Preliminary Modeling Evaluation of Draft Conservation Strategy Core Elements

Update to BDCP Steering Committee

January 30, 2009

Overview

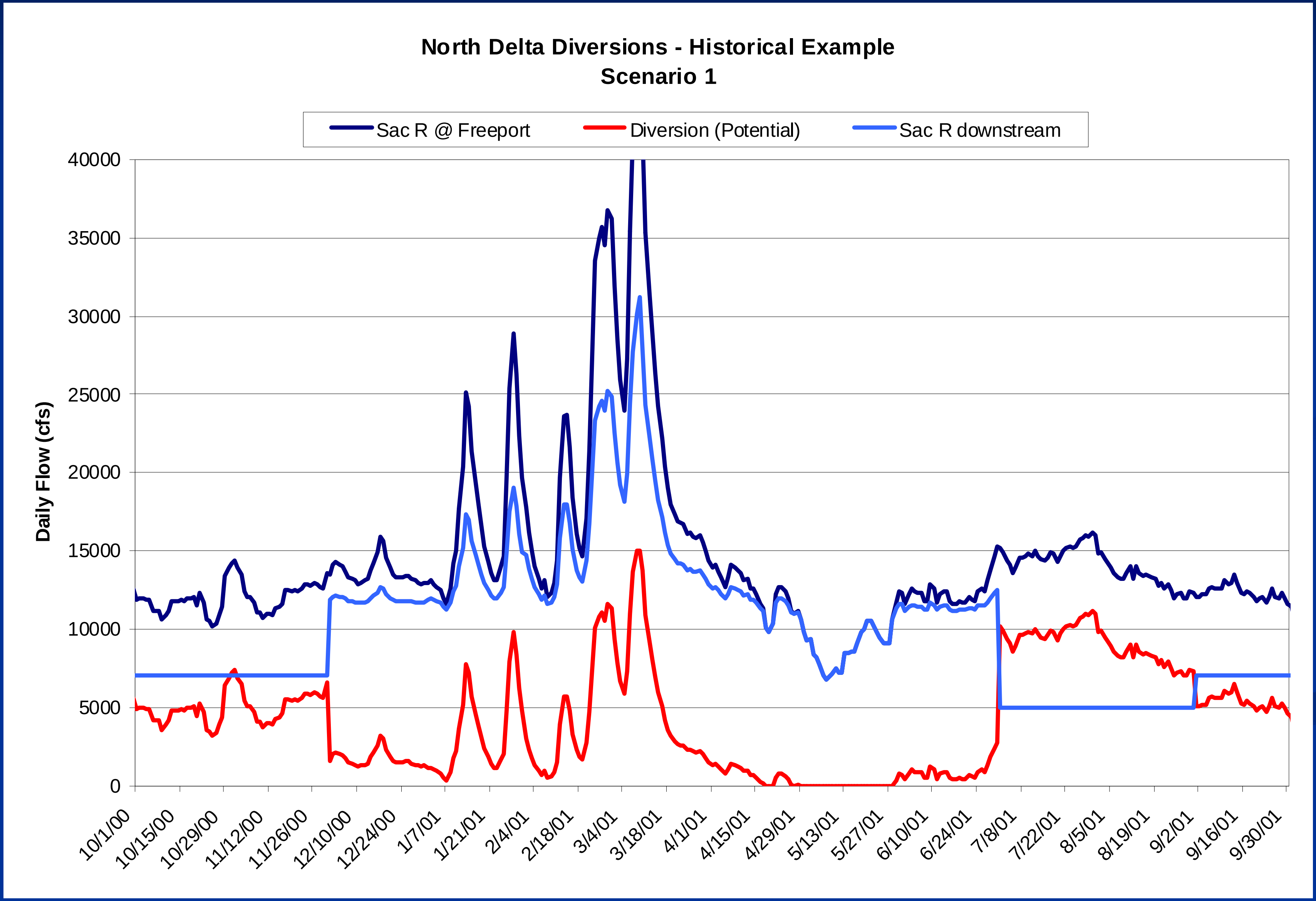
1. Key assumptions for Core Elements (Dec 2008)
2. North Delta facilities assumed configuration and operations
3. Evaluation of two scenarios of North Delta diversion
4. Sample of modeling results for draft simulations

Core Elements – Key Assumptions Included in Initial Modeling

- Dec 19, 2008 Core Elements of Draft Conservation Strategy
  - Freemont Weir modifications for more frequent inundation
    - up to 4,000 cfs during Dec-May
  - North Delta diversion and associated bypass flows (two scenarios)
    - 15,000 cfs max diversion capacity
    - 11,000 cfs and 5,000 cfs bypass flow scenarios in winter-spring
  - Delta Cross Channel operations
    - closed except for Jul-Aug and half of Sep and Oct
  - Old and Middle River flow restrictions
    - OMR > -3,500 cfs (Dec-Jun), OMR > -5000 cfs (Jul-Nov)
  - Tidal marsh restoration in Cache Slough complex
    - 5,000 – 15,000 acres

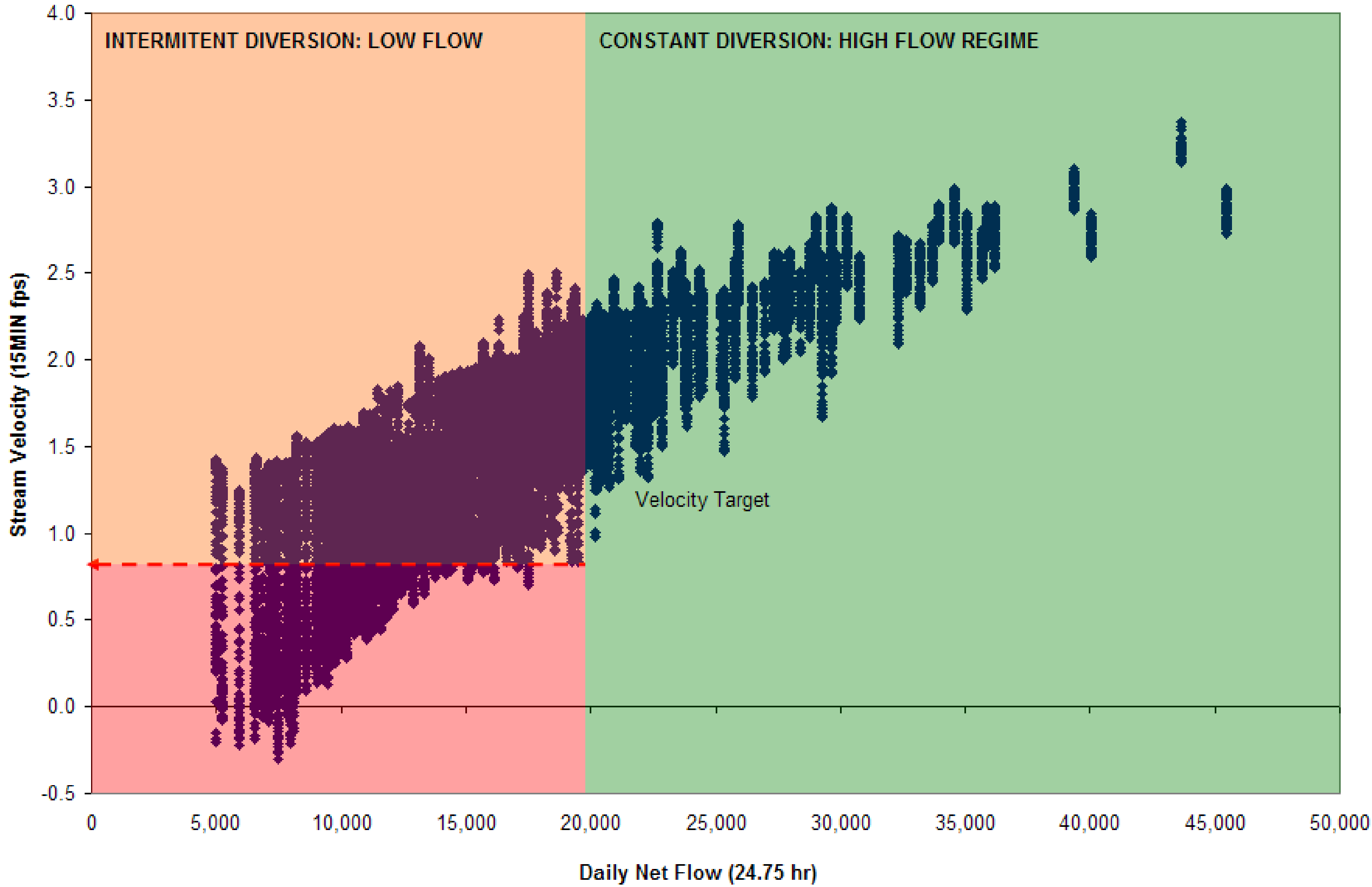
PRELIMINARY DRAFT

Ex. River Flow and Diversion Patterns



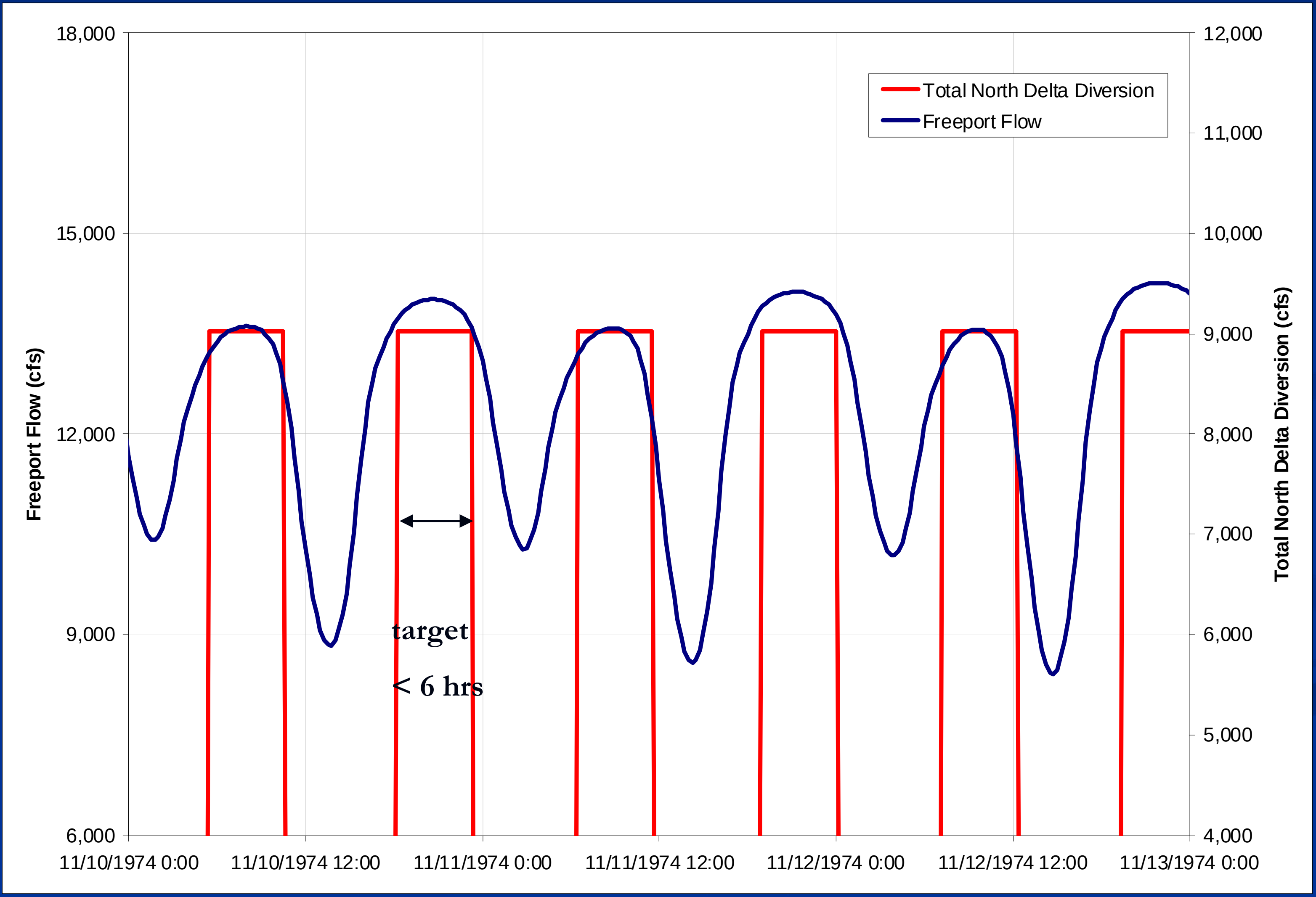
PRELIMINARY DRAFT

Diversion Operational Regimes (Tidal)



PRELIMINARY DRAFT

Proposed Diversions under Intermittent Operations Regime



Diversion Operations Objectives

- Objectives:
  - Limit to that permissible under bypass flow criteria
  - Maintain sweeping velocities at each screen
  - Prioritize pumping during ebb flows
  - Target diversion duration to two 6-hr periods centered on peak ebb flows (at low flows)
  - Determine no. of facilities based on daily diversion volume and target duration
  - Prioritize pumping from upstream to downstream

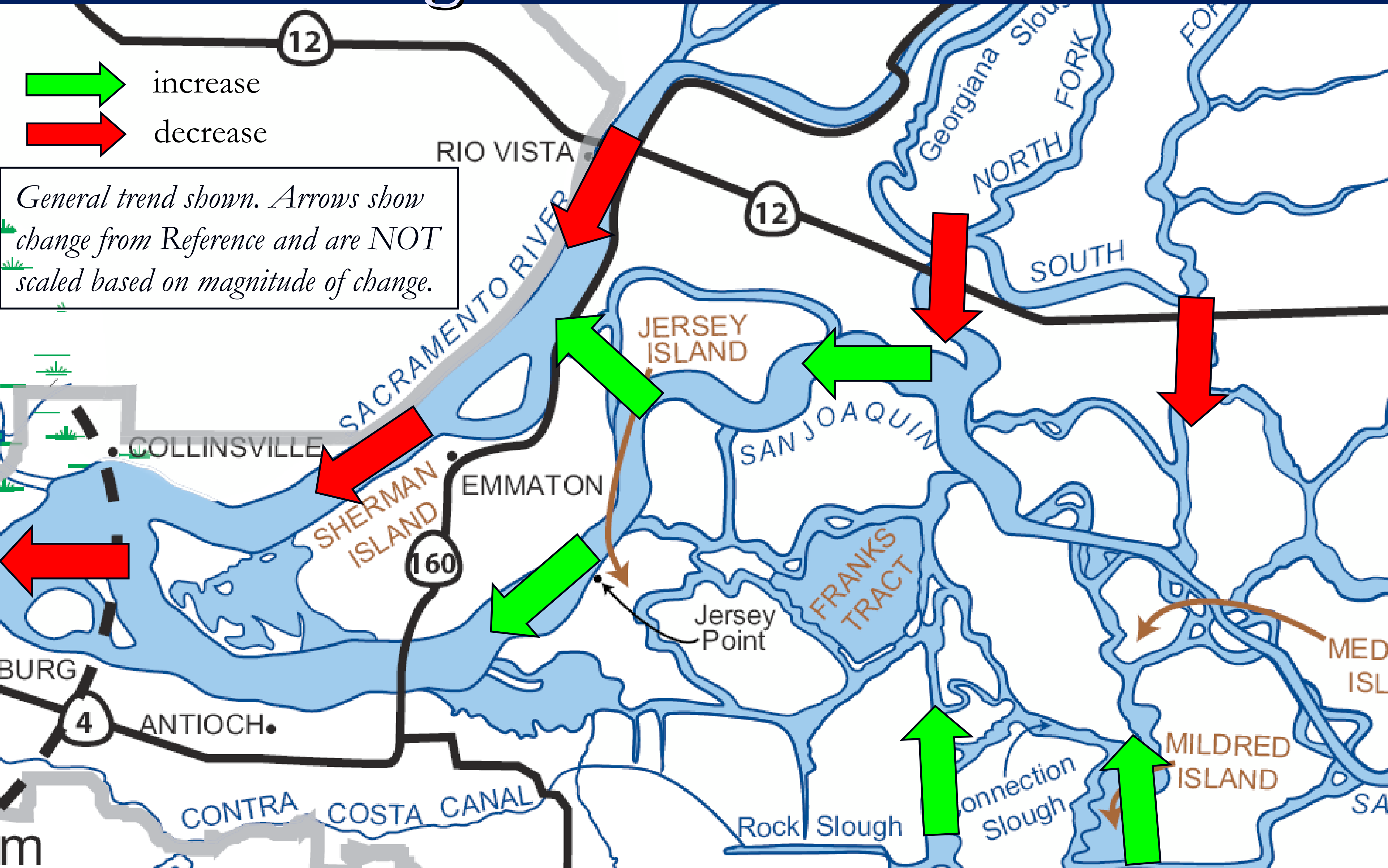
Preliminary Hydrodynamic & Water Quality Modeling Results

- Net and tidal flow changes
- Velocity changes
- Water quality changes
- Particle tracking results

Change in Exports

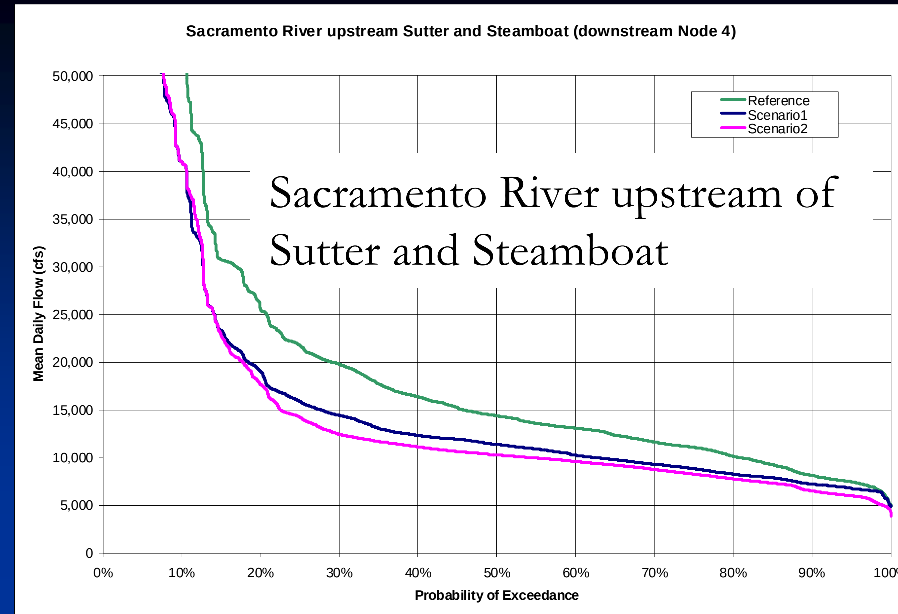
- Scenario 1
  - Long-term: +190 TAF/YR
  - Dry period: -190 TAF/YR
- Scenario 2
  - Long-term: +470 TAF/YR
  - Dry period: +150 TAF/YR

Change in Delta Net Flows

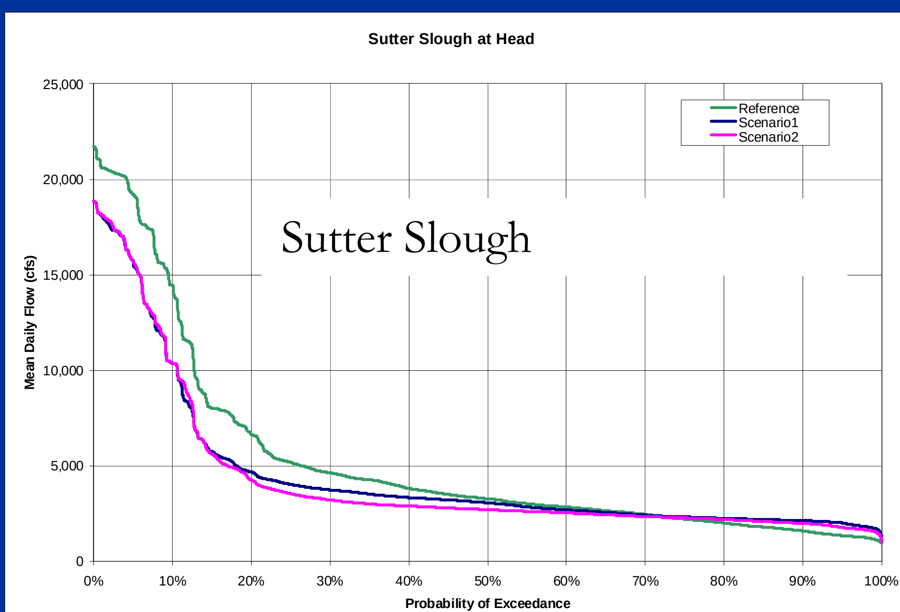


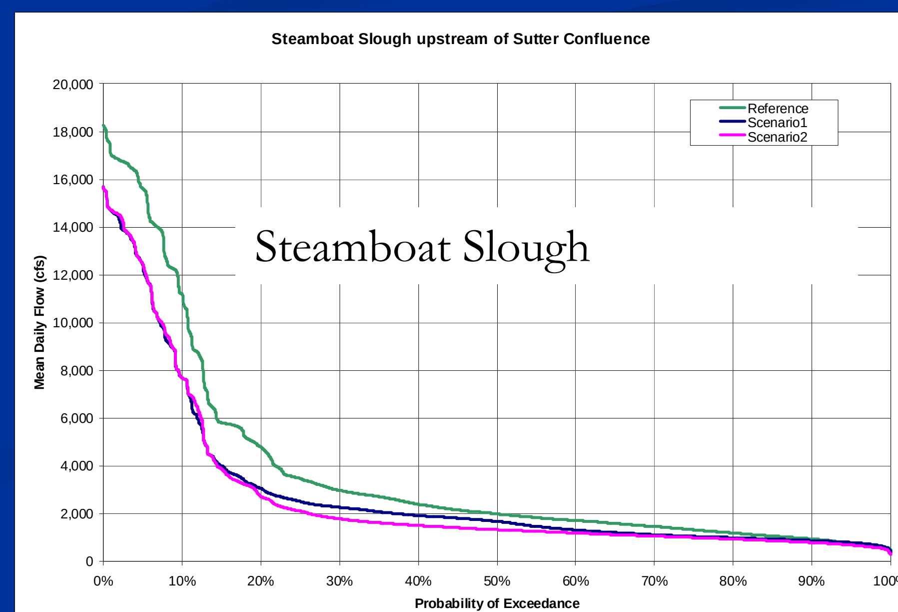
PRELIMINARY DRAFT

North Delta Flows



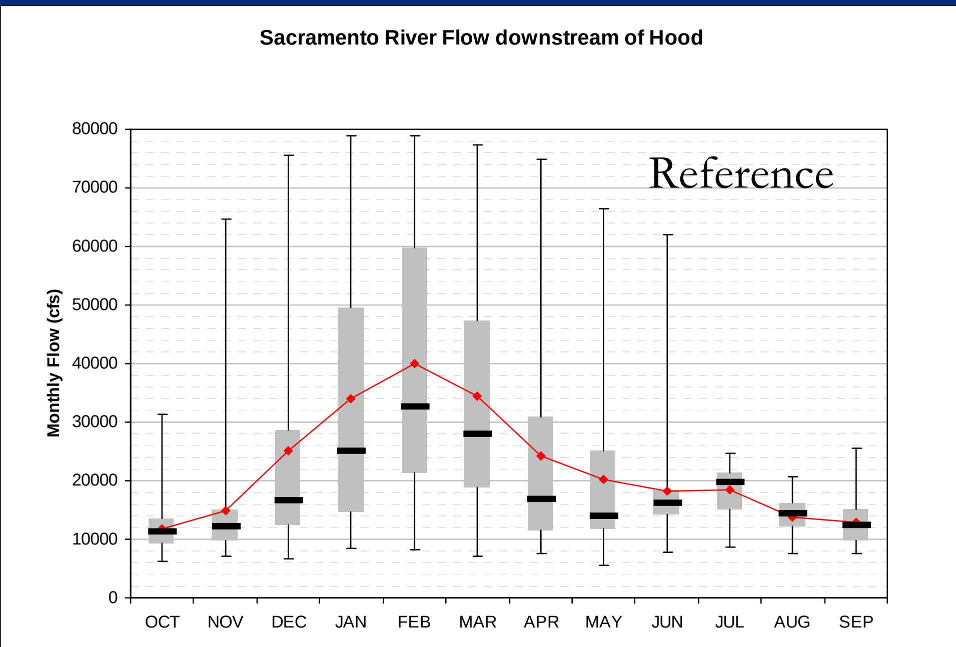
Net flows reduced due to North Delta Diversion

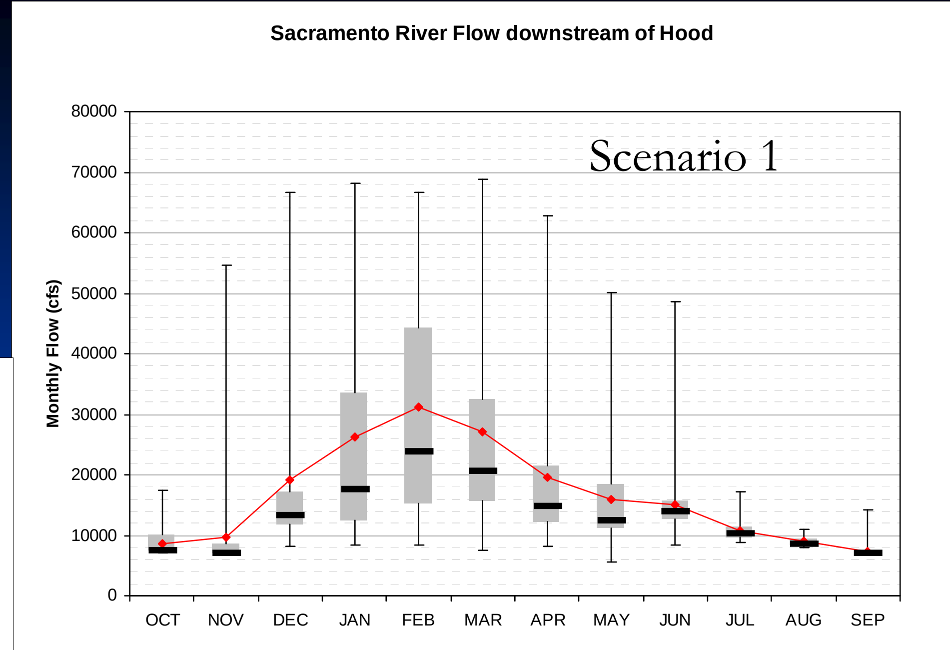


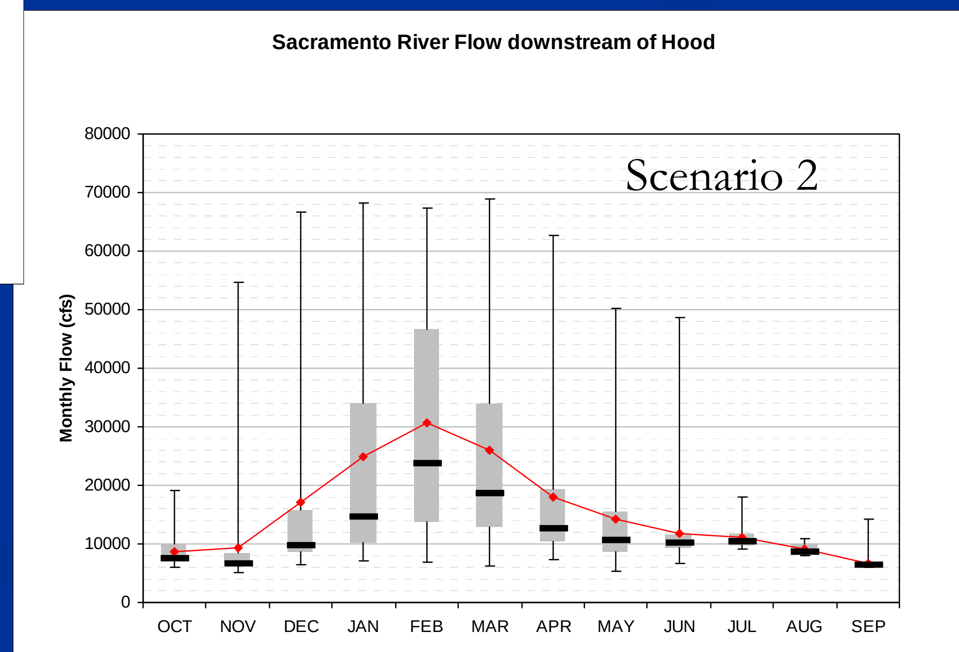


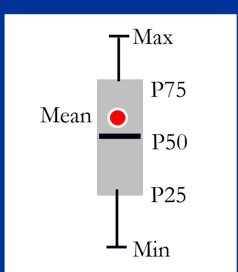
PRELIMINARY DRAFT

Sac R Flows d/s Diversion



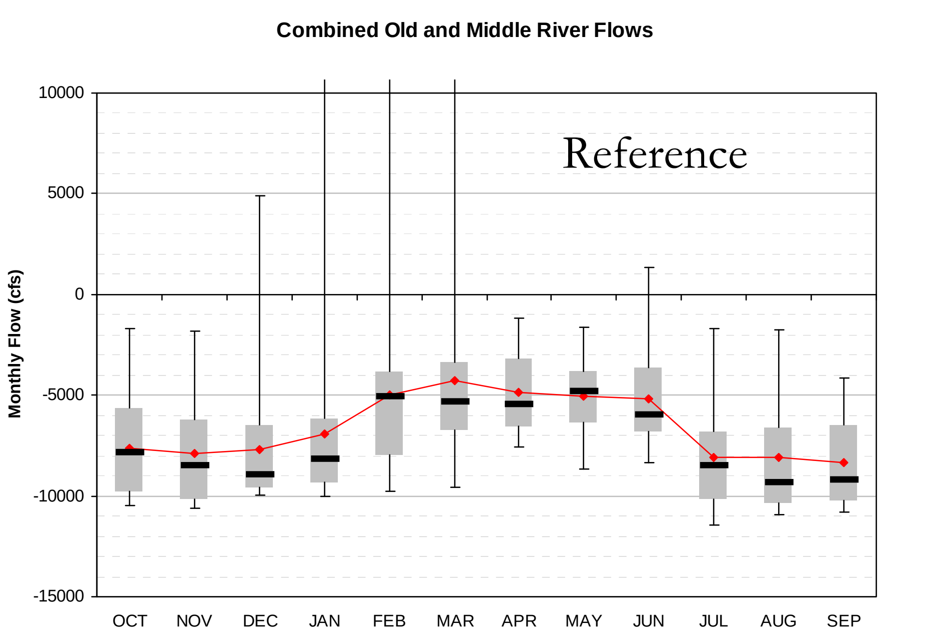


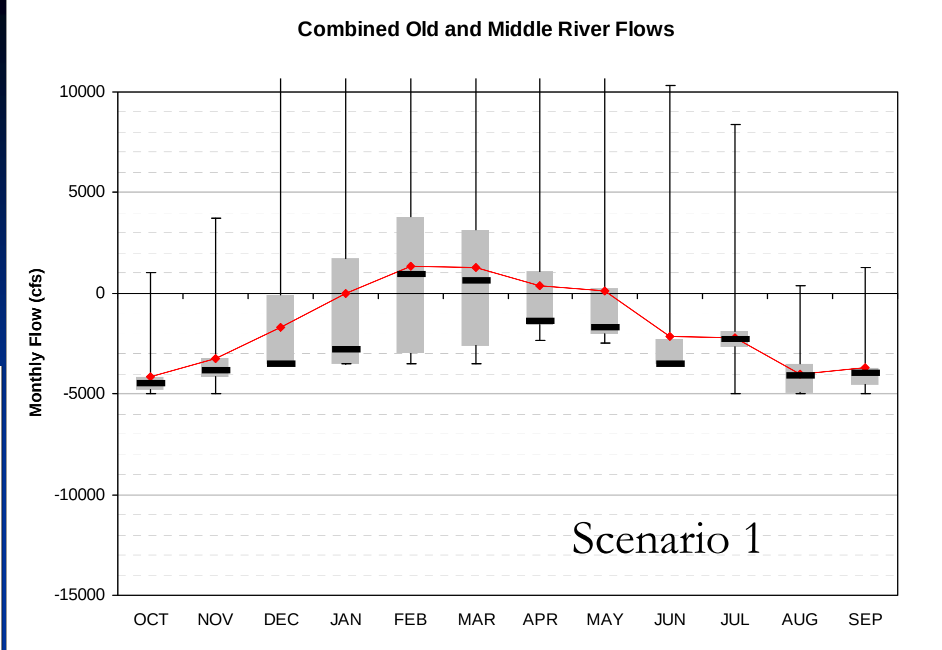


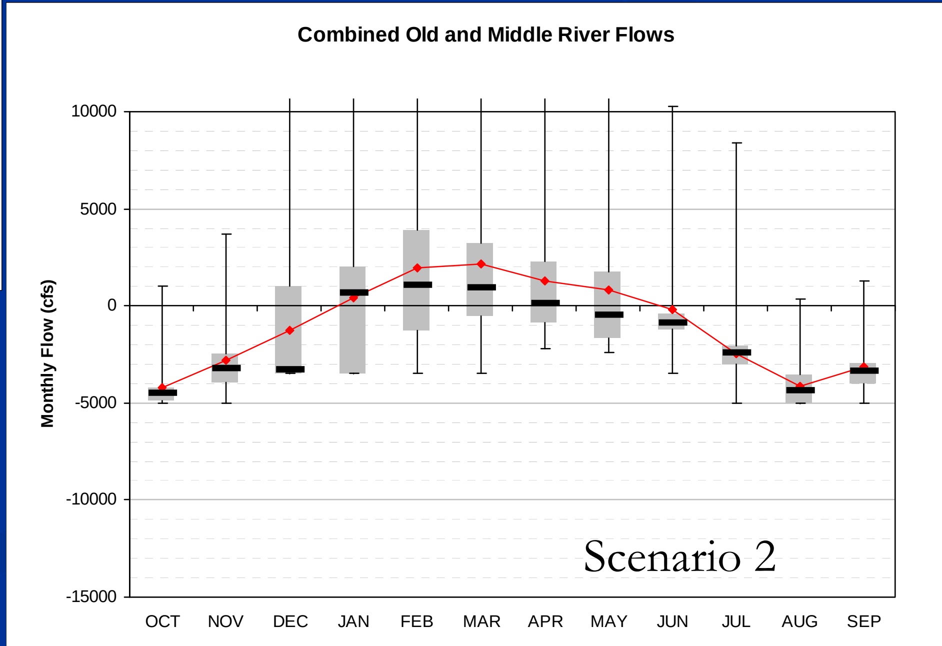


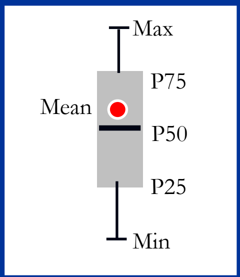
PRELIMINARY DRAFT

OMR Flows

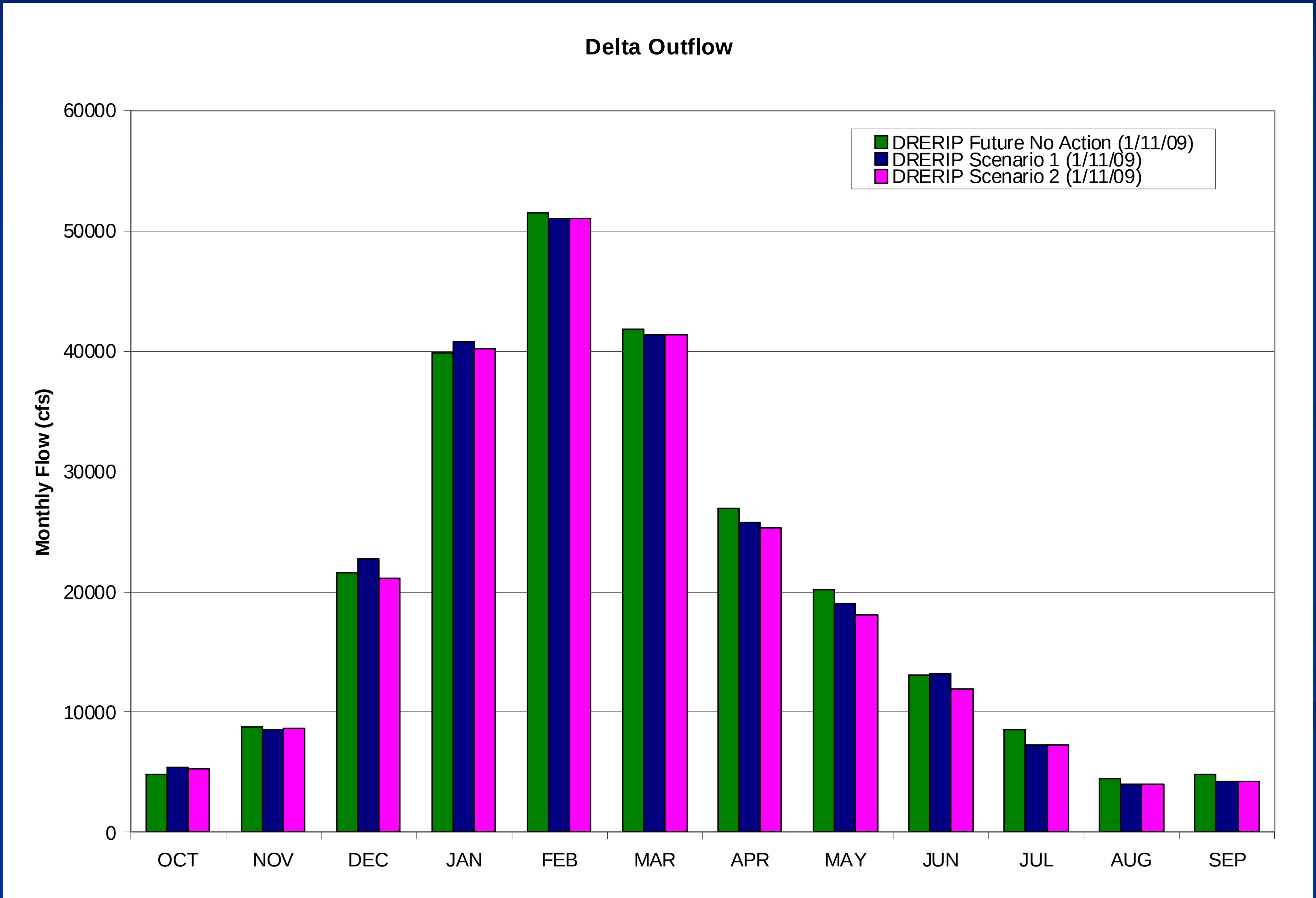




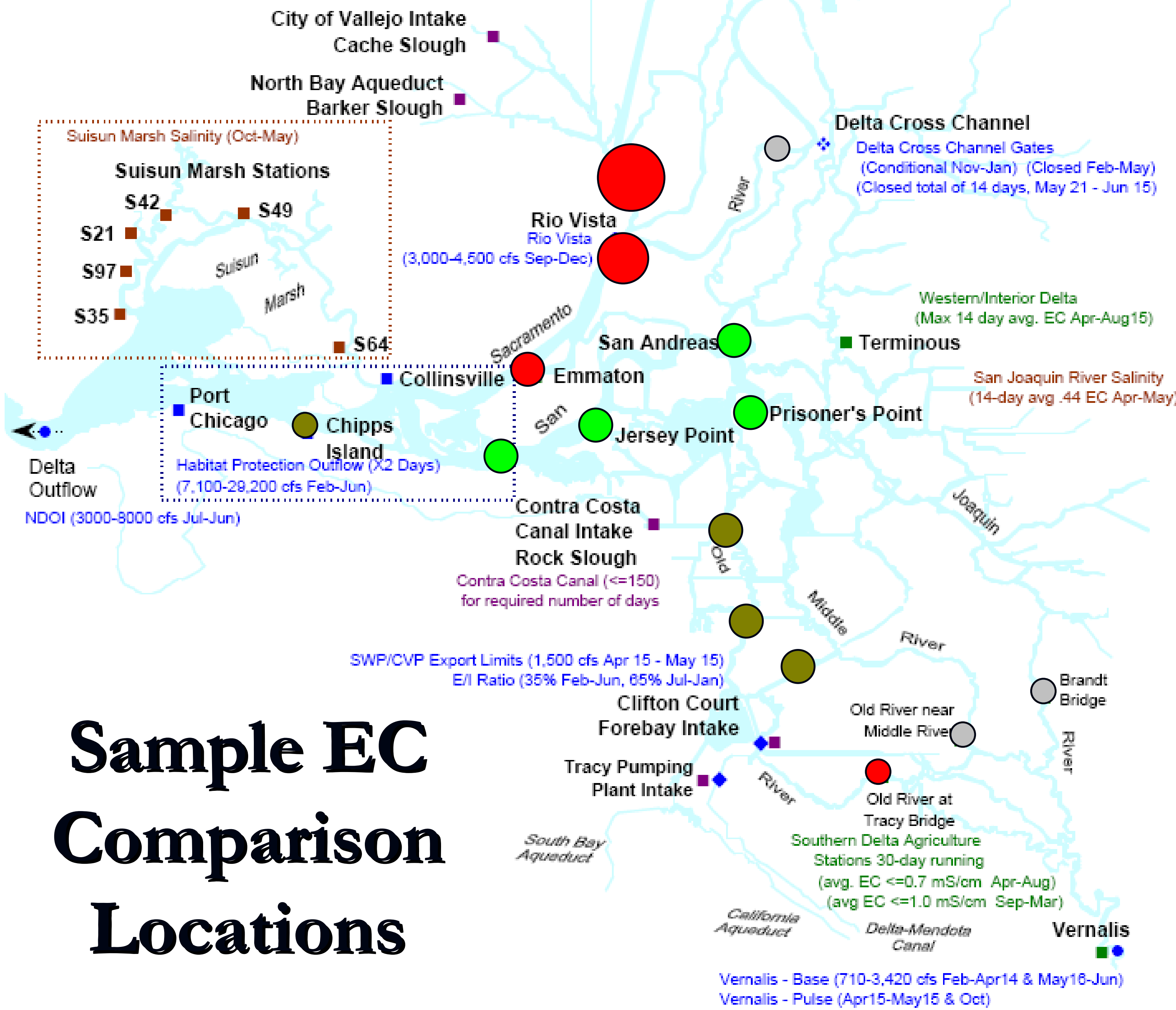




Delta Outflow

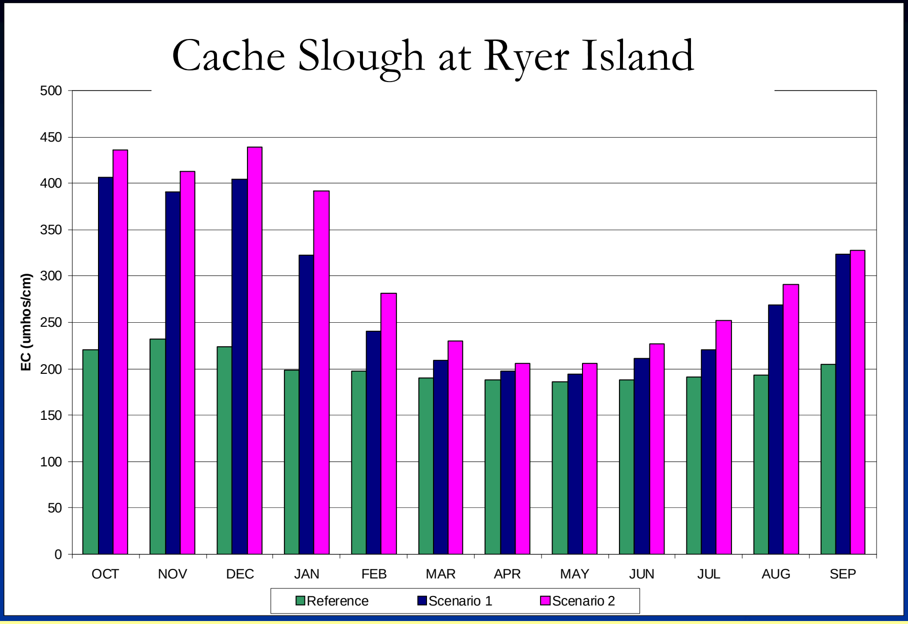


Sample EC Comparison Locations

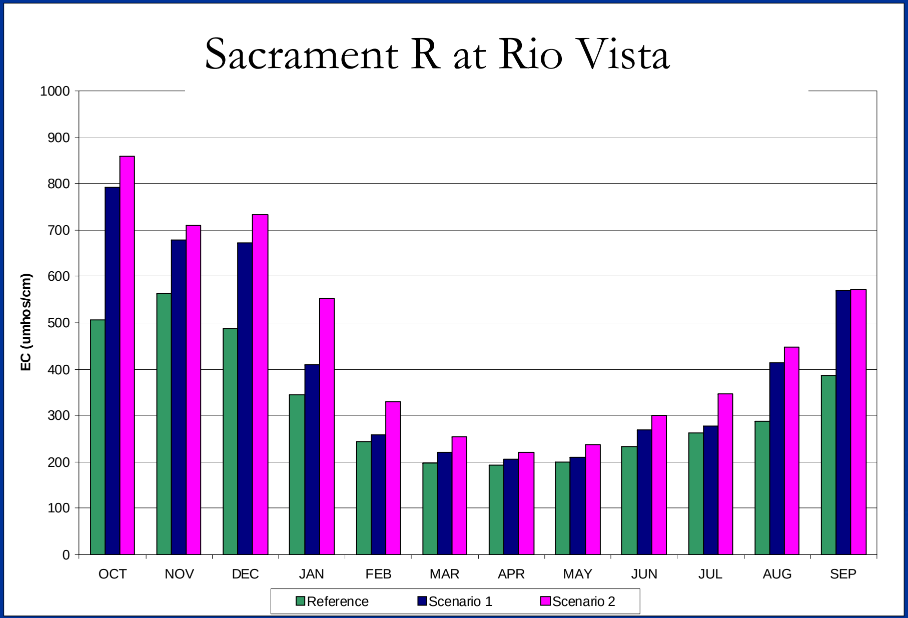


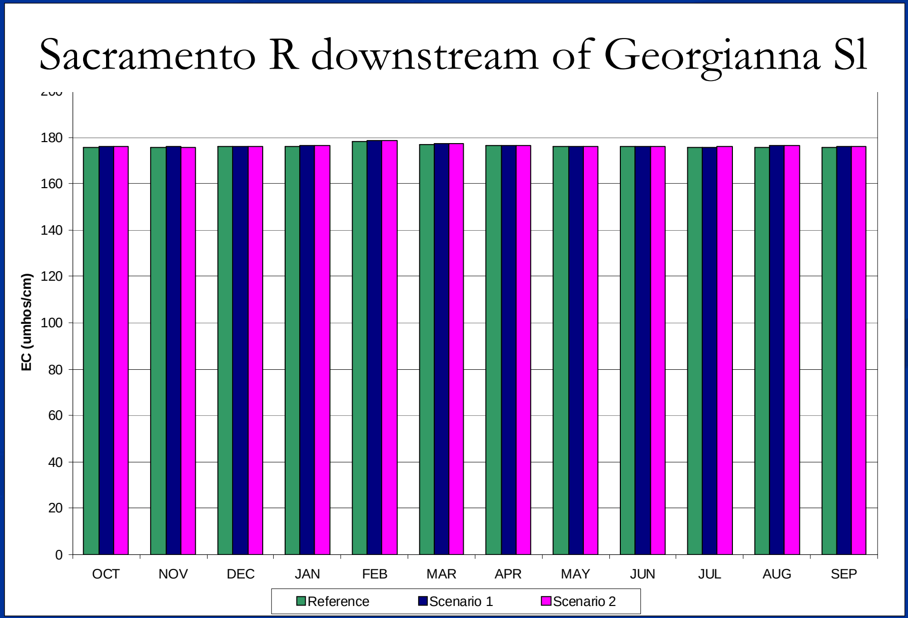
PRELIMINARY DRAFT

North Delta Salinity



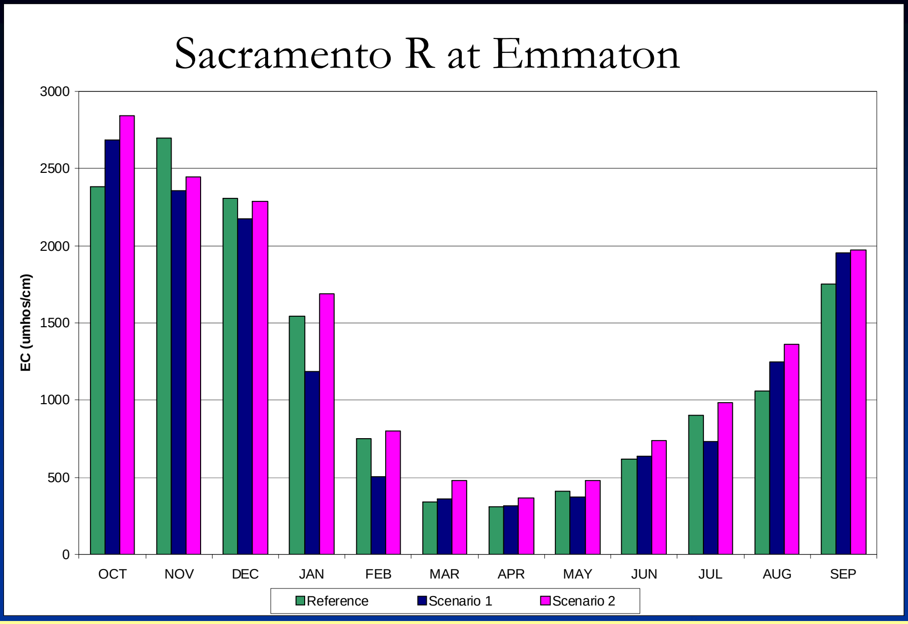
Increased mixing causes Cache and Rio Vista salinity to increase; no change on mainstem upstream of Cache Sl



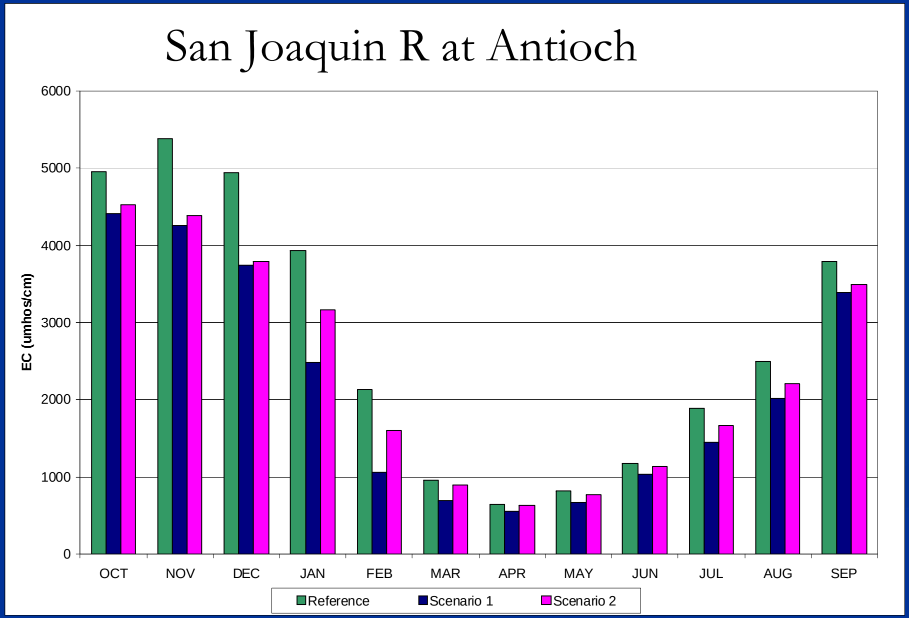


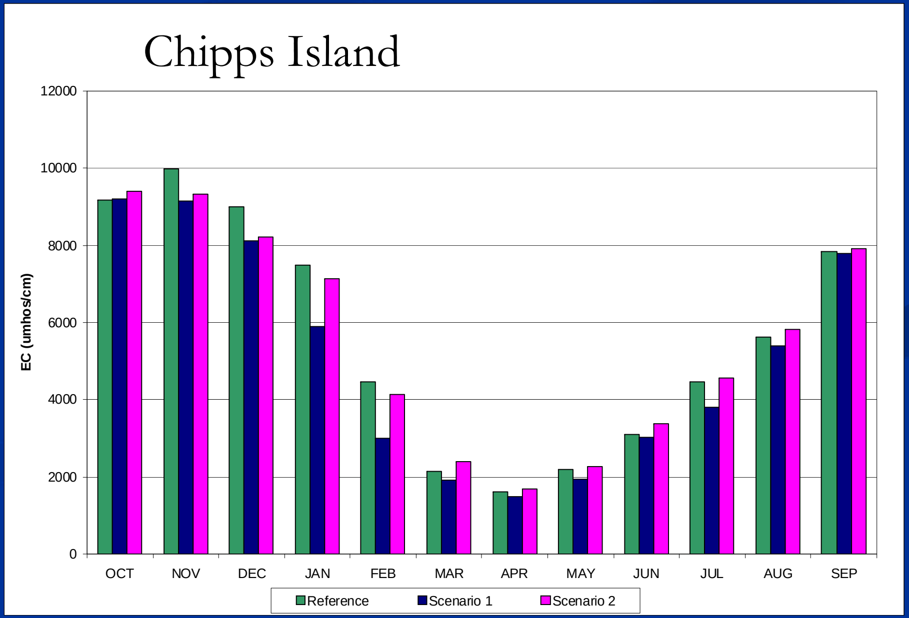
PRELIMINARY DRAFT

West Delta Salinity



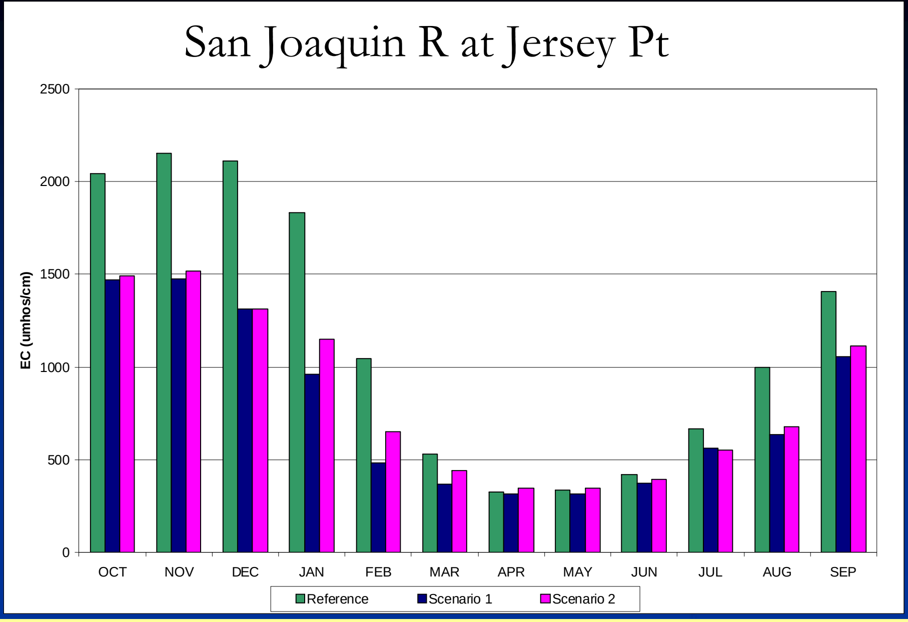
Decreased SJR salinity in the fall, and increased SJR-SAC transfer through Threemile Sl, cause slight decrease in western salinity



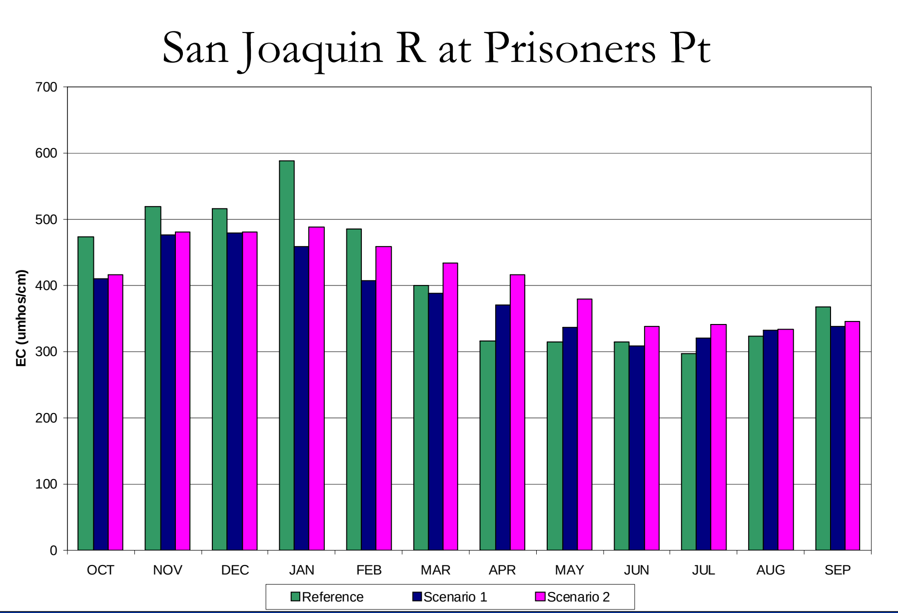


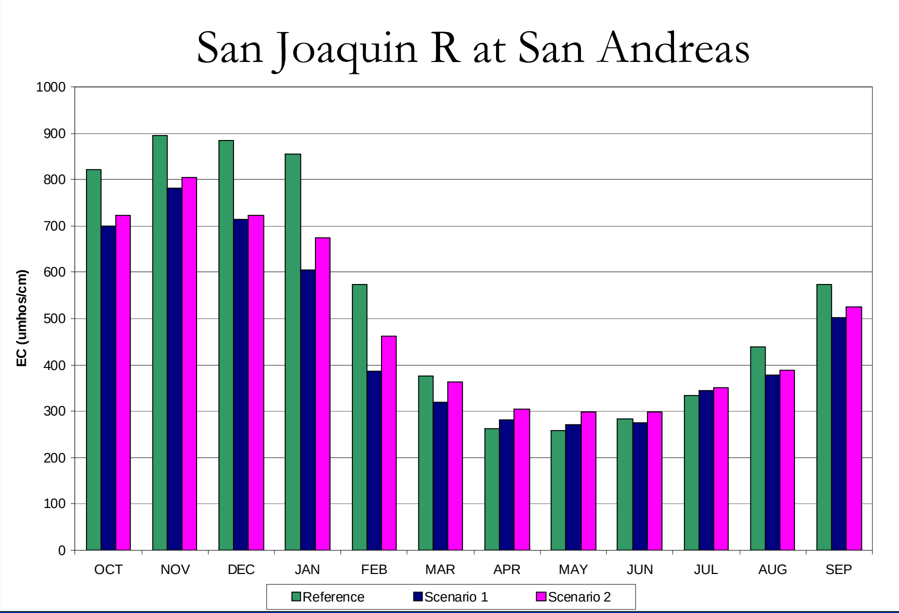
PRELIMINARY DRAFT

Central Delta Salinity



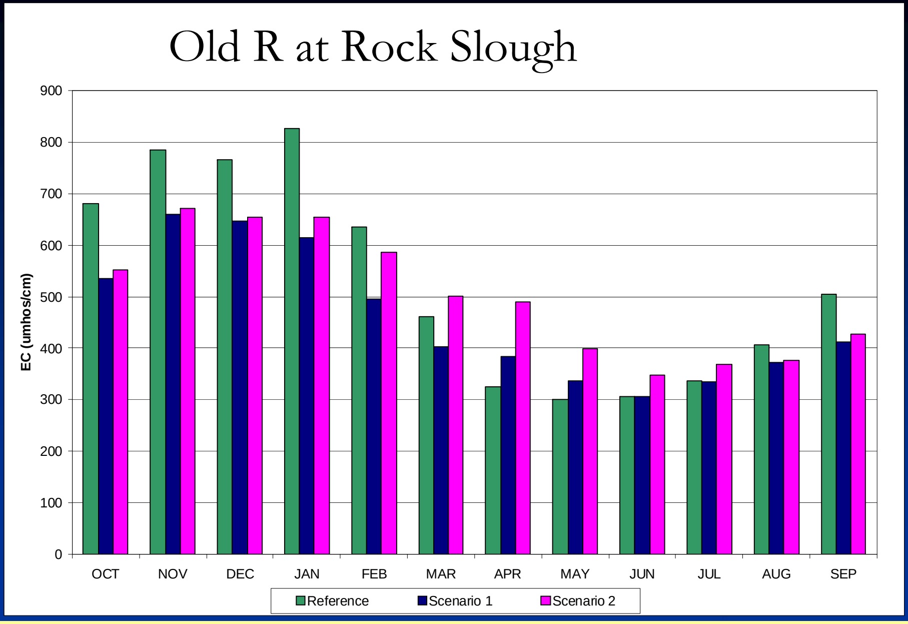
Lower south Delta pumping reduces salinity in the fall, but causes increases in spring and summer





PRELIMINARY DRAFT

South Delta Salinity (OMR Corridor)



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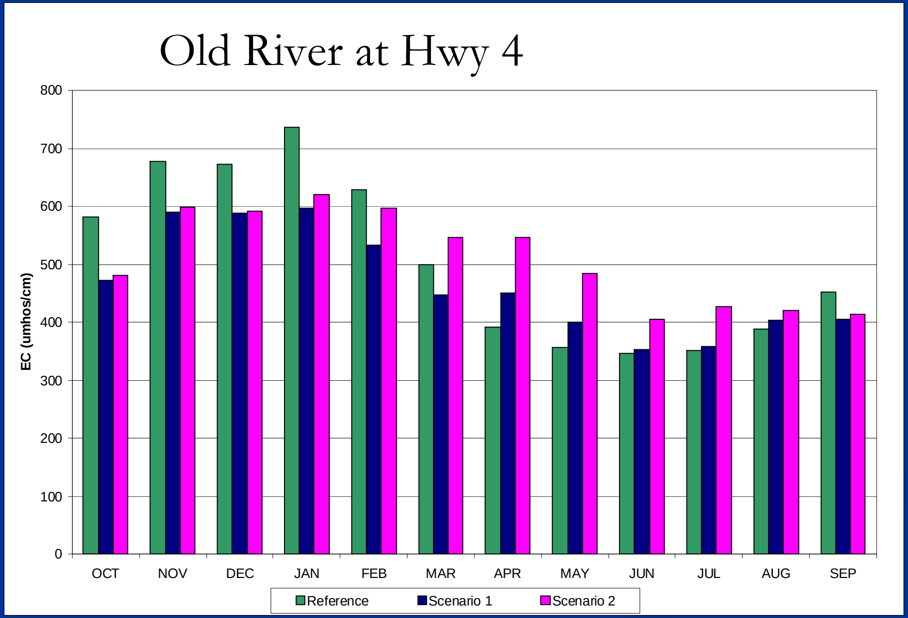
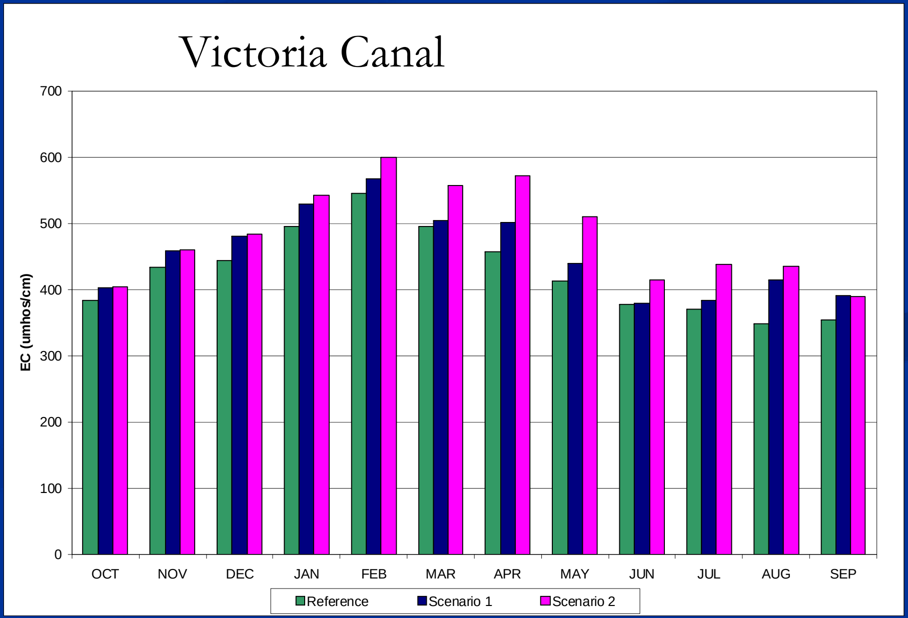
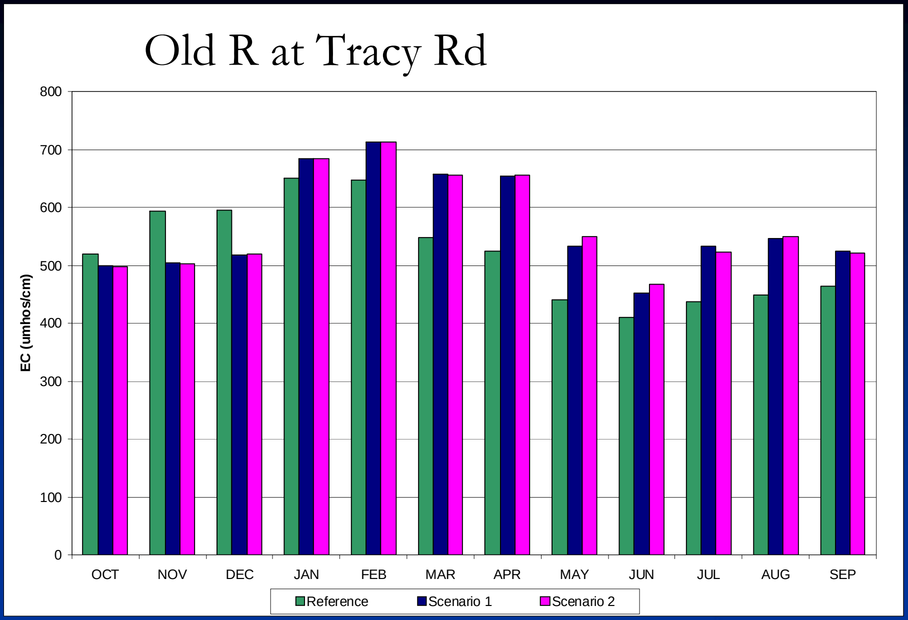




PRELIMINARY DRAFT

South Delta Salinity (SJR dominated)



In deep south Delta and along SJR, changes in operations have little effect