SAN JOAQUIN RIVER
RESTORATION PROGRAM

Water Management Technical Feedback Meeting

January 21, 2015
Reno, NV

SAN JOAQUIN RIVER RESTORATION PROGRAM

Agenda Overview

- Introductions
- SJRRP Background & Update
- Paragraph 16 Projects
- Part III Projects
- *Lecture Series*: Framework for Implementation Update
- Investment Strategy
- Next Meeting Dates

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Introductions

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San Joaquin River Restoration Program

Friant Dam and Millerton Reservoir

- Completed in 1942
- Authorized for:
  - Water Supply
  - Flood Control
- Storage Capacity:
  520,500 Acre-feet
- Average Inflow:
  1.8 Million Acre-feet
- Average Deliveries:
  1.4 Million Acre-feet
- No Carryover Storage

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San Joaquin River Operations

Controlled Releases:

- San Joaquin River (8,000 cfs)
- Friant-Kern Canal (5,000 cfs)
- Madera Canal (1,250 cfs)

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Settlement History

1942 - Friant Dam completed

1988 - Lawsuit filed challenging renewal of Friant Contracts

2004 - Federal Judge rules Reclamation violated California Fish and Game Code Section 5937

2005 - Settlement negotiations reinitiated

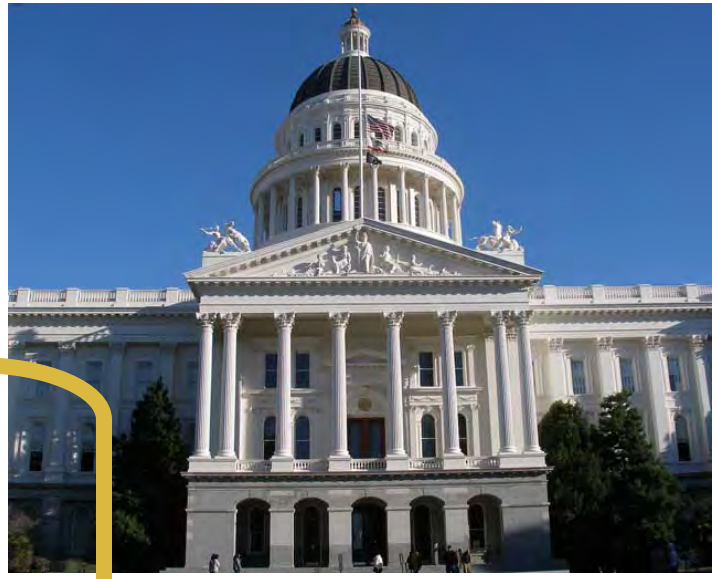
2006 - Settlement reached; Implementation begins

2009 - Federal legislation enacted (Public Law 111-11); Interim Flow releases begin October 1

Settling Parties & Implementing Agencies

Settling Parties

- NRDC Coalition
  - 14 organizations
- Friant Water Authority
  - 29 water agencies
- Federal Government
  - Department of the Interior
    - Bureau of Reclamation
    - Fish and Wildlife Service
  - Department of Commerce
    - National Marine Fisheries Service
- State of California
  - Department of Water Resources
  - Department of Fish and Wildlife
- Restoration Administrator



Implementing Agencies

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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.

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Restoration Goal Activities

- Increase flows from Friant Dam
- Improve channel and structures to convey flows and improve fisheries habitat
- Reintroduce spring-run and fall-run Chinook salmon

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Restoration Flow Releases

Flow Releases – Restoration Flow Guidelines

- Restoration Flow Guidelines identify how water is released
- In general:
  - Reclamation determines water year type and volume available
  - Restoration Administrator recommends how to release that volume
  - Reclamation "***shall consider and implement***" the recommendation to the extent consistent with law, operational criteria, and the Settlement (Paragraph 18)
- Flow targets in each reach (Paragraph 13(a) and Exhibit B)
- Releases are made consistent with the RA recommendation, Reclamation's water rights, law, and the Settlement

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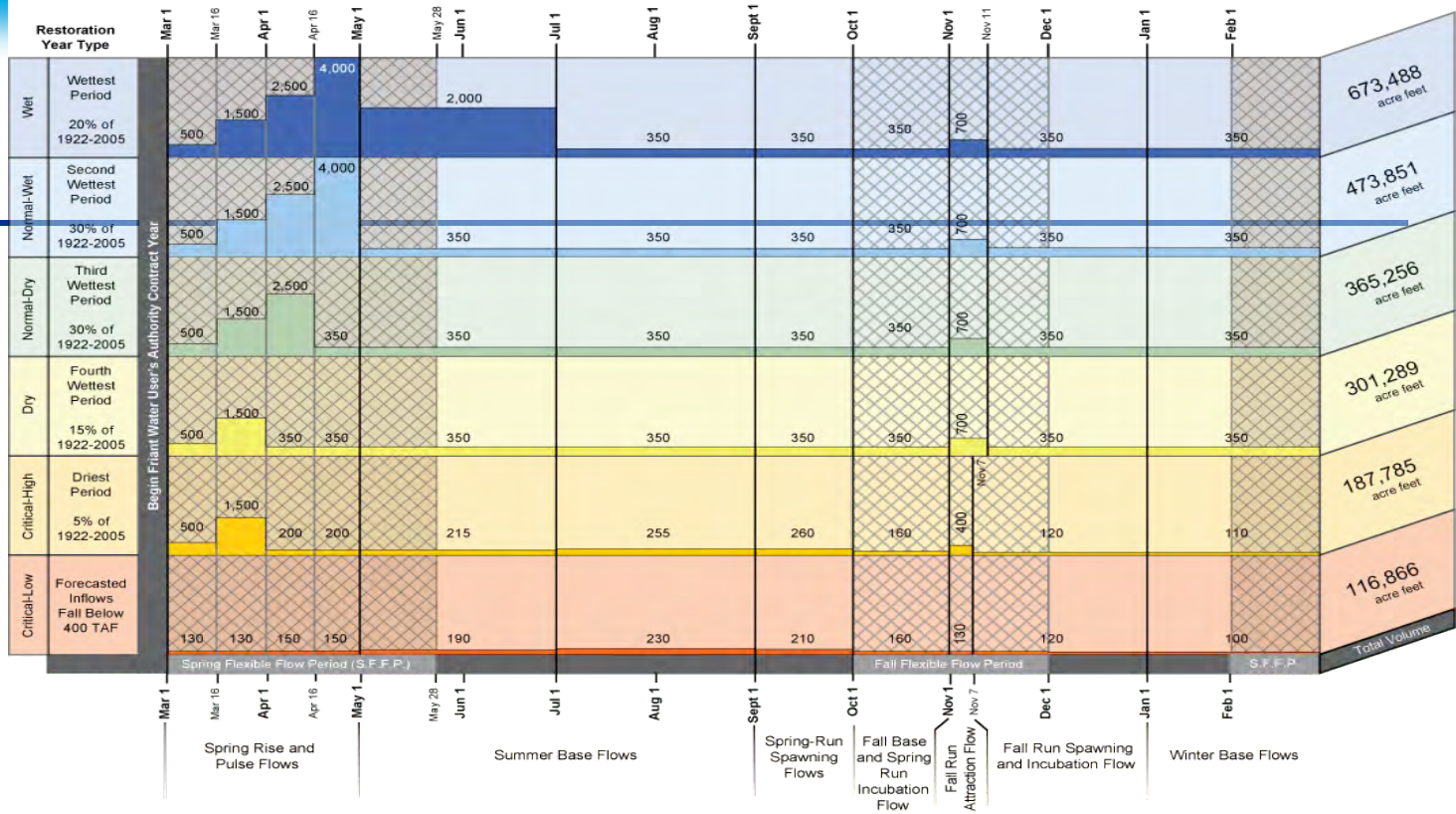
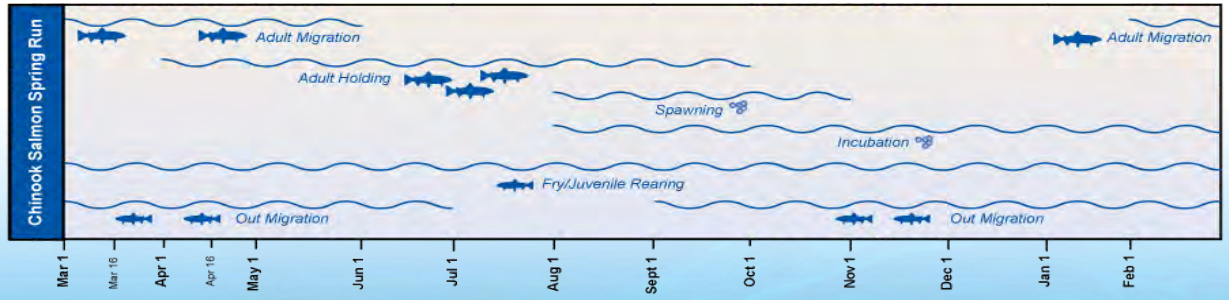
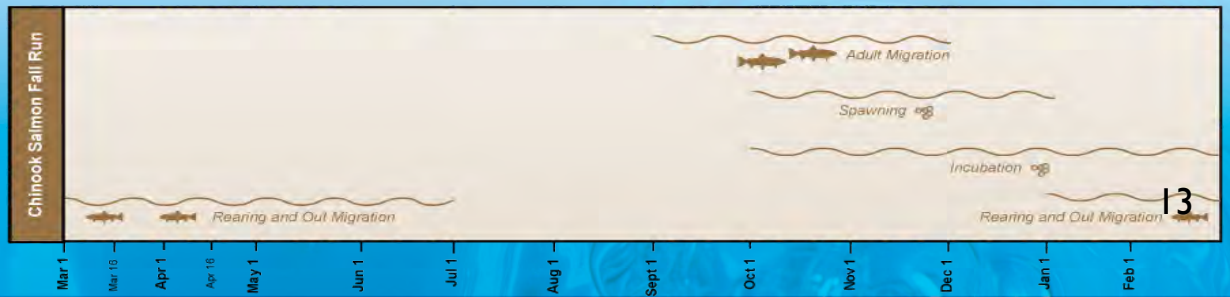
Friant Release Schedule with Fisheries Migration Timing

- Interim Flows began in 2009 and continued through 2013
- Restoration Flows began in 2014
- All flows released up to "then current" channel capacities







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Flow Releases (cont) – URFs

- Flows not released into the river become "Unreleased Restoration Flows" and are (Paragraph 13(i)):
  1. Banked, stored, or exchanged with Friant for future use to supplement Restoration Flows
  2. Transferred or sold to Friant; proceeds deposited into SJRR Restoration Fund
  3. Same as above with third parties
  4. Released at other times of the year
- Unreleased Restoration Flows must be used to "best achieve the Restoration Goal"

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2015 Restoration Flows

- Critical High Year
  - As of allocation released on January 20
  - Uncertain if Reclamation can make water available to meet the Exchange Contract
  - No flow releases for the SJRRP at this time
  - Will reassess on February 17
- In 2015, SJRRP will have capability for 70 cfs, possibly up to 300 cfs past Sack Dam

Major Channel and Structural Improvements

- Paragraph 11(a) identified 10 specific channel and structural improvement projects (Phase 1 projects)
- Settlement and Settlement Act do not identify priority
- Combined into 4 major projects (3 underway)
- Phase I projects address:
  - Channel capacity limitations
  - Fish habitat limitations
  - Fish passage and entrainment issues

Mendota Pool Bypass and Reach 2B Channel Improvements Project

- Project (Paragraph 11(a)(1) and (a)(2)):
  - Create new river bypass channel around Mendota Pool
  - Expand Reach 2B capacity to convey at least 4,500 cfs (new levees and flood plain habitat)
  - Four alternatives currently under consideration
- Current Schedule:
  - Draft EIS/R – May 2015
  - Final EIS/R – early 2016
  - Construction start – 2017 (funding dependent)

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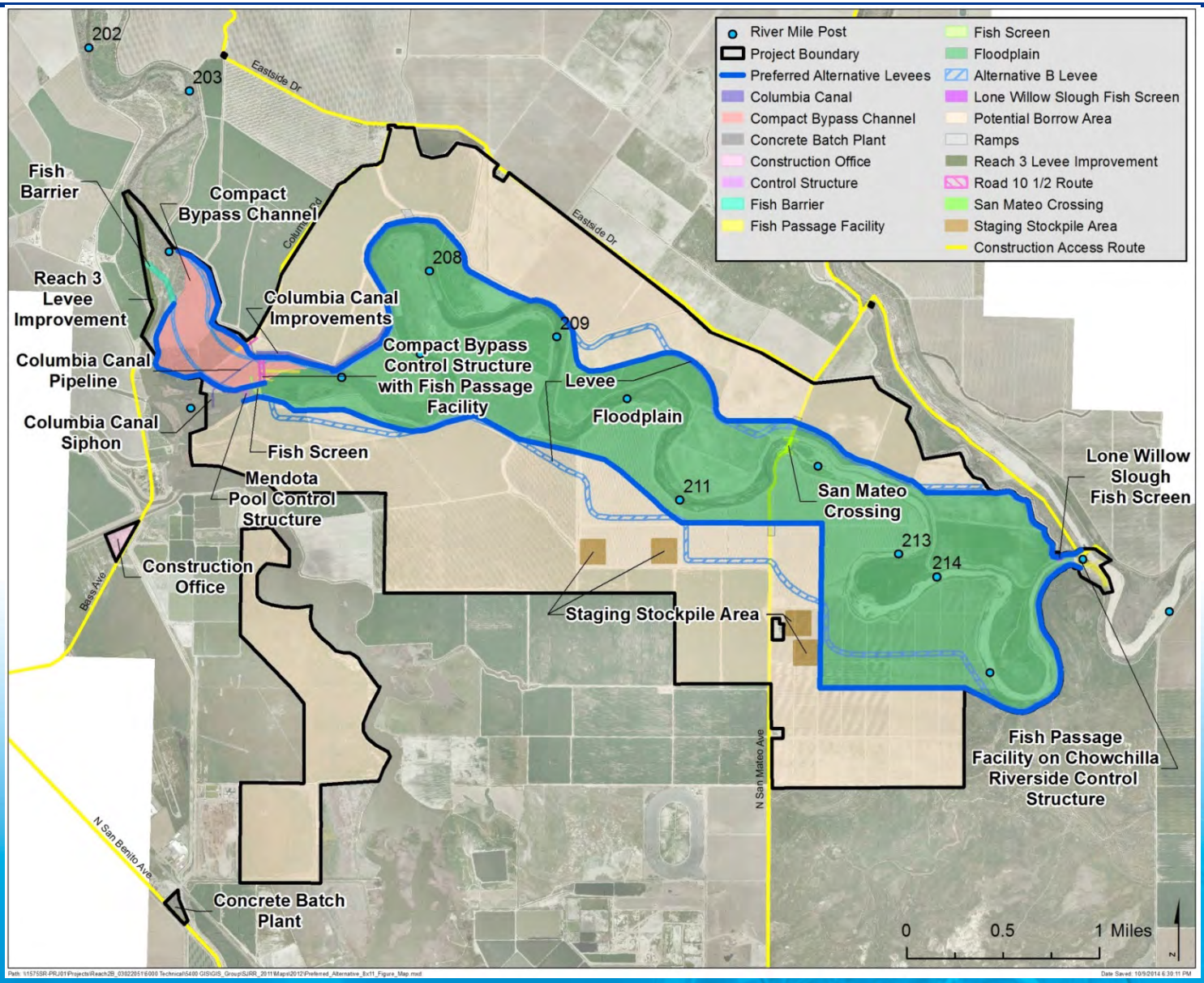
Mendota Pool Bypass and Reach 2B Improvements - Preferred Alternative



Reach 4B, Eastside Bypass and Mariposa Bypass Channel and Structural Improvements

- Project (Paragraph 11(a)(3)-(5), (8)-(9), AND 11(b)(1) and (4)):
  - Reach 4B
    - Modify to convey *at least* 475 cfs, possibly up to 4,500 cfs
    - Modify Sand Slough and Reach 4B headgates for flows and fish passage
  - Eastside and Mariposa Bypass
    - Modify structures for fish passage
    - Establish low-flow channel
  - Variety of levee alignments and infrastructure in each
  - Project will have to account for subsidence
- Current Schedule:
  - Draft EIS/R – mid 2017
  - Final EIS/R – mid 2018
  - Construction start – to be determined
- Report to Congress required in Section 10009(f)(2)

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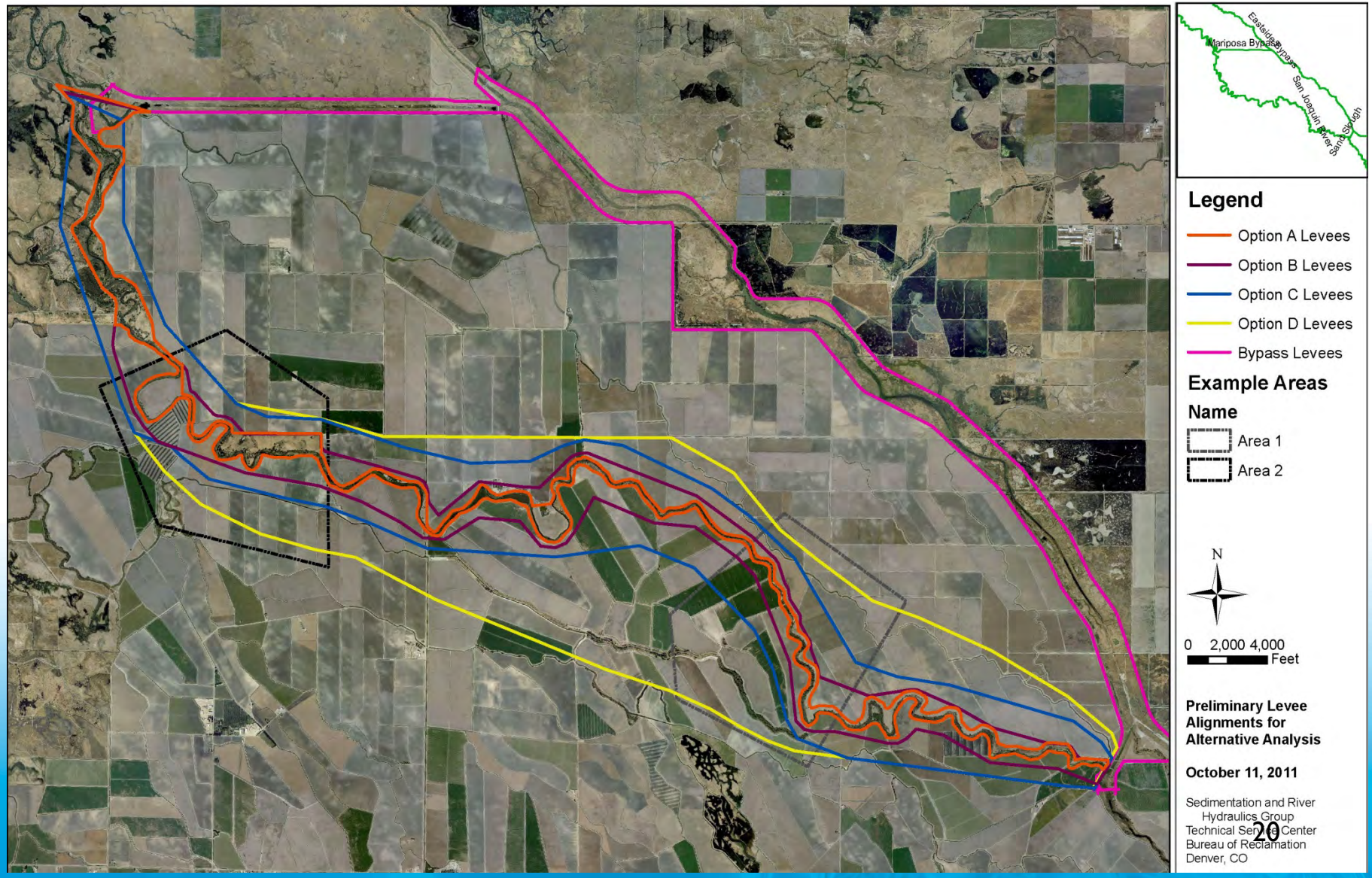
Reach 4B, Eastside Bypass and Mariposa Bypass Channel and Structural Improvements Project



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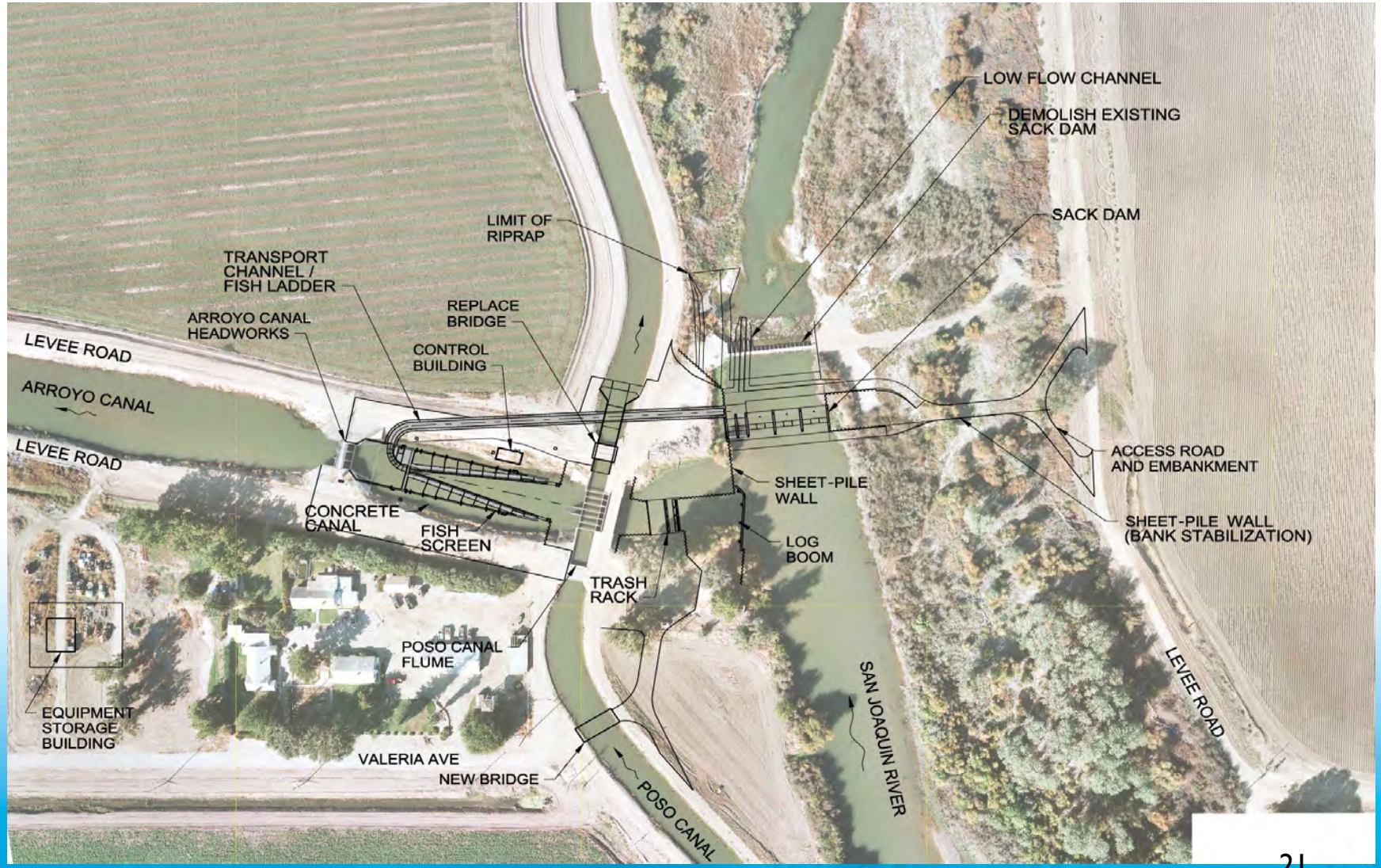
Arroyo Canal Fish Screen and Sack Dam Fish Passage Project



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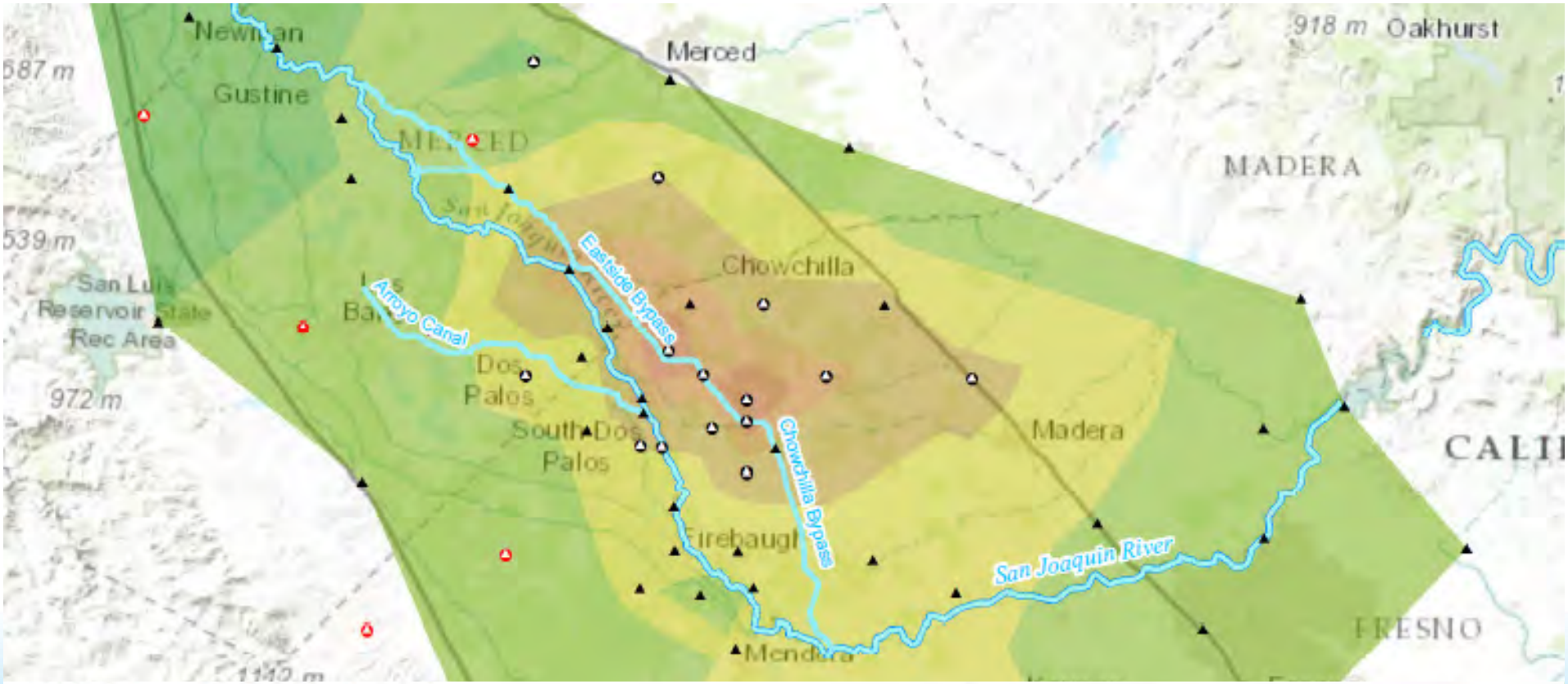
Subsidence, Control Point Survey Results



Subsidence Rates (feet/year)
December 2011 to July 2014

- 0.3 to 0.45
- 0.15 to 0.3
- 0 to 0.15
- -0.15 to 0
- -0.3 to -0.15
- -0.45 to -0.3
- -0.6 to -0.45
- -0.75 to -0.6
- -0.9 to -0.75

GPS Coordinates

- GPS Point-December 2011
- GPS Point-added July 2012
- GPS Point-added December 2013

N

0 7 14 21 Miles

RECLAMATION
Managing Water in the West

Reclamation Subsidence GPS Stations

Subsidence rates calculated by comparing survey values a GPS Stations for the dates specified in the legend. GPS points that have not been monitored for over one year wer not included in the Subsidence Rates surface.

Reintroduction of Salmon

- Paragraph 14 requires reintroduction of spring-run and fall-run Chinook salmon
- Settlement Act requires ESA rules to release spring-run; no other requirements or conditions precedent (Section 10011)
- Spring-run
  - Active reintroduction
  - Broodstock development at Conservation Facility
  - Direct release in 2014 and anticipated in 2015
- Fall-run
  - Opportunistic reintroduction
  - Continued trap and haul

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Water Management Goal

- Paragraph 16 of the Settlement
  - Recovered Water Account implementation
  - Recapture and Recirculation Plan
- Part III of the Settlement Act
  - Friant-Kern and Madera Canal Capacity Restoration Projects
  - Friant-Kern Canal Reverse Flow
  - Financial assistance for groundwater banks

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Recovered Water Account

- Available only in wet hydrologic conditions
- Total cost of $10/acre-foot
- 680,440 acre-feet allocated to date
- 356,200 acre-feet delivered to date

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Recapture and Recirculation

- Draft Plan released February 2011; Draft Revised Plan scheduled to be largely completed in 2015
- 286,000 acre-feet recaptured and recirculated from Contract Year 2010 through 2013
  - Recapture amounts vary each year based on flows released and recapture locations
  - Recaptured roughly 50-60% of the flows released to date
  - Will be less in the future as flows go past the Merced River confluence and are recaptured at the Delta facilities

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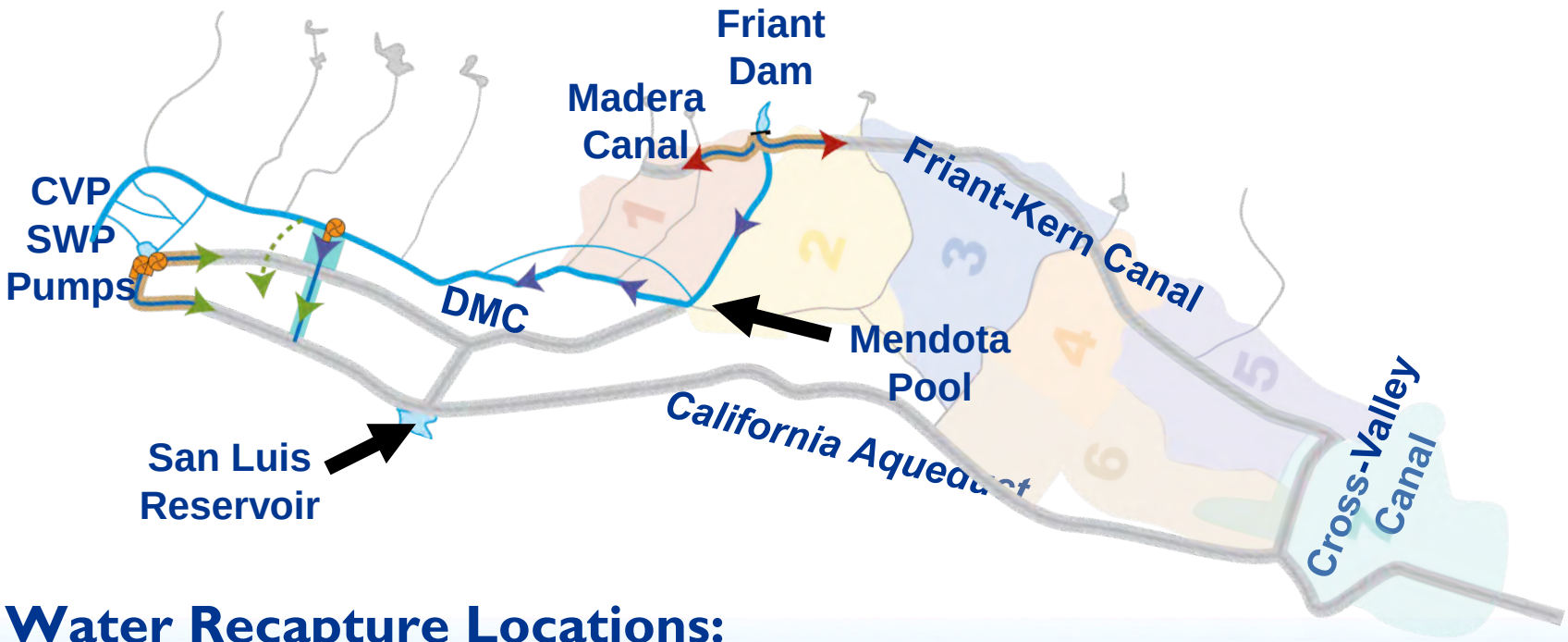
Recapture and Recirculation



Water Recapture Locations:

- Mendota Pool (temp)
- In Delta
- Along San Joaquin River at existing pumping plants
- New pumping plant along the river (considered in PEIS/R)

Recirculation Options:

- Exchanges
- Direct Deliveries (AEWSD/SWID)
- Sales

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Long-term R&R EIS/EIR

- Planning and impacts analysis for WY 2018 and beyond
- Long-term R&R may consider:
  - Modified or new facilities
  - New agreements and/or operations
  - Changes to contract amounts
- Alternatives Development Phase
  - Scoping meetings Spring 2015

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Friant-Kern Canal Capacity Restoration

- Restore Design Maximum Flow Capacity and current design standards from MP 29.14 to MP 71.3
- Draft Feasibility Report – June 2011
- Design-level 60%
- Value Engineering Study – January 2015
  - Reduce earthwork volumes and unit costs

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Madera Canal Capacity Restoration

- Demonstration Project advancing low-flow bypass valve into the Madera Canal
- Feasibility Study to focus on off-canal alternatives proposed by Chowchilla WD and Madera ID
  - Draft Feasibility Report scheduled for public review summer 2015

Friant-Kern Canal Reverse Flow Pump-Back Project

- Reverse-flow capacity at Poso and shafter check
- Red Bluff pumps and motors purchased and transported to FWA storage facility
- Feasibility study on hold until FY 17

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Part III - Local Groundwater Projects

- $50M, indexed at Oct 2008 levels
- At least 50% cost share
- Final Guidelines released August 2012
- Awarded $14.6M in Financial Assistance in FY2013
  - Pixley ID- Joint Groundwater Bank
  - Porterville ID- In-Lieu Project
  - Tulare ID- Cordeniz Basin Construction & Exchange Program
  - Shafter-Wasco ID- Madera Ave Intertie

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Discussion and Questions

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Lecture Series: Framework for Implementation Update

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WHAT ARE WE DOING AND WHY?

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Why are we Updating the Framework?

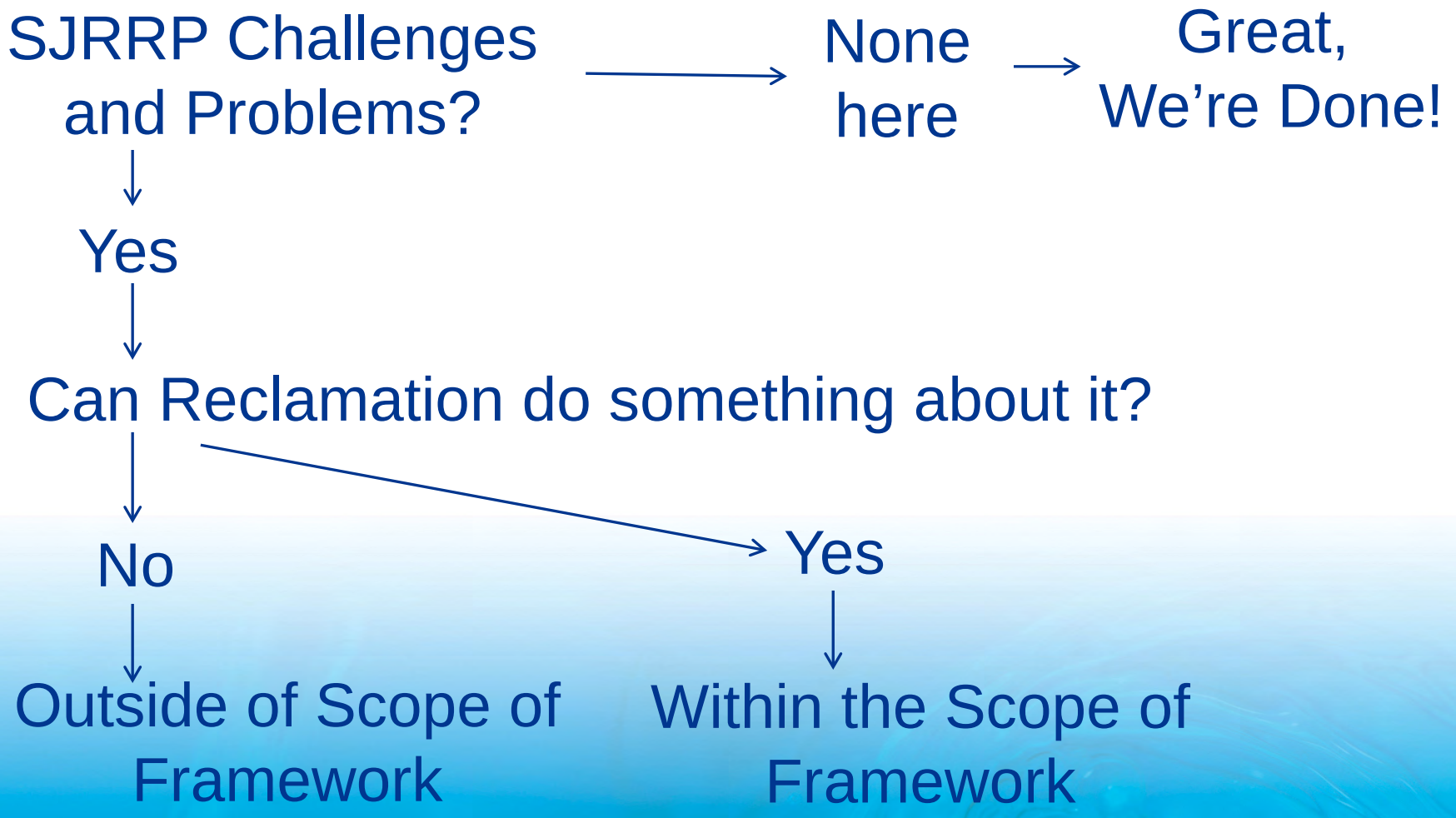
1. Common vision/path forward for implementing the Program
2. Identify Implementing Agencies roles and responsibilities with more accountability
3. Realistic schedules and funding outlooks so the Program can demonstrate success
4. Program success the basis of continued funding, and reduced potential for litigation and other challenges

Why bother?
Why not let the Settlement fail?

Significant risks for all parties:

Reclamation	- Judge continues remedy phase, orders flows - SWRCB includes instream flow requirements on water rights
NRDC	- No channel improvement projects - No active fish reintroduction
Friant	- Flow releases as ordered by Judge - No Water Management Goal projects - SWRCB instream flow requirements
Third Parties	- Flow releases as ordered by Judge - No seepage, levee stability, third party protections and other infrastructure projects - Uncertain future California Fish and Game Code 5937 compliance at Mendota Dam and Sack Dam - SWRCB instream flow requirements

Actions Within the Scope



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Will Not Consider…

- Changes to or violations of the Settlement
- Changes to or violations of the Act
- Anything that violates State or Federal law
- Returning to court for a "better" deal
- "Just get more money"
- Not implementing the entire Settlement or Settlement Act (no cherry picking actions)
- Miracles in addressing staffing, schedule, and process constraints
- Reclamation/Congress just go "fix it"
- Hoping it fixes itself

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Who makes the "Final" Decision?

- Reclamation is obligated to implement the Settlement and the Settlement Act
- Reclamation, in coordination with the Implementing Agencies will:
  - Complete the Revised Framework
  - Make decisions on items that the group cannot come to agreement on
  - Implement the Revised Framework based on the outcome of this process
  - Only adopt realistic and achievable assumptions for the Program
- If the SPs, Third Parties, and Implementing Agencies can all live with a proposal, Reclamation will implement it

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FRAMEWORK OVERVIEW

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Principles

- Consistency with the Settlement and Act
  - We're not re-negotiating the Settlement or Act (except for funding if necessary)
  - Release of Restoration Flows shall be made, consistent with RA recommendation
  - Release of salmon shall be made consistent with permits, rules, and environmental conditions
- We're implementing the Settlement
  - not "restoring" and "recovering" the entire San Joaquin River

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Principles (cont.)

- All "core" projects are included in the Framework, irrespective of responsibility for costs
  - Core projects from 2012 Framework
  - Core projects: Actions considered essential to the success of the program; the Agencies are certain that the action will result in a positive outcome; and the absence of action would result in program failure
- Restoration Goal and Water Management Goal move forward together
- Best available information is always used for appropriations, costs, and schedules
- Visions, once agreed upon, will establish the priority of funding and implementation of projects

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Schedule of Key Actions

2015-2019	2020-2024	2025-2029	2030+
Goal: Connectivity	**Goal: Increased Capacity**	**Goal: Phase 1 Projects Complete**	**Goal: All Remaining Projects Complete**
• Friant-Kern Capacity Restoration • Madera Canal Capacity Restoration • Mendota Pool Bypass • Temporary Sack Dam Passage • Conservation Facility • Seepage Projects to 1,300 cfs	• Part III • Reach 2B • Arroyo Canal and Sack Dam • Reach 4B Land Acquisition • Seepage Projects to 2,500 cfs • Levee Stability to 2,500 cfs	• Reach 4B • Mud and Salt Sloughs • Seepage Projects to 4,500 cfs • Levee Stability to 4,500 cfs	• Ongoing Operations and Maintenance

Key Foundational Factors and Assumptions

- Core projects only
- $50 million per year maximum additional federal appropriations
- Full Restoration Flows before Phase 2 projects are initiated
- Everyone gets better together
  - NRDC, Flows and fish in the river
  - Friant, Progress on WMG commensurate with increases of flows
  - 3rd Parties, Avoidance of "take" under ESA
- Only specific 3rd Party protections are required to be in place before actions are taken

5-Year Vision

5 Year Vision: Connectivity
(FY 2015 – 2019)

- Flow connectivity and fish passage, such that adult and juvenile salmon can complete migration without human assistance
- Continue to implement Water Management Actions to reduce or avoid supply impacts to Friant Division contractors

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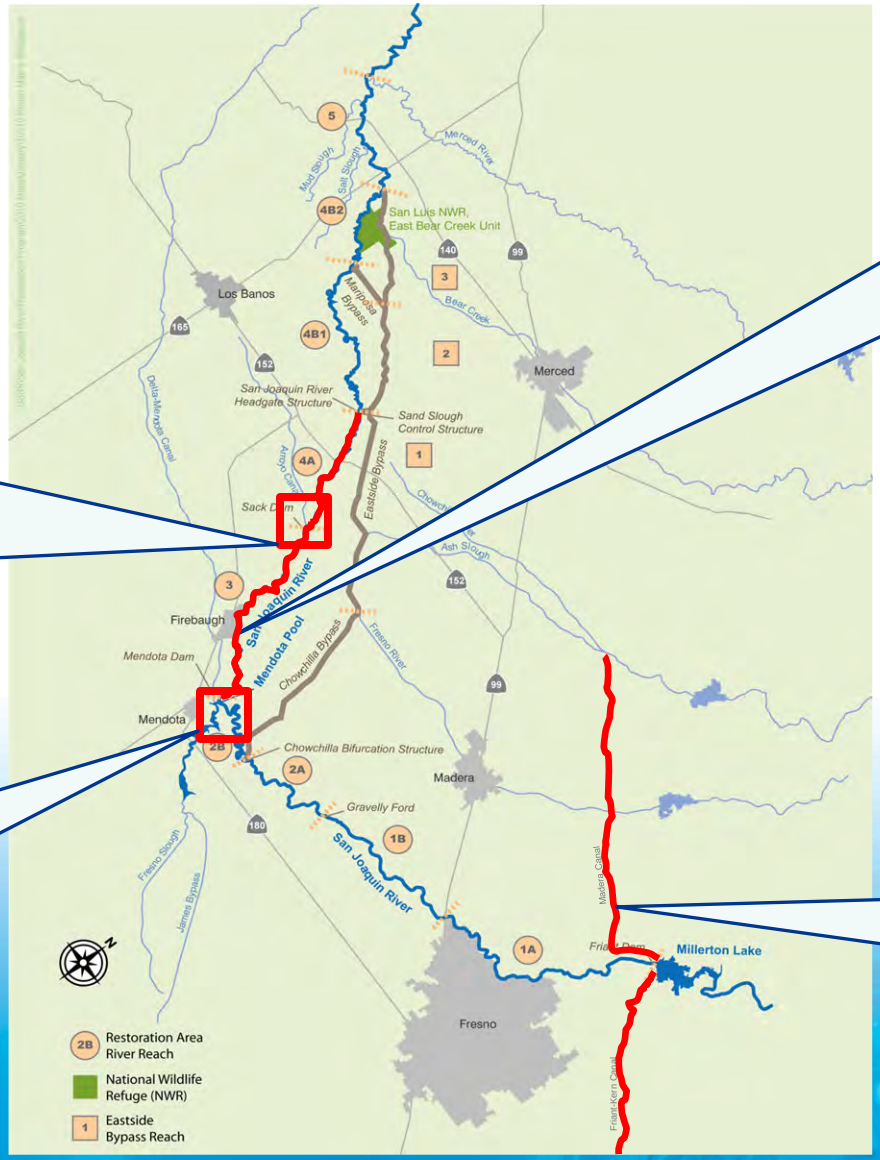
5 Year Vision: Connectivity (FY 2015 – 2019)

Key Elements

Arroyo Canal Fish Screen & Sack Dam Fish Passage temporary solution (if necessary)

Mendota Pool Bypass and Fish Screen Completed



Seepage Projects and Levee Improvements to allow for flows up to 1,300 cfs

Friant-Kern and Madera Canal Capacity Restoration

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Flow Related Activities

- Reach 2B Compact Bypass
  - Minimize trucking fish - costly and less effective
  - Limited funds, so cannot build the Compact Bypass and 2B setback levees at the same time
  - Passage is a priority over flow capacity - still seepage and levee stability limited downstream
- PEIS/R ROD Conservation Strategy and Mitigation Actions
- Seepage and Levee Stability to allow up to 1,300 cfs in Reach 2B

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Channel and Structural Improvements

- Mendota Pool Bypass or Fresno Slough Dam
  - Minimize trap and haul of fish
- Reach 4B, Eastside Bypass/Mariposa Bypass EIS/R and Report to Congress
  - Routing decision to justify bypass levee repairs
- Temporary Arroyo Canal Fish Screen/Sack Dam Fish Passage
  - Prevent fish entrainment for the short term
- Passage at Key Barriers
  - Minimize trap and haul of fish

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Fish Reintroduction

- Construction & operation of Salmon Conservation and Research Facility
- Spring-run donor stock collection and tagging
- Trap and haul fish until Mendota Pool Bypass is completed
- Permit for use of wild stock

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Water Management

- Continued Recapture and recirculation of Restoration Flows, RWA accounts
- Recapture and Recirculation Plan
- Recirculation EIS/R
- Friant-Kern and Madera Canal Capacity Restoration Projects
  - Construct ASAP to maximize funding value (costs not indexed)

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10-Year Vision

10 Year Vision: Increased Capacity
(FY 2020 – 2024)

- SJR Restoration Fund available without further appropriation in FY 2020
  - Level of construction action increases with available funding
  - Make all major project decisions and award funds

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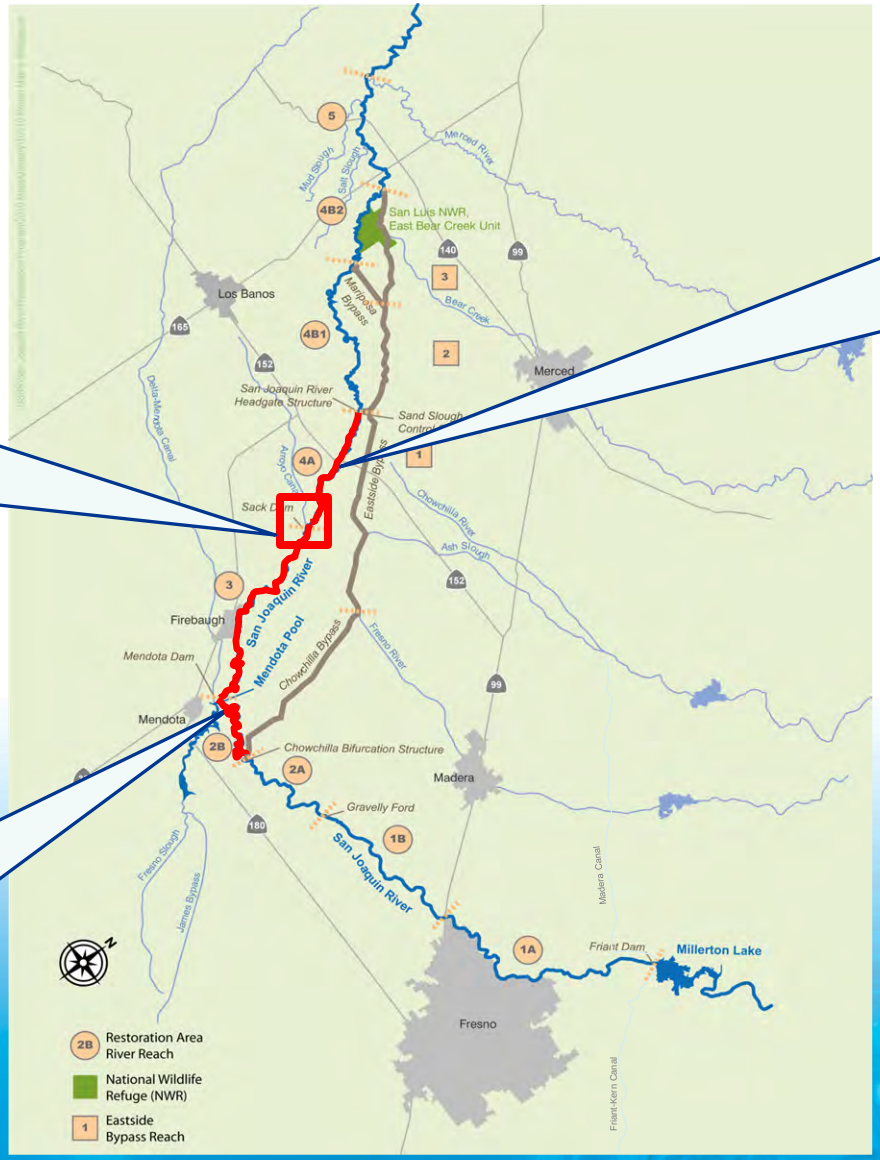
10 Year Vision: Increased Capacity (FY 2020 – 2024)

Key Elements

Arroyo Canal Fish Screen & Sack Dam Fish Passage Construction

Increase Reach 2B channel capacity to 4,500 cfs, levee construction

Seepage Projects and Levee Improvements to allow for flows up to 2,500 cfs



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Flow Related Activities - 10 Year

- Conservation Strategy and Mitigation Actions from PEIS/R ROD
- Flow management and monitoring
- Seepage and Levee Stability
  - Can get flows to 2,500 cfs in all reaches
  - Better manage water temperatures and improve salmon survival

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Channel and Structural Improvements

- 2B levee and channel improvements to 4,500 cfs
  - Relieves flow constraint in upper reaches
  - Full Spring pulses to Mendota Pool
- Land acquisition for Reach 4B, Eastside Bypass/Mariposa Bypass
  - Landowners likely prefer certainty of early land acquisition
- Construct Arroyo Canal Fish Screen/Sack Dam Fish Passage
  - Subsidence could further delay or increase costs
- Environmental Compliance for Salt and Mud Slough Seasonal Barriers

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Fish Reintroduction

- Operation of Salmon Conservation and Research Facility
- Spring-run donor stock collection and tagging
- Prepare Report to Congress (Section 10011(d))
  - Segregation Action Cost not included

Water Management Goal

- Water Management Goal Oversight
- Recapture and Recirculation Plan Implementation
- Award funding for Groundwater Banking facilities
- Any remaining actions on the Madera Canal Capacity Restoration Project

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15-Year Vision

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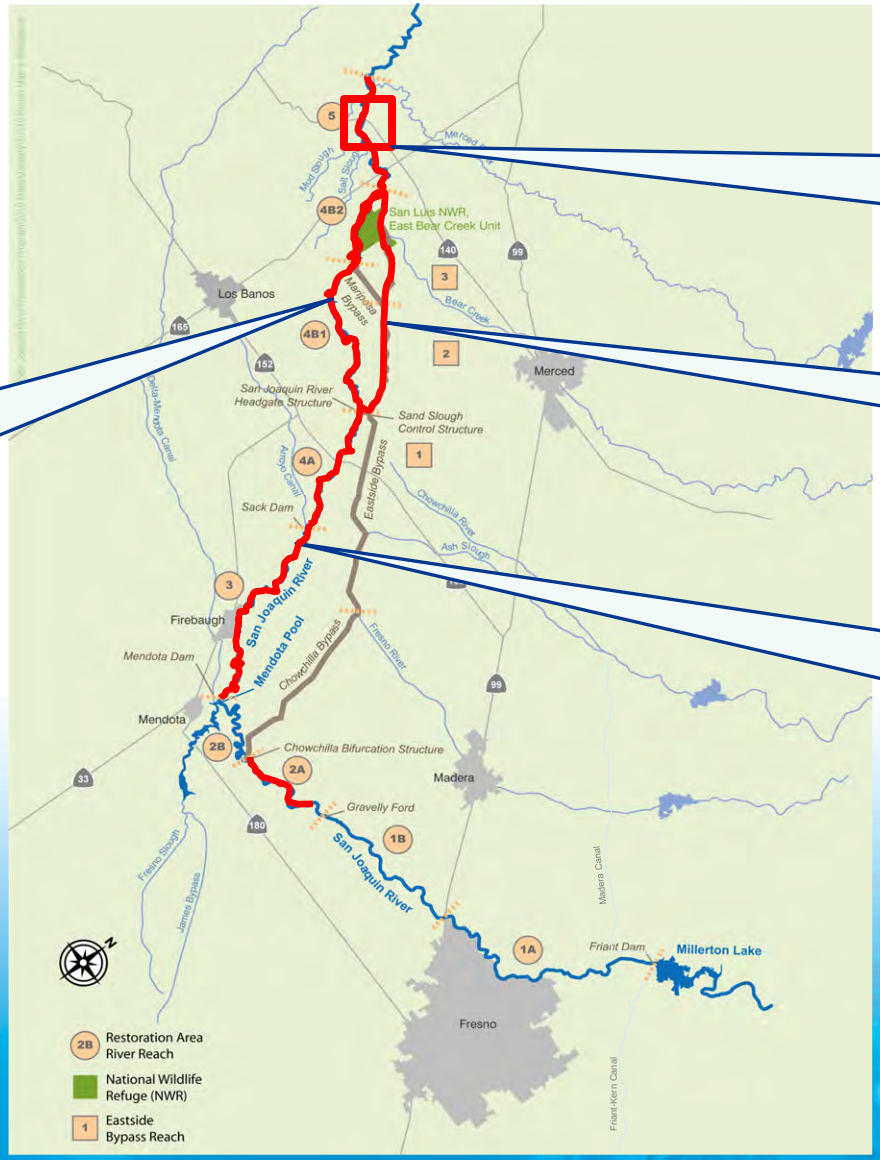
15 Year Vision: Conveyance (FY 2025 – 2029)

Key Elements

Reach 4B Channel and Structural Improvements

Continue implementing Water Management Goal



Salt and Mud Slough Seasonal Barrier Projects

Reach 4B/ESB High Flow Routing

Increased channel capacity to allow for flows up to 4,500 cfs

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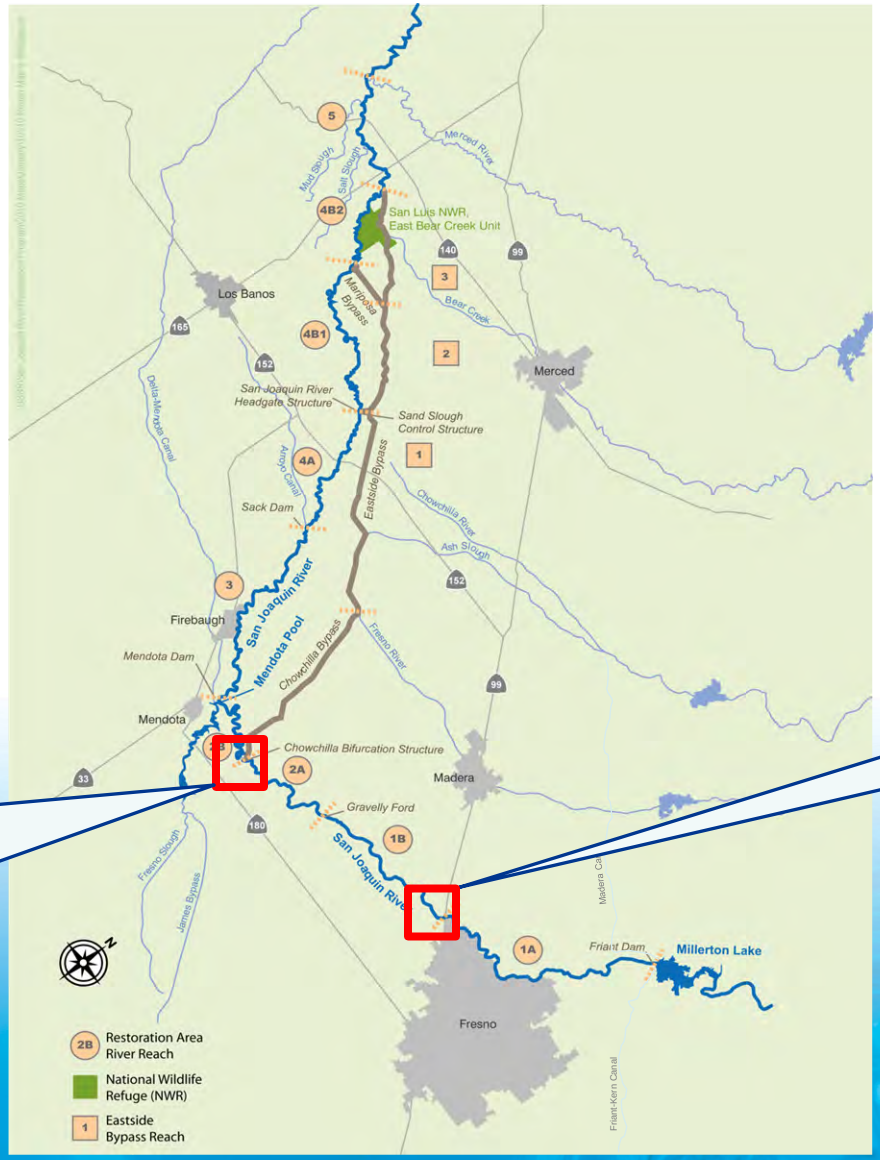
15+ Year Vision

Beyond 15 Year Vision (FY 2030+) : Monitoring, Maintenance and Final Project work

- Complete remaining construction actions
  - all Paragraph 11(b) projects
  - all Paragraph 12 projects, if any recommended
- Monitor and maintain system for long-term
- Phase out hatchery production
  - Phase out hatchery production and population augmentation
  - Monitor self-sustaining, naturally reproducing populations
- Continue implementing Water Management Goal
  - continue recapture and recirculation, tracking and allocating RWA water

Beyond 15 Year Vision (FY 2030+): Monitoring and Maintenance

Key Elements



Chowchilla Bifurcation Fish Passage Construction

Gravel Pit Filling and/or isolation

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QUESTIONS?

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Investment Strategy

Investment Strategy Purpose and Objectives

- Provide information for the Recapture and Recirculation Plan

  "*the Plan shall include provisions for funding necessary measures to implement the Plan*"

  – Identify, evaluate, and rank structural projects that could help achieve the Water Management Goal

  – Support decisions to provide Federal funding for WMG projects when opportunities occur

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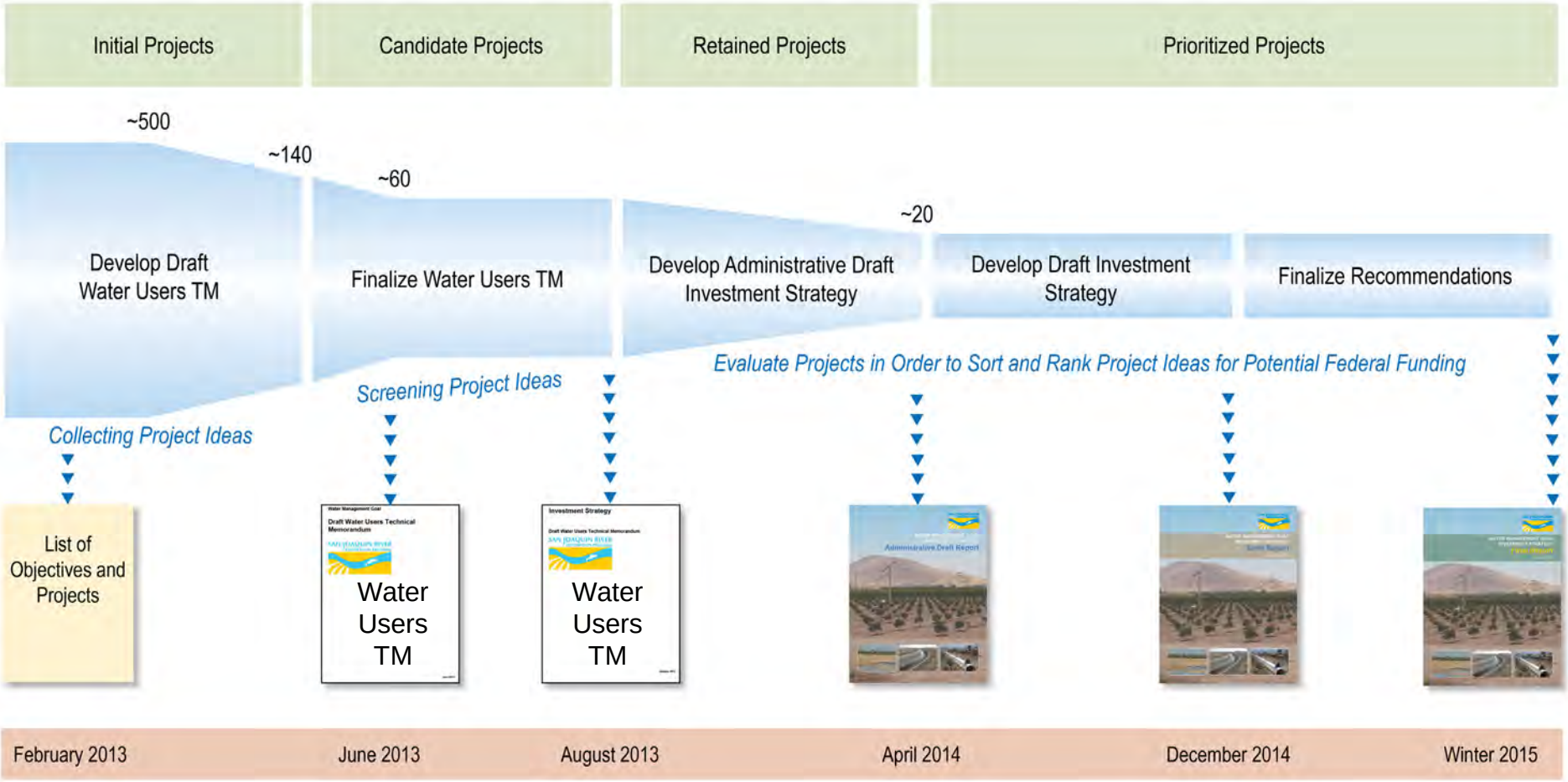
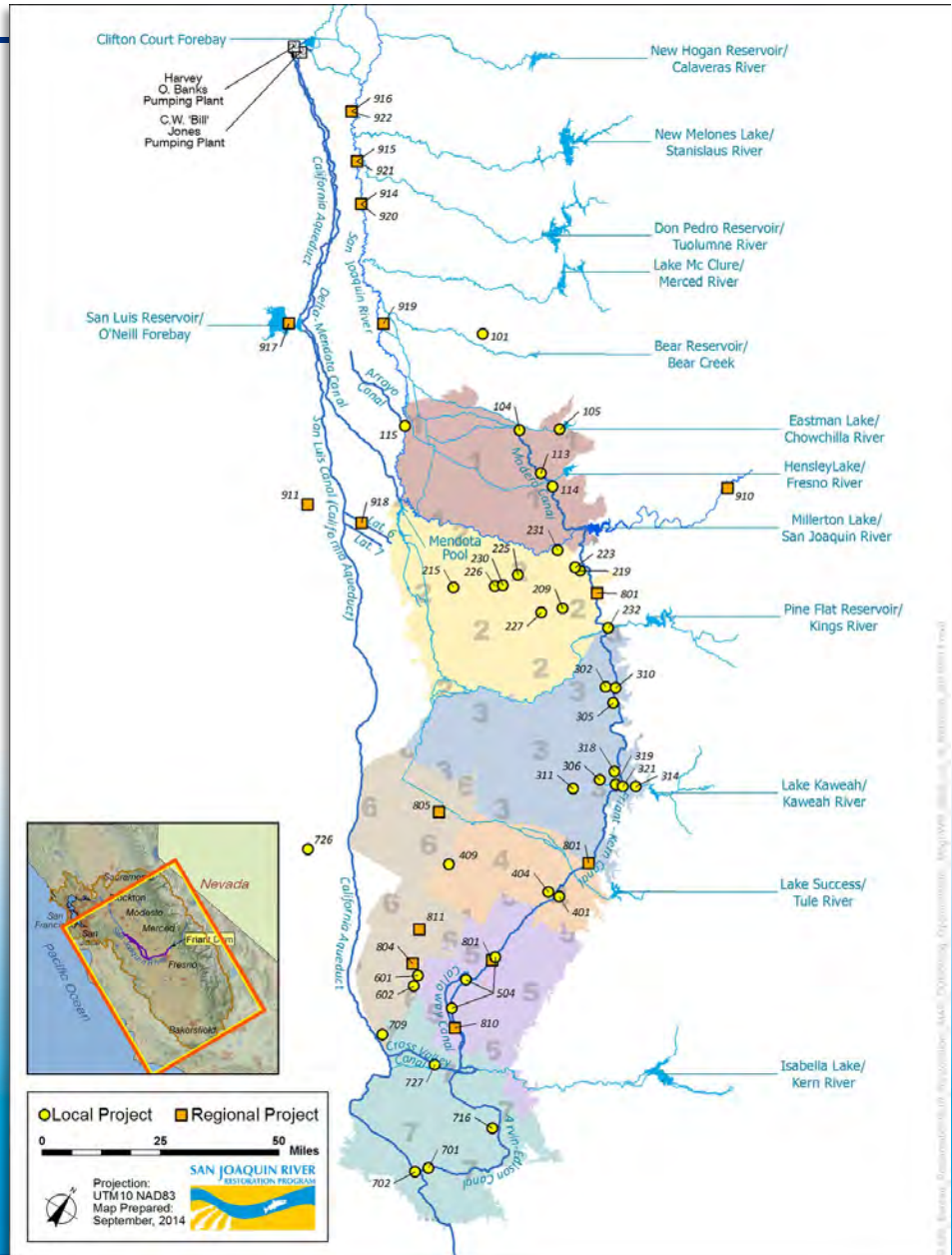
Investment Strategy Approach



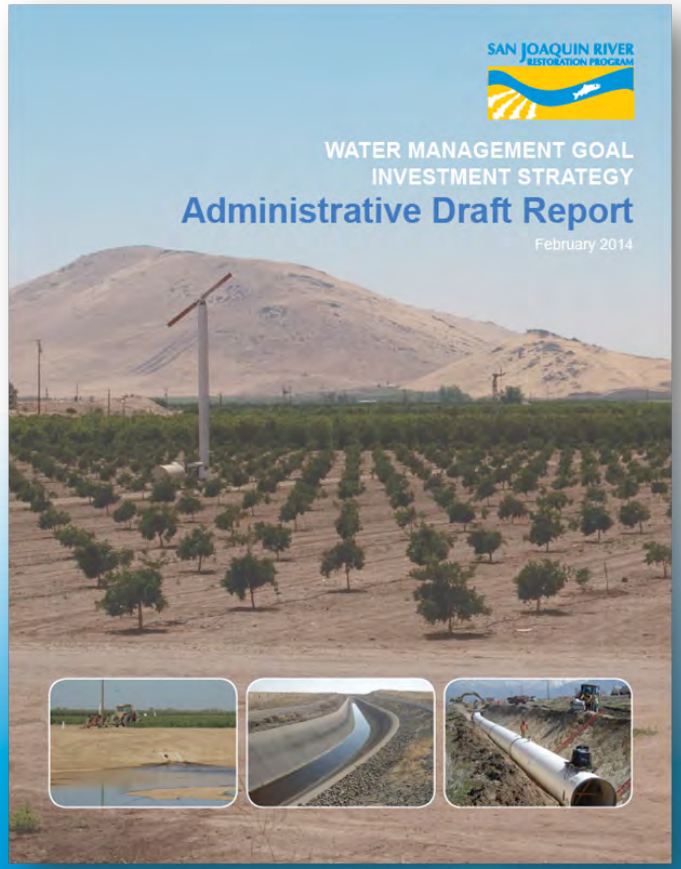
Water Users Technical Memorandum

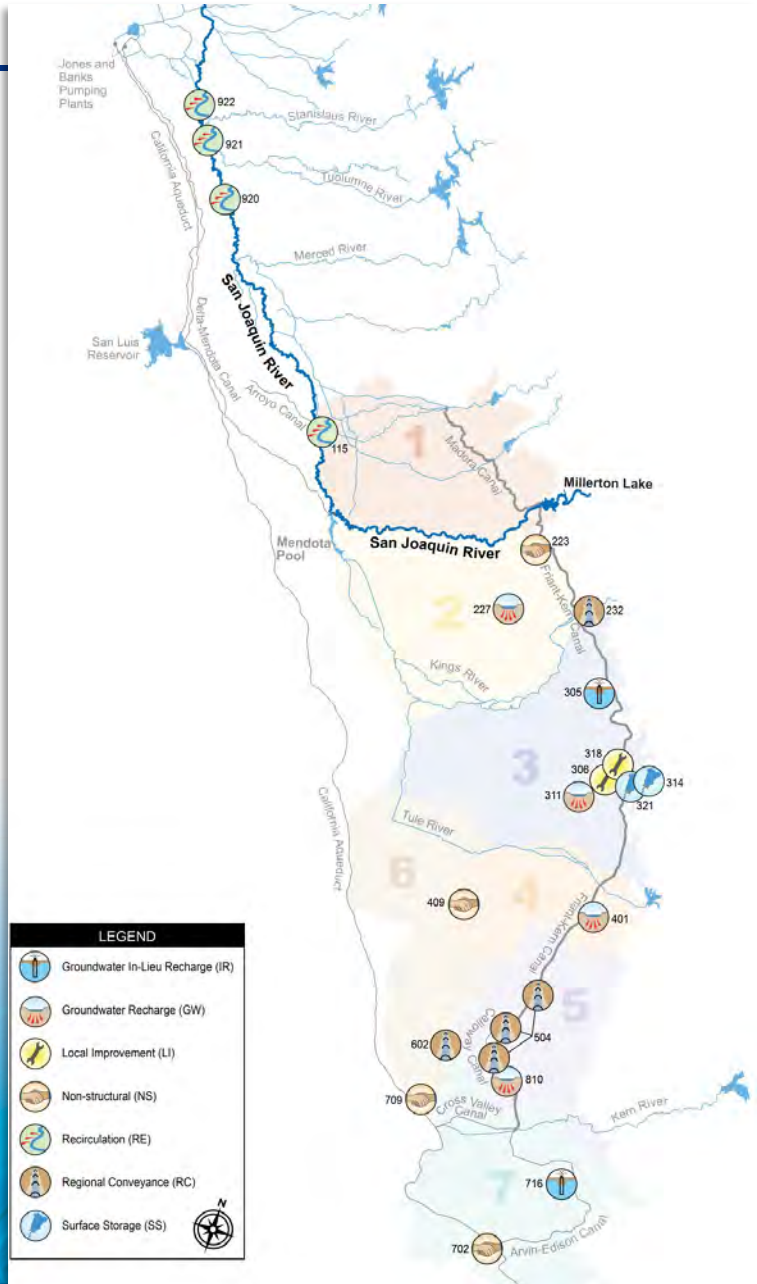
60 Candidate local and regional projects identified



Administrative Draft Investment Strategy

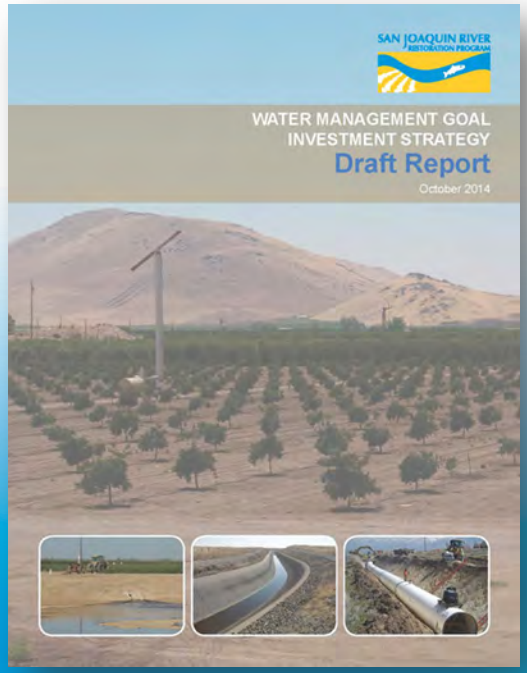
20 Priority
Projects identified





Draft Investment Strategy Report
Appraisal Evaluation of Priority Projects

- Appraisal-level cost estimates
- Implementation requirements and schedule
- Water supply competition analysis



SAN JOAQUIN RIVER RESTORATION PROGRAM

Evaluation Criteria & Metrics

Performance & Costs

- Overall cost-effectiveness (yield/cost)
- Federal cost of RWA benefit

Implementation Complexity

- Environ. Compliance Requirements/
- Permitting Requirements/ Water Rights
- Institutional/ Land Acquisition/Schedule

Completeness of Project Definition

- Facilities & Costs
- Yield & RWA Reduction Approach
- Finance

Related Benefits

- Groundwater Overdraft Reduction /
- Hydropower / Flood Damage Reduction
- Recreation / Ecosystem / Water Quality

Overall Score

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Key Findings from Evaluations

- Local and Regional projects can reduce RWA by:
  - Increasing the ability to:
    - Recapture and recirculate Restoration Flows
    - Capture and use surplus flows on the San Joaquin River and other Eastside tributaries
  - Improving water management flexibility within districts
  - Improving the ability to exchange between districts

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Priority Projects

Project Type	# of Projects	Potential Yield (TAF/year)	Cost ($million)
Groundwater Recharge	4	28	$98.6
In-lieu Recharge	2	10	$43.3
Local Improvement	2	3	$12.6
Regional Conveyance	3	30	$36.4
Recapture	4	69	$82.3
Surface Storage	2	6	$24.7
Non-structural	4	40	$0.7
Subtotal	21	186	$298.6

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Structural Projects

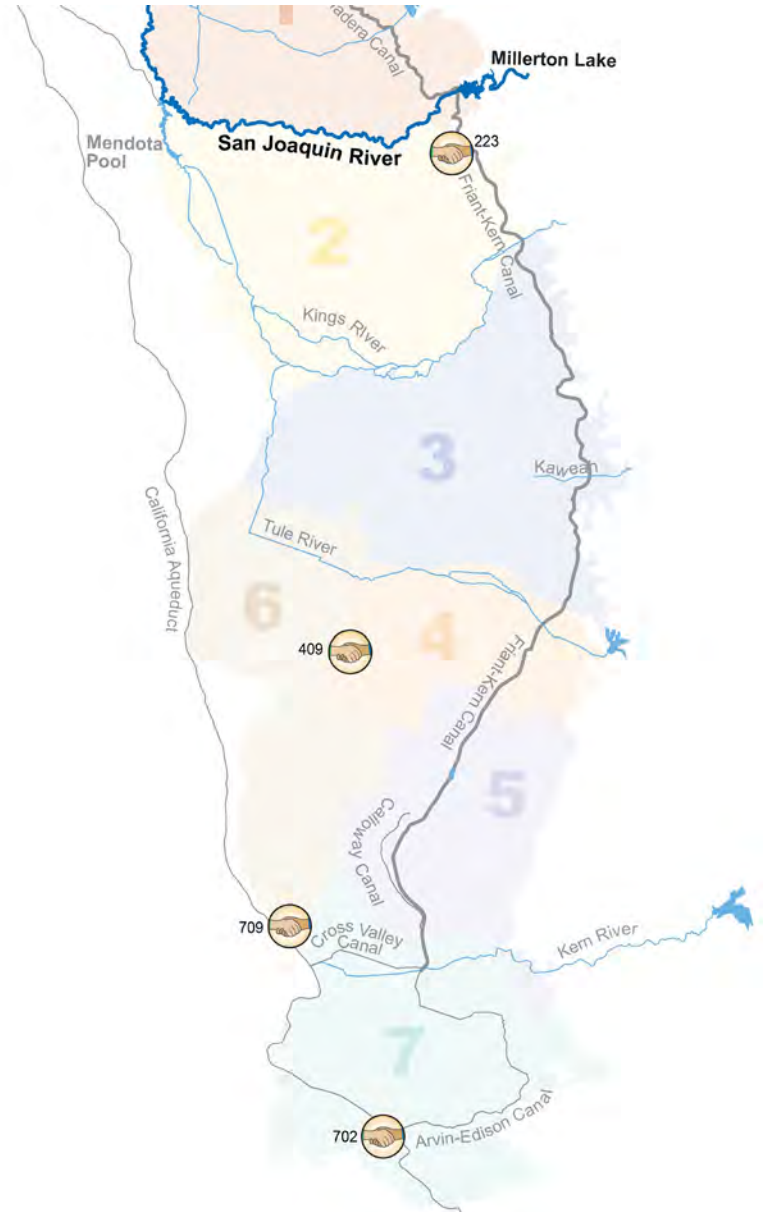
- Overall, the Priority Structural Projects can be cost-effective in reducing RWA balances
- There is strong interest by project proponents to implement and cost-share projects

	Potential Yield (TAF/year)	Cost ($million)	Cost-Effectiveness ($/acre-foot)
Total*	146	$298	-
Average*	8.6	$14	$195
Range*	0.7 ~ 30	$2.75 ~ $59	$20 ~ $637

** Not including non-structural projects*

Non-Structural Priority Projects include Exchanges and Operational Rule Changes

- Cost-effective approach to provide relatively high yield
- Need additional work to develop exchange agreements and modify existing operational practices
- Reclamation can play an important role to facilitate these agreements



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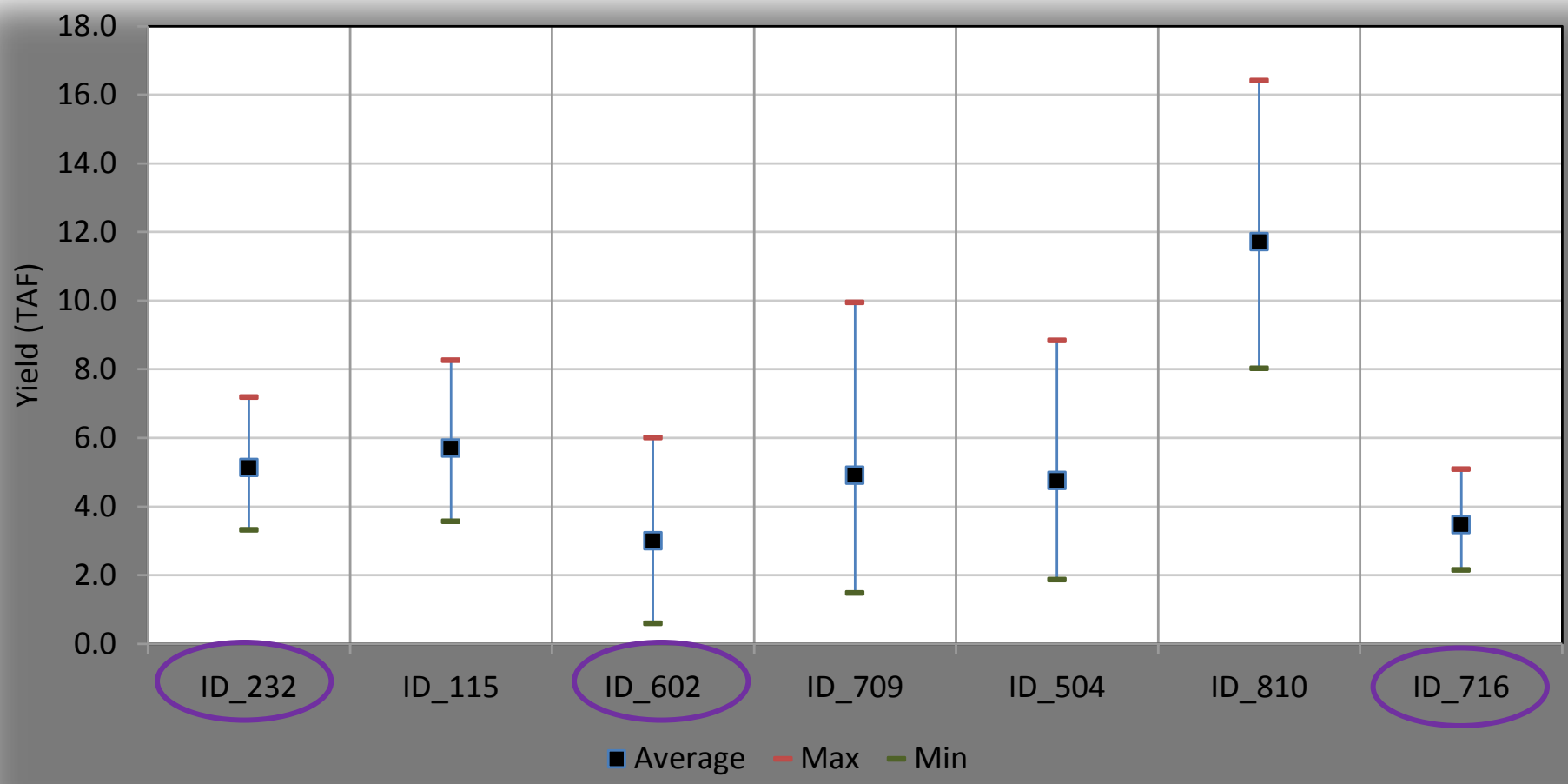
Water Supply Competition

- Evaluated potential competition for water sources and conveyance facilities
  - San Joaquin River surplus flow
  - Kaweah River supply
  - Recapture and Recirculation of Restoration Flows
- Example:
  - Recirculation of Recaptured Restoration Flows

Example – Recirculation of Restoration Flows Recaptured in the Delta



Also could use San Joaquin River surplus flows

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Water Supply Competition Findings

- Yield and cost-effectiveness would reduce if multiple projects are implemented for:
  - San Joaquin River recapture
  - Recirculation
  - Kaweah River Supplies
- Adequate supply appears available for surplus San Joaquin River projects identified to date

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Investment Strategy Accomplishments

- Provided common understanding among all parties regarding:
  - **Friant Division project priorities** that support implementation of the Settlement
  - **Magnitude of funding needed** to support the SJRR Recapture and Recirculation Program
  - Water supply challenges the Friant Division is facing and **how Reclamation can support locally-led management activities**

Investment Strategy Value to Reclamation, Friant Districts, and others

- Formalized criteria and metrics for project screening, evaluation, and ranking
  - Structured and transparent scoring and ranking
  - Scalable to level of available information/details

Investment Strategy Value to Reclamation, Friant Districts, and others

- Appraisal studies for Priority Projects
- Pre-screened list of "implementation ready" projects
- Well positioned to apply opportunistic funding, such as:
  - Reclamation end of year unspent funds
  - Drought relief funds

Next Steps for Reclamation and Project Proponents

- Identify funding opportunities
- Identify priority project(s) that best meet the specific funding requirements
- Prepare applications for funding, as appropriate
- Continue to support SJRRP efforts to reduce RWA balances

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Next Steps – Investment Strategy Update

- Maintain and update the Investment Strategy's Priority Project list to remain relevant:
  - Add/remove/update project as requested by proponents, consistent with evaluation criteria
  - High-level annual review by Reclamation
  - Five-year comprehensive updates

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Investment Strategy Dates

- Dec 1, 2014 – Final version of Draft Investment Strategy Report & Appraisal Studies
- Dec 2-4, 2014 – Project Proponent Meetings with Reclamation at ACWA
- Jan 9, 2015 – Draft Final Investment Strategy Report for Settling Party review
  - Comments due: Jan 30, 2015
- Mar 6, 2015 – Final Investment Strategy Report for public release

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Public Comment / Next Meetings

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Next Meetings

Day	Date	Location
Friday	March 20, 2015	Visalia
Friday	June 19, 2015	Sacramento
Friday	September 18, 2015	Visalia