Delta and Tributaries Salinity Conceptual Model

Sam Harader
CALFED Bay-Delta Program
October 3, 2006

Approach

- Capture information and synthesize CM from available studies (identify data gaps)
- Present most current science
- Identify and focus on most important drivers
- Present most promising management options based on best available science

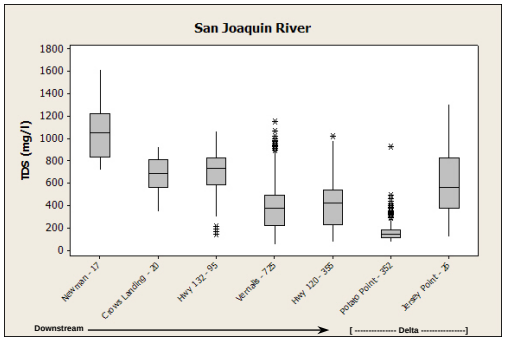
Salinity Primer

- Salinity, PSU, EC, and TDS all mean the same thing (sort of)
- Br^- and Cl^- are constituents of salinity and can be predicted from EC (sort of)
- TDS = total dissolved solids
- Seawater has a pretty set chemistry (lots of Na and Cl, less SO^4)
- Freshwater make-up is much more variable
- A basic measure of “usability” of water

Impacts of Salinity

- Contributes to DBP formation (a public health hazard)
- Makes water taste bad
- Inhibits the growth of crops
- Causes corrosion and scaling
- Limits the ability to recycle/re-use water
- Affects the distribution of many aquatic species

Characterizing salinity



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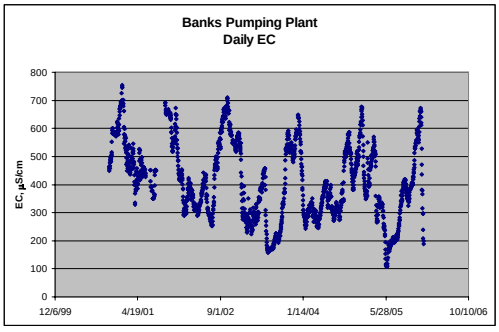

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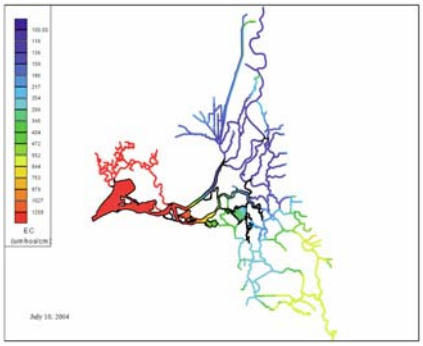
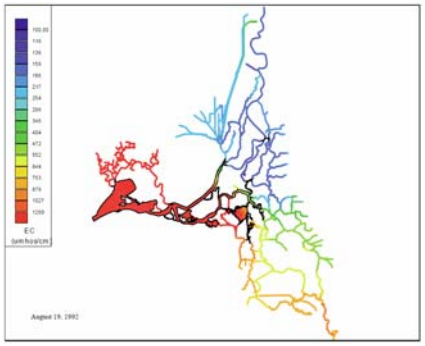
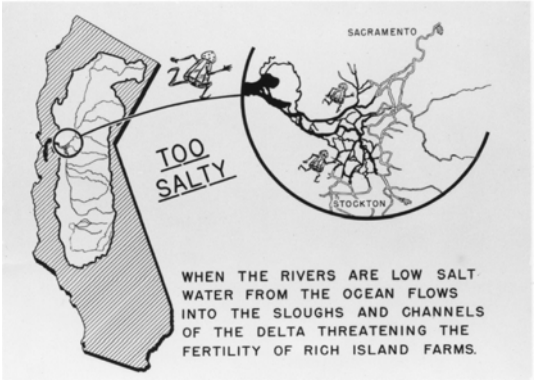


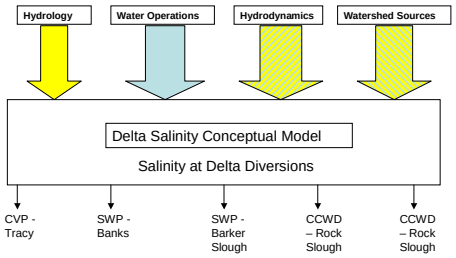
RMA, 2006

Characterizing salinity



RMA, 2006

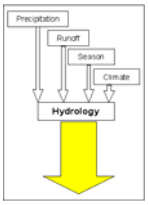


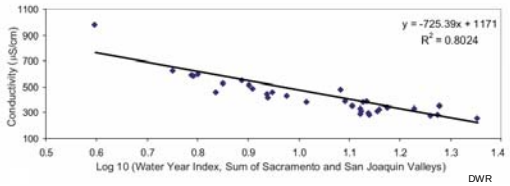


Overview of salinity in Delta drinking water.

Hydrology

The amount of water flowing into the Delta is the single most important determinant of salinity at the export pumps and the amount of inflow is largely determined by hydrology.

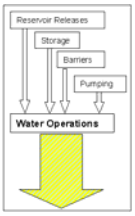


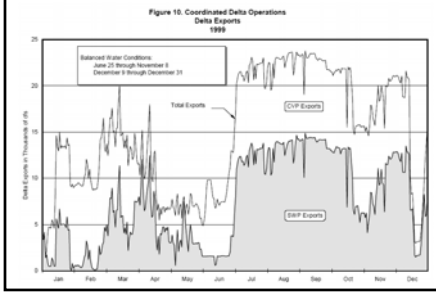


DWR

Water Operations

During periods of low natural inflow, the combination of reservoir releases, barrier operations, and Delta diversion pumping govern salinity.

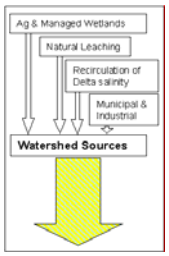


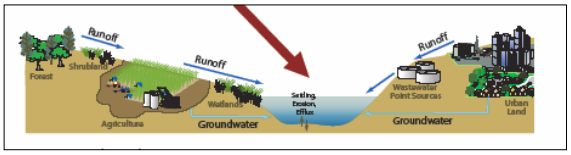


DWR, 2003

Watershed Sources

Included here are salts added through material inputs to agricultural, municipal, industrial, and natural processes.

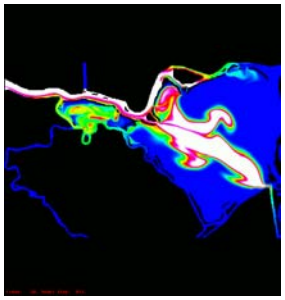


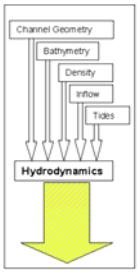


Tetratech, 2006

Hydrodynamics

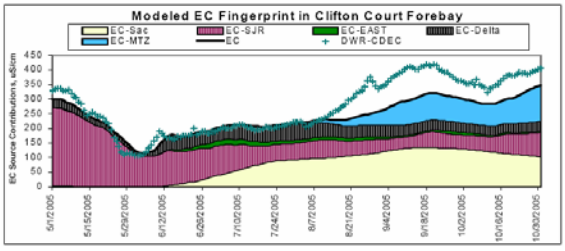
Hydrodynamics includes the major physical features, properties, and processes that govern the movement of water within the Delta and Bay.





USGS, DWR, and RMA

Management Tools



DWR

Implications for Salinity Management

- High salinity at the export pumps comes primarily from San Joaquin inflow and seawater intrusion.
- Delta freshwater inflow dilutes watershed salt load and repels seawater intrusion.
- Anything that reduces high quality inflow increases salinity.
- When export salinities are highest, seawater is involved.

Implications for Salinity Management

- A significant fraction of San Joaquin River salt is from natural gypsum in soils mobilized by irrigation.
- More salt is entering the San Joaquin River basin each year than is leaving.
- Any large scale change to the geometry or bathymetry of the Delta could have a significant affect on salinity.

Next Steps

- Incorporate CALFED Delta Hydrodynamics conceptual model
- Complete next draft
- Technical review of next draft
- CVDWPWG review
- Finalize report
- Life beyond CVDWP
  - Performance Measure Development
  - Put it on the web (living document)