

# Draft Programmatic Environmental Impact Report (PEIR) Impact Assessments for Air Quality

November 7, 2006



## The Legislated Goals of the Restoration Program

### CHAPTER 13. SALTON SEA RESTORATION ACT

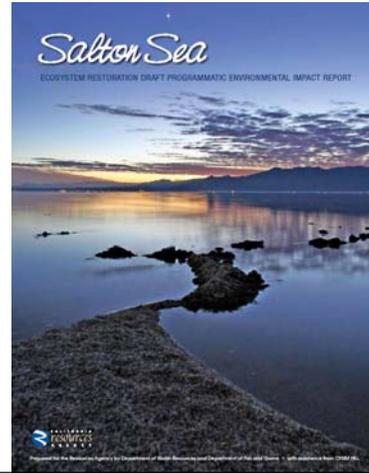
It is the intent of the Legislature that the State of California undertake the restoration of the Salton Sea ecosystem and the permanent protection of the wildlife dependent on that ecosystem.

**The preferred alternative shall provide the maximum feasible attainment of the following objectives:**

- (1) Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea.
- (2) **Elimination of air quality impacts from the restoration projects.**
- (3) Protection of water quality.

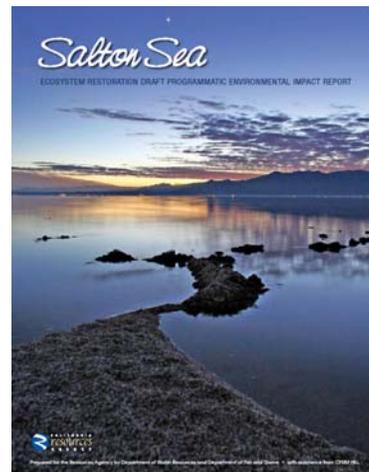
## PEIR Air Quality Impact Assessments – Where to Find What

- ◆ **Chapter 10 - Climate and Air Quality.**  
*Includes Existing Conditions and Impact Assessment.*
- ◆ **Appendix E, Attachments E1 and E2.**  
*Emission summary and emissions calculations and assumptions for construction and operation.*
- ◆ **Appendix E, Attachment E3.**  
*Emission calculations and assumptions for exposed playa.*
- ◆ **Appendix E, Attachments E4 to E12.**  
*Memos on air quality subjects such as health effects, salt efflorescence potential, and microclimate.*
- ◆ **Appendix H-3. Final memo - Identify and Outline Measures to Control Playa Emissions.**

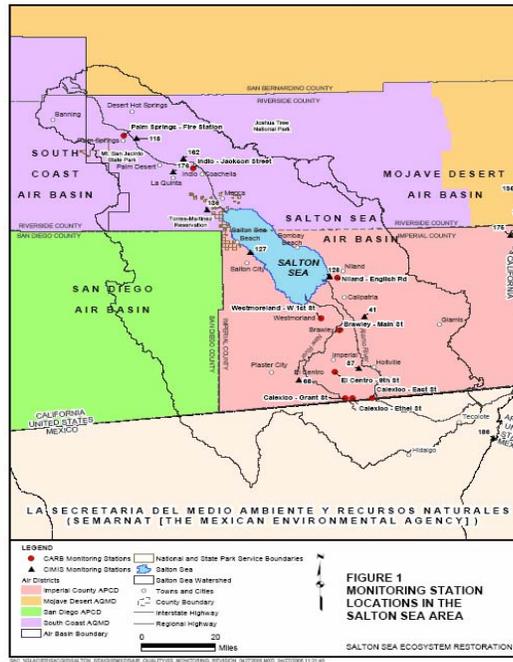


## PEIR Air Quality Impact Assessments

- ◆ **Existing setting**
- ◆ **Development of alternatives**
- ◆ **Environmental consequences**
  - ⌘ **Significance criteria**
    - ❖ Quantitative
    - ❖ Qualitative (e.g., odors)
  - ⌘ **Screening level analysis**
  - ⌘ **Emissions estimation**
    - ❖ Assumptions and limitations
  - ⌘ **Comparison to significance criteria**
  - ⌘ **Comparison of alternatives**



- Air Quality Setting:
- Air Basin Boundaries and Agency Jurisdictions
  - Monitoring and Meteorological Stations in Area



## Existing Air Quality Issues



Portions of the Salton Sea Watershed With Air Concentrations that Exceed National and California Ambient Air Quality Standards (NAAQS and CAAQS)

County (or Portion of)	Carbon Monoxide	Fine Particulate Matter (PM10)	Fine Particulate Matter (PM2.5)	Ozone
Imperial	C	N and C		N and C
Riverside		N and C		N and C
San Bernardino		N and C	N and C	N and C
San Diego		C	C	N and C

N = Ambient air concentrations exceed the National Ambient Air Quality Standards  
 C = Ambient air concentrations exceed the California Ambient Air Quality Standards  
 Source: California Air Resources Board, Area Designations, [www.arb.ca.gov](http://www.arb.ca.gov)

## Significance Criteria for Air Quality Impact Analysis

- ◆ **Construction emissions**
  - ⌘ Fugitive dust (PM<sub>10</sub>)
  - ⌘ Exhaust (NO<sub>x</sub>, diesel PM<sub>10</sub>)
- ◆ **Operations and maintenance emissions**
- ◆ **Exposed playa areas**
  - ⌘ Fugitive dust (PM<sub>10</sub>, HAPs)
- ◆ **General conformity applicability**
- ◆ **Odors**
- ◆ **Microclimate**

## Analysis Methodologies

- ◆ **Construction emissions**
  - ⌘ Material quantities and acreages for the main components
  - ⌘ Emission factors
- ◆ **Operations and maintenance emissions**
  - ⌘ Percent of Peak Construction Year emissions estimates
- ◆ **Exposed playa areas**
  - ⌘ Preliminary PI-SWERL data collected at the Salton Sea, threshold wind speeds, wind data, seasonality
- ◆ **General conformity applicability**
- ◆ **Odors**
- ◆ **Microclimate**

## PEIR Impact Analysis: Emissions from Construction

- ◆ **Construction emissions**
  - ⌘ Fugitive dust (PM<sub>10</sub>, HAPs)
  - ⌘ Exhaust (NO<sub>x</sub>, diesel PM<sub>10</sub>)
- ◆ **Emissions estimation methodology**
  - ⌘ Material quantities and acreages for the main components
- ◆ **Assumptions and limitations**
- ◆ **Primary contributors to predicted emissions**
  - ⌘ Fugitive dust – unpaved roads
  - ⌘ NO<sub>x</sub> – barges
  - ⌘ Diesel PM<sub>10</sub> – barges
- ◆ **Results (presented in bar chart for comparative purposes)**



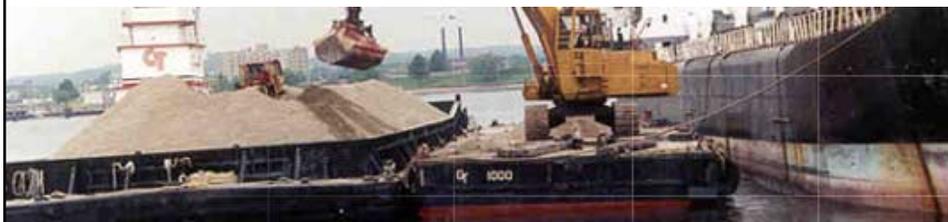
Construction Emissions – PM10 and Nonattainment Pollutant Precursors (e.g., NOx)

- ◆ **Some of the alternatives include large construction projects, which may adversely affect regional air quality.**



Construction Emissions

- ◆ **Some of the alternatives considered would involve transport and placement of 80 to 100 million cubic yards of rock and gravel to form barriers and dikes.**

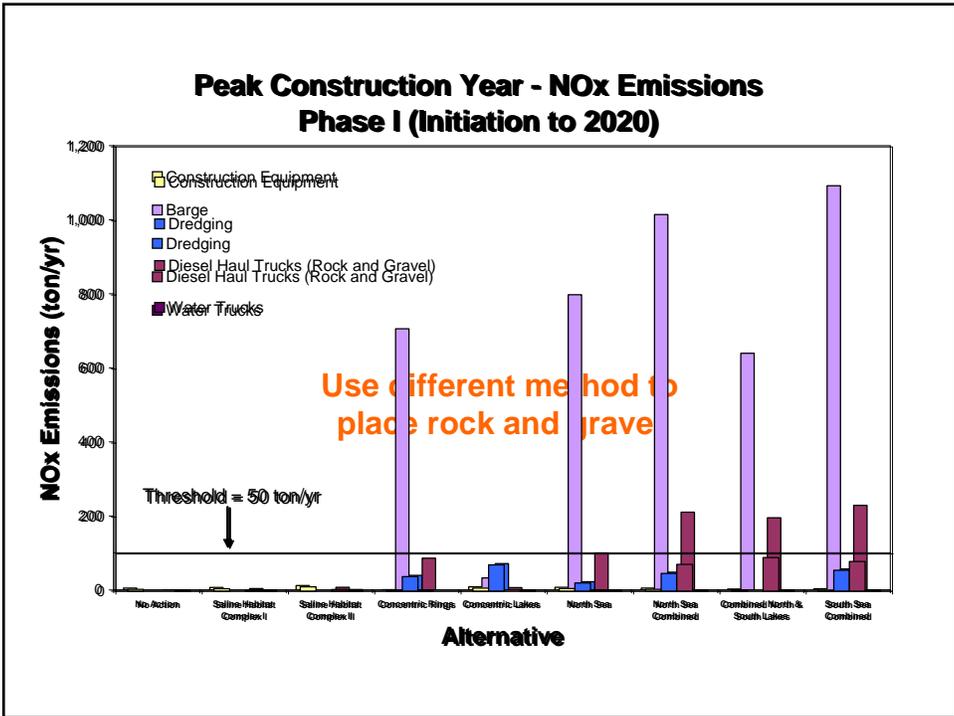
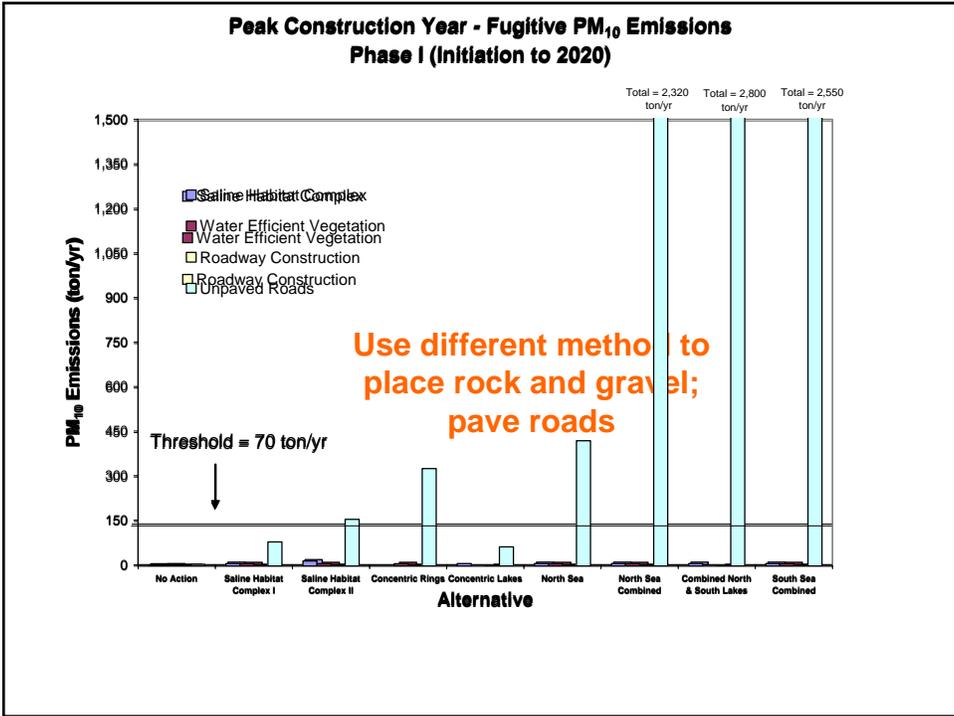


# Use of Innovative Construction Methods Such as Conveyor Systems Could Significantly Reduce Construction Related Emissions



# Control of Fugitive Dust During Construction





## PEIR Impact Analysis: Emissions from Operations and Maintenance

**Simple assumption that emissions would represent a fixed percent of peak construction year emissions estimates (1 to 10 percent)**



## PEIR Impact Analysis: Emissions from Exposed Playa Areas

### ◆ Emissions estimation methodology

- ⌘ Emissions without control
- ⌘ Emissions after AQM

### ◆ Assumptions and limitations

### ◆ Contributors to predicted emissions

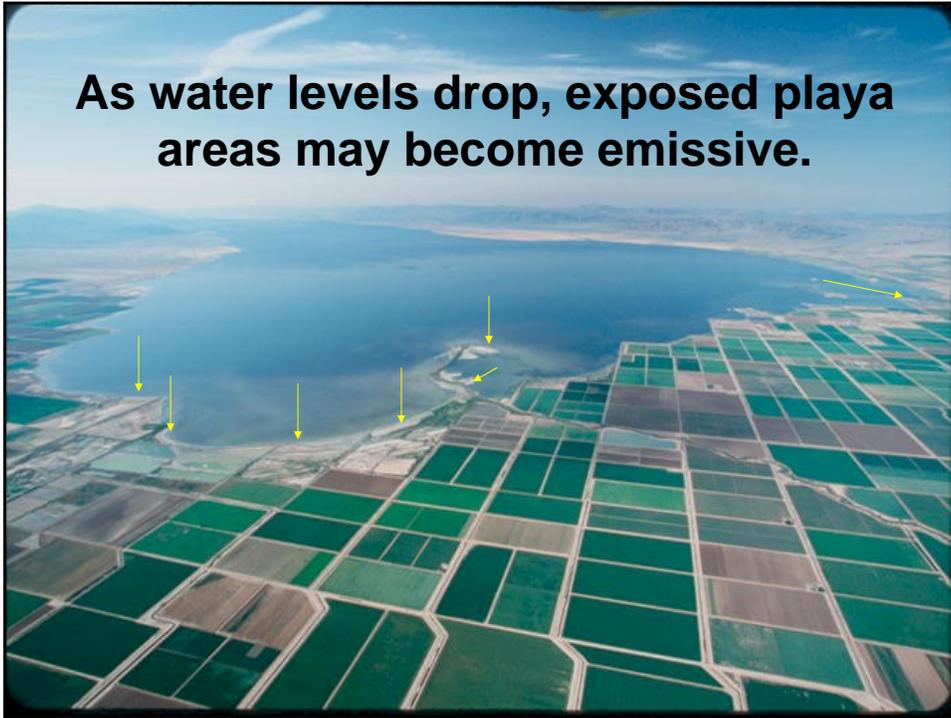
- ⌘ Size of exposed areas
- ⌘ Level of control proposed
- ⌘ Measured wind speeds
- ⌘ Seasonal changes in playa stability & emissivity

### ◆ Results (presented in bar chart for comparative purposes)

PHOTO 1: DUST STORM EVENT AT DAVIS ROAD (photo by M&E Friends)



**As water levels drop, exposed playa areas may become emissive.**



### Fugitive Dust (PM10)



◆ **Currently wet or flooded areas could become dry and exposed and thereby become sources of windblown dust.**



## Approaches Must Recognize Uncertainty Regarding Location and Extent of Emissive Areas

- ◆ Monitor newly exposed playa for stability and emissivity
- ◆ Transition areas deemed stable to long-term monitoring
- ◆ Implement proven controls on areas that exhibit substantial risk of causing unacceptable air quality impacts



## Proven Control Measures for Air Quality Management

- ◆ If exposed playas are emissive, air quality mitigation would be implemented with irrigated, salt-tolerant vegetation or other proven dust control measures



Approaches Must be Consistent with BACM and Air District Regulations

**As serious PM10 nonattainment areas, SCAQMD and ICAPCD must require implementation of Best Available Control Measures (BACM) to limit emissions from significant sources under their jurisdiction.**

**For example, ICAPCD Rule 804, Control Measures for Disturbed Open Areas:**

- ◆ Apply water or dust suppressants to all unvegetated areas
- ◆ Establish vegetation on all previously disturbed areas
- ◆ Pave, apply and maintain gravel, or apply and maintain chemical stabilizers

## Toolbox of Possible Dust Control Measures

### Options that require water:

- ⌘ Stabilization with brine (enhanced salt crust)
- ⌘ Water-efficient vegetation
- ⌘ Event-driven irrigation
- ⌘ Regular watering
- ⌘ Seasonal surface wetting

### Options that require minimal water:

- ⌘ Gravel cover
- ⌘ Chemical stabilizers
- ⌘ Tillage
- ⌘ Sand fences
- ⌘ Moat and row



## Recommendations of Air Quality Working Group in March 2006

- ◆ **Portions of exposed playa areas would likely be emissive; this may be seasonal.**
- ◆ **Inflow water should be allocated for future potential Air Quality Management (AQM) needs.**
- ◆ **Irrigated vegetation should be carried forward as one of the control measures for consideration in the PEIR.**
- ◆ **The “tool box” of dust control measures should remain open. No options should be eliminated from consideration unless proven infeasible or ineffective.**
- ◆ **Assume implementation of water-based control on 50% of playa area; assume other areas either not emissive or controlled by other means.**

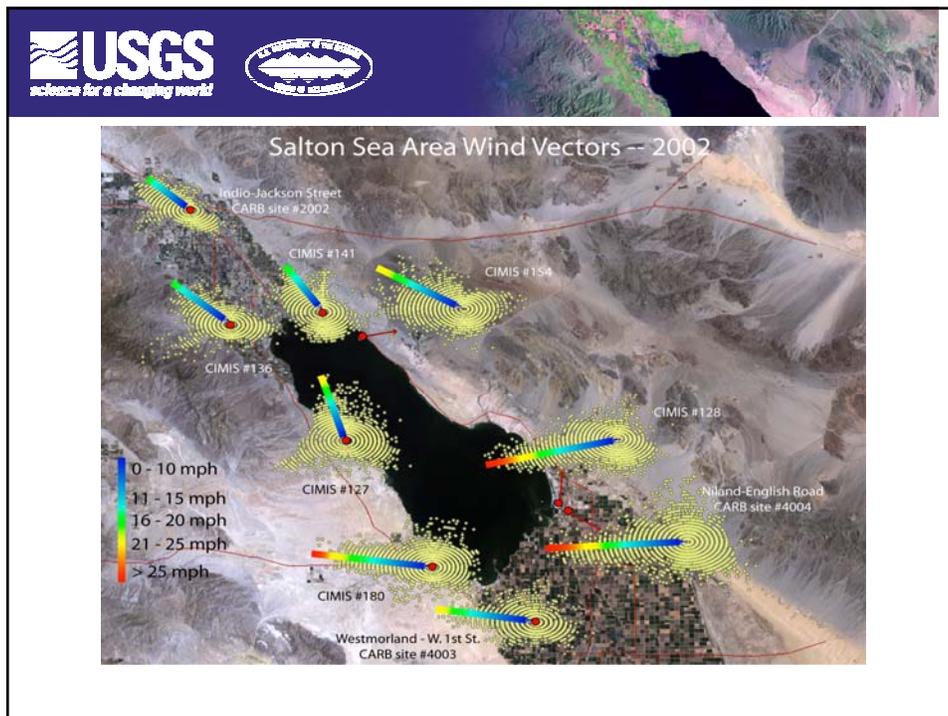
## Additional Assumptions for Resource Allocation for AQM in the PEIR

Assume allocation of **1 acre foot per acre per year** for 50% of exposed area under each alternative.

- ◆ **Should allocated resources prove to be in excess** of actual AQM needs, re-allocate to other uses in the Ecosystem Restoration program (e.g., habitat).
- ◆ **Should additional resources** be required for AQM, supplemental environmental documentation would likely be required.

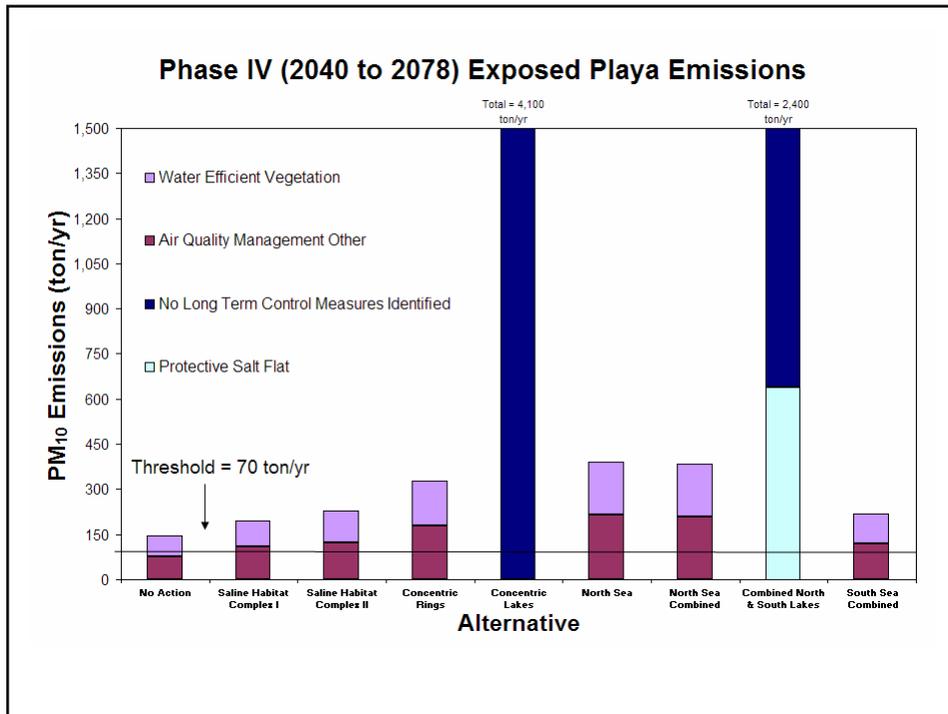
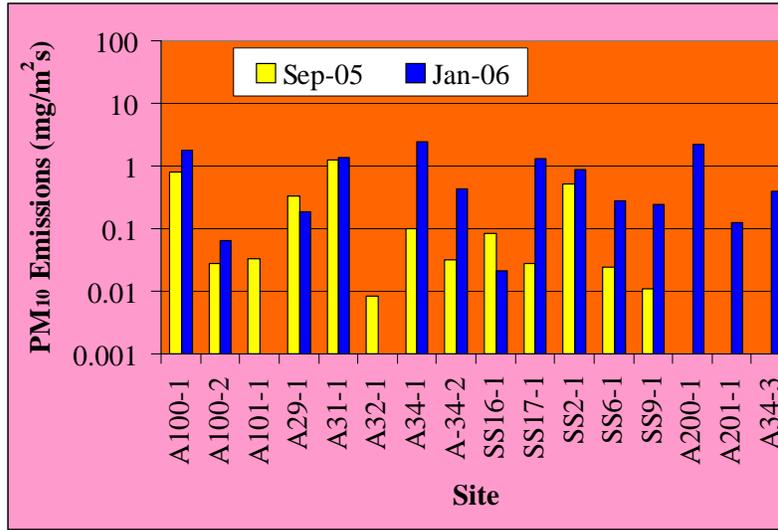
## Exposed Playa Area (acres) Maximum in Phase 4 (2041 to 2078)

Alternative	1	2	3	4	5	6	7	8
No Action Alternative	Saline Habitat Complex I	Saline Habitat Complex II	Concentric Rings	Concentric Lakes	North Sea	North Sea Combined	Combined North & South Lakes	South Sea Combined
47,000 + 51,000	83,000	91,000	126,000	128,000	118,000	131,000	103,000	128,000



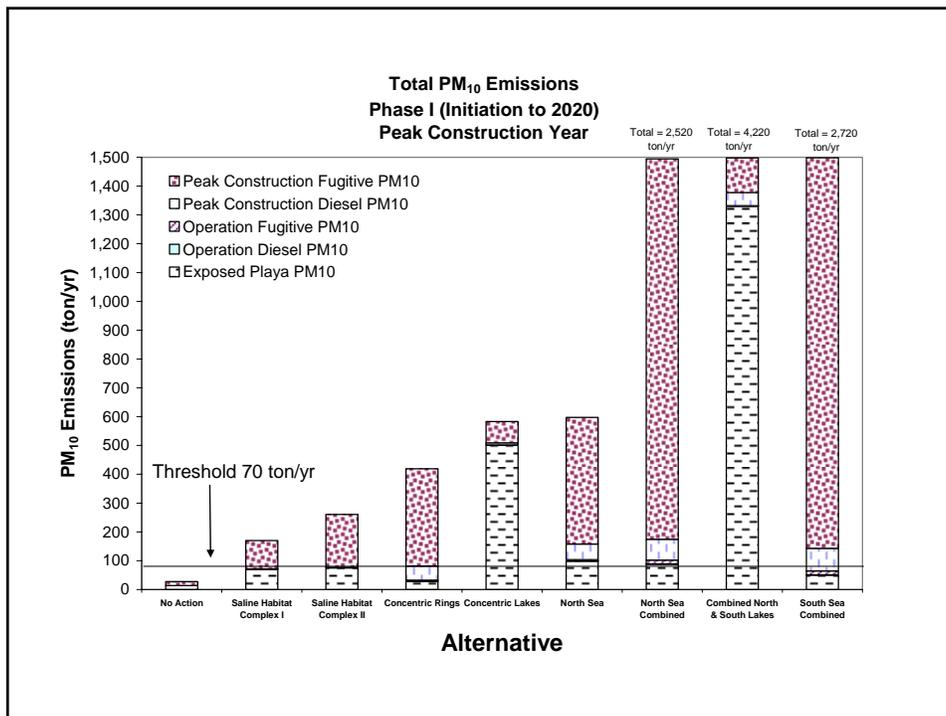


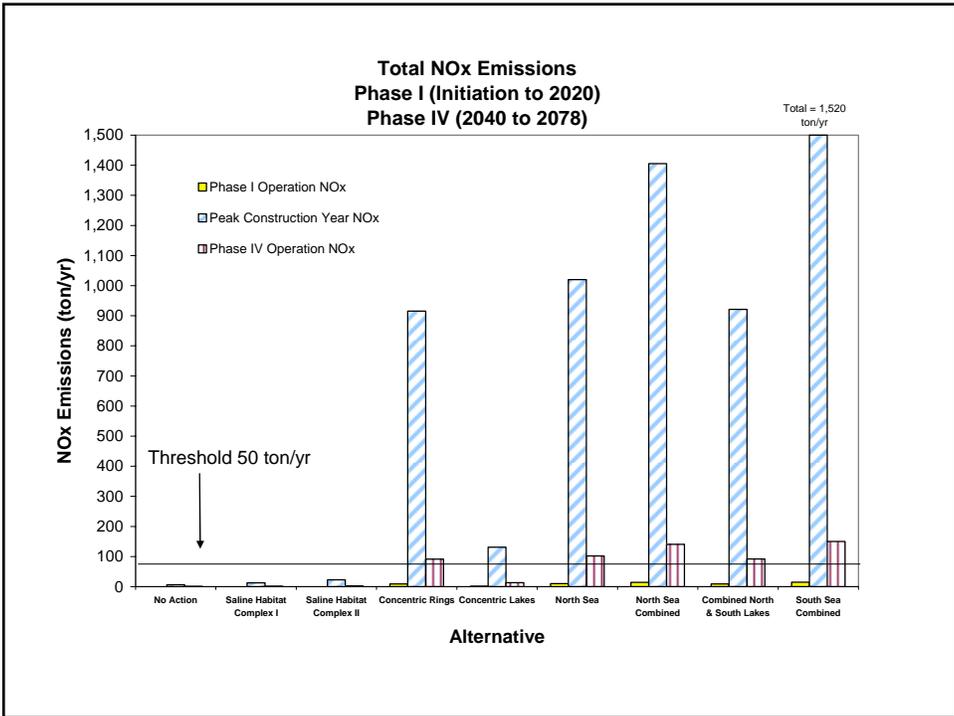
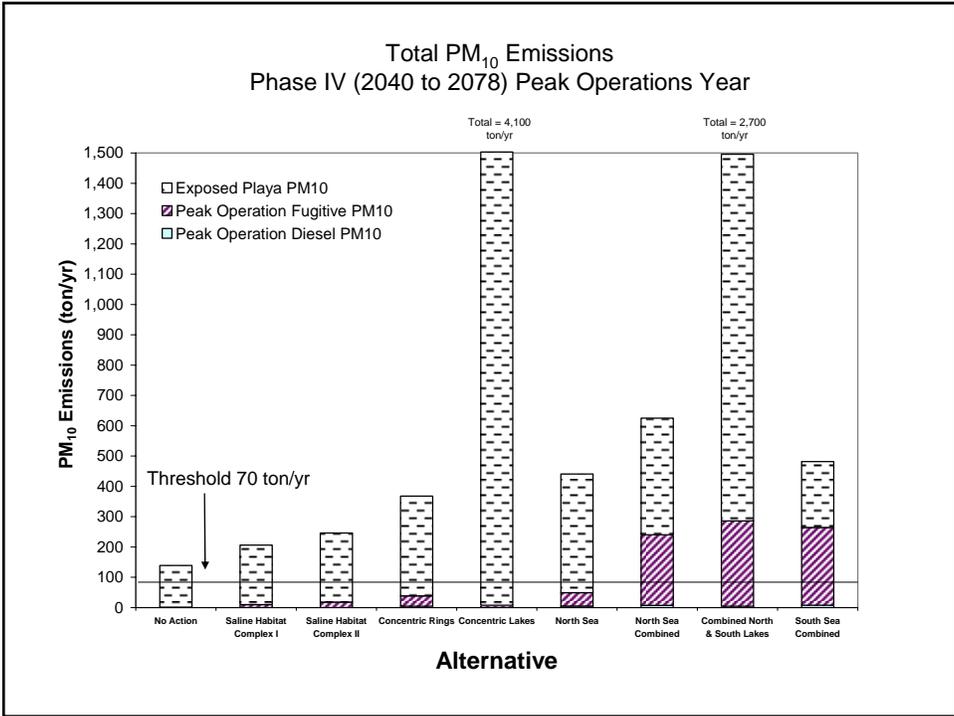
In general, January emissions measured by PI-SWERL > September values at same sites



## Impact Analysis for General Conformity Applicability

- ◆ **Sum of Phase I construction and operation emissions compared to No Action Alternative**
- ◆ **Phase IV operation emissions compared to No Action Alternative**
- ◆ **Comparison of net increases in emissions to de minimis thresholds**
  - ⌘ **Thresholds exceeded, formal determination needed**
- ◆ **Comparison of net emissions to regional inventory**
  - ⌘ **Not regionally significant**
- ◆ **Results (bar charts)**





## Impact Analysis for Odors

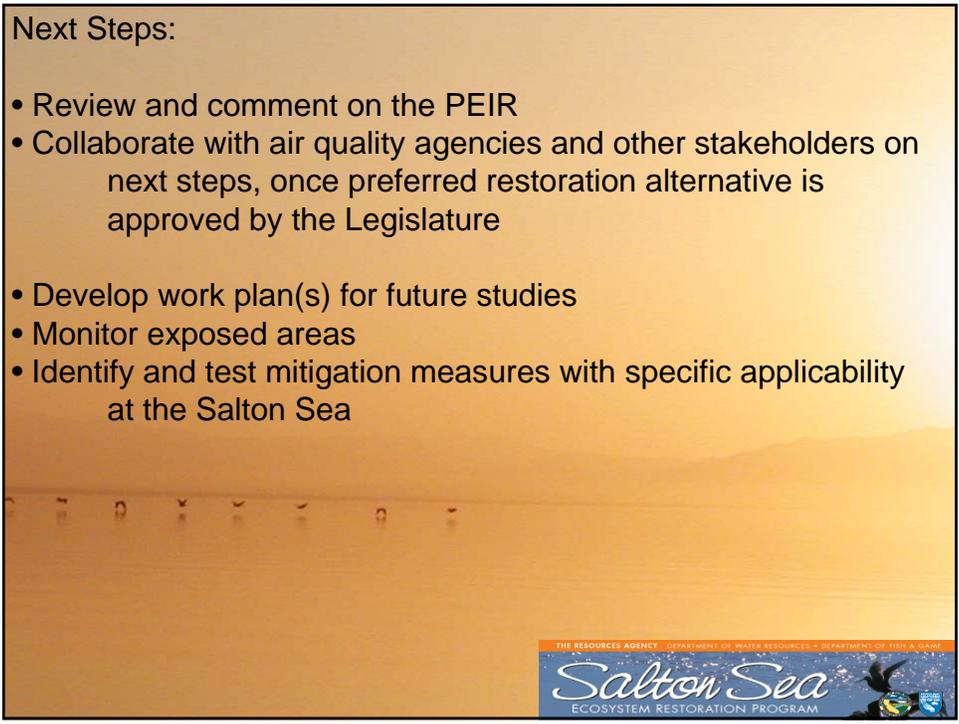
- ◆ **Sources of odorous emissions under each alternative:**
  - ⌘ **Water quality and stratification**
  - ⌘ **Fish and algal dieoffs**
- ◆ **Results of the water quality modeling indicate that alternatives with shallower water bodies would result in better mixing of the water column, decreasing summer stratification periods, and lessening potential build up of hydrogen sulfide and ammonia compared to Existing Conditions**
- ◆ **Conversely, deeper water bodies would result in increases in the length of stratification periods, allowing greater buildup and eventual releases**
- ◆ **Water bodies in the south would tend to be shallower, and higher winds in the south would provide more energetic mixing and aeration**

## Impact Analysis for Microclimate

- ◆ **All alternatives are predicted to result in potentially significant changes in microclimate of shoreline areas where water levels are predicted to recede, with lesser impacts on shoreline areas that will remain adjacent to water bodies.**
- ◆ **Project level analysis would need to do more detailed analysis and mitigation planning.**

Next Steps:

- Review and comment on the PEIR
- Collaborate with air quality agencies and other stakeholders on next steps, once preferred restoration alternative is approved by the Legislature
- Develop work plan(s) for future studies
- Monitor exposed areas
- Identify and test mitigation measures with specific applicability at the Salton Sea





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For more  
information:  
<http://www.saltonseawater.ca.gov/>

