

**Salton Sea Ecosystem Restoration:
An Integrated Monitoring and Assessment Plan (MAP)
and Other Air Quality Investigations**

October 11, 2007

**Salton Sea Air Quality Technical Working
Group Meeting
Ontario, CA**

Preferred Alternative Phases

- ◆ Implementation of Preferred Alternative will be accomplished in four periods or phases
- ◆ (1) Pre-Construction Phase (Five-Year Plan)
 - ⌘ Pilot and demonstration projects
 - ⌘ Implementation of Early Start Habitat
 - ⌘ Project-level and site-specific design, analyses, and environmental documentation
 - ⌘ Collection of additional environmental data
- ◆ Subsequent phases include: (2) Major Construction; (3) Construction Completion; and (4) Operations and Maintenance

The Five Year Plan

What is really important to monitor in the next 5 years?

- ◆ **Establish baseline/background conditions, to allow monitoring of changes in conditions due to future management actions**
- ◆ **Develop information needed to implement the Preferred Alternative**
- ◆ **Support design of program and project elements, including mitigation measures**
- ◆ **Support studies related to ecosystem restoration project feasibility**

Monitoring and Assessment Plan (MAP)

“Monitoring of the ecosystem is critical to the success of restoration”.

USGS Salton Sea Science Office

Overarching Goal of the Monitoring and Assessment Plan (MAP)

- ◆ **Implement a data collection, analysis, management, and reporting system to inform and guide management actions for the restoration of the Salton Sea ecosystem.**

Objectives of the Monitoring and Assessment Plan (MAP)

- ◆ **Conduct a retrospective analysis of data to determine its relevance and/or applicability for inclusion in the MAP.**
- ◆ **Incorporate relevant existing data in the MAP.**
- ◆ **Measure and assess changes to the Salton Sea ecosystem from baseline or other reference conditions.**
- ◆ **Provide information to refine hypotheses of ecosystem functions.**
- ◆ **Provide information to assess performance of project implementation and management actions.**
- ◆ **Store, manage, and make monitoring data publicly available in a timely manner.**

Ecosystem Components to be Monitored in Support of Ecosystem Restoration

- ◆ Geographic/Geologic
- ◆ Hydrologic – surface water, ground water, water quality, and contaminants
- ◆ Biologic – plankton, benthos/aquatic invertebrates, fish, birds
- ◆ **Air quality**
- ◆ Episodic and unpredictable events
- ◆ Socioeconomic

One Priority: Background or Baseline Air Quality Conditions

- ◆ Critical to answering questions regarding air quality impacts resulting from management actions
- ◆ Critical to meeting the legislated mandate: elimination of impacts associated with restoration to the maximum extent feasible
- ◆ Air quality monitoring plan is in development, and needs input and oversight by the Air Quality Technical Working Group

**Air Quality Monitoring Network:
Plan Development and
Implementation**

Later this afternoon...

Other Air Quality Investigations

**An Integrated Approach to
Monitoring**

Integrated Approach to Monitoring

<u>Air Quality Issue</u>	<u>Monitoring Data/Shared Information</u>	<u>Integrated Resource Areas</u>
<i>Particulate matter (PM10, PM2.5) (fugitive dust) from exposed playa</i>	Wind data, meteorological and ambient air quality monitoring data, soil/sediment characterization, water resources data on exposed areas and fetch estimates	Air quality impacts, Biological/health impacts
<i>Particulate matter (PM10, PM2.5) from disturbed areas (fugitive dust); fuel combustion for construction</i>	Wind data, meteorological data, ambient air quality monitoring data, construction requirements	Air quality impacts, Biological/health impacts
<i>Ozone precursors - NOx from fuel combustion for construction</i>	Location of source materials, transport distances, transport methods, construction requirements	Geotech/construction requirements

Integrated Approach to Monitoring, cont.

<u>Air Quality Issue</u>	<u>Monitoring Data/Shared Information</u>	<u>Integrated Resource Areas</u>
<i>Hazardous air pollutants in fugitive dust from exposed playa or construction</i>	Soil/sediment sampling and characterization, PM studies, construction requirements	Air quality impacts, Biological/health impacts, Agricultural impacts, Water quality impacts
<i>Hazardous air pollutants - Diesel PM10 from fuel combustion for construction</i>	Location of source materials, transport distances, transport methods	Geotech/construction requirements

Integrated Approach to Monitoring, cont.

<u>Air Quality Issue</u>	<u>Monitoring Data/Shared Information</u>	<u>Integrated Resource Areas</u>
<i>Odors and Nuisance Complaints</i>	Water quality, fish kills, bird kills, episodic events	Water quality, Biological/health impacts
<i>H2S</i>	Water quality, Geothermal data, episodic events	Water quality, geothermal, Biological/health impacts
<i>Ammonia</i>	Water quality, episodic events	Water quality, Biological/health impacts

Integrated Approach to Monitoring, cont.

<u>Air Quality Issue</u>	<u>Monitoring Data/Shared Information</u>	<u>Integrated Resource Areas</u>
<i>Microclimate</i>	Wind data, temperature data, ambient air quality monitoring data, water resources data on exposed areas and fetch estimates	Air quality impacts, Agricultural impacts
<i>Salt deposition on crops</i>	Soil/sediment sampling and characterization	Air quality impacts, Biological/health impacts, Agricultural impacts, Water quality impacts
<i>Nitrate deposition on native vegetation</i>	Soil/sediment sampling and characterization	Air quality impacts, Biological/health impacts, Agricultural impacts, Native vegetation impacts, Water quality impacts

Integrated Approach to Monitoring

<u>Air Quality Issue</u>	<u>Monitoring Data/Shared Information</u>	<u>Integrated Resource Areas</u>
<i>Greenhouse gases and climate change</i>	Emissions from fuel combustion in construction equipment, sequestration in biological resource areas, emissions from the lake (?), episodic events	Water quality, Geotech/construction requirements, biology
<i>Environmental justice issues associated with air quality exposures</i>	Wind data, temperature data, ambient air quality monitoring data, soil/sediment characterization	Air quality impacts, Biological/health impacts, Agricultural impacts, Water quality impacts

Next Steps

- ◆ **Development of an air quality monitoring program plan**
- ◆ **Identify roles and responsibilities**
- ◆ **Facilitate and integrate input from local, Tribal, state, and federal agencies and other stakeholders (Technical Working Group)**
- ◆ **Meetings and decision making**
- ◆ **Agreements and contracts to implement monitoring program**
- ◆ **Pilot and demonstration scale projects**
- ◆ **What else???**