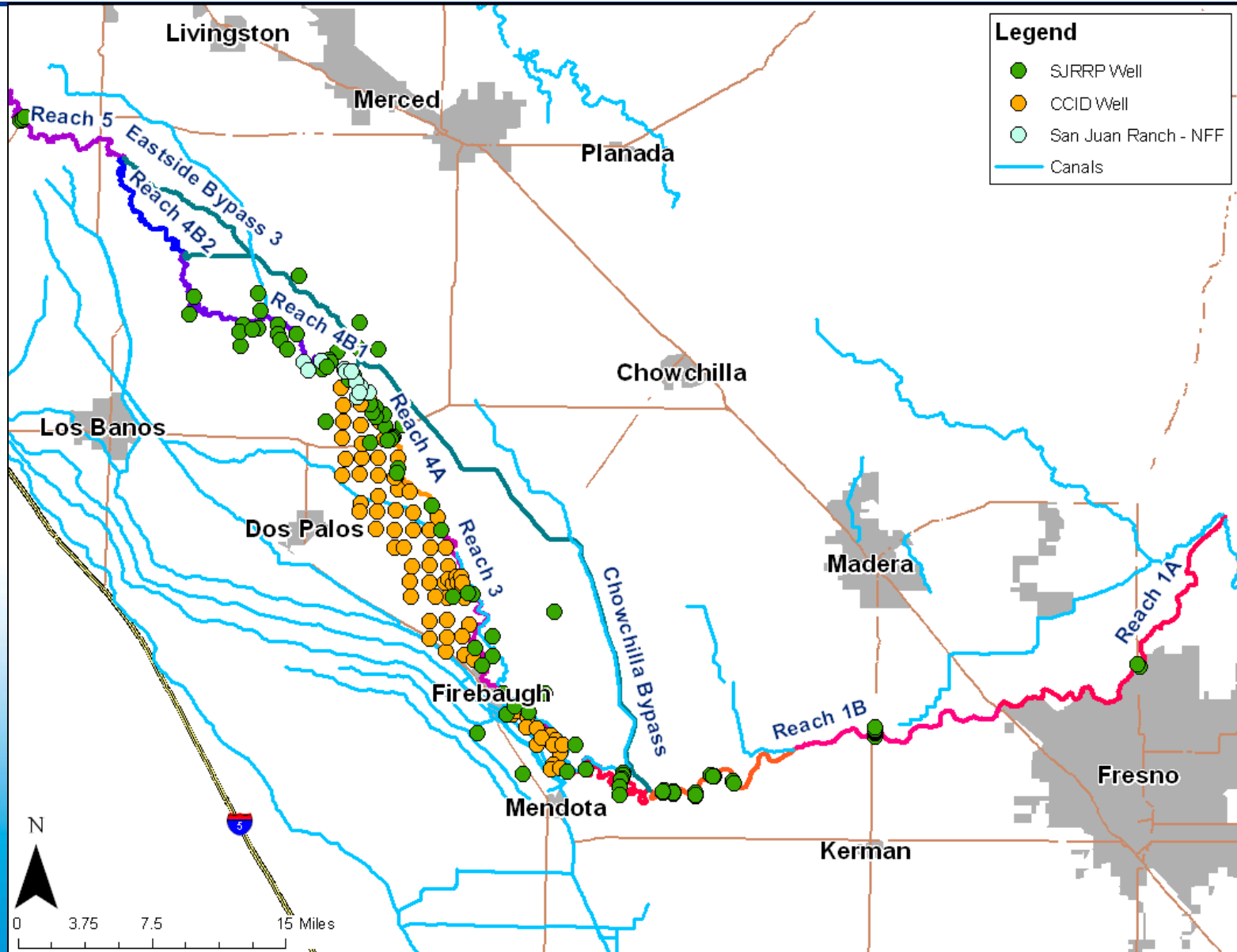
Note: Not to scale



GROUNDWATER MONITORING

Types of monitoring

SJRRP Monitoring Well Network



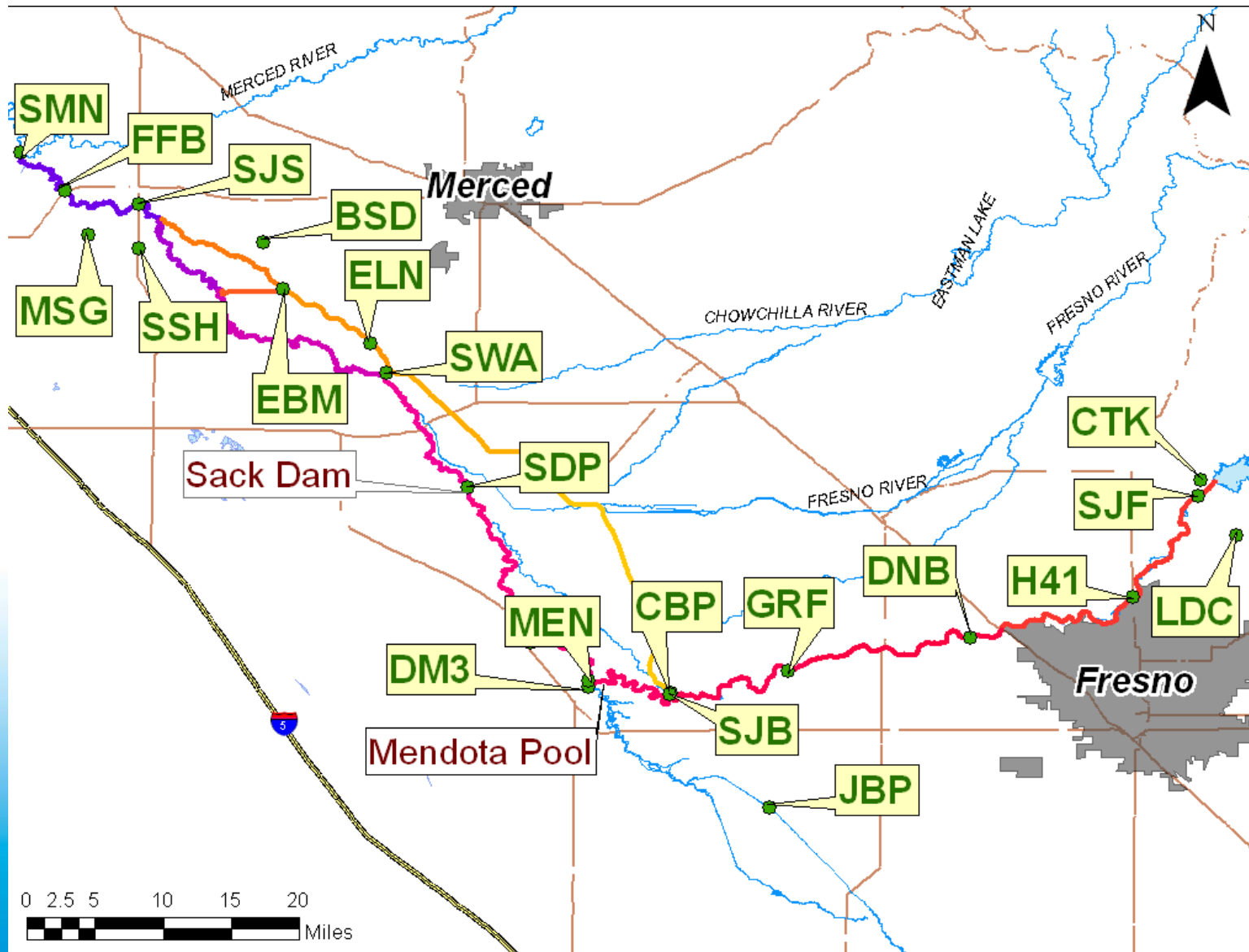
Data Types

- Flow Data
 - Real-time Stream gages
 - Water Surface Profile and Bathymetry
- Groundwater Data
 - Real-time
 - Hourly Data Logged
 - Measurements
- Soil Salinity Sampling
- Hydraulic Conductivity
- Water Quality





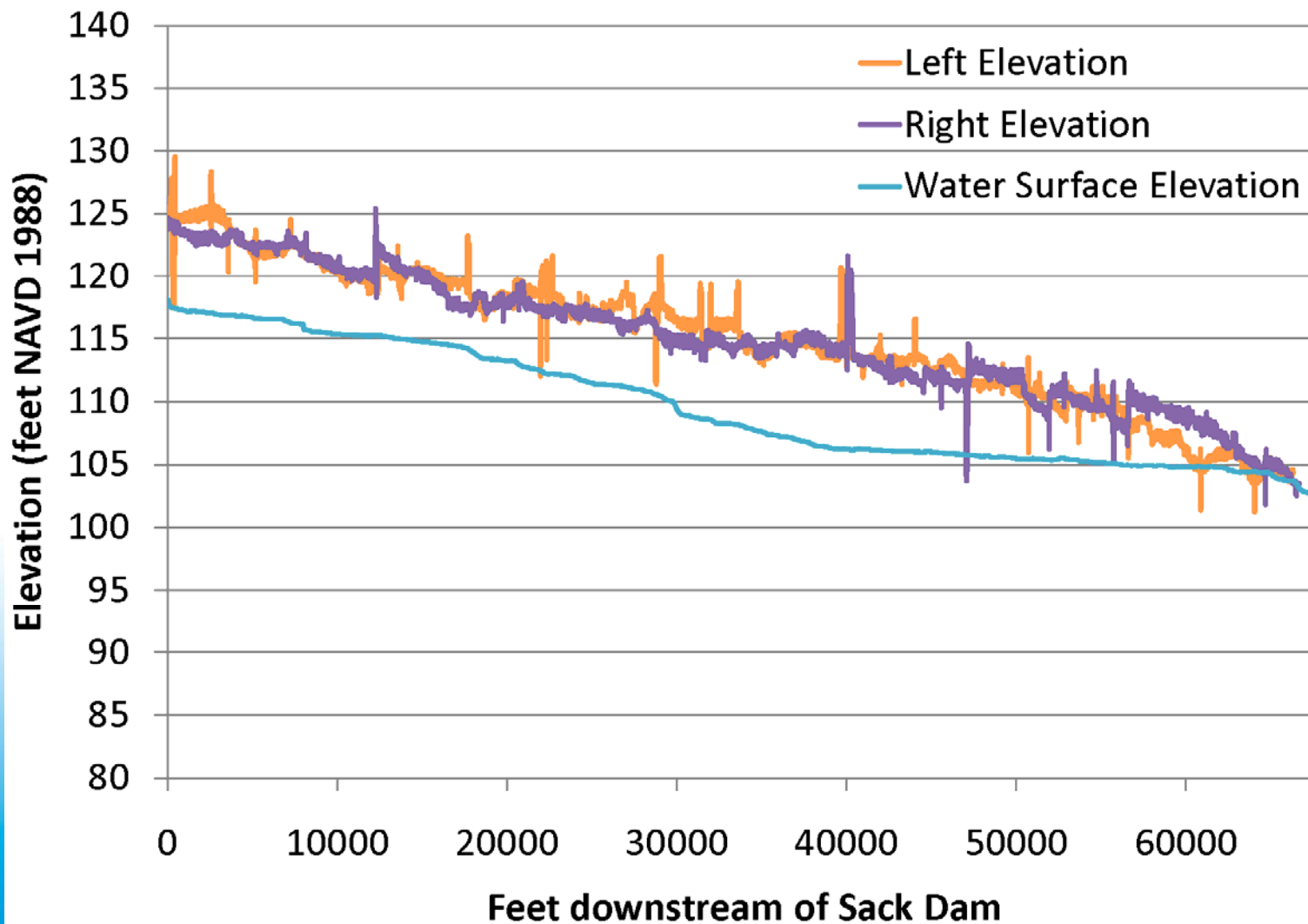
Stream Gage Network





Profiles

Reach 4A



Groundwater Monitoring Frequency

- Real-time
- Weekly soundings in key wells
- Hourly water level recorders
- Monthly soundings



Real Time Groundwater Monitoring



Well and data logger are below-ground in a vault (foreground). Power is supplied by a solar panel on the pole, and data are transmitted via satellite using the antenna on top of the pole.

Figure G3.

Photo of a Real-Time Monitoring Well Installed By the SJRRP

- Five sites in Reaches 2-4
- Hourly depth to groundwater, temperature, and EC
- Available online at www.restoresjr.net and <http://cdec.water.ca.gov>
- Support water management decisions



Real Time Wells

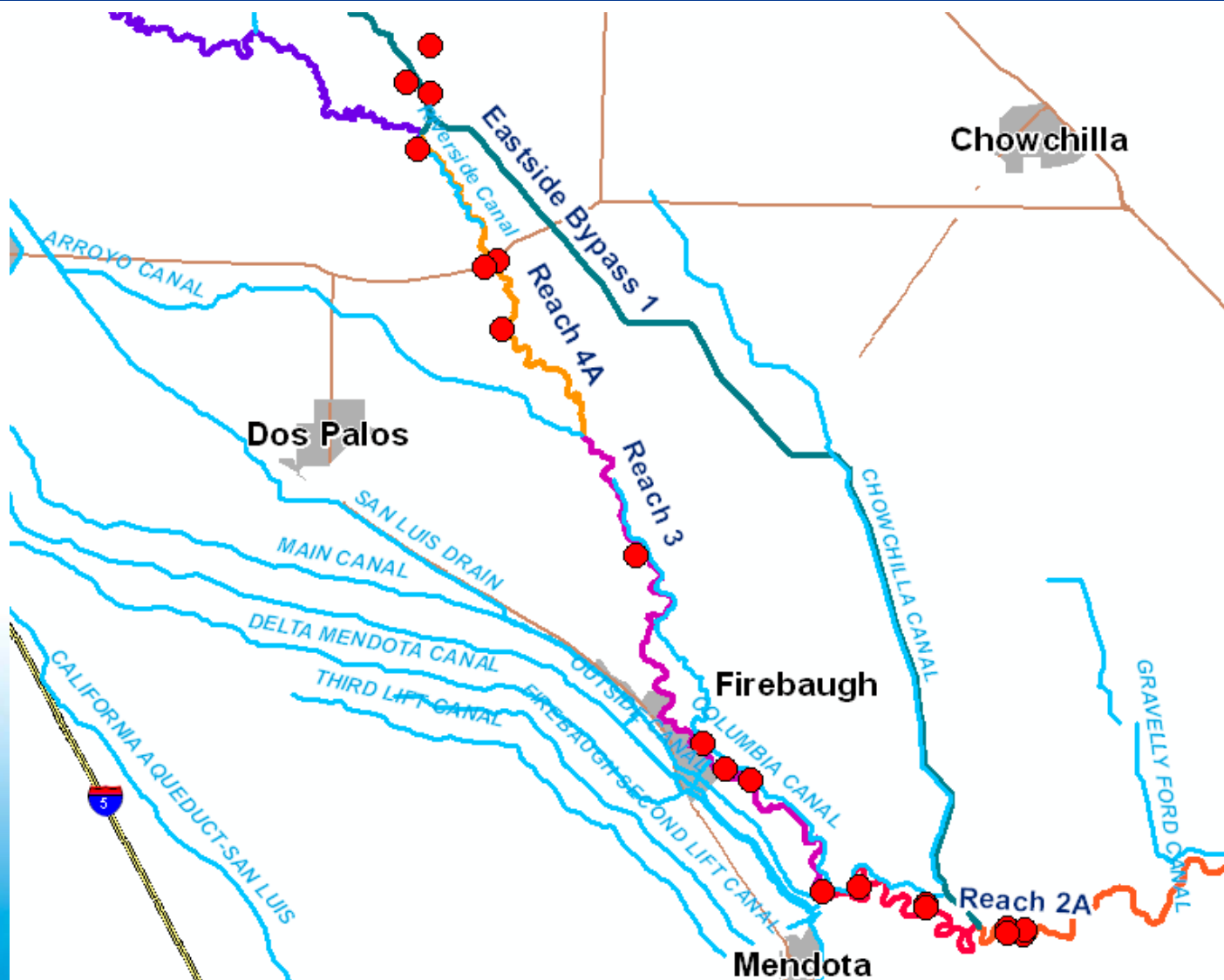


R3-7 Telemetry Removed 4/7/2011





Priority Wells





Weekly Groundwater Report

SAN JOAQUIN RIVER RESTORATION PROGRAM
Weekly Groundwater Report - Week Ending April 16, 2011

REACH 2A

Buffer Zone (ft)

Well ID	Date	DTW_GS (ft)	BGS)	River Mile	Bank
FA-9	4/13/2011	2.71	4-6	218.2	Left
MW-47	4/13/2011	1.80	6-8	218.2	Right
MA-4	4/13/2011	3.05	6-8	217.2	Right
MW-49B	4/13/2011	NR	4-6	217.2	Left

REACH 2B

Buffer Zone (ft)

Well ID	Date	DTW_GS (ft)	BGS)	River Mile	Bank
MW-54B	4/13/2011	10.60	TBD	211.8	Right
MW-55B	4/13/2011	7.17	6-8	211.8	Left
R2B-1	4/13/2011	5.23	4-6	207.1	Right
R2B-2	4/13/2011	5.35	4-6	205.1	Right

REACH 3

Buffer Zone (ft)

Well ID	Date	DTW_GS (ft)	BGS)	River Mile	Bank
R3-5	4/13/2011	2.78	TBD	197.8	Right
R3-6	4/13/2011	2.45	4-6	196.6	Right
R3-7	4/13/2011	0.00	3-5	199.2	Right
MW-75	4/12/2011	5.78	6-8	187.0	Left

REACH 4A

Buffer Zone (ft)

Well ID	Date	DTW_GS (ft)	BGS)	River Mile	Bank
MW-84	4/11/2011	15.32	4-6	173.9	Right
MW-87B	4/11/2011	Dry (>14)	4-6	173.9	Left
MW-89	4/12/2011	2.07	6-8	175.4	Right
MW-92	4/11/2011	6.70	TBD	170.0	Left

REACH 4B

Buffer Zone (ft)

Well ID	Date	DTW_GS (ft)	BGS)	River Mile	Bank
MW-90	4/11/2011	0.77	TBD	168.0	Right
MW-94	4/11/2011	4.27	TBD	166.7	Right
MW-95	4/11/2011	1.55	TBD	166.7	Right

PRELIMINARY SAN JOAQUIN RIVER FLOW DATA

Location	Station_ID	Reach	River Mile	Flow (cfs)	Date	Time
Friant Dam	MIL	1	267.6	6600	4/14/2011	24 hr Avg.
Gravelly Ford	GRF	2A	227.6	6468	4/14/2011	1200
SJR below BIF	SJB	2B	216	567	4/14/2011	1200
SJR near Mendota	MEN	3	202.1	3350	4/14/2011	1200
SJR near Dos Palos	SDP	4	181.5	ART	4/14/2011	1200
SJR at Fremont Ford	FFB	5	125.1	9970	4/14/2011	1200
SJR above Merced River	11273400	5	118.3	ART	4/14/2011	1200

REAL TIME GROUNDWATER MONITOR WELL INFORMATION

Well ID	CDEC_ID	Weblink
MW-54B	W54	http://cdec.water.ca.gov/cgi-progs/queryF?s=w54
R3-7	R37	http://cdec.water.ca.gov/cgi-progs/queryF?s=r37
MW-75	W75	http://cdec.water.ca.gov/cgi-progs/queryF?s=w75
MW-89	W89	http://cdec.water.ca.gov/cgi-progs/queryF?s=w89
MW-92	W92	http://cdec.water.ca.gov/cgi-progs/queryF?s=w92

NOTE: All data are provisional and are subject to revision

TBD=To be determined NR=No Reading (Well Inaccessible)

Buffer Zone as defined in the Draft SJRRP Seepage Mgt Plan (ft BGS= feet below ground surface)

DTW_GS = Depth to Groundwater from Ground Surface

CDEC = California Data Exchange Center

BRT=Below Rating Table

ART=Above Rating Table

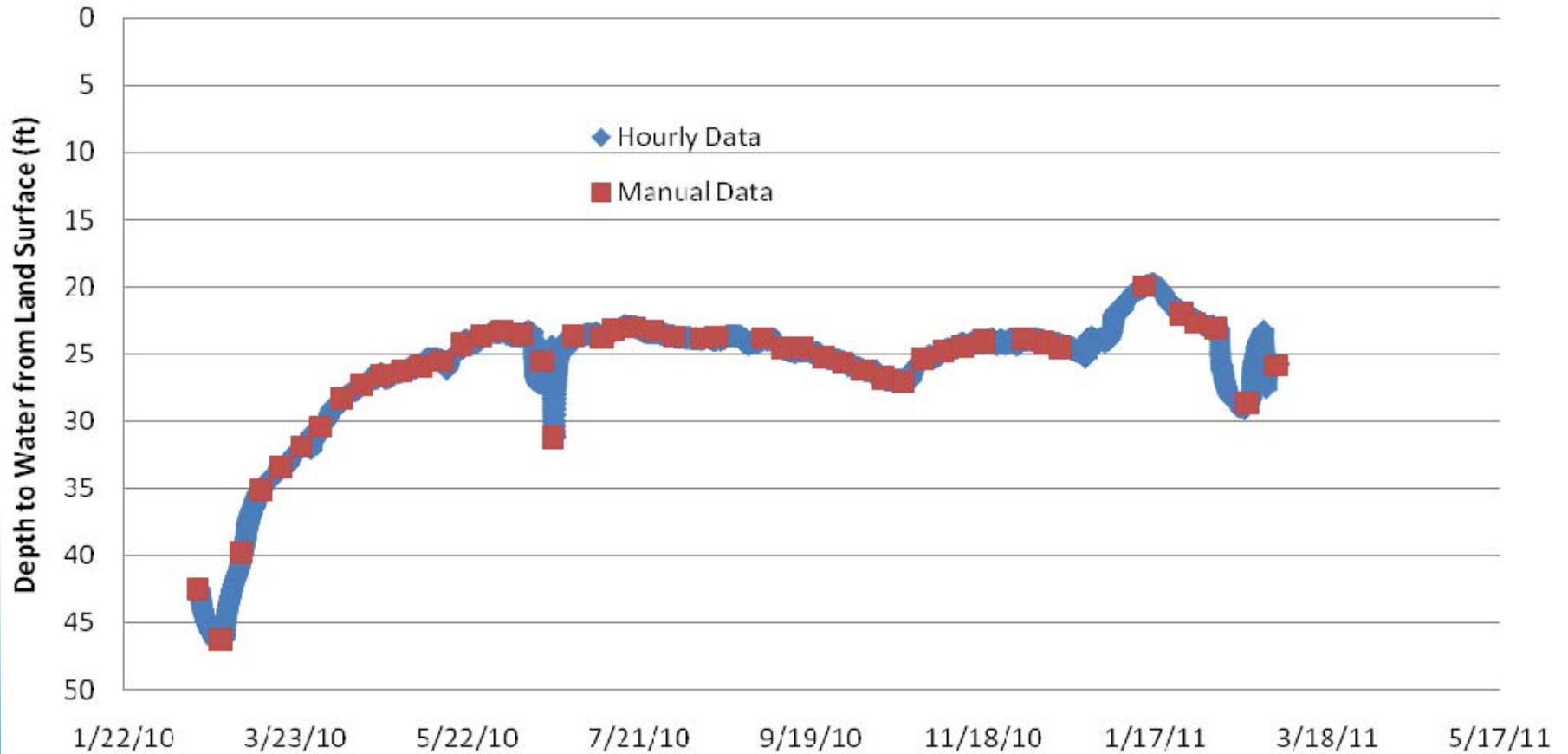


Hourly Data Logged

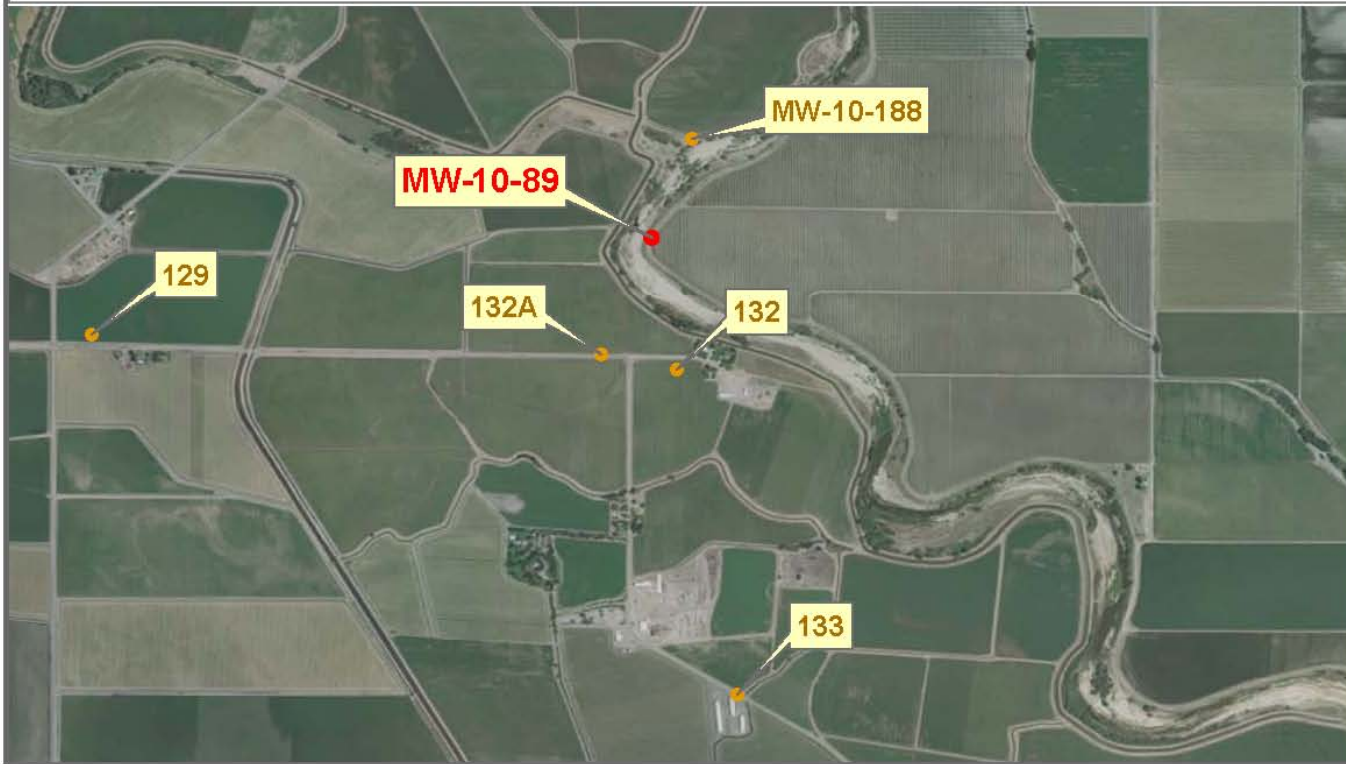
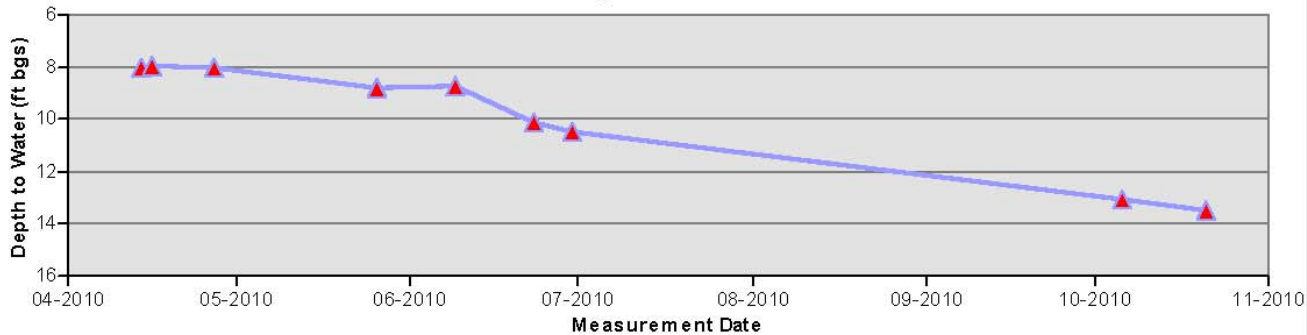


Hourly Data Logged

MW-86 Reach 4A (RM 173.9)



Monitoring Well MW-10-89



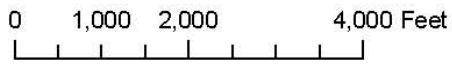
San Joaquin River Restoration Program

Reach = 4A Madera County
 River Mile =
 Site = TBD
 Crop type = Almonds
 Root depth (ft) = 6
 GS buffer (ft) = 3.4
 Capillary rise (ft) = 0.5
 Historical GW level (ft bgs) = 8
 Threshold (ft bgs) = 8
 Threshold elevation (ft) = 111.2
 GS Elevation (ft) = 118.8
 Screen Depth (ft) = 10-25
 Status = Realtime
 Measurement Type = Elec. Sounder
 Most Recent Meas. = 10/21/2010

Description:
 2 inch PVC casing AG

* = assumed value
 bgs = below ground surface
 GS = ground surface
 NR = not recorded

Preliminary Data



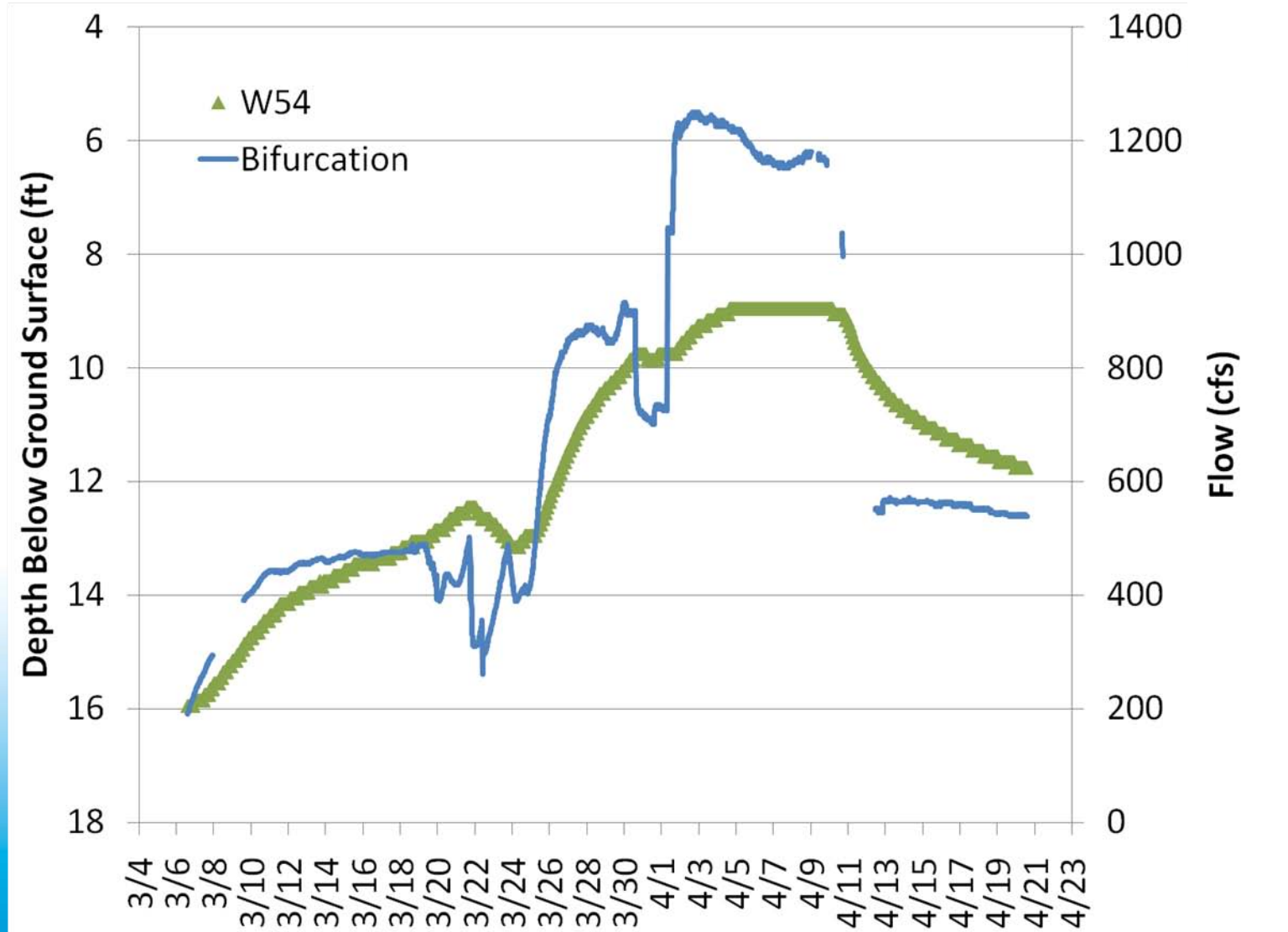
Monitoring Well MW-10-89



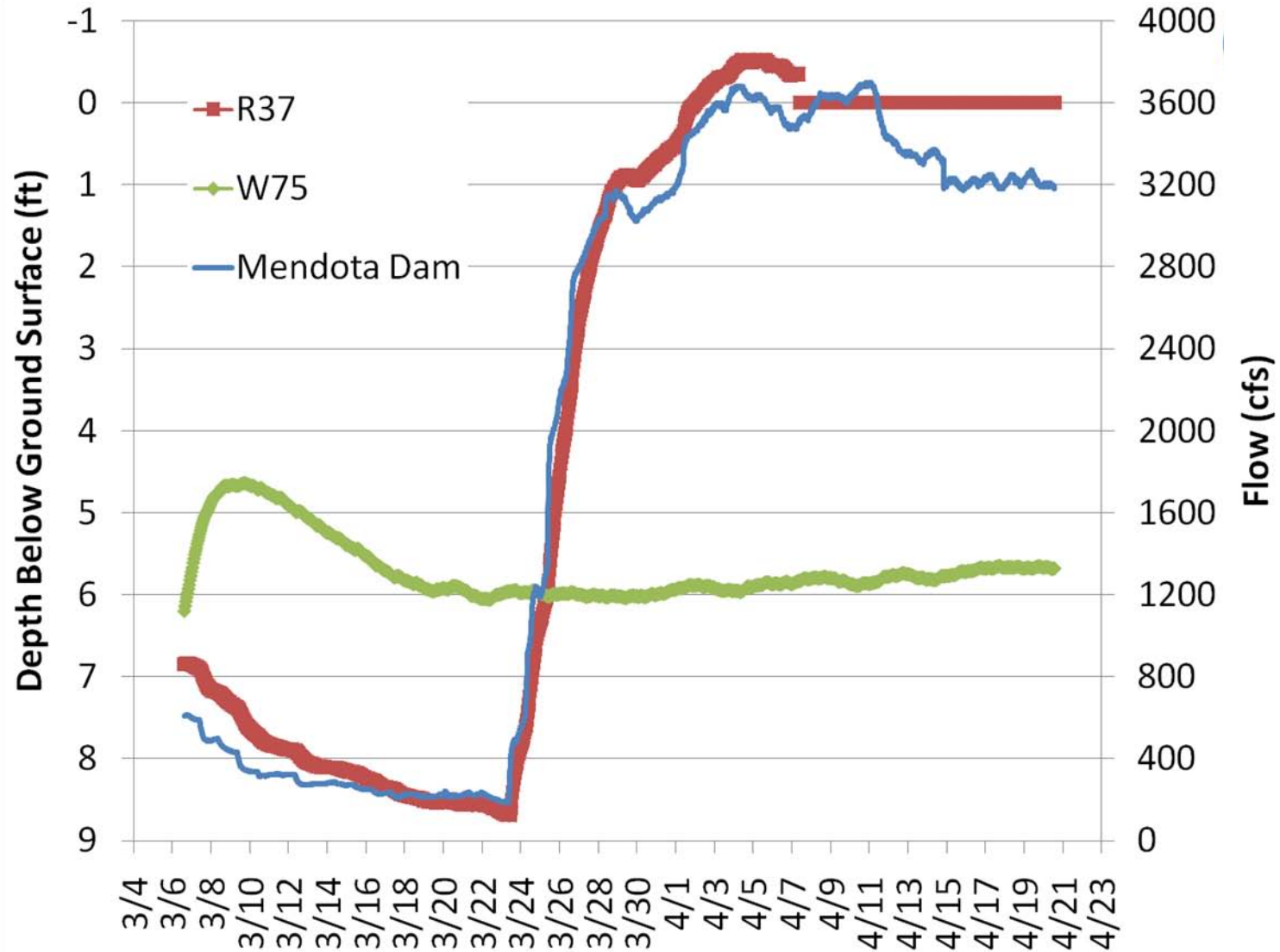


GROUNDWATER RESPONSE

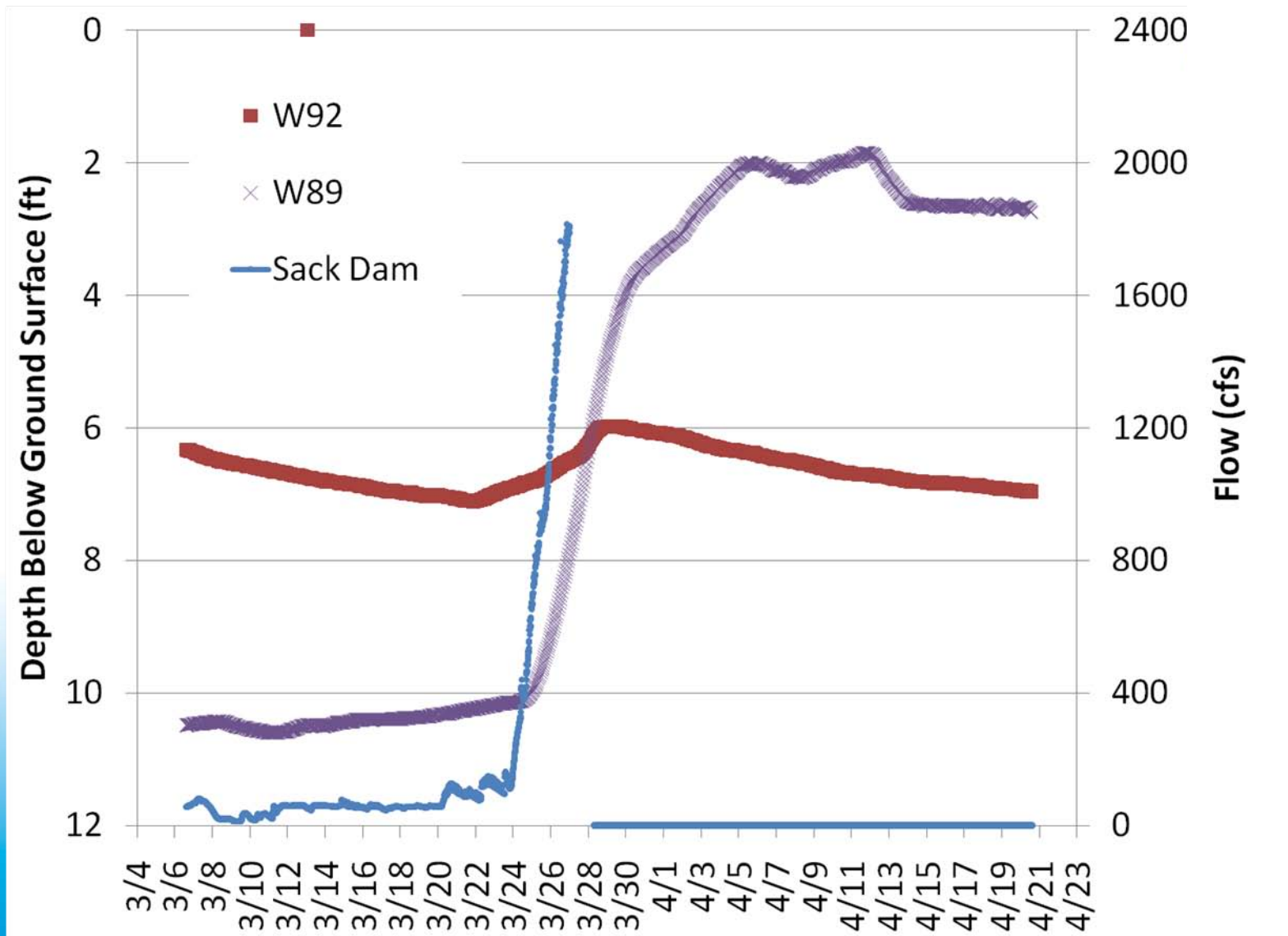
Reach 2B Groundwater



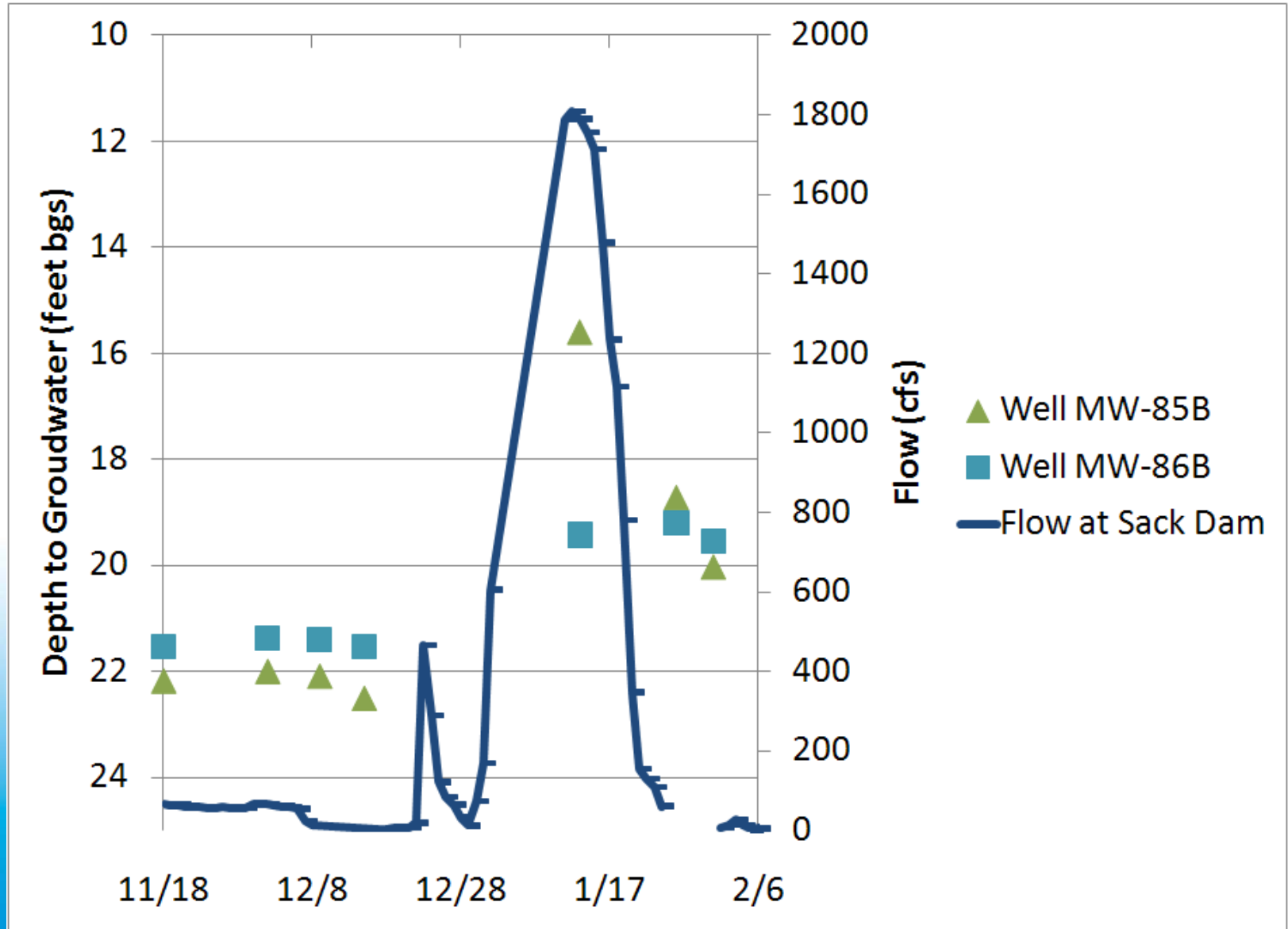
Reach 3 Groundwater



Reach 4A Groundwater



Hwy 152 – 2011 Flood Flows





Questions?

- Katrina Harrison
 - 916-978-5465
 - kharrison@usbr.gov
- Seepage Hotline
 - 916-978-4398
 - interimflows@restoresjr.net



San Joaquin River below Friant Dam Sediment Monitoring

Scott Wright
U.S. Geological Survey, Sacramento

Thursday, April 21, 2011
CSU Stanislaus, Turlock

U.S. Department of the Interior
U.S. Geological Survey

Funding provided by:



Tasks and Objectives

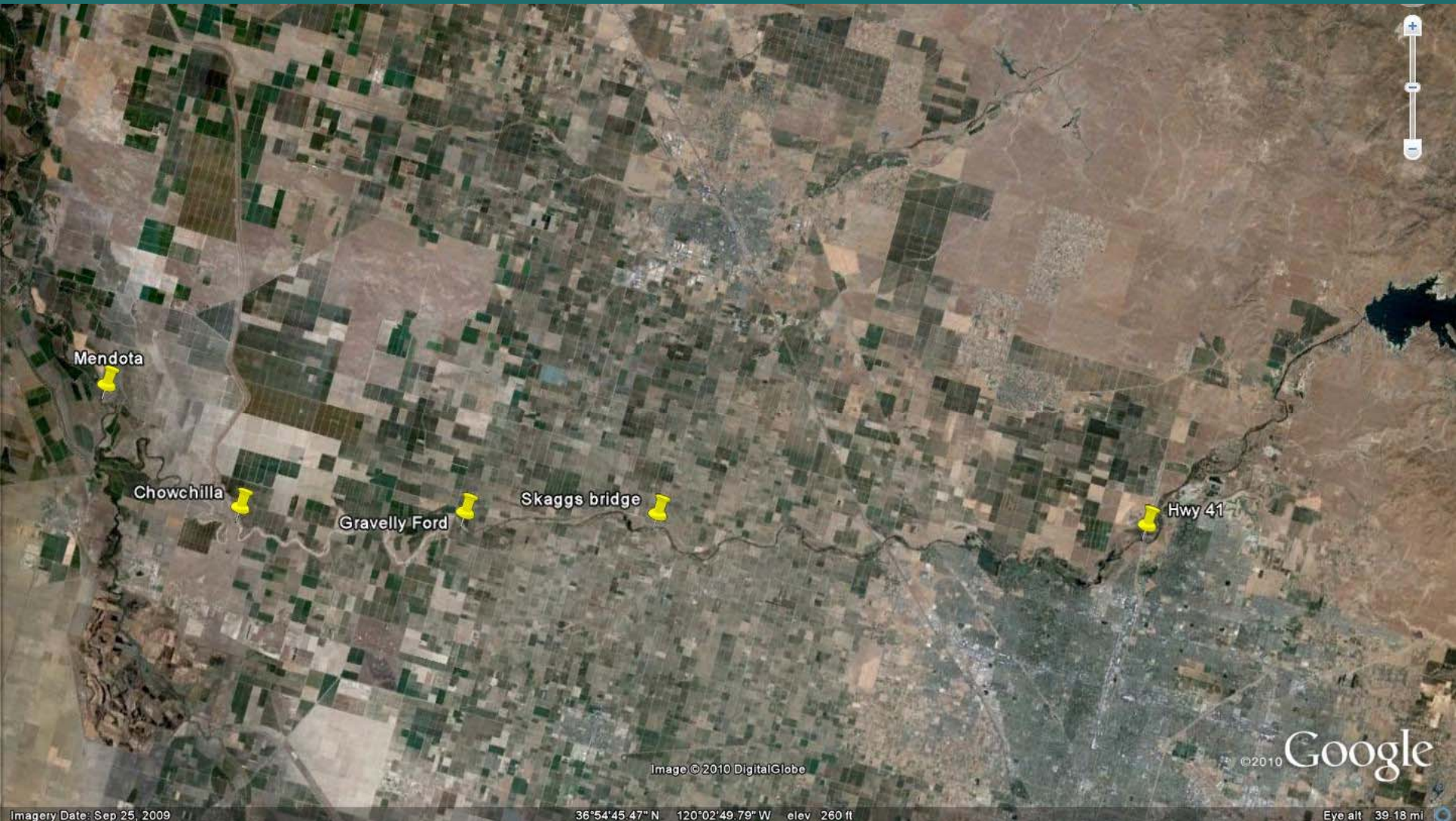
1. Monitor sediment transport rates (suspended and bedload) at 5 gages along the mainstem during spring releases

Evaluate transport rates over a range of flow releases and longitudinally downstream from Friant Dam, assess sediment supply limitation, construct sediment budgets for gravel and sand, and fines

2. Measure and estimate sediment supply from two tributaries, Cottonwood Creek and Little Dry Creek

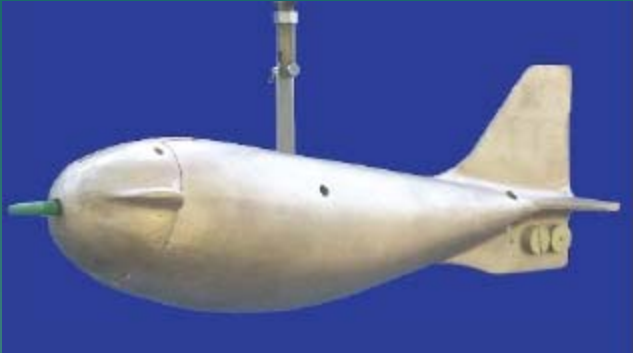
Estimate the supply of sand and gravel from the tributaries and compare to transport rates and storage on the mainstem San Joaquin

Sediment monitoring locations



Methods

Suspended sediment



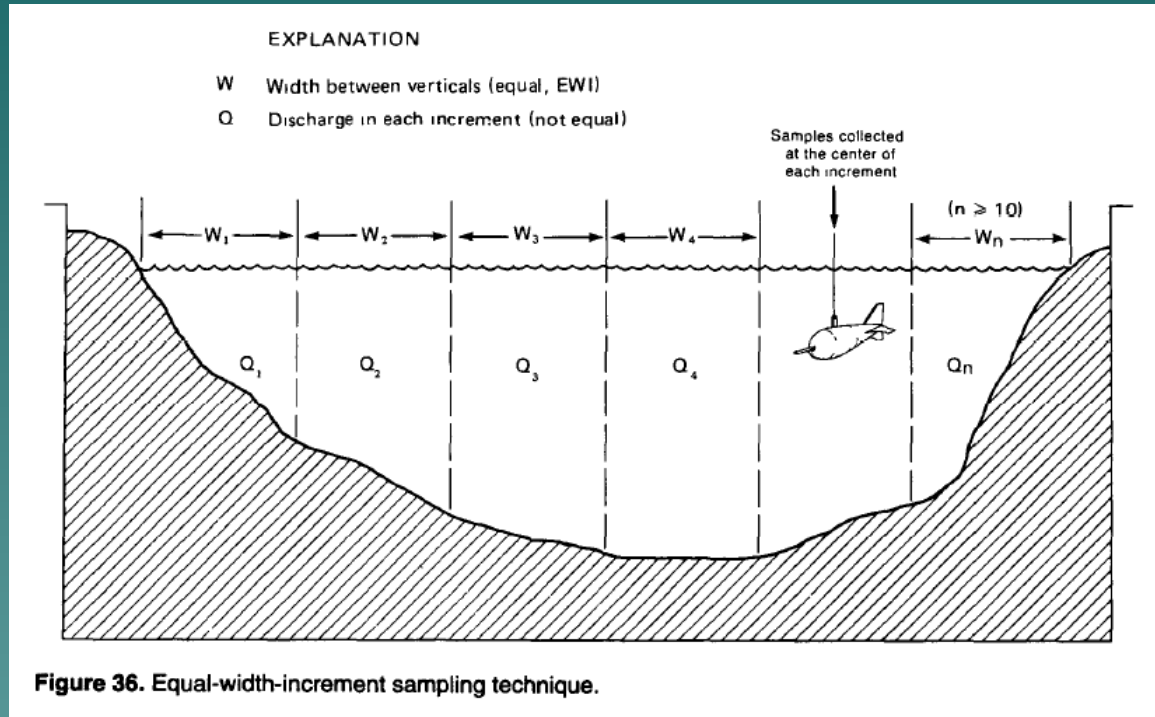
Bedload transport



Bed material/substrate

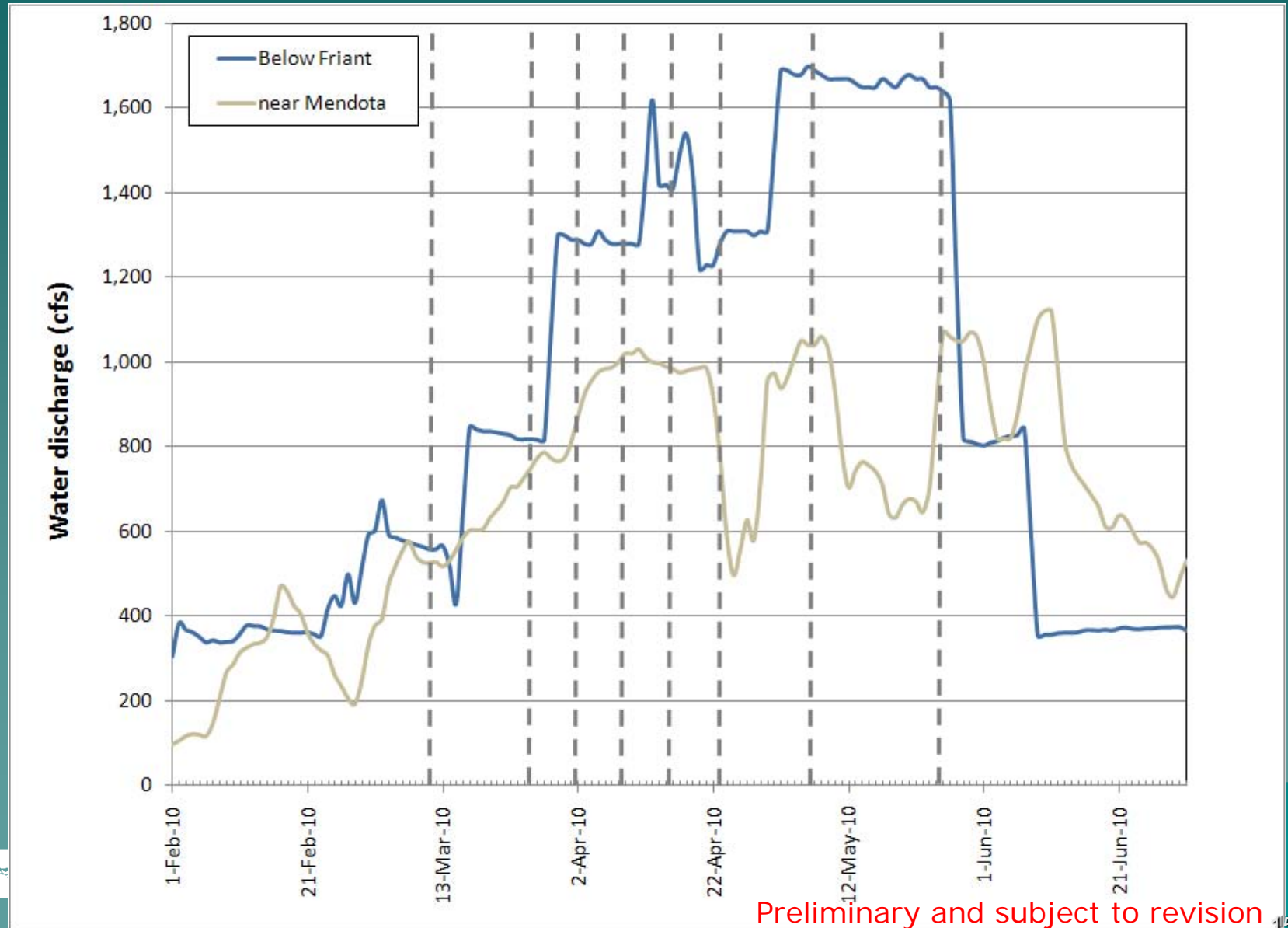


Samples collected at multiple stations across the channels



Samples analyzed in the lab
for concentrations and
particle size distributions

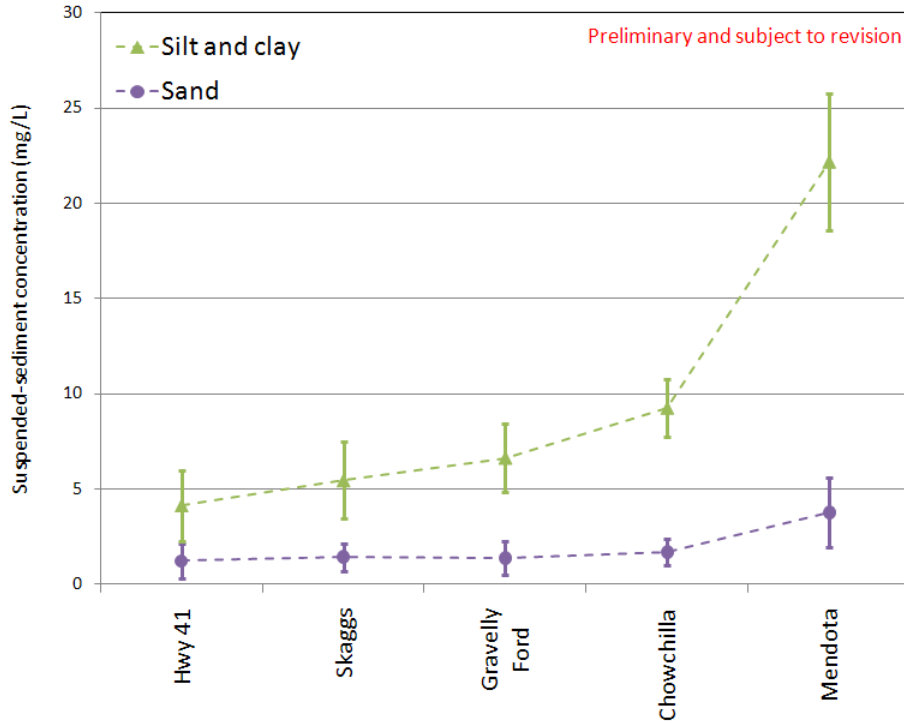
Water Year 2010 Results



Preliminary and subject to revision

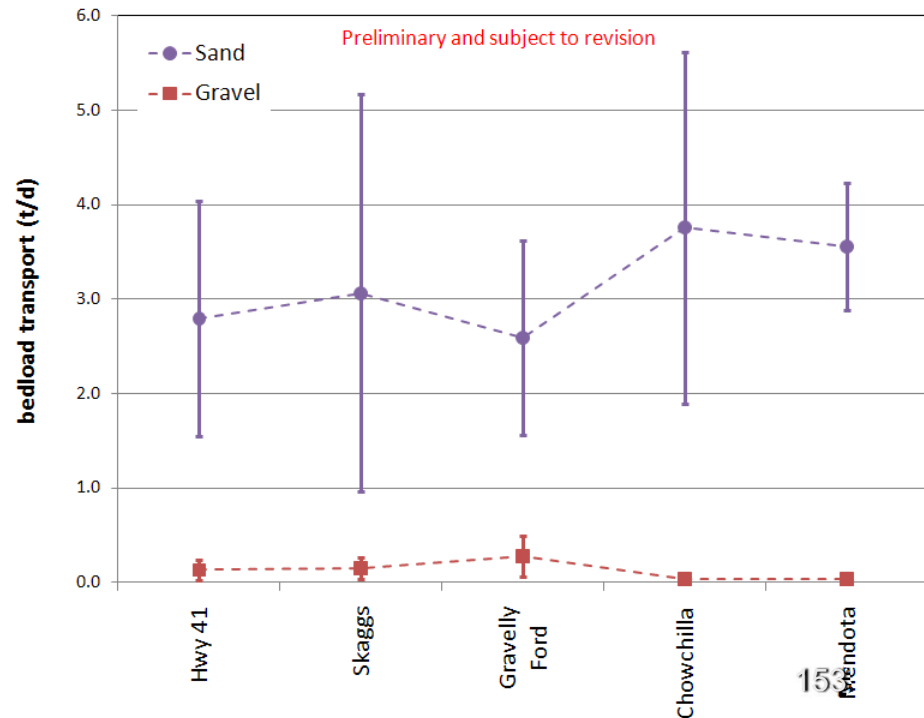
Water Year 2010 Results

Average suspended concentrations



Low concentrations, increasing downstream

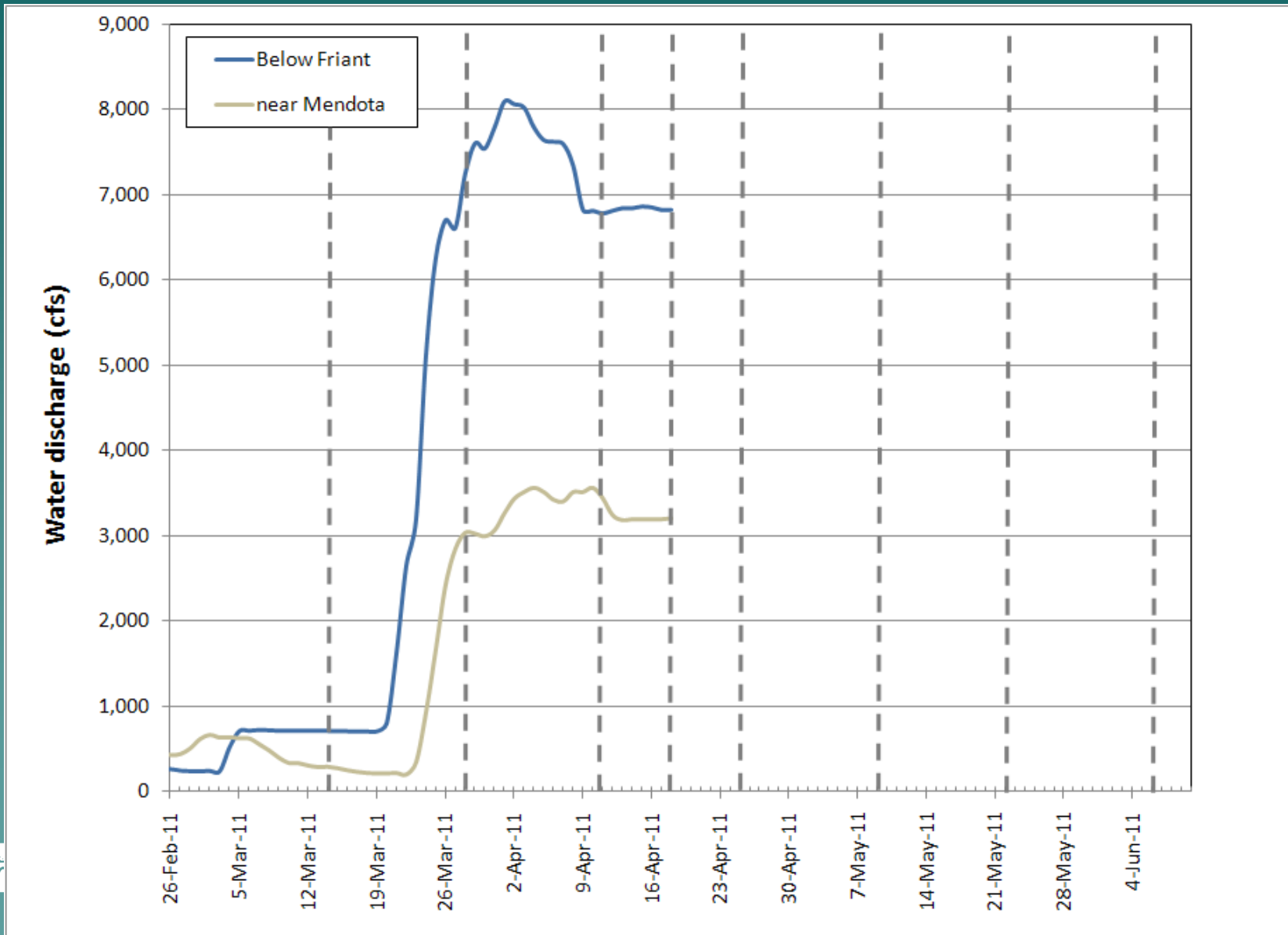
Average bedload transport rates



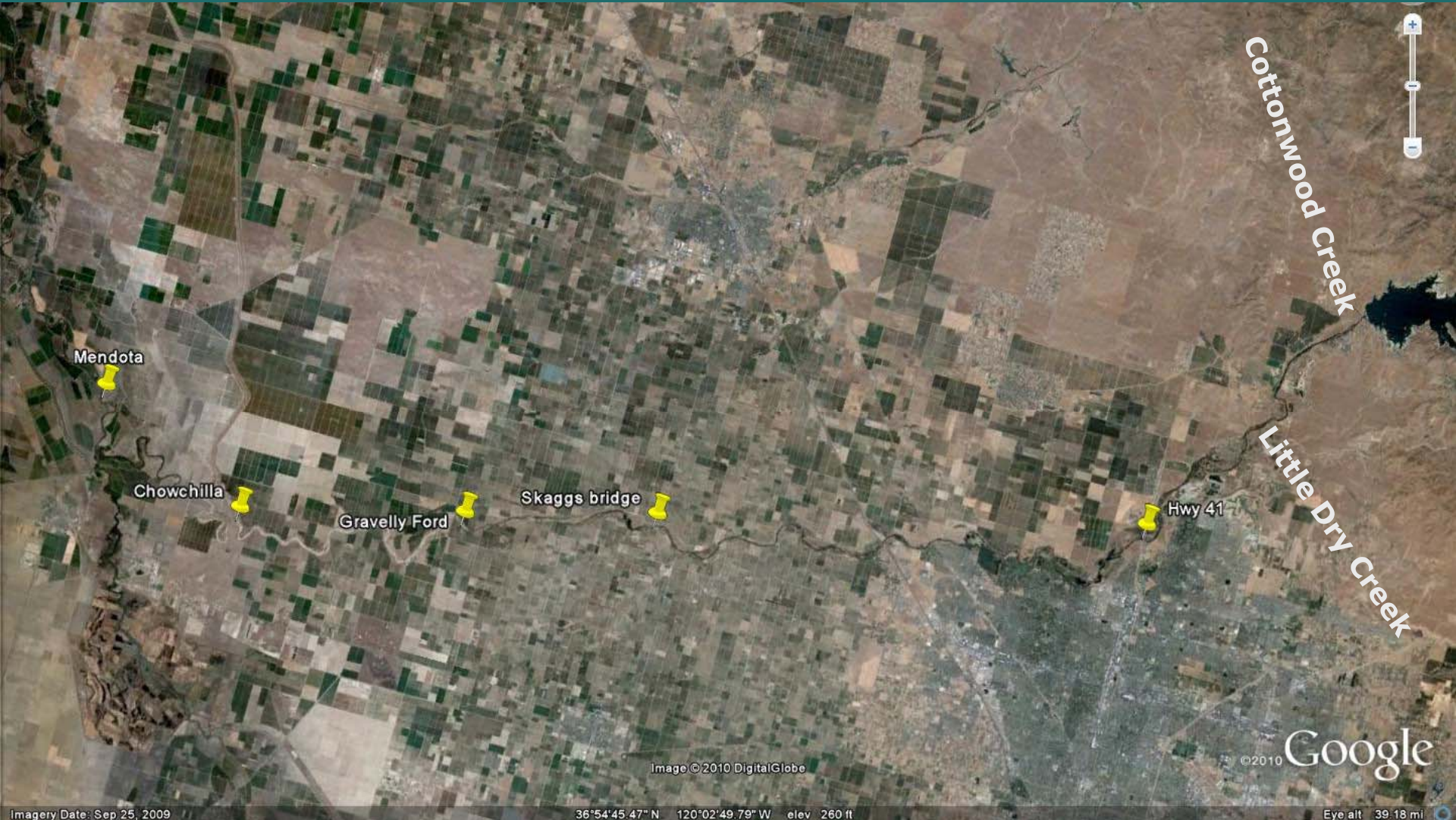
Almost no gravel transport



Water Year 2011 – in progress



Tributary Supply Study



Tributary Supply Study

Objective: Quantify the sand and gravel inputs from these tribs

Methods

Topographic surveys of the tributary confluences with the mainstem
Water surface and particle size mapping
Bedload and suspended load calculations and modeling
Bedload transport measurements





Closing and Next Meeting

- Restoration Goal TFG meetings to be held approximately every 2 months
- To discuss future meeting topics, please contact Erin Rice: erice@usbr.gov.



SAN JOAQUIN RIVER RESTORATION PROGRAM



www.restoresjr.net

