

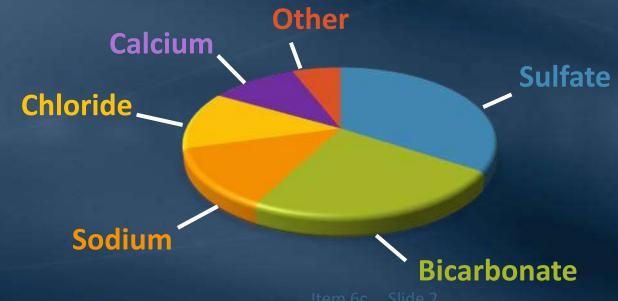
Report on Salinity Management

Engineering and Operations Committee Item 6c October 11, 2021

What is salinity?

- Measurement of salts (minerals) dissolved in water
- Commonly expressed as Total Dissolved Solids or "TDS"
- Naturally occurring, agricultural runoff, urban uses, seawater intrusion

<u>Typical mineral comparison in Colorado River water</u>



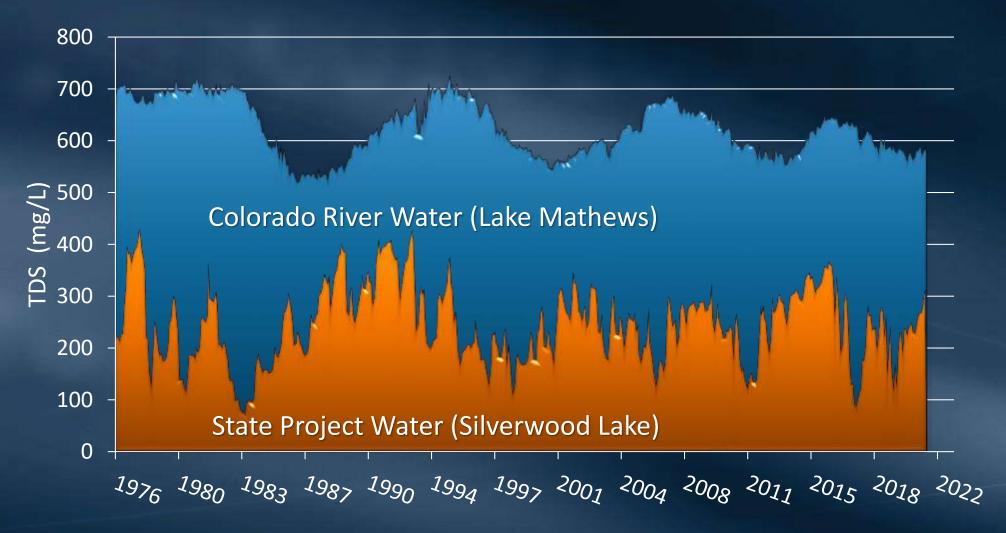
E&O Committee Slide 2 October 11, 2021

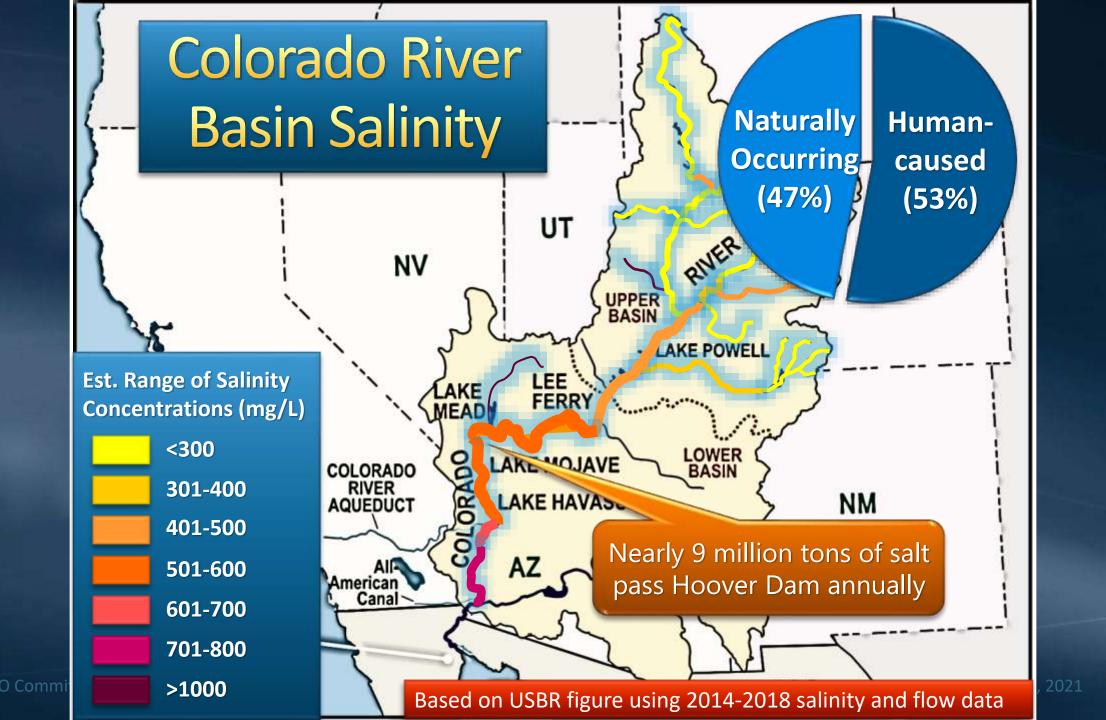
Why does salinity matter?

- Limits use of groundwater basins for storage
- Lowers usefulness and increases cost of recycled water
- Scaling of household appliances and plumbing fixtures; impacts industrial processes
- Reduces agricultural crop yields
- Imparts unpleasant taste in drinking water



Salinity in Metropolitan Supplies Historical Trends





Colorado River Basin Salinity Control Program

- Salinity Control Forum (1973); federal government and Basin states
- Salinity control measures
 - Improved irrigation practices
 - Rangeland management
 - Deep-well brine injection
- 1.2 million tons/year removed → 100 mg/L reduction
- ~\$40 million spent annually; 70% federally funded
- Current challenges: Paradox Valley; Funding





Paradox Valley Salinity Control Deep Well Injections



Paradox Valley Unit

Paradox Valley Salinity Control Status

- Well hasn't operated since 4.1 magnitude earthquake in March 2019
 - Reclamation analyzing injection and seismic data to optimize operations
- Final EIS analyzed replacement options new injection well, evaporation ponds, zero liquid discharge, and no action
- Lake Powell and Lake Mead provide significant buffers



Ms. Brenda Burman, Commissioner U.S. Burgau of Recharacion. 1849 C Street NW Washington, D.C., 20240-000

Dear Commissioner Burman

Comments on the Paradox Valley Unit of the Colorado River Basin Salinity Control Program

The Metropolitan Water District of Southern California (Metropolitan) has reviewed the Paradox Valley Unit (PVU) of the Colorado River Basin Salinity Control Program Final Environmental Impact Statement (PEIS). We appreciate the substantial efforts undertaken by the Bureau of Reclamation (Reclamation) to complete this effort. However, as the PVU is a critical component of the Colorado River Basin Salinity Control Program, Metropolitan is concerned with Reclamation's preferred No Action Alternative finding in the FEIS. Metropolitan respectfully requests that Reclamation not issue a Record of Decision for the FEIS and keep the door open for additional options to be explored that might be acceptable to Reclamation to continue reducing salinity in the Colorade River from sources in the Paradox Valley.

Metropolitan is a regional water wholesafer that delivers approximately two million acre-feet of water per year to its 26 public member agencies, who is turn provide water to nearly 19 million residents in Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. To supply the more than 300 cities and unincorporated areas in Southern California with safe and reliable water, Metropolitan owns and operates an extensive water system including the Colorade River Aqueduct, 16 hydroelectric facilities, nine reservoirs, 830 miles of largedenotes pipes, and five water treatment plants. Maintaining a high level of water quality in the Onesseer paper, and rive water vanishing pages.

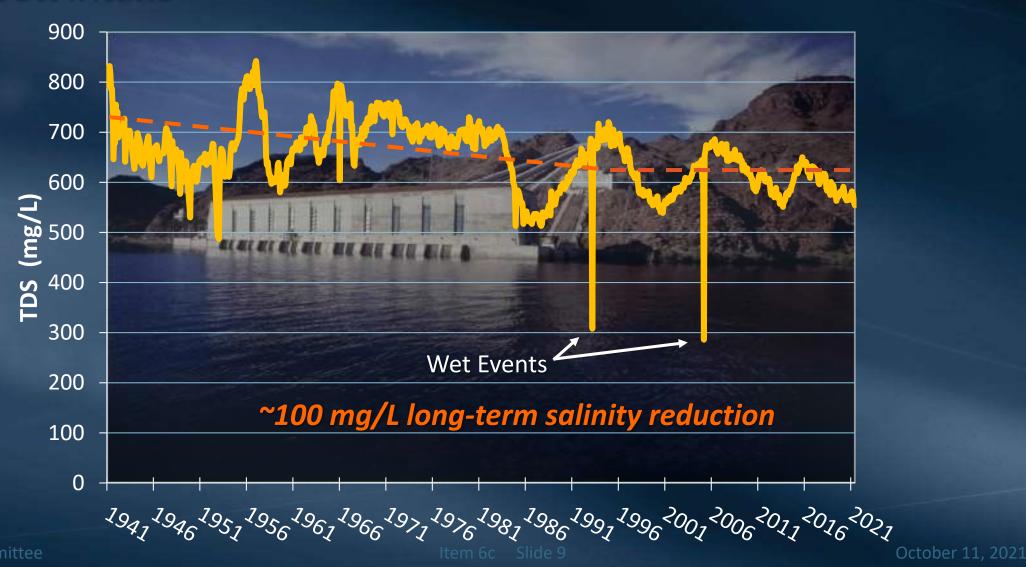
Colorado River is of utmost importance to Metropolitan and as a member of the Colorado River. Basin Salinity Control Forum and major funder for the Salinity Control Program, Metropolitan has made significant investments in controlling the salinity of the Colorado River.

Increasing salinity levels being about a myriad of challenges to Southeen California water utilities who have expressed concern with the high sait content in Colorado River supplies impacting potable supplies, brigation waser, recycled wastewater, and groundwater supplies. impacing points suppose, originion saler, review wantering, and growing the scaling potential or Hult salinity has an impact on various water size, including increasing the scaling potential or the largest single point-source admits control project for the Colorado River Basin Salinity control p the targest single principance manny courses propose me mit a constraint more constraint control Program. Metropolitan is concerned that failure to implement a replacement abstractive control program. Commercial and the contractions in increase in the Colorado River, resulting in significant commit damages and water supply impacts to water mers in Southern California.

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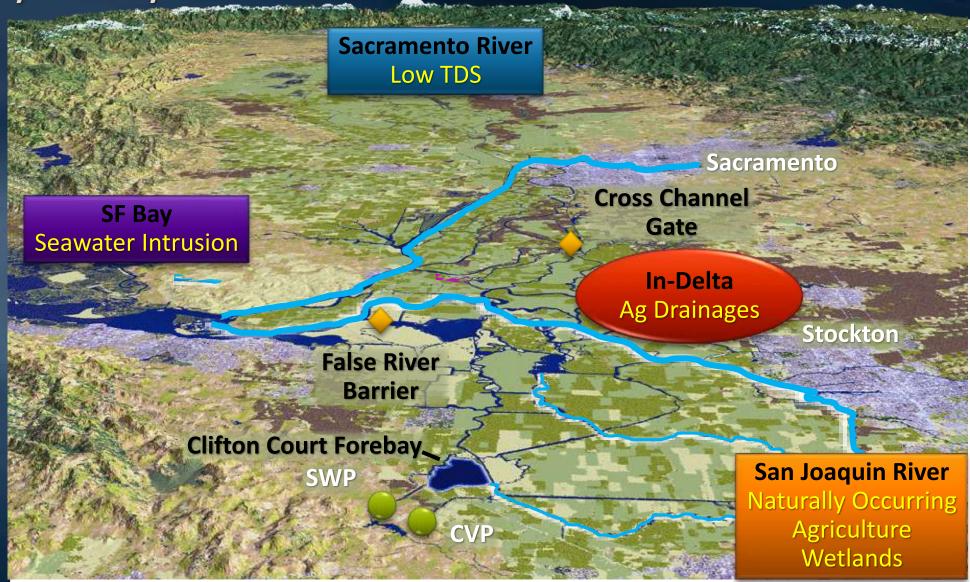
Colorado River Historical Salinity

Whitsett Intake



State Water Project

Primary Salinity Sources



Statewide Salinity Management Efforts

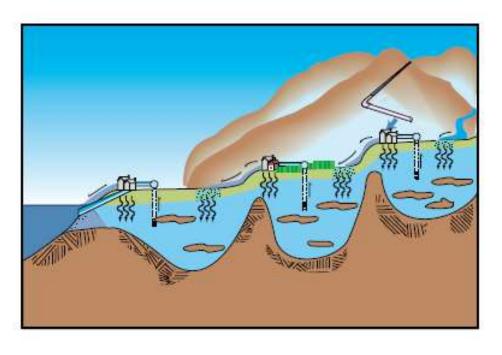
- Delta-State Water Project
 - Delta Cross Channel Gate
 - Emergency Drought Salinity Barrier
 - Salinity forecasts
- Central Valley Salinity Alternatives for Long-term Sustainability (CV-SALTS) Initiative
- Salt and Nutrient Management Plans



Salinity Management Study

- Study estimated \$95 million/yr economic benefit with 100 mg/L salinity reduction (1999 dollars)
- Metropolitan Board adopted 500 mg/L TDS objective, annual average
 - System Blending
 - Dependent on availability of sufficient SWP water
- Protect imported source water
- Support groundwater and recycled water resources

SALINITY MANAGEMENT STUDY Final Report







June 1999

O Committee Item 6c Slide 12

Salinity Economic Impact Model

- Developed by USBR and Metropolitan; updated in 2020
- Quantifies economic impacts of salinity
 - Reduced appliance/ plumbing fixtures useful life
 - Reduced crop yields
 - Groundwater & Recycling impacts
- \$500 million/yr damages to lower Colorado River Basin (2035 projection)





- Agriculture
- Residential
- Commercial
- Groundwater
- Recycled Water Utilities
- Industrial

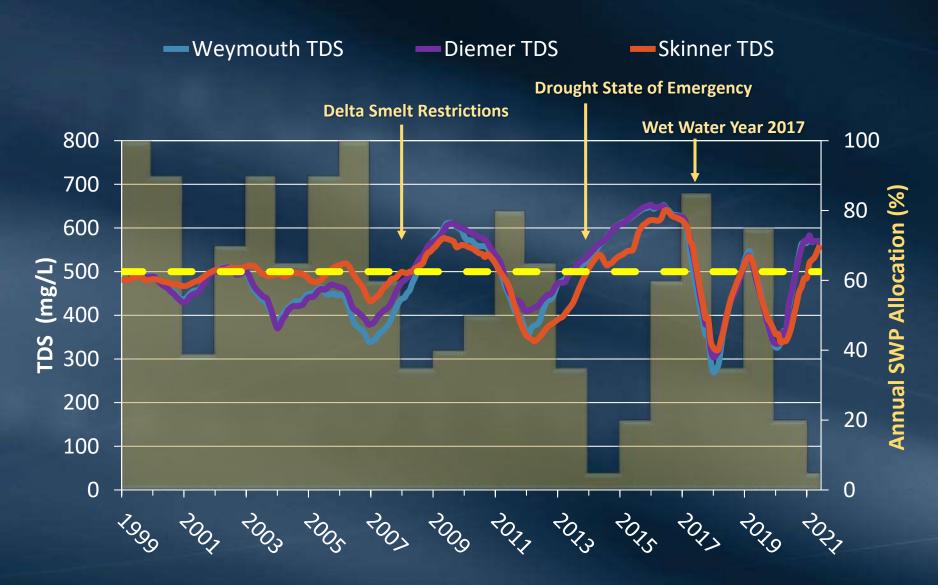
Efforts to Meet Salinity Goal

- Transfer and Exchange Programs
- Local Storage
 - Inland Feeder/ Diamond Valley Lake
- Operating Principles
 - Meet water quality requirements and salinity objectives





TDS Trends at Blend Plants



E&O Committee Slide 15 October 11, 2021

Moving Forward

- Work with Reclamation to find a long-term replacement for the Paradox Well and develop a sustainable funding plan for the Salinity Control Program
- Invest in reliable Delta water supplies
- Manage system to meet salinity management policy objectives
- Collaborate with stakeholders on regional approaches
 - Southern California Salinity Coalition
 - Future Supply Actions Funding Program
 - Participate in other state and national programs

