

Water Quality Management



Advisory Committee
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Sacramento, California

Outline of Discussion

- ◆ **Constituents of concern**
 - Phosphorus and selenium
- ◆ **Water Quality differences between Water Sources**
- ◆ **Water Quality objectives**
- ◆ **Management of water from each source related to water quality objectives by habitat needs**

Constituents of Concern

- ◆ **Previous studies described historical chemistry and limnology**
 - Eutrophication caused by several constituents
 - ❖ High phosphorus loading more critical than high nitrogen loadings in the Salton Sea
 - ❖ May be reduced with implementation of Sediment - Silt Total Maximum Daily Load (TMDL)
 - Selenium concentrations are potentially higher than future regulatory limitations
- ◆ **Other constituents may not be as critical to habitat success in the alternatives**

Silt Management included in All Alternatives

- ◆ **Assume implementation of Sediment-Silt TMDL in accordance with RWQCB report**
- ◆ **Silt removal prior to conveyance of water in canals in most alternatives**
- ◆ **Filtration of water prior to pumping into deep drip irrigation for Air Quality Management vegetation**

Determination of Water Quality in the Alternatives

- ◆ **Initial allocation of water from each source to different habitat/areas in the alternatives**
 - Marine Sea and Shoreline Sea
 - Shallow Habitat Complex
 - Air Quality Management
- ◆ **Determination of water quality needs of each area**
- ◆ **Development of water quality management methods for each area**

Phosphorus Concentrations vary for each Water Source

- ◆ **Can enter water from detergent and fertilizer residuals, wetted soils, and aquatic organisms**
- ◆ **Phosphorus concentrations are higher in tributaries than in Salton Sea (see next slide)**
 - Within the Salton Sea, phosphorus precipitates from the water and is removed through incorporation in fish and invertebrates
- ◆ **Phosphorus concentrations vary by season due to response to inflow characteristics, temperature, & other factors**

1999 Total Phosphorus Data

"Chemical and Physical Limnology of the Salton Sea, California - TM 8220-03-02 US Bureau of Reclamation"

	Summer	Fall	Winter	Spring	Annual Mean
Alamo River	530	583	744	1020	719
New River	1,010	1,100	1,160	1,150	1,110
White-water R	753	920	899	889	865
Salton Sea	53	26	107	88	69

All values in ug/L

Phosphorus Future Changes must be Estimated

- ◆ **Phosphorus loading in New River will decline as flows from Mexico are reduced**
- ◆ **Based on initial monitoring, phosphorus loadings are reduced due to implementation of Best Management Practices for Sediment - Silt TMDLs**
- ◆ **Draft TMDL for phosphorus for Salton Sea is 35 ug/L as Annual Mean value**

Determination of Phosphorus Criteria

- ◆ **Initially, considered relative elimination of nitrogen and phosphorus from inflows - this assumption used for cost estimates presented in December 2005**
- ◆ **Subsequently, met with RWQCB to discuss Nutrient TMDL Advisory Committee efforts**
 - Suggested goals would continue with phosphorus and nitrogen concentrations that would support eutrophic conditions

Considerations for Phosphorus Management

- ◆ **Focus use of Alamo River for areas sensitive to high phosphorus loadings**
- ◆ **Continue to evaluate phosphorus controls**
 - Physical/Chemical Treatment using alum
 - Additional source control
 - ◆ Changes in fertilizer practices
 - ◆ Separation of tilewater and tailwater drains with treatment
 - Natural Treatment
 - ◆ Will evaluate results of ongoing wetlands studies

Selenium Concentrations also Vary by Water Source

- ◆ **Higher selenium concentrations in tilewater than tailwater**
- ◆ **Future selenium concentrations may change as New River flows from Mexico are reduced**
- ◆ **Historic concentrations and future projections developed by source (see next slide)**

Historic and Projected Selenium Average Concentrations in No Action Alternative

	Alamo R	New R	White-water R	Imp. V. Drains	Local Flows	Sea or Brine Sink
Current	8	4	2.5	12.5	0.5	1
By 2020	10	4.5 to 5	2.5	12.5	0.5	1

All values in ug/L

Possible Selenium Criteria

◆ **5 ug/L (ppb)**

- USEPA: Chronic National Ambient Water Quality Criterion for freshwater organisms
- USEPA: Chronic California Standard for freshwater organisms

◆ **2 ug/L (ppb)**

- Recommended by USFWS as alternative to National Ambient Water Quality Criterion and California Standard for chronic exposure of freshwater organisms
- Listed as TMDL for water use in refuges and wildlife areas of Grasslands Area (Merced Co.)
- Being considered by Arizona & New Mexico

Considerations for Selenium Management

◆ **Determine projected selenium loadings and need for management for each habitat/area**

◆ **Continue to evaluate selenium controls**

- Physical/Chemical Treatment - Residuals (sludge) may be considered hazardous
- Bioreactors - evaluating for "scale up"
- Submerged Natural Treatment - evaluating for "scale up"
- Offset Mitigation using Treated Water for Mitigation Sites
- Separation of tilewater and tailwater drains with treatment

Summary

- ◆ **Water Quality management aspects of the alternatives will continue to be evaluated and included in the Draft PEIR**
- ◆ **Blending different sources of water will be considered to reduce phosphorus and selenium concentrations in sensitive habitats**
- ◆ **Not considering construction of water treatment at this time - need to be considered in Site-Specific Documents**