SAN JOAQUIN RIVER RESTORATION PROGRAM

Seepage and Conveyance Technical Feedback Group Meeting

September 13, 2012

Preliminary draft – subject to change

Patti Ransdell

INTRODUCTION

Agenda

- Purpose
- SJRRP Overview
- Seepage Management Plan
- Seepage Project Handbook
- Stakeholder Perspective
- Seepage Project Status

Purpose

- Kick-off an independent review of the San Joaquin River Restoration Program (SJRRP)'s Seepage Management Plan (SMP)

- Objectives
  - Hear SMP concerns directly from stakeholders

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SJRRP OVERVIEW

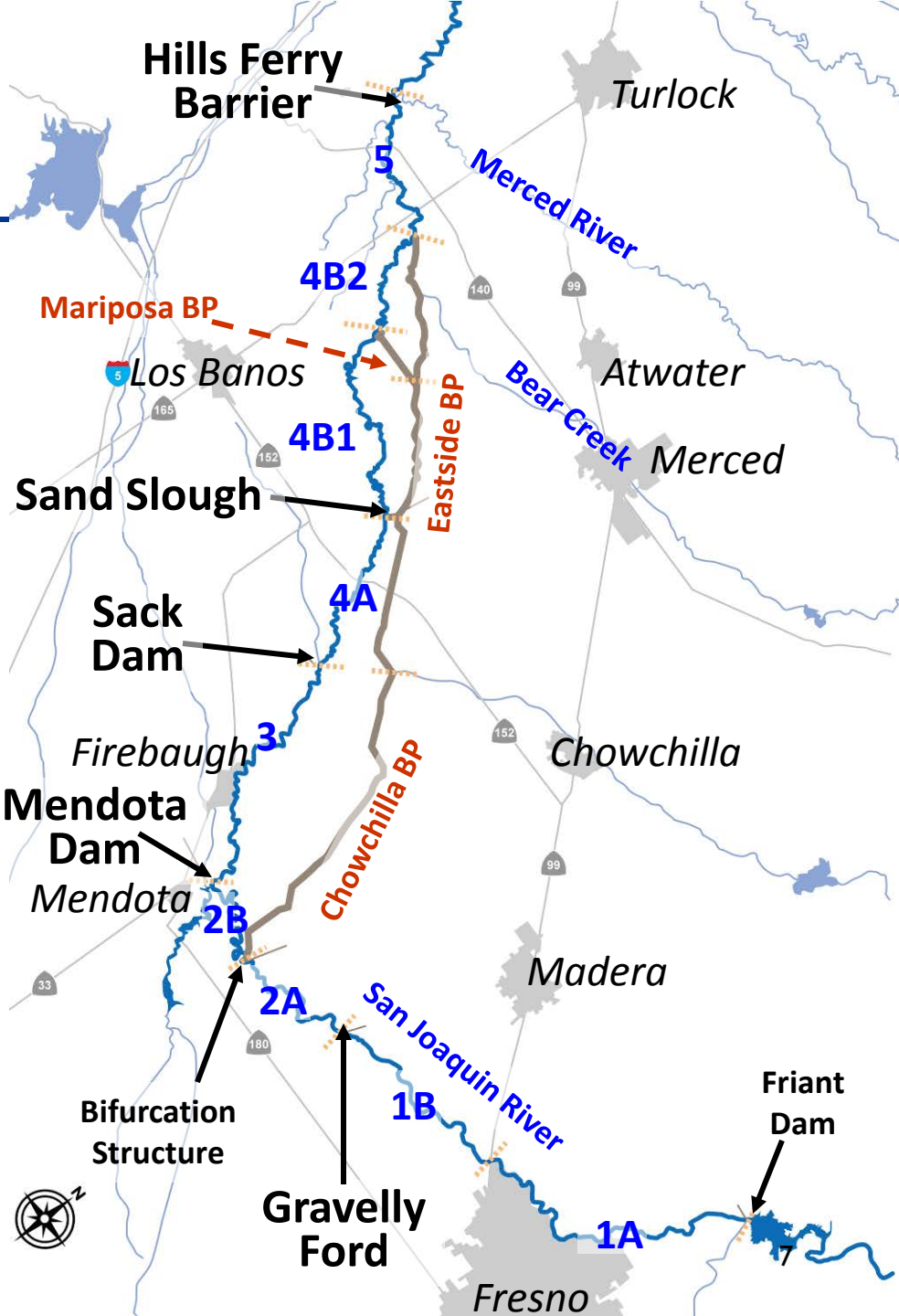
SJRRP Overview Purpose

- Big picture context and background for peer reviewers

- How does the SMP fit into the rest of the SJRRP?

Restoration Area

- 150 miles of River
- Historically Dry Reaches
- Water Supply Facilities
- Agriculture
- Sand and Gravel Mining
- Flood Control
- Urban Areas



SJRRP Steps

- Release Flows
- Construction
- Fish Reintroduction
- Water Management

Reach 2 in July 2009

Reach 2 in November 2009

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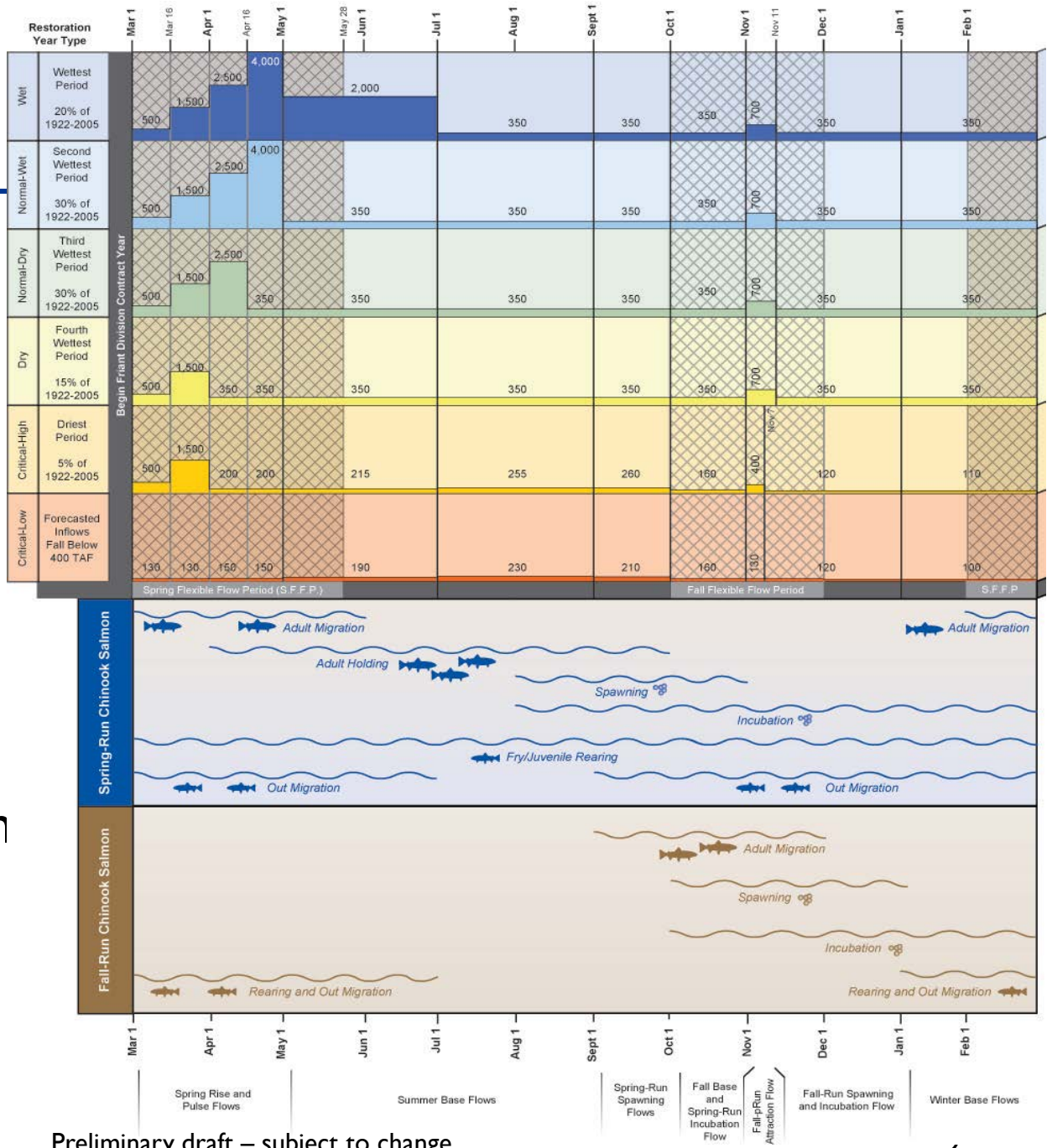
Restoration Flow Schedule

- Flexible flow periods
- Restoration Administrator
- Interim Flow monitoring program
- All flows released up to "then existing" channel capacity



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Seepage Management Plan

- "Then existing" channel capacity includes seepage.
- The Seepage Management Plan influences flows, one of the 3 pieces of the Restoration Goal.

- SMP was developed in collaboration with landowners and other members of the SCTFG
- Peer review to independently check
- Revisions to SMP in late 2012 based on peer review recommendations

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SEEPAGE MANAGEMENT PLAN

Purpose and Objective

- The SMP describes
  - Monitoring and operating guidelines to reduce Restoration/Interim flows to address adverse material impacts (per Public Law 111-11)
  - Identify projects to increase flows while avoiding seepage impacts
- Meant to be dynamic and adaptive
- Objective: convey Restoration/Interim flows while avoiding seepage impacts

Seepage Management Plan

- Seepage Impacts
- Locations of Known Risks
- Operations Conceptual Model
- Monitoring Program
- Thresholds
- Triggers, Site Visit, and Response
- Site Evaluation and Projects

Seepage Impacts

- Waterlogging of Crops (disease, anoxia, temp)
- Root-zone Salinity
- Levee Instability

Locations of Known Risks

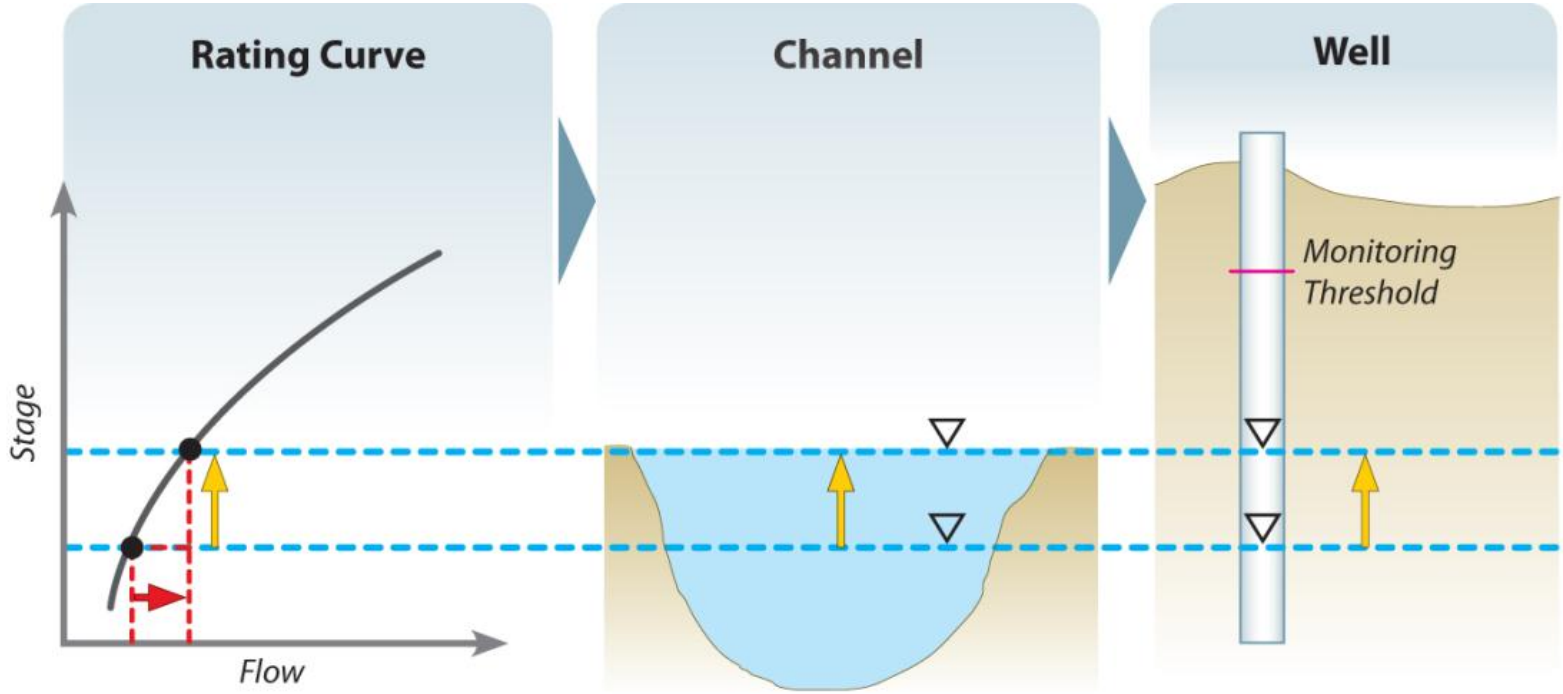
- Primarily properties close to the river in Reaches 3, 4A, and the downstream end of 2A
  - Landowner and District Anecdotal Information
  - Observed Surface Ponding
  - Ground Surface Elevation
  - Groundwater Levels
  - Surface Water Stage
  - Analytical Tools

Operations Conceptual Model

a) Determine increase in river stage from proposed flow increase

b) Assume increase in river = increase in groundwater

c) Add increase in groundwater to most recent observed groundwater level



Monitoring Program

- Groundwater Elevation
- River Stage
- Hydraulic Conductivity
- Soil Salinity
- Water Quality
- Soil Texture

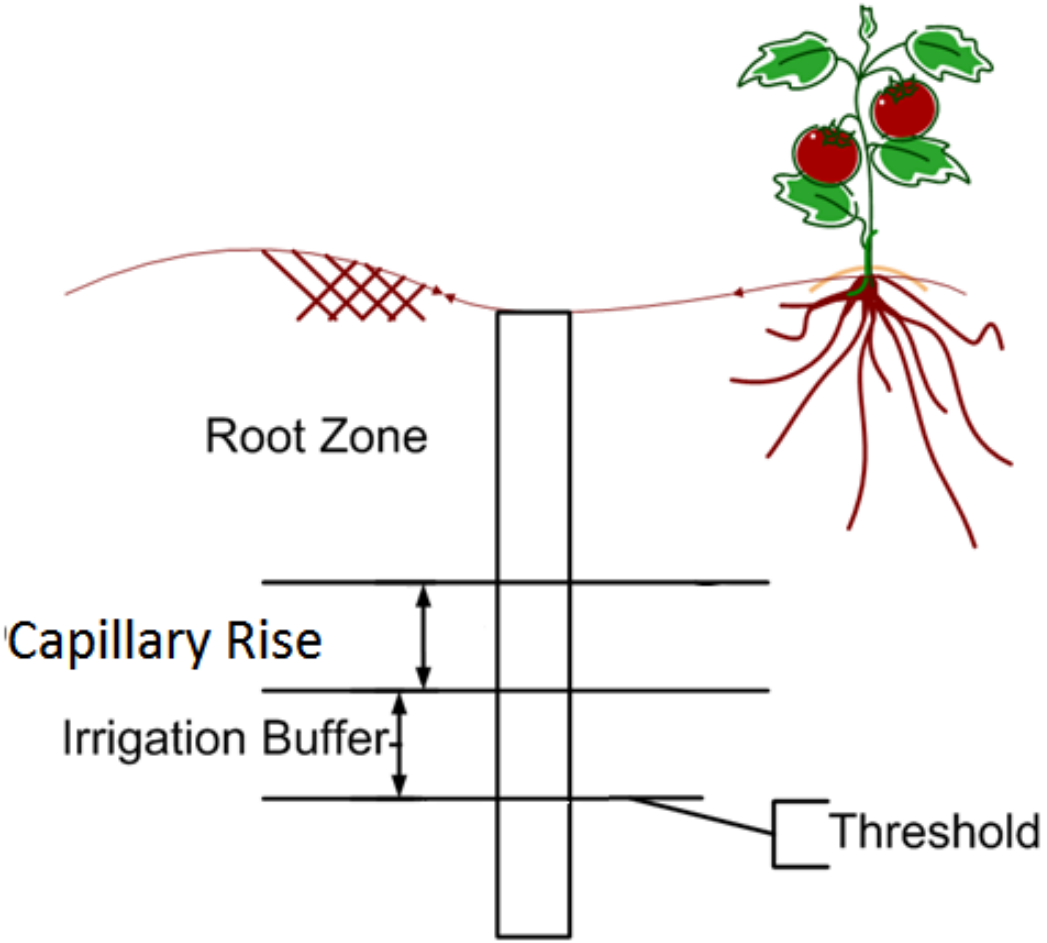
Thresholds

- Thresholds identify potential problems so that Reclamation can establish operating criteria to manage flows

- Three thresholds methods:
  - Agricultural Conditions
  - Historical Data
  - Drainage Direction

Thresholds - Agricultural Method

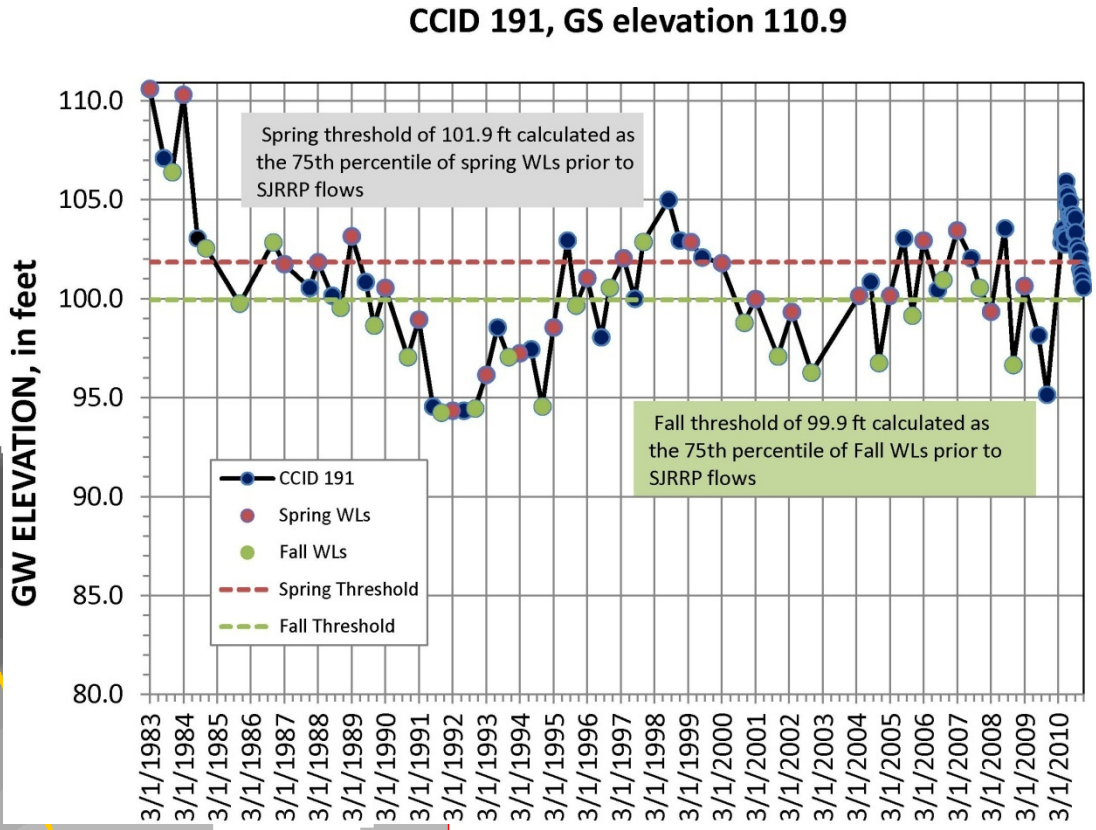
- Root Zone
- Capillary Rise
- Irrigation
- Ground Surface

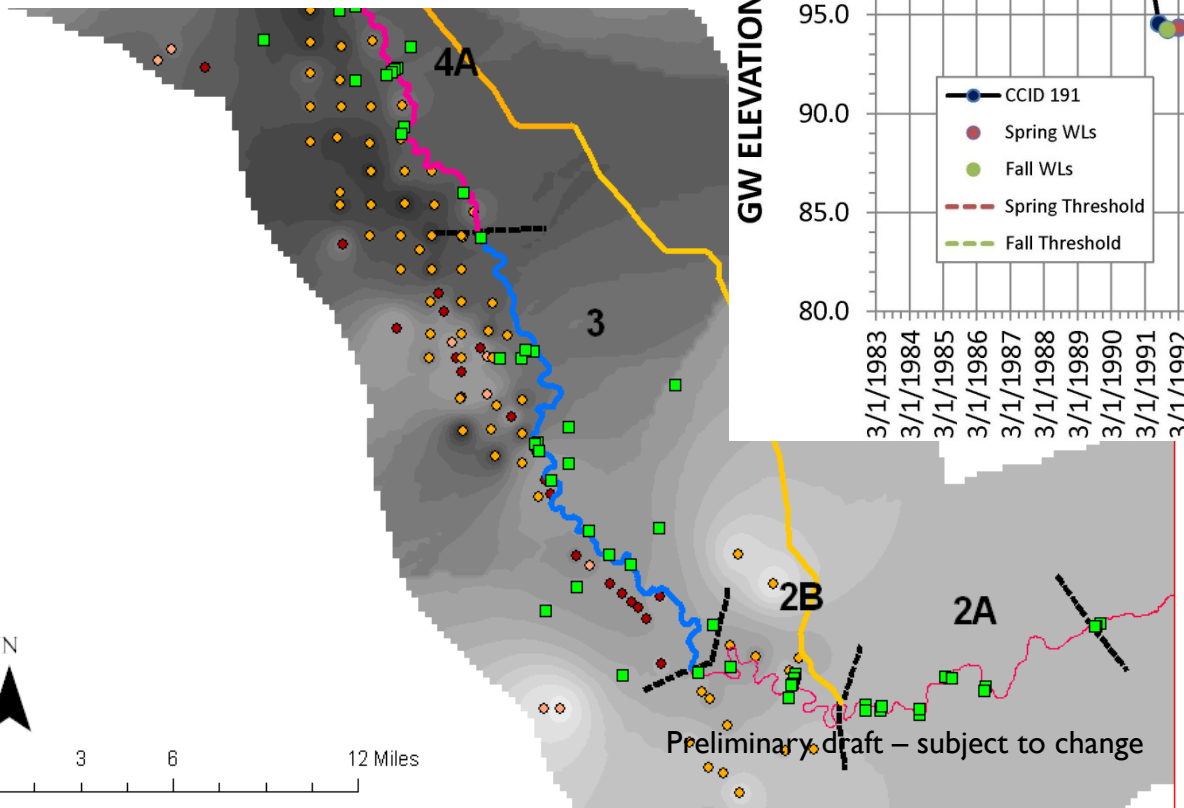


Crop Type	Root Zone (ft)
Tomato	3
Annual	4
Vines, etc.	6
Almond	9

Thresholds – Historical Data

- CCID Well Database
- DWR Well Database
- 75th percentile or CCID average





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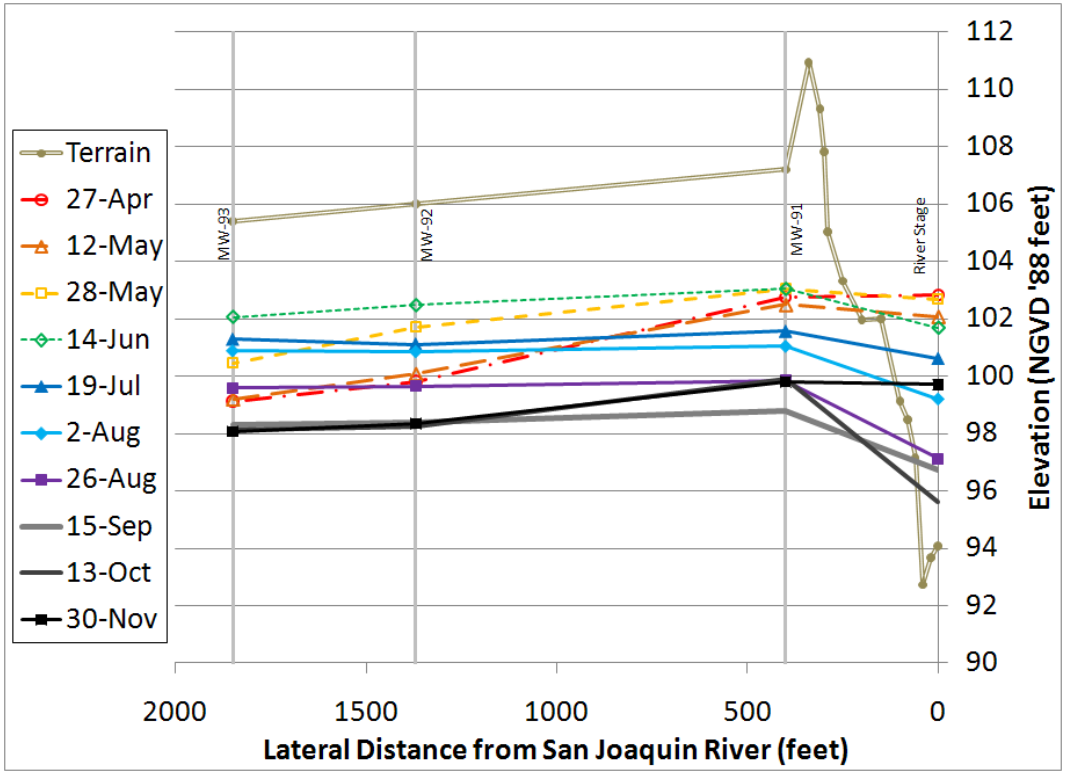
Thresholds – Drainage Direction

- Gaining Reaches
- Baseline Groundwater Elevation
- River Stage



Triggers, Site Visit, and Response

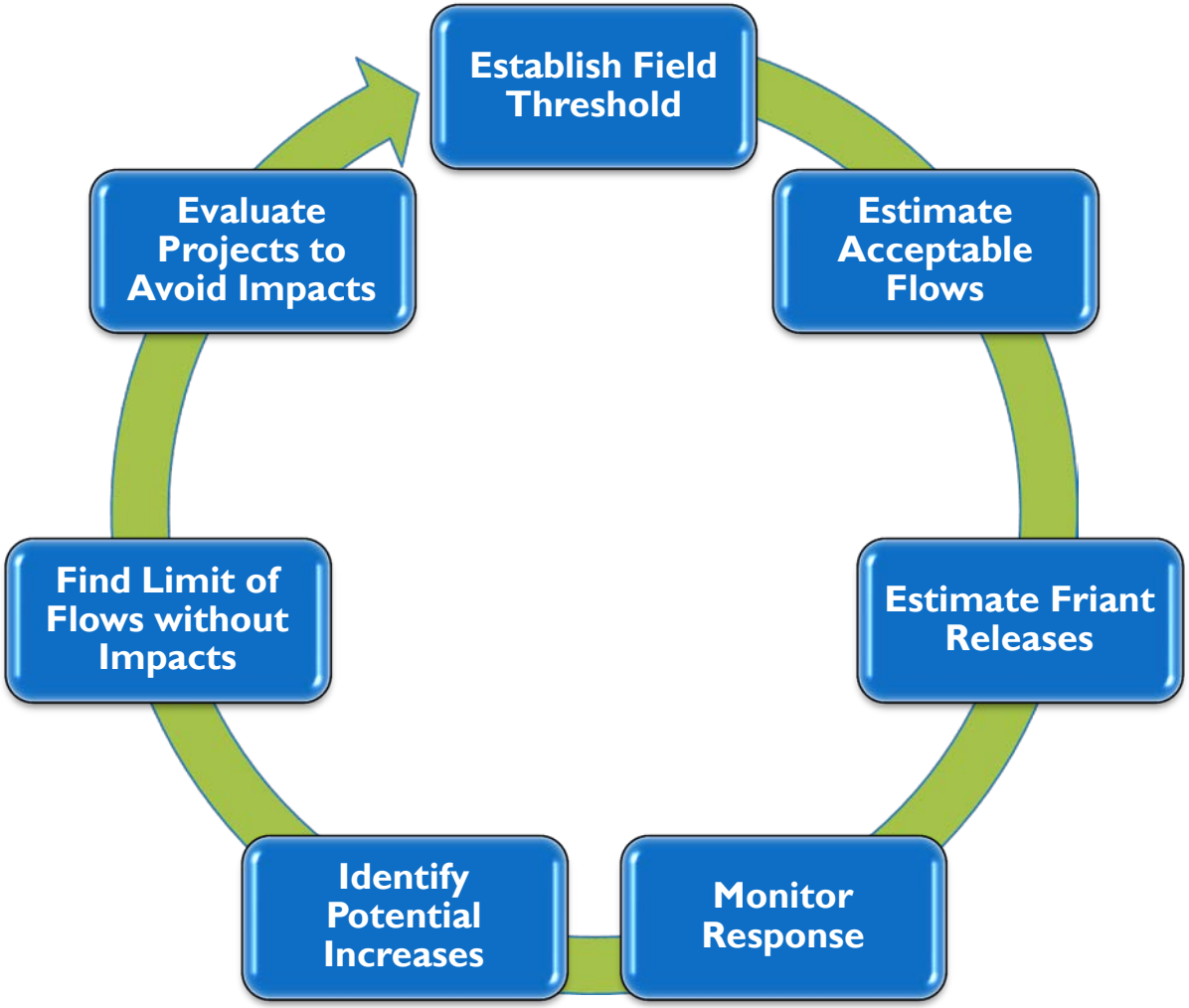
- Monitoring Data
- Triggers
  - Flow Bench Evaluations
  - Daily Evaluations
  - Hotline Intake
- Site Visit
- Response

Seepage Projects

- Land was broken up into Seepage Parcel Groups to organize potential seepage locations
- Projects are chosen by priority – worst-case parcel groups are started first
- Seepage Project Handbook describes the process

Iterative Approach to Increase Flows while Avoiding Impacts

- Flow Bench Evaluation
- Daily Flow Evaluation
- Seepage Hotline



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SEEPAGE PROJECT HANDBOOK

Seepage Project Handbook Purpose

- Goal: increase channel capacity while avoiding seepage impacts
- Objectives of the SPH include:
  - Establish a process for implementing seepage projects, including estimated timelines and lists of potential activities;
  - Delineate expectations and deliverables for input
  - Develop strategies to overcome challenges to increased flow.
- Appendix K of the SMP

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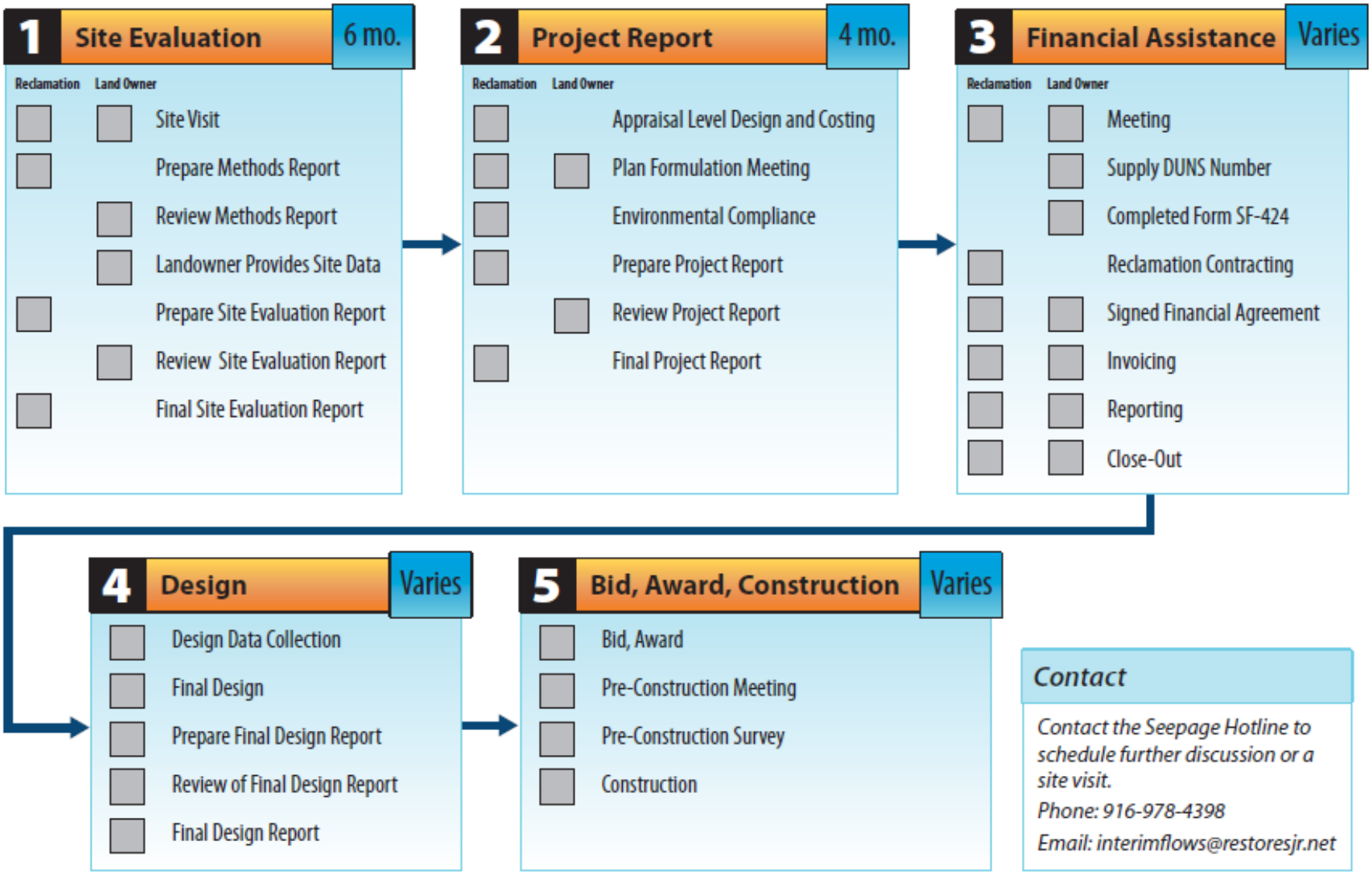
Seepage Project Process



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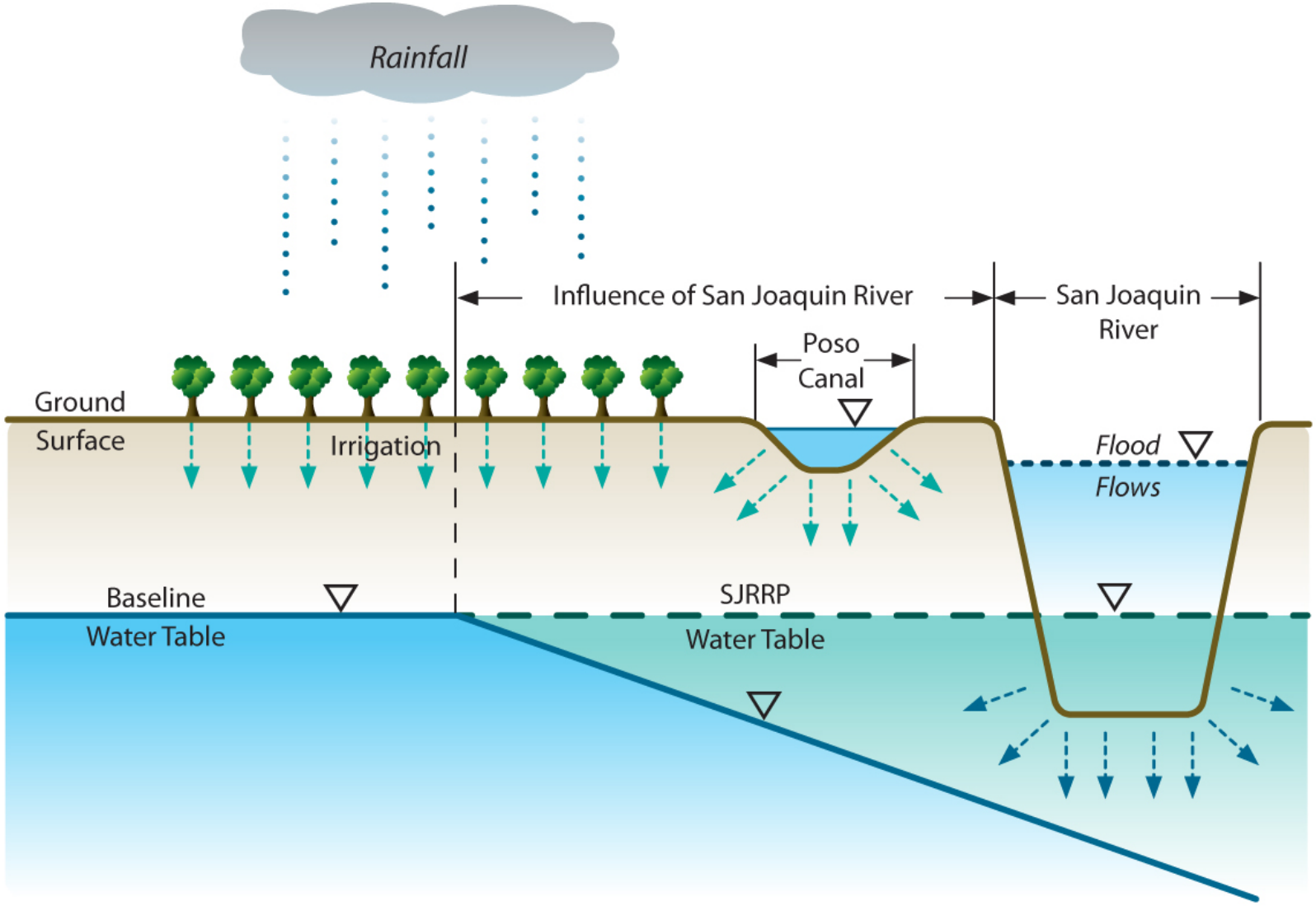
Site Evaluation



Project Report

- Design for selected project:
  - Easements
  - Acquisition
  - Slurry Walls
  - Seepage Berms
  - Interceptor Lines
  - Land Terrain Changes
  - Conveyance Improvements
  - Shallow Groundwater Pumping

Design and Construction

- Goal: Allow SJR flows up to 4500 cfs past the property without seepage impacts

- Site Conditions
- Project Agreement

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Seepage Project Approach

- Address projects with the worst potential seepage first
- All projects will be built to 4500 cfs

- Each project expected to take 1-2 years
- Multiple projects worked on at the same time

STAKEHOLDER PERSPECTIVE

Stakeholder Perspective

- Individual Presentations
  - Exchange Contractor Representative
  - Landowner Representative
  - Peter Vorster, The Bay Institute
  - Bill Luce, Friant Water Authority

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CONCLUSION AND NEXT STEPS

Conclusion

- Seepage Management Plan Objective: Conveyance of the maximum Interim or Restoration Flows while avoiding material adverse seepage impacts
- Two areas of SMP:
  - Flow Operations
  - Seepage Projects

Objective of Peer Review

- "The objective of the Seepage Management Plan (SMP) Peer Review is to provide Reclamation with confirmation of the processes described in the SMP and, where appropriate, guidance on revisions to the document to increase the document's technical accuracy."

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Top 5 Peer Review Questions

- Overall, does the SMP maximize flows while avoiding seepage impacts?
- Are operations predictions, methods and accuracy reasonable?
- Are agricultural thresholds reasonable?
- How do we reasonably account for historical conditions that may impair groundwater even in the absence of SJRRP flows?
- Are there missing components or other refinements to the SMP necessary?

Peer Review Process

- Peer Review Kickoff presentations – Sept. 13
- Peer Review check-in call – late Sept.
- Panel conducts review; prepares report – by Oct. 31
- Peer Review findings presentation – 1st week of Nov.
- SCTFG review report; discuss findings – mid/late Nov.
- Reclamation revises SMP – Dec./Jan.

All dates are tentative

SCTFG Review of SMP

- Comments due by October 12

- Peer review recommendations will be incorporated along with SCTFG comments in late 2012

Brian Heywood

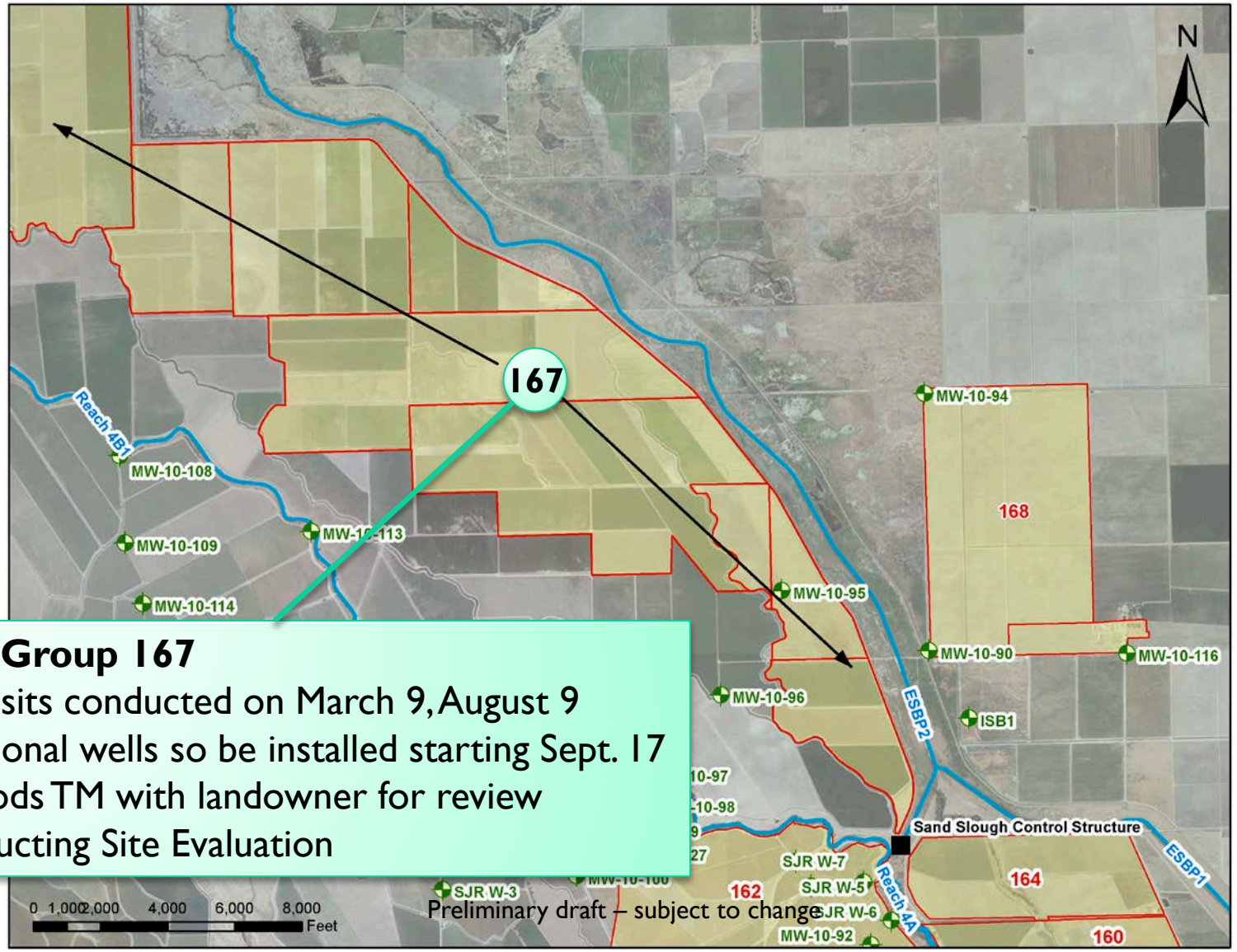
SEEPAGE PROJECTS

Seepage Project Approach

- Split potential areas of impact into seepage parcel groups
- Prioritize parcel groups based on most at-risk properties
- Initiate first tier of priority parcel groups

Flow	# Projects
300 cfs	3
700 cfs	1
1,300 cfs	7
2,000 cfs	11
4,500 cfs	69
Total	**91**

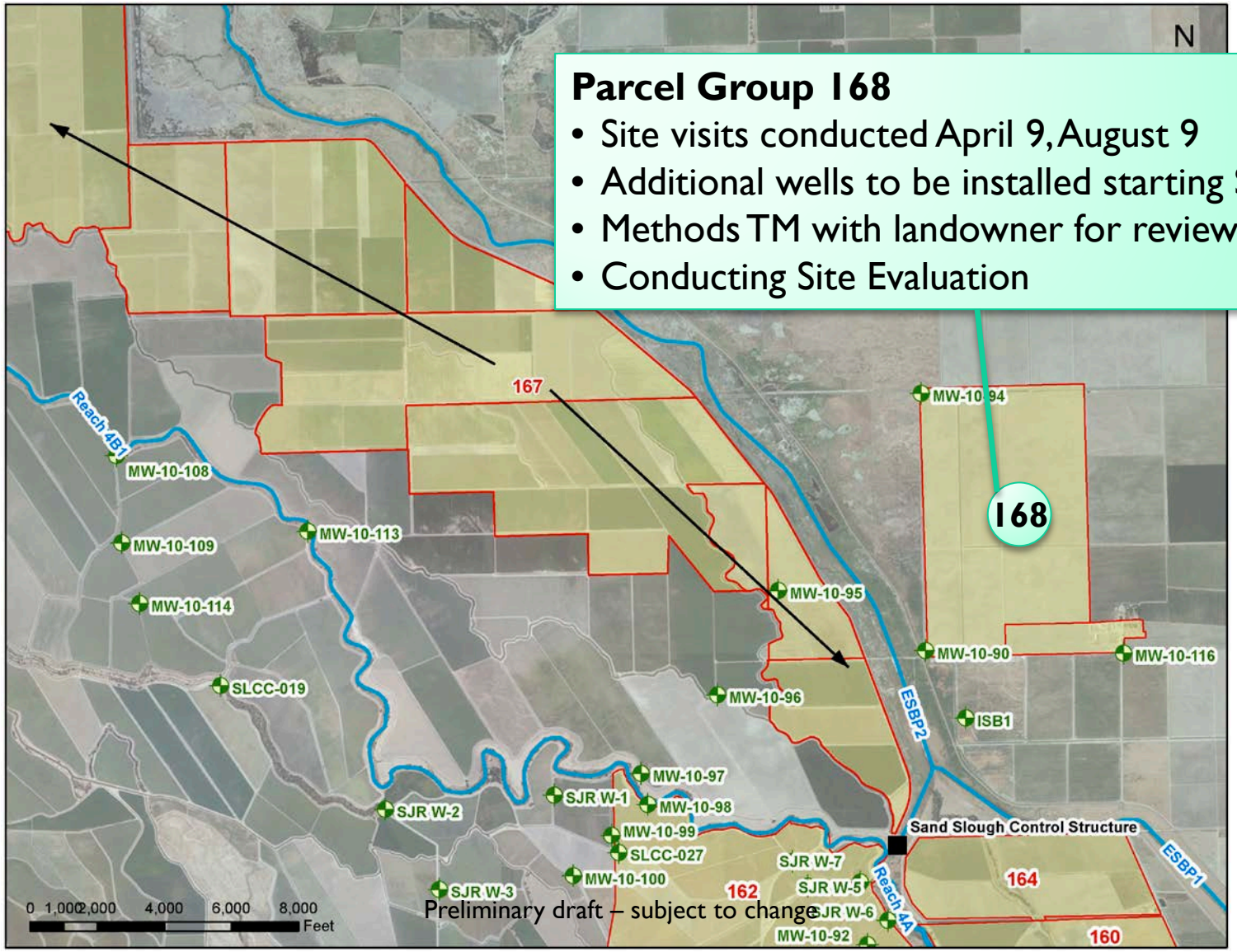
Priority Parcel Groups and Projects Initiated



Parcel Group 167

- Site visits conducted on March 9, August 9
- Additional wells so be installed starting Sept. 17
- Methods TM with landowner for review
- Conducting Site Evaluation

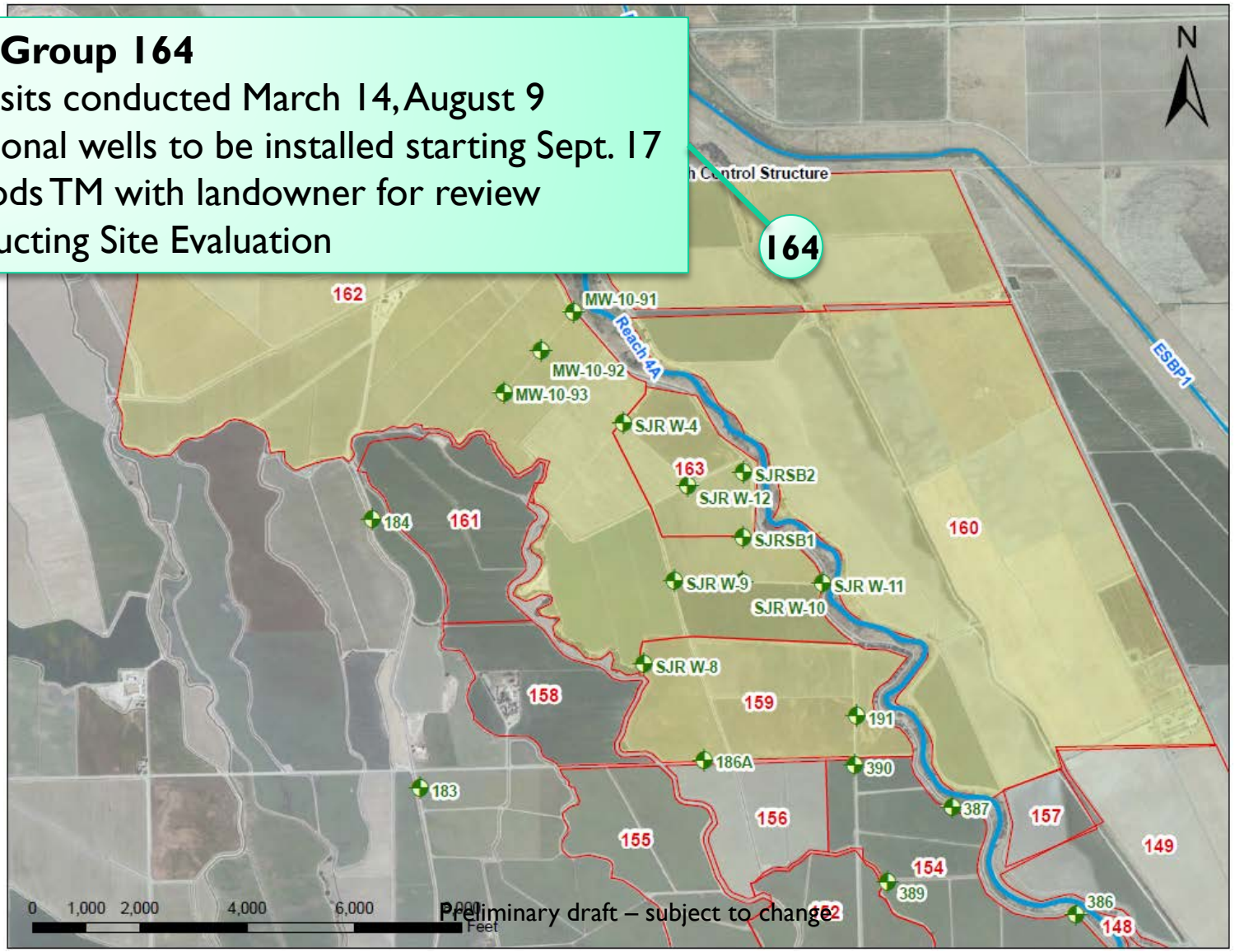
Priority Parcel Groups and Projects Initiated



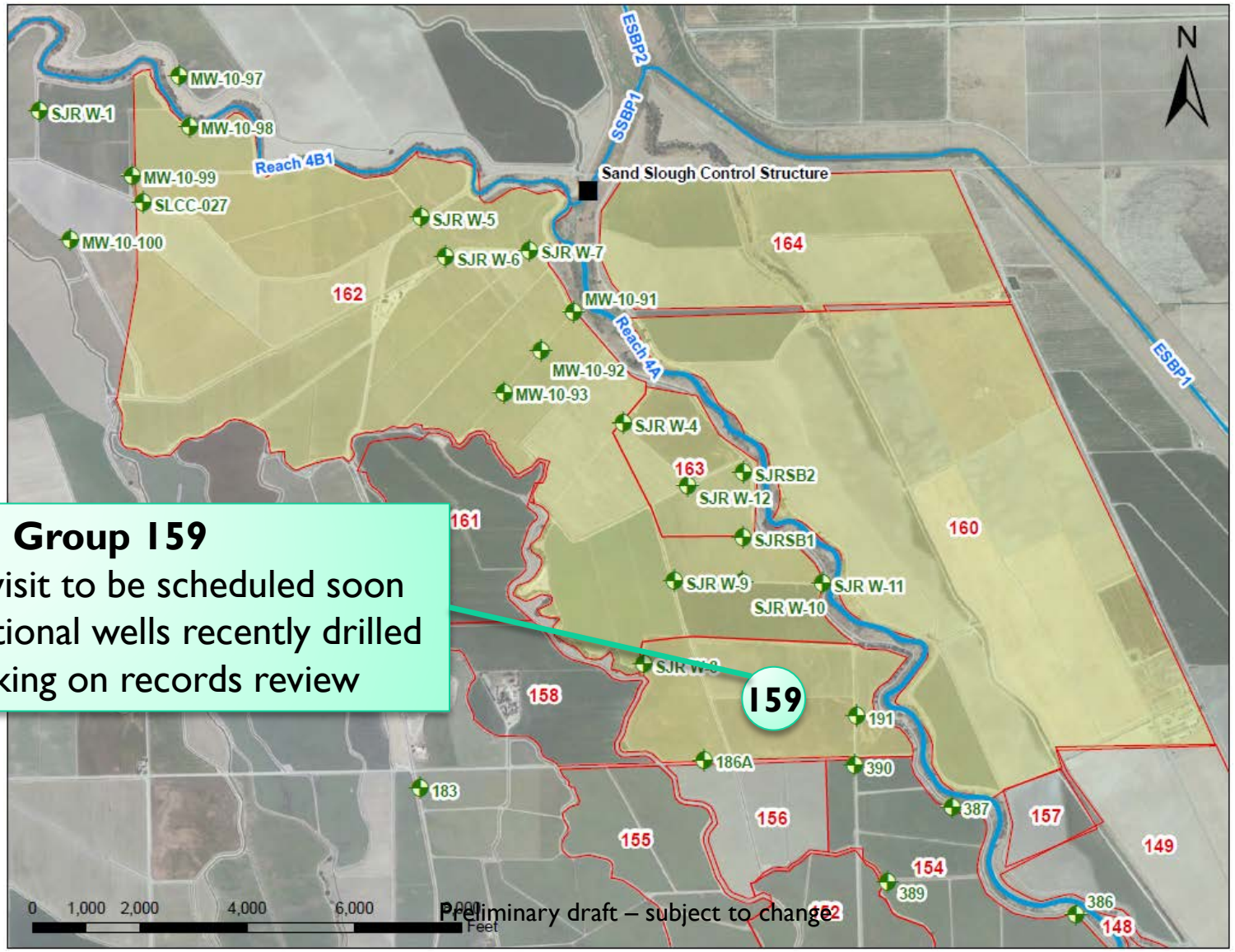
Priority Parcel Groups and Projects Initiated

Parcel Group 164

- Site visits conducted March 14, August 9
- Additional wells to be installed starting Sept. 17
- Methods TM with landowner for review
- Conducting Site Evaluation



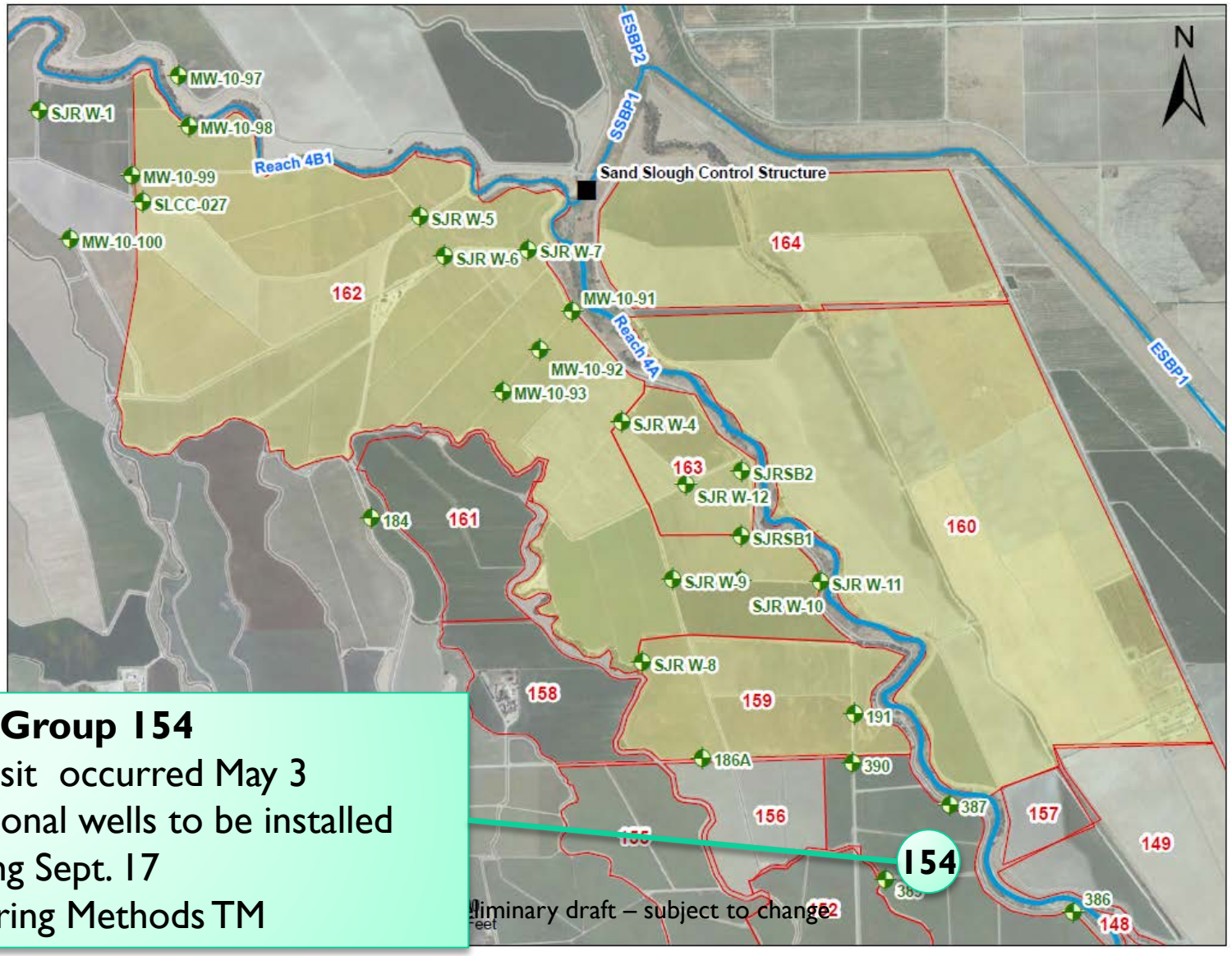
Priority Parcel Groups and Projects Initiated



Parcel Group 159

- Site visit to be scheduled soon
- Additional wells recently drilled
- Working on records review

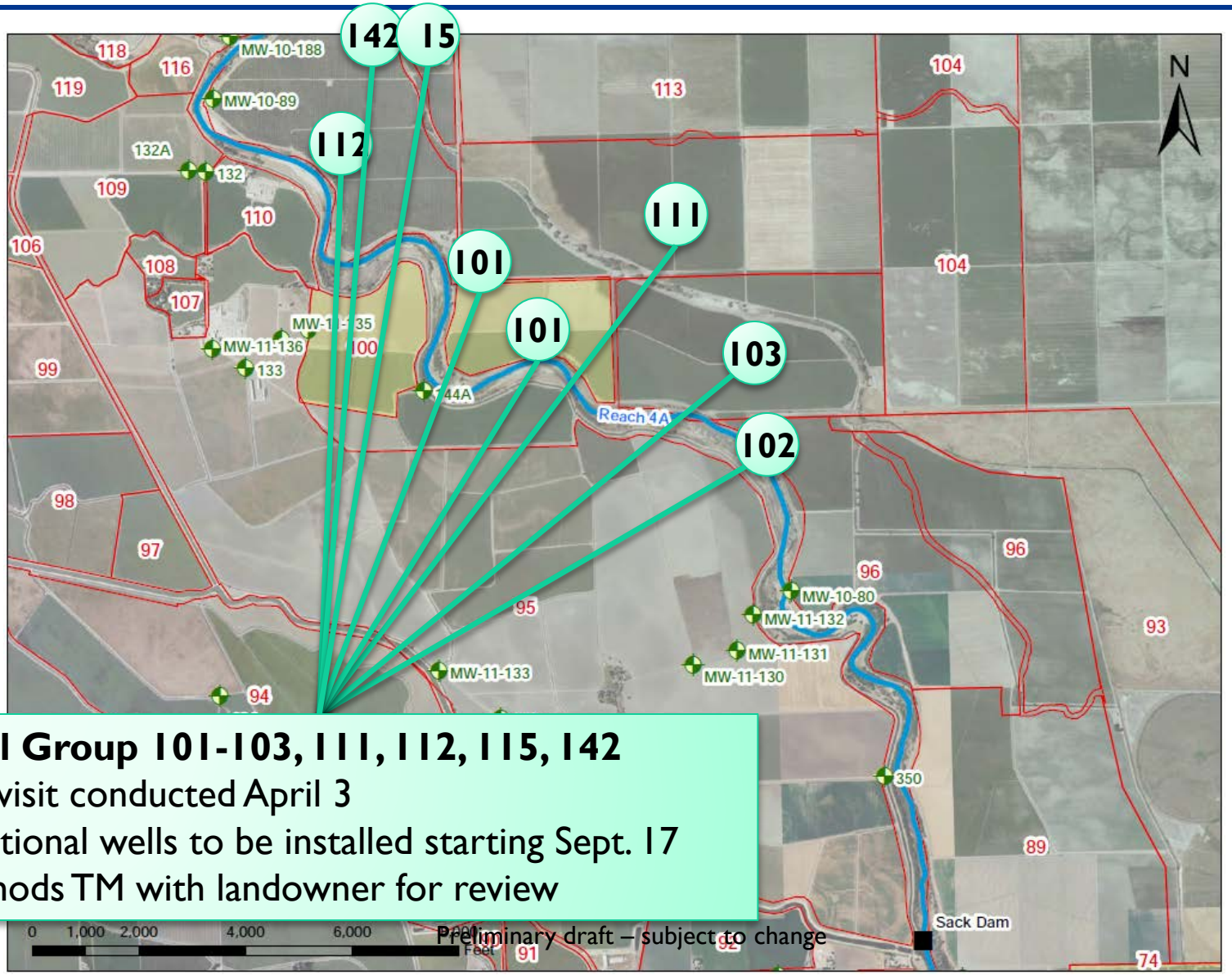
Priority Parcel Groups and Projects Initiated



Parcel Group 154

- Site visit occurred May 3
- Additional wells to be installed starting Sept. 17
- Preparing Methods TM

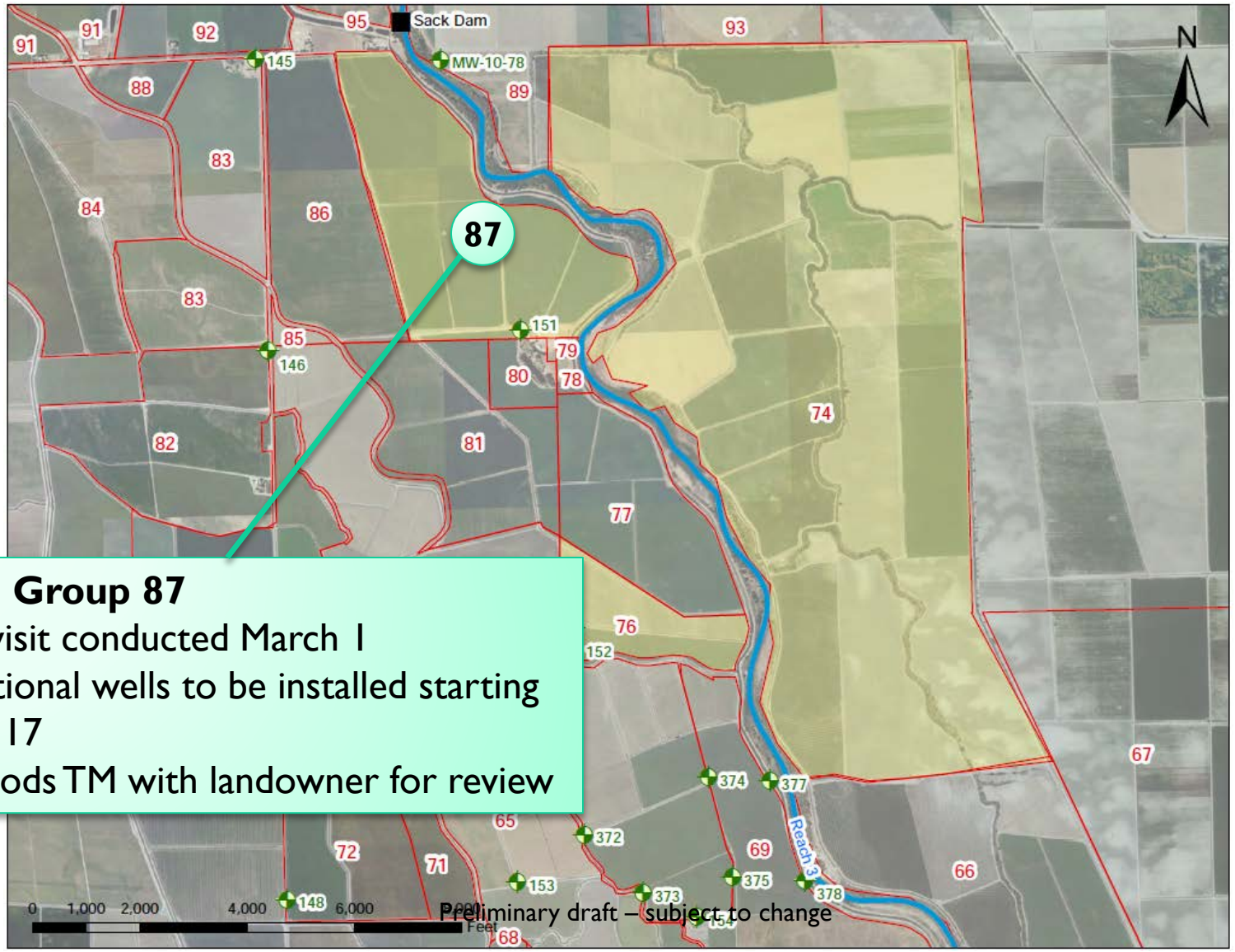
Priority Parcel Groups and Projects Initiated



Parcel Group 101-103, 111, 112, 115, 142

- Site visit conducted April 3
- Additional wells to be installed starting Sept. 17
- Methods TM with landowner for review

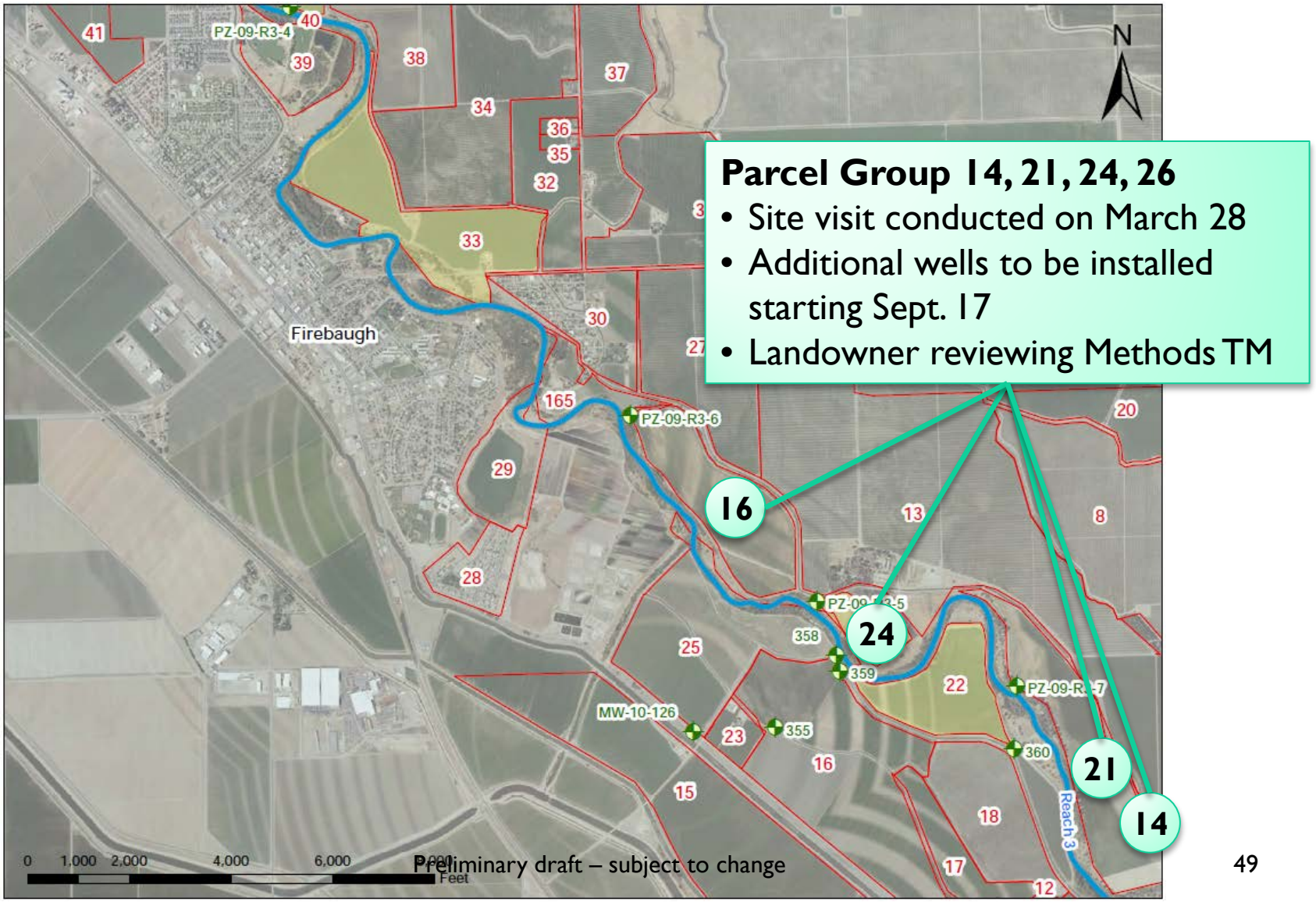
Priority Parcel Groups and Projects Initiated



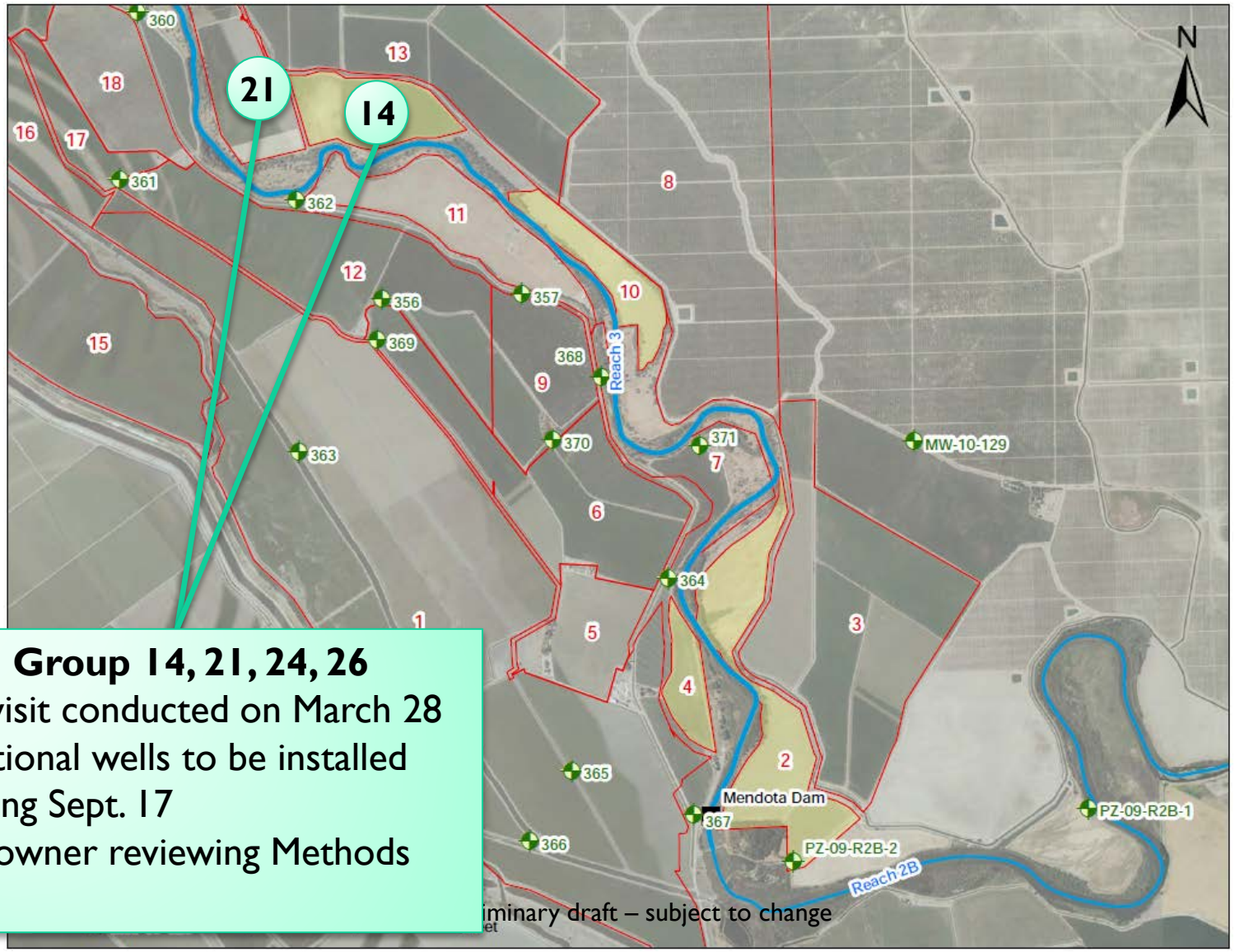
Parcel Group 87

- Site visit conducted March 1
- Additional wells to be installed starting Sept. 17
- Methods TM with landowner for review

Priority Parcel Groups and Projects Initiated



Priority Parcel Groups and Projects Initiated



Parcel Group 14, 21, 24, 26

- Site visit conducted on March 28
- Additional wells to be installed starting Sept. 17
- Landowner reviewing Methods TM

Challenges and Accomplishments

- Challenges
  - Land access
  - Schedule

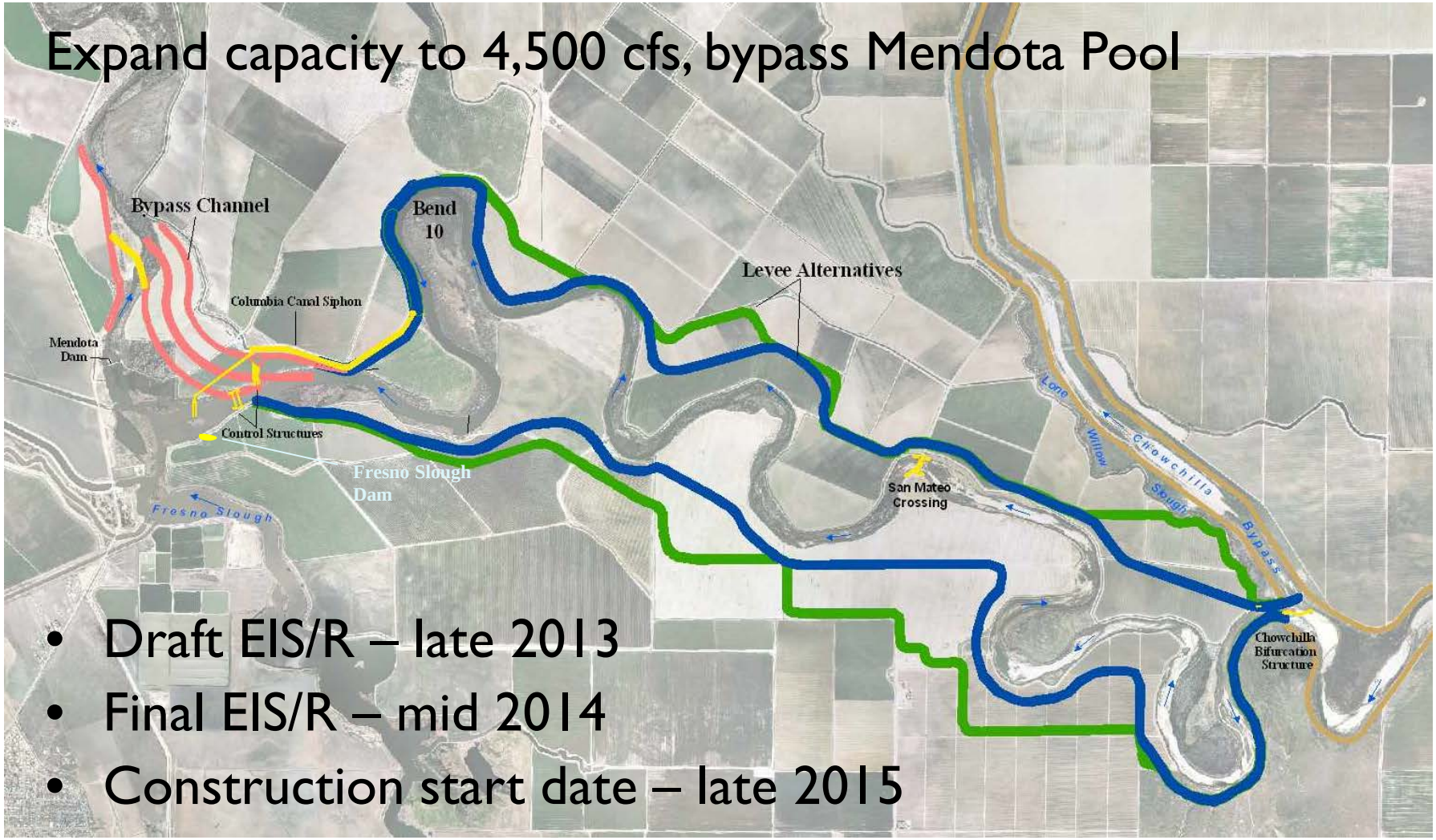
- Accomplishments
  - Six of the 11 projects needed for 2,000 cfs flows initiated
  - Site Evaluations underway for 3 projects

QUESTIONS

Contact

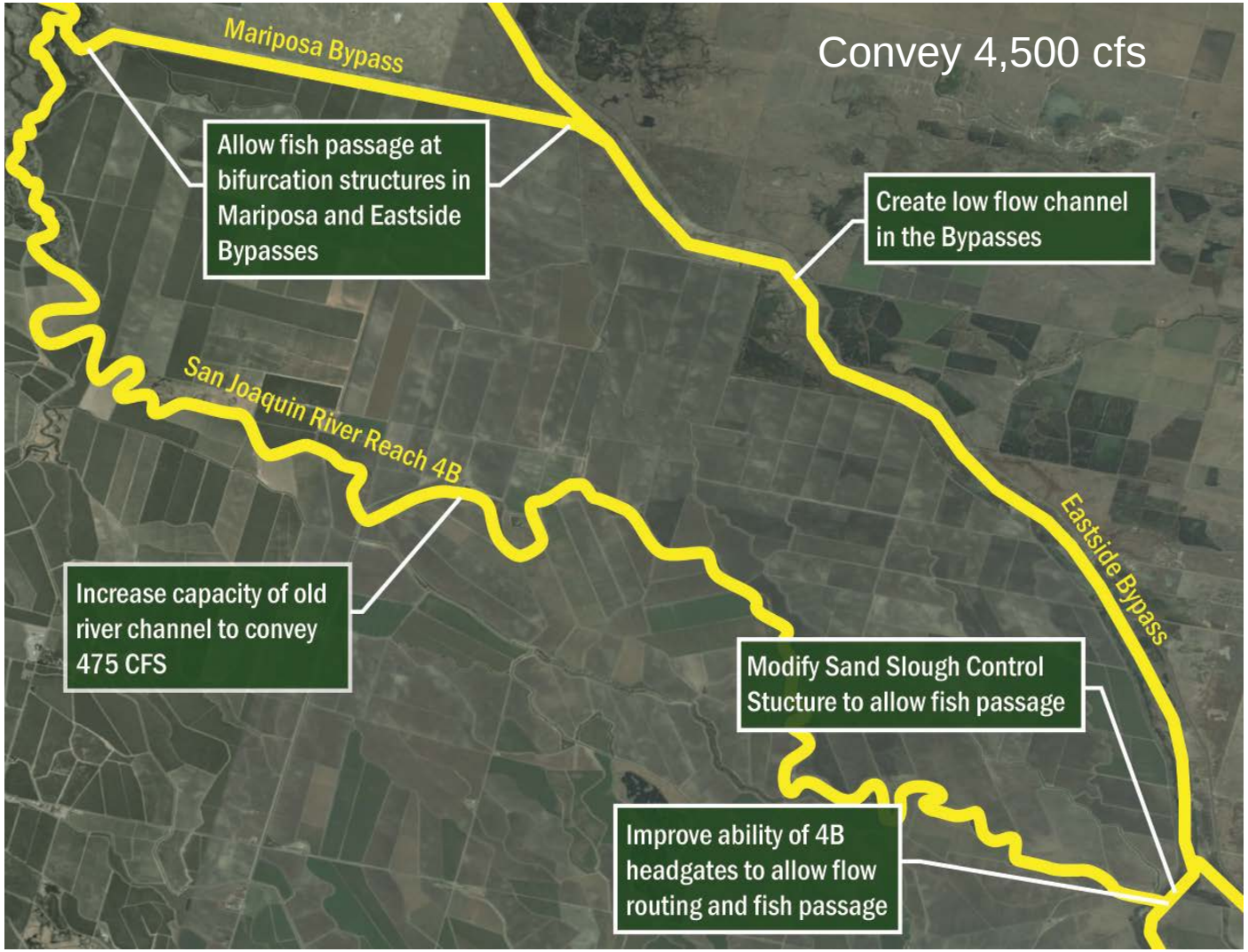
- Technical Feedback Group – Katrina Harrison
  - 916-978-5465
  - kharrison@usbr.gov
- Seepage Concerns – Seepage Hotline
  - 916-978-4398
  - interimflows@restoresjr.net

Mendota Pool Bypass and Reach 2B Channel Improvements Project



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

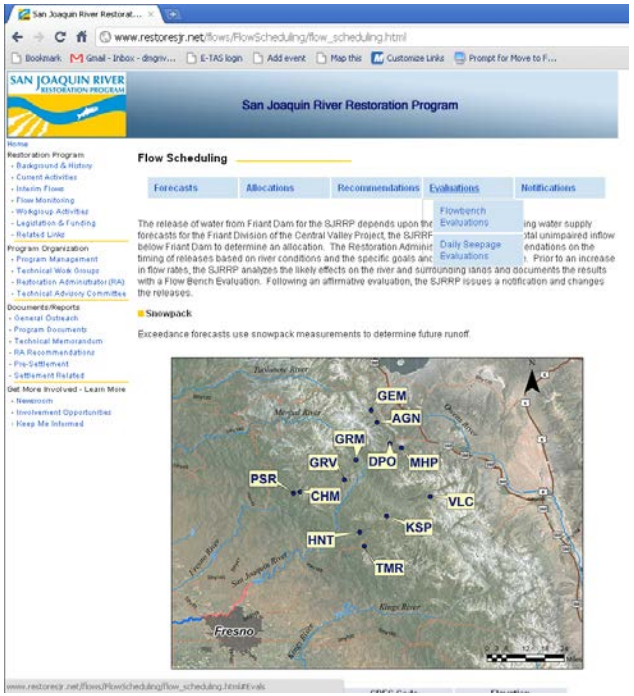
- Draft EIS/R – mid 2013
- Final EIS/R – late 2014
- Construction Start Target – no earlier than late 2015



Preliminary draft – subject to change

Flow Bench Evaluations

- Reclamation performs Flow Bench Evaluations prior to increasing flows.
- Flow Bench Evaluations include:
  - Conveyance Capacity
  - Groundwater Telemetry
  - Groundwater Manual Measurements
  - Flow Stability
  - Groundwater Projections
  - Mendota Pool Operations
  - Feedback
    - Landowners (Seepage Hotline)
    - Levee District
    - CCID
    - SLCC

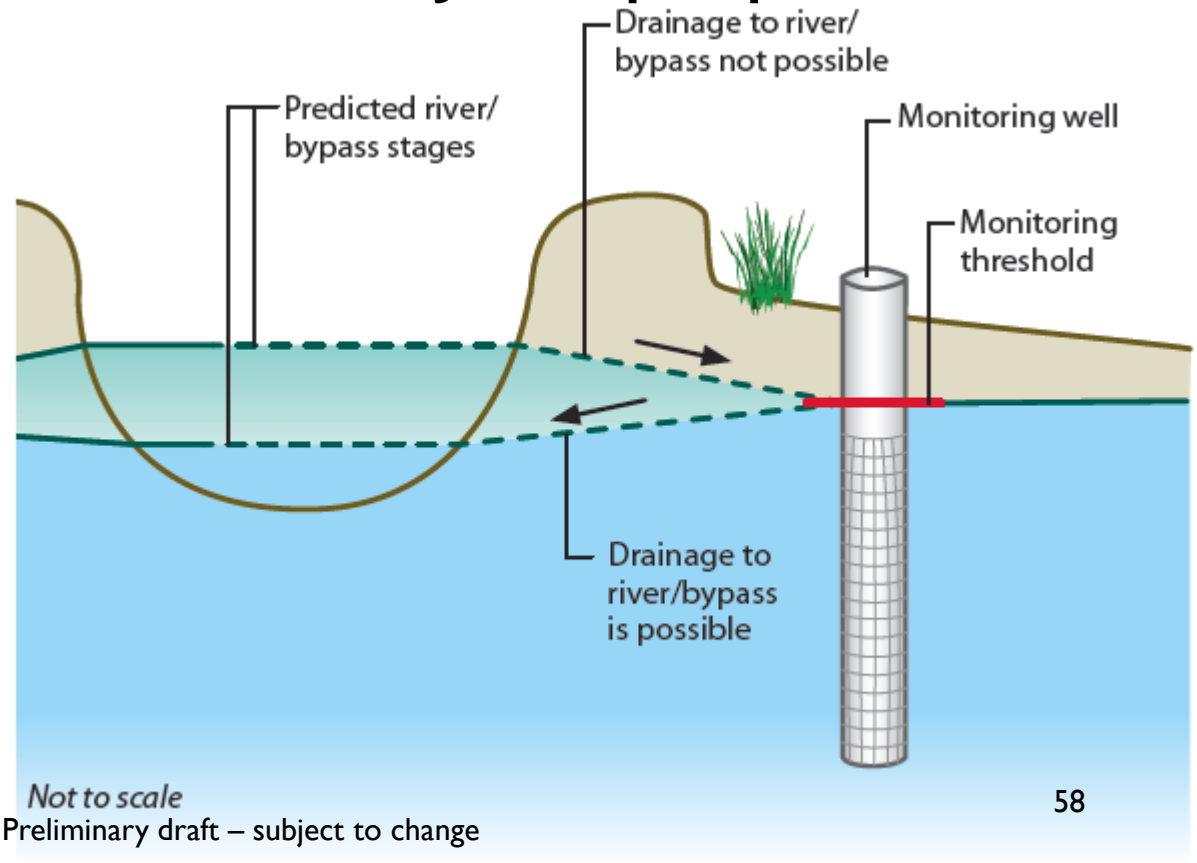


- Reclamation documents evaluations at:
  http://www.restoresjr.net/flows/FlowScheduling/flow_scheduling.html

Groundwater Predictions – Drainage Method

a) If irrigation ongoing

b) Compare monitoring threshold elevation to water surface elevation in SJR at proposed flow level



Triggers – Daily Flow Evaluations

- Reclamation performs daily evaluations when flows exceed 475 cfs
- Daily Flow Evaluations Include
  - Conveyance Capacity
  - Groundwater Telemetry
  - Mendota Pool Operations
  - Landowner Feedback (Seepage Hotline)
- Reclamation documents evaluations at http://www.restoresjr.net/flows/FlowScheduling/flow_scheduling.html

Triggers – Seepage Hotline Process

- Hotline Intake: A landowner calls the seepage hotline or sends an email

  (916) 978-4398

  interimflows@restoresjr.net

- Site Visit: Reclamation views the problem and meets with the landowner
- Response: Reclamation identifies a course of action