

*Real Time Management Program
for Managing Salinity in the Lower San Joaquin River
Using
**WARMF Forecast Model,
Management Module, and Visualization Tool***



Collaboration

- San Joaquin River WARMF River Forecast Model and the Manager Module funded by Reclamation
- Guided by a the Technical Research Team including representatives of Reclamation, Central Valley Water Board, DWR, and Westside Watershed Coalition

Salt and Boron TMDL Compliance

- Develop the RTMP
 - Export salt when river has assimilative capacity
 - Develop monitoring networks
 - Promote sharing of real-time data
- Coordinate and Communicate Releases and Diversions
- Actively manage loading in coordination with dischargers
- Provide releases from New Melones to meet Vernalis WQO

RTMP System and Tools

- Monitoring network with real-time sensors and database with QA/QC

- WARMF River Forecast Model

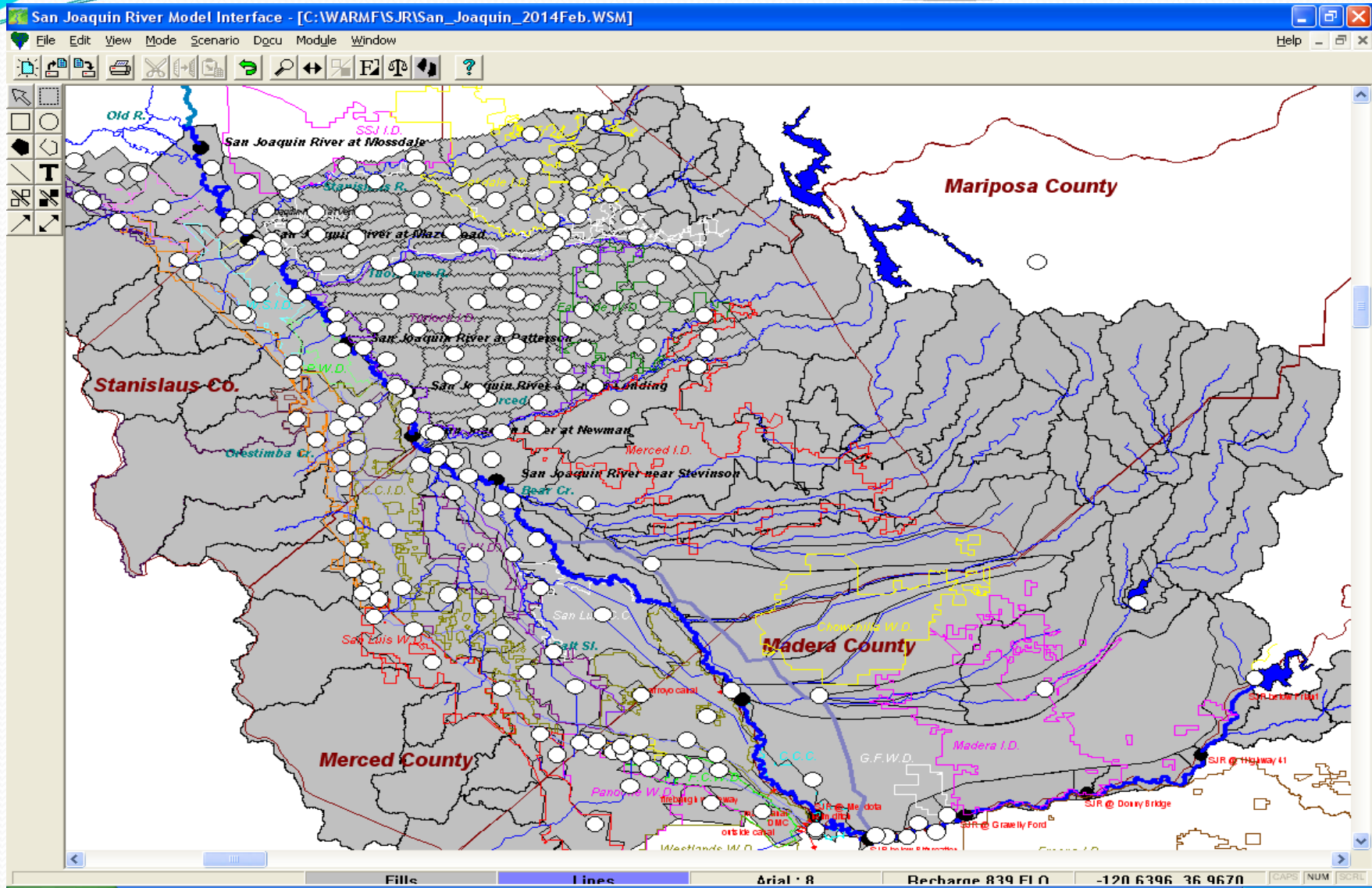
Real-time data river, tributary, diversions, Inputs, Outputs, CDEC, NOAA, and Meteorology

- WARMF Management Module

- Visualization Tool

Watersheds and Irrigation Districts need to know and manage salt loads—Visualization Tool

WARMF Model Area with Inputs for Diversions and Recharge

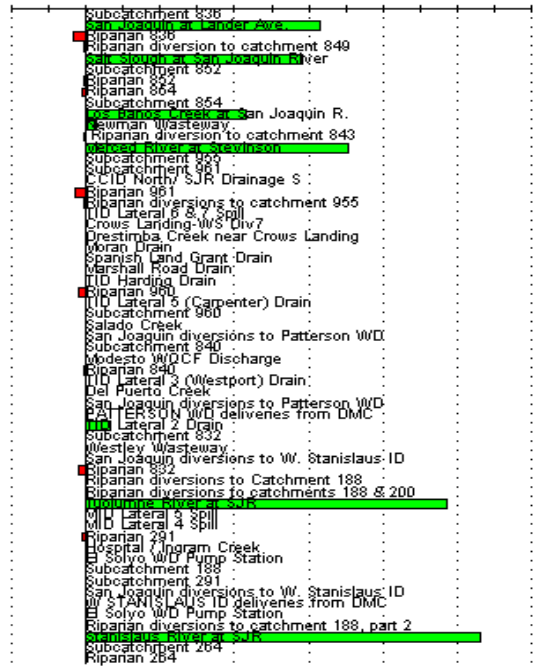


Gowdy Output: San Joaquin River near Stevinson to San Joaquin River at Vernalis

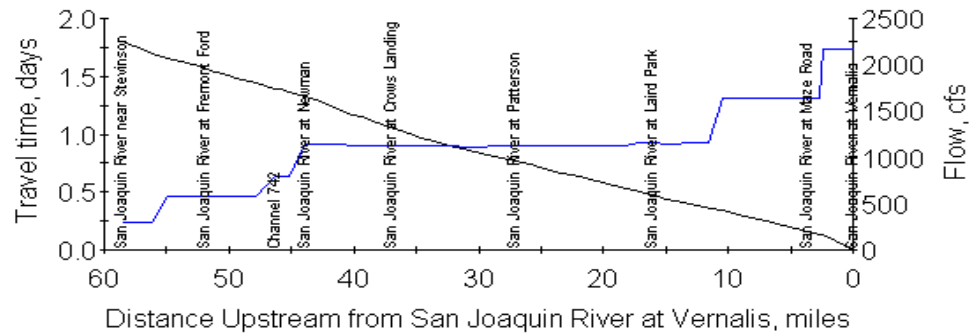
Scenario: San_Joaquin_2012Apr30_HourlyGowdy Output Date: 10/10/2005
 Parameter: Flow

Account for in-stream processes Ignore in-stream processes

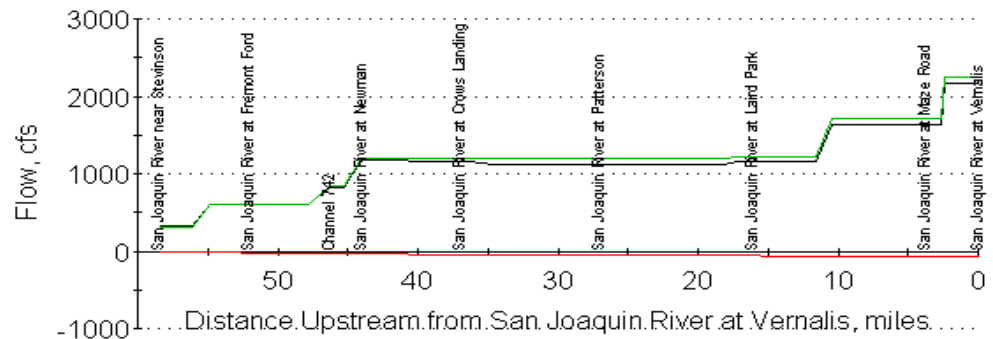
Sources of Flow, cfs



Longitudinal Output



Cumulative Loading



Help

Export Source Allocations

Export Longitudinal

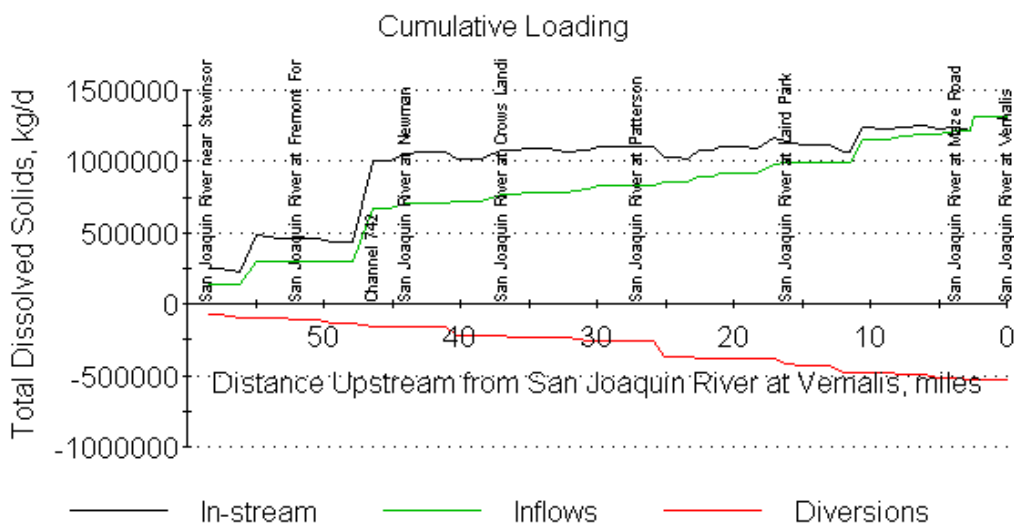
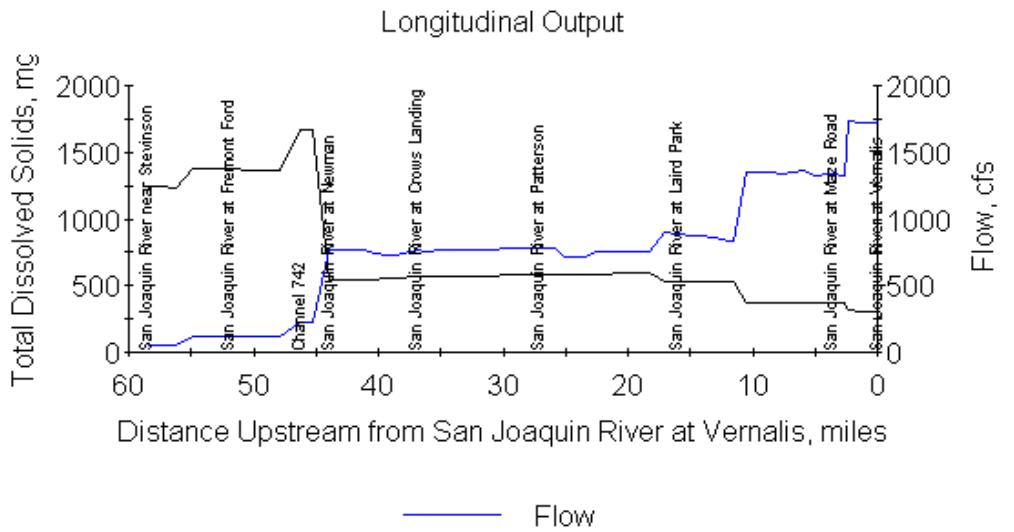
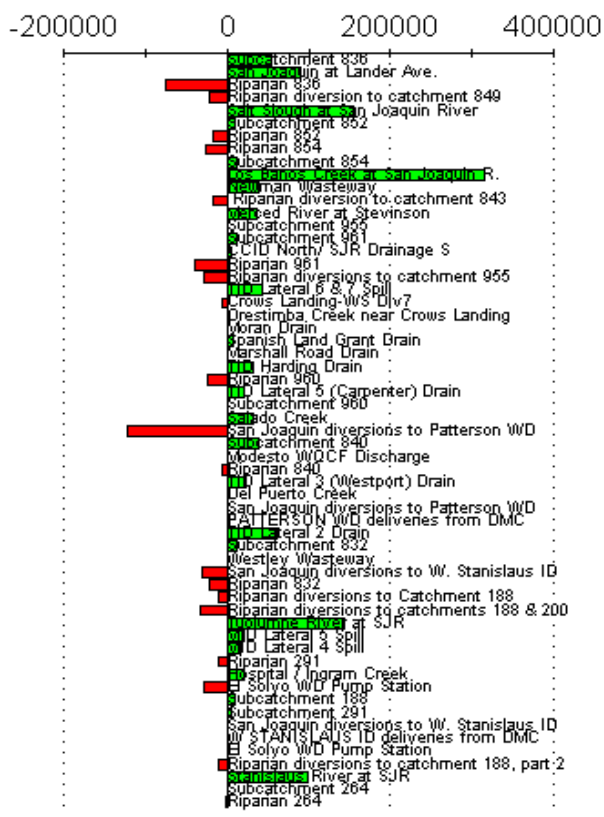
Export Cumulative Loading

Gowdy Output: San Joaquin River near Stevinson to San Joaquin River at Vernalis

Scenario: San_Joaquin_2013May Output Date: 09/01/2005
 Parameter: Total Dissolved Solids

Account for in-stream processes Ignore in-stream processes

Sources of Total Dissolved Solids, kg/d



Export Source Allocations

Export Longitudinal

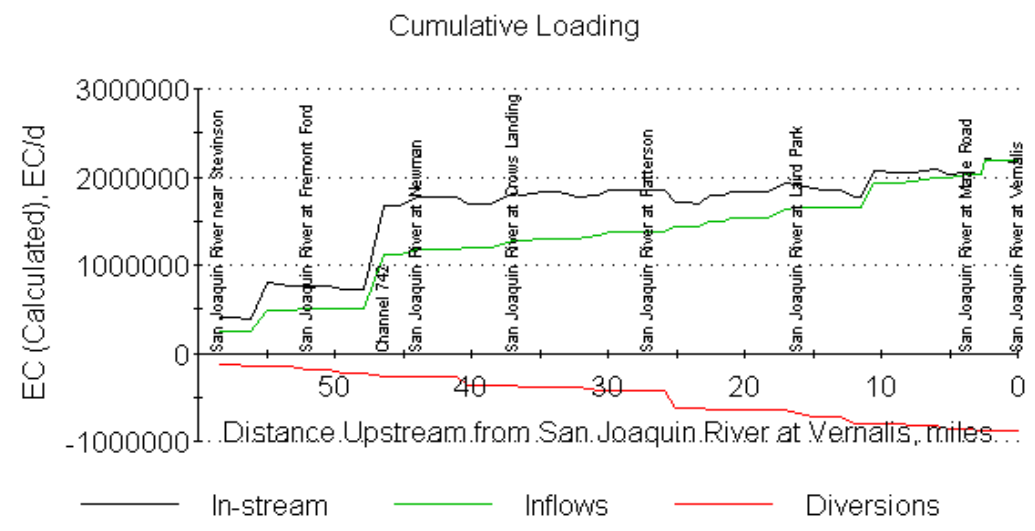
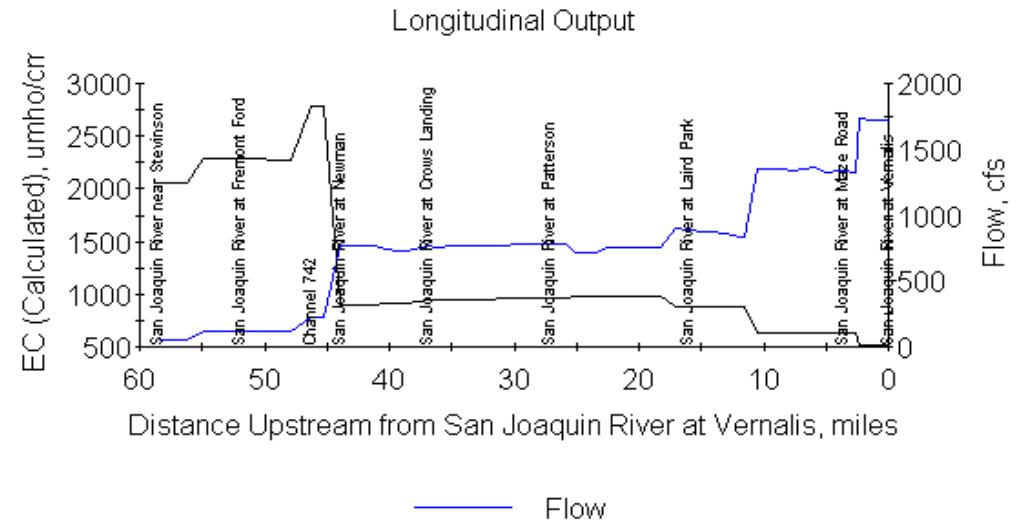
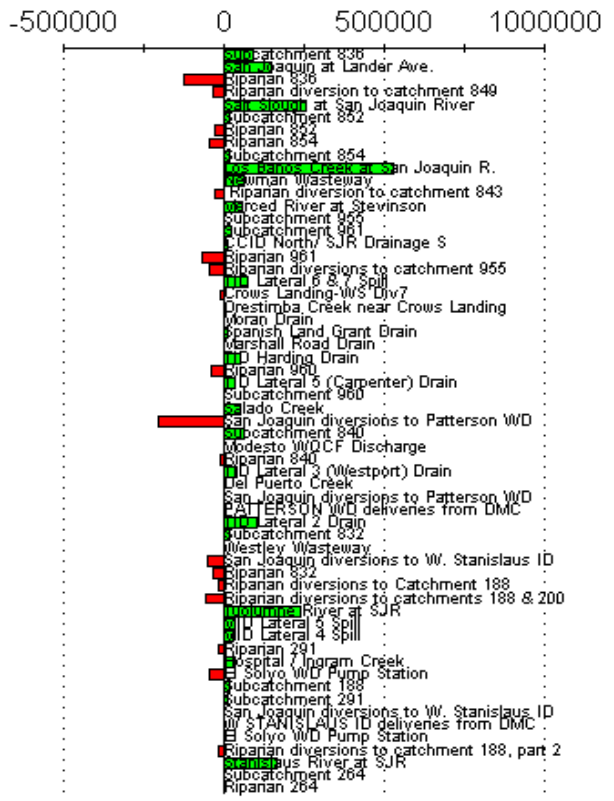
Export Cumulative Loading

Gowdy Output: San Joaquin River near Stevinson to San Joaquin River at Vernalis

Scenario: San_Joaquin_2013May Output Date: 09/01/2005
 Parameter: EC (Calculated) 09/01/2005

Account for in-stream processes Ignore in-stream processes

Sources of EC (Calculated), EC/d



Help Export Source Allocations Export Longitudinal Export Cumulative Loading

Manager Module

Beginning Date Ending Date Time steps per day

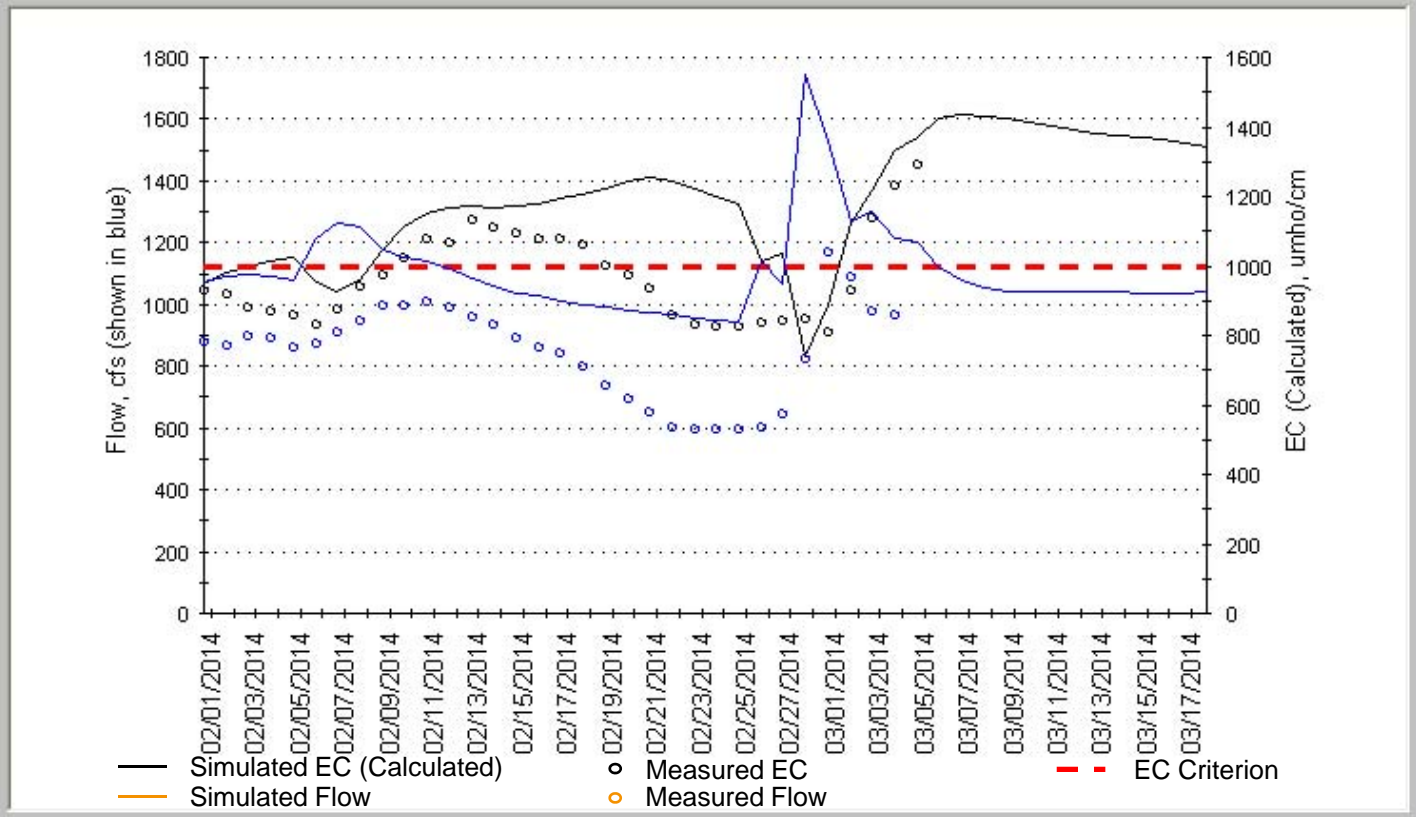
Initial Conditions from Warm Start File

Setup | Input | Time Series Output | Herr Output

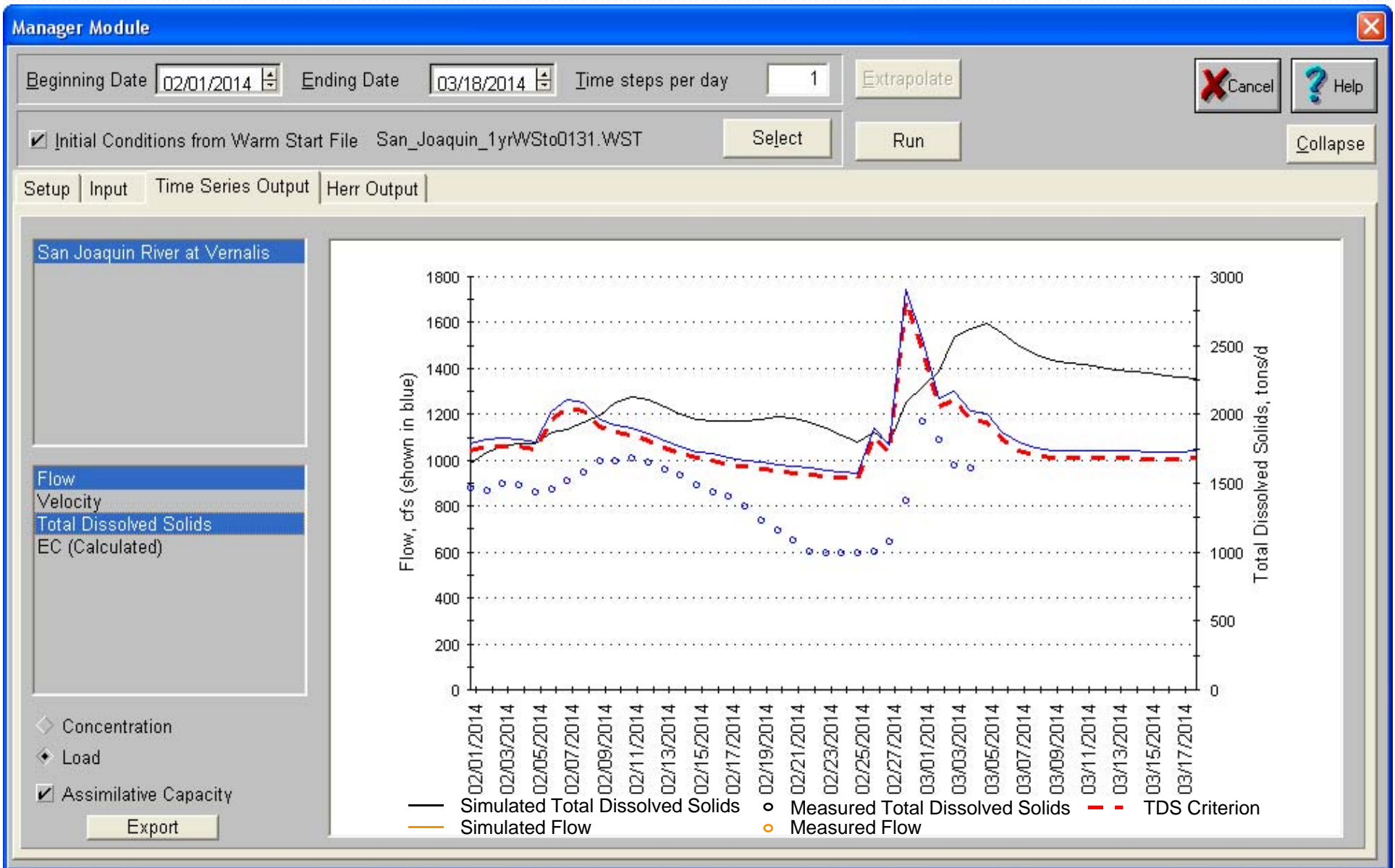
San Joaquin River at Vernalis

Flow
Velocity
Total Dissolved Solids
EC (Calculated)

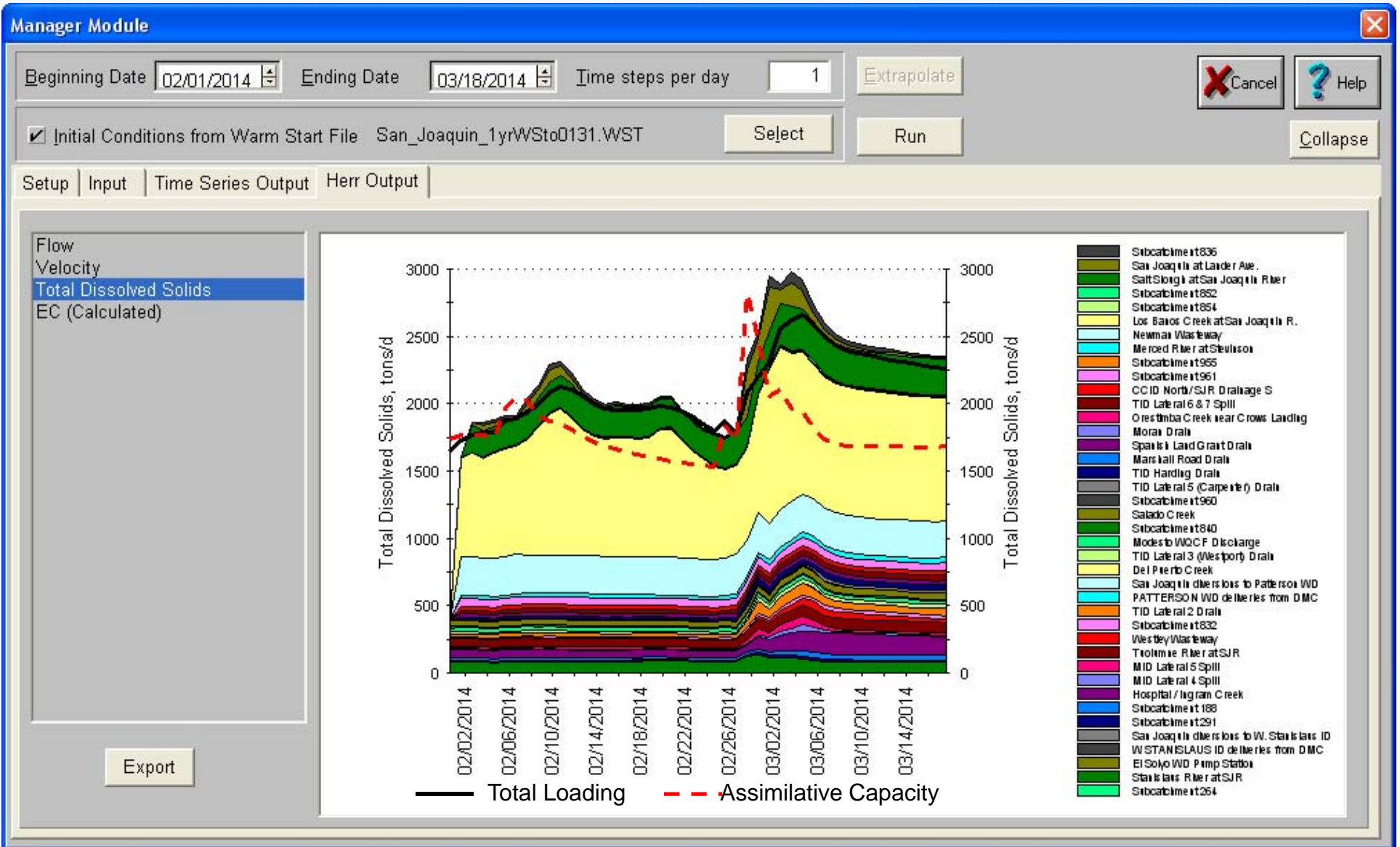
Concentration
 Load
 Assimilative Capacity



Management Module Time Series Output: Load



Management Module - Herr



Summary

- Manager Module provides managers with powerful modeling tool with simplified interface
- Real-time simulations predict assimilative capacity
- Real-time data replaces simulated data-making forecasts better
- Advanced outputs show sources of salt loading and opportunities to export salt