SALTON SEA
RESTORATION
Project

Symposium III
alternatives packet

Jan 13-14, 2000
For Additional information Contact:

Salton Sea Authority

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Bureau of Reclamation

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P.O. Box 61470  
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702-293-8129

Project Web Site  
“www.lc.usbr.gov”
PROJECT GOALS

• Maintain Agricultural Drainage Repository
• Provide a safe, productive environment for birds and endangered species
• Restore Recreational Uses
• Maintain a viable Sport Fishery
• Enhance opportunities for economic development
No Action

Salton Sea Alternatives

Inflow 1.36 Million af/yr
-224 below sea level

Inflow 1.06 Million af/yr
-242 below sea level

Inflow .8 million af/yr
-251 below sea level

af/yr=acre feet per year
NO ACTION

*Environmental Impacts*

- Significant impact to fisheries would result from increases in salinity
- Bird species would be threatened by loss of fisheries
- A significant drop in Sea elevation and decrease in surface area could occur if inflows to the Sea decrease in the future
- Local economic conditions and recreational opportunities would continue to decline
Alternative 1

Salton Sea Alternatives

Major Actions in the First 30 Years

Accelerated Export

150,000 AFY

Inflow 1.36 MAFY

Evaporation Pond 1 N
Evaporation Pond & Pupfish Pond
Accelerated Export
North Wetland Habitat

Inflow 1.06 & 0.8 MAFY

Displacement Dike

Components

Common Elements

- Improve Recreation
- Fish Harvest
- Wildlife Disease Program
- Shoreline Clean up
- Strategic Science Plan
- Long-Term Management Plan

San Felipe Creek

Displacement Dike

Pupfish Pond

North Wetland Habitat

Whitewater River

Alamo River

New River

Salton Sea

Components on line at:

MAFY - million acre-feet per year
AFY - acre-feet per year


Alternative # 1

Environmental Impacts

- Long term benefits compared to No Action for fisheries and bird species
- Beneficial effects to recreation and the local economy from restoration activities
- Visual changes due to alterations in the landscape in the vicinity of ponds and dike
- Potential traffic impacts (delays) between material borrow site and the Sea during construction activities
- Fugitive dust problems could occur during construction
- Temporary disturbance of fisheries would occur during construction
- Possible disturbance of cultural and Native American resources
- Additional effects associated with export options could occur during Phase 2.

Summary of Estimated Costs

Incremental Costs by Component:

<table>
<thead>
<tr>
<th>Item</th>
<th>Inflows Ac-ft/yr</th>
<th>Construction Costs ($ M)</th>
<th>O&amp;M&amp;R Costs ($ M/yr)</th>
<th>Energy Costs ($ M/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components Proposed</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>at 1.36 MAF/Y Inflows</td>
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<tr>
<td>Evaporation Ponds:</td>
<td>424.0</td>
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<tr>
<td>Fish Harvesting</td>
<td>2.0</td>
<td>TBD</td>
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<tr>
<td>Recreation facilities</td>
<td>2.0</td>
<td>0.1</td>
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<tr>
<td>Shoreline Cleanup</td>
<td>0.5</td>
<td>0.2</td>
<td></td>
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</tr>
<tr>
<td>North Shorebird Ponds</td>
<td>15.0</td>
<td>0.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wildlife Disease</td>
<td>0.0</td>
<td>0.1</td>
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<tr>
<td><strong>Alternative Costs at 1.36 MAF/YR</strong></td>
<td><strong>$ 443.5</strong></td>
<td><strong>$ 1.6</strong></td>
<td><strong>$ 0.1</strong></td>
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</table>

| Components added              |                  |                          |                      |                       |
| at 1.06 MAF/Y Inflows         |                  |                          |                      |                       |
| Displacement Dike              | 1.06             | 450.0                    | 1.4                  | 0.0                   |
| Flood flows (existing)         | 10.0             | 0.4                      |                      |
| **Additional Costs at 1.06 MAF/Y** | **$ 460.0** | **$ 1.8**                | **$ 0.0**            |
Enhanced Evaporation System at Bombay Beach

Periodic Flood Flows

Alternative 2
Salton Sea Alternatives

Major Actions in the First 30 Years

Inflow 1.36 MAFY
- Enhanced Evaporation System
- North Wetland Habitat

Inflow 1.06 & 0.8 MAFY
- Displacement Dike
- Periodic Flood Flows

Common Elements
- Improve Recreation
- Fish Harvest
- Wildlife Disease Program
- Shoreline Clean up
- Strategic Science Plan
- Long-Term Management Plan

MAFY - million acre-feet per year
AFY - acre-feet per year
Alternative #2

Environmental Impacts

- Long term benefits compared to the No Action for fisheries and bird species
- Beneficial effects to recreation and the local economy from restoration activities
- Fugitive dust problems could occur during construction
- Possible disturbance of cultural and Native American resources
- Loss of desert habitat and possible salt drift at and near Enhanced Evaporation System sites
- Visual changes due to alterations in the landscape in the vicinity of ponds, dike structures, and Enhanced Evaporation System towers at the Bombay Beach site
- Potential adverse impacts to migrating birds due to tower configuration and height, and salt mist

Summary of Estimated Costs

Incremental Costs by Component:

<table>
<thead>
<tr>
<th>Item</th>
<th>Inflows Ac-ft/yr</th>
<th>Construction Costs ($ M/)</th>
<th>O,M&amp;R ($ M/yr)</th>
<th>Energy ($ M/yr)</th>
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</thead>
<tbody>
<tr>
<td>Components Proposed</td>
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<tr>
<td>at 1.36 MAF/Y Inflows</td>
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<tr>
<td>Enhanced Evaporation System</td>
<td>286.0</td>
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<td>Recreation facilities</td>
<td>2.0</td>
<td>0.1</td>
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<tr>
<td>Shoreline Cleanup</td>
<td>0.5</td>
<td>0.2</td>
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<tr>
<td>North Shorebird Ponds</td>
<td>15.0</td>
<td>0.0</td>
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<tr>
<td>Wildlife Disease</td>
<td>0.0</td>
<td>0.1</td>
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<tr>
<td><strong>Alternative Costs at 1.36 MAF/YR</strong></td>
<td><strong>$ 304.5</strong></td>
<td><strong>$ 9.1</strong></td>
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<td>at 1.06 MAF/Y Inflows</td>
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<td>Flood flows (existing)</td>
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<td><strong>Additional Costs at 1.06 MAF/Y</strong></td>
<td><strong>$ 460.0</strong></td>
<td><strong>1.8</strong></td>
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Alternative 3

Salton Sea Alternatives

Major Actions in the First 30 Years

Inflow 1.36 MAFY
- Enhanced Evaporation System
- North Wetland Habitat

Inflow 1.06 & 0.8 MAFY
- Displacement Dike
- Periodic Flood Flows

Common Elements
- Improve Recreation
- Fish Harvest
- Wildlife Disease Program
- Shoreline Clean up
- Strategic Science Plan
- Long-Term Management Plan

MAFY - million acre-feet per year
AFY - acre-feet per year

Components on line at:
San Felipe Creek
Whitewater River
North Wetland Habitat
Salt River
New River
Alamo River

Periodic Flood Flows
Displacement Dike
Alternative #3

Environmental Impacts

- Long term benefits compared to the No Action for fisheries and bird species
- Beneficial effects to recreation and the local economy from restoration activities
- Fugitive dust problems could occur during construction
- Possible disturbance of cultural and Native American resources
- Loss of desert habitat and possible salt drift at and near Enhanced Evaporation System sites
- Visual changes due to alterations in the landscape in the vicinity of ponds, dike structures, and Enhanced Evaporation System towers at the Salton Sea Test Base Site
- Potential adverse impacts to migrating birds due to tower configuration and height, and salt mist

Summary of Estimated Costs

Incremental Costs by Component:

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<th>Construction Costs ($ M/)</th>
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<th>Energy ($ M/yr)</th>
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<tr>
<td>Components Proposed</td>
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<td>at 1.36 MAF/Y Inflows</td>
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<tr>
<td>Enhanced Evaporation System</td>
<td>15.0</td>
<td>409.0</td>
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<td>North Shorebird Ponds</td>
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<td>15.0</td>
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<tr>
<td>Wildlife Disease</td>
<td>0.0</td>
<td>0.0</td>
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<td>Flood flows (existing)</td>
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<td>10.0</td>
<td>0.4</td>
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<tr>
<td>Additional Costs at 1.06 MAF</td>
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<td>$ 460.0</td>
<td>1.8</td>
<td>0.0</td>
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Alternative 4

Major Actions in the First 30 Years

Components on line at:

**Inflow 1.36 MAFY**
- Enhanced Evaporation System
- Evaporation Pond (S) & Pupfish Pond
- North Wetland Habitat

**Inflow 1.06 & 0.8 MAFY**
- Displacement Dike
- Periodic Flood Flows

**Common Elements**
- Improve Recreation
- Fish Harvest
- Wildlife Disease Program
- Shoreline Clean up
- Strategic Science Plan
- Long-Term Management Plan

MAFY - million acre-feet per year
AFY - acre-feet per year
Alternative #4

Environmental Impacts

- Long term benefits compared to the No Action for fisheries and bird species
- Fugitive dust problems could occur during construction
- Loss of desert habitat and possible salt drift at and near Enhanced Evaporation System sites
- Possible disturbance of cultural and Native American resources
- Beneficial effects to recreation and the local economy from restoration activities
- Visual changes due to alterations in the landscape in the vicinity of ponds, dike structures, and Enhanced Evaporation System towers at the Salton Sea Test Base Site
- Potential traffic impacts (delays) between material borrow site and the Sea during construction activities

Summary of Estimated Costs

Incremental Costs by Component:

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<thead>
<tr>
<th>Item</th>
<th>Inflows</th>
<th>Construction Costs</th>
<th>O&amp;M&amp;R</th>
<th>Energy</th>
</tr>
</thead>
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<td>($ M/yr)</td>
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<td>Evaporation Pond and EES</td>
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<td>Fish Harvesting</td>
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<tr>
<td>Shoreline Cleanup</td>
<td>0.5</td>
<td>0.2</td>
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<td>North Shorebird Ponds</td>
<td>15.0</td>
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<tr>
<td>Wildlife Disease</td>
<td>0.0</td>
<td>0.1</td>
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<td><strong>$ 542.5</strong></td>
<td><strong>$ 7.1</strong></td>
<td><strong>$ 2.1</strong></td>
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<td>at 1.06 MAF/Y Inflows</td>
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<td>450.0</td>
<td>1.4</td>
<td>0.0</td>
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<tr>
<td>Flood flows (existing)</td>
<td>10.0</td>
<td>0.4</td>
<td></td>
<td></td>
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<tr>
<td><strong>Additional Costs at 1.06 MAF</strong></td>
<td><strong>$ 460.0</strong></td>
<td><strong>1.8</strong></td>
<td><strong>0.0</strong></td>
<td></td>
</tr>
</tbody>
</table>
Alternative 5

Salton Sea Alternatives

Major Actions in the First 30 Years

Components on line at:

**Inflow 1.36 MAFY**
- In-Sea Enhanced Evaporation System in Evaporation Pond (N)
- North Wetland Habitat

**Inflow 1.06 & 0.8 MAFY**
- Displacement Dike
- Periodic Flood Flows

**Common Elements**
- Improve Recreation
- Fish Harvest
- Wildlife Disease Program
- Shoreline Clean up
- Strategic Science Plan
- Long-Term Management Plan

MAFY - million acre-feet per year
AFY - acre-feet per year
Alternative #5

Environmental Impacts

- Long term benefits compared to the No Action for fisheries and bird species
- Fugitive dust problems could occur during construction
- Temporary disturbance of fisheries would occur during construction
- Possible disturbance of cultural and Native American resources
- Beneficial effects to recreation and the local economy from restoration activities
- Additional effects associated with export options could occur during Phase 2.
- Visual changes due to alterations in the landscape in the vicinity of ponds, dike structures, and Enhanced Evaporation System towers at the Salton Sea Test Base Site
- Potential traffic impacts (delays) between material borrow site and the Sea during construction activities

Summary of Estimated Costs

Incremental Costs by Component:

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<th>Item</th>
<th>Inflows Ac-ft/yr</th>
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<th>O,M&amp;R ($ M/yr)</th>
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</thead>
<tbody>
<tr>
<td>Components Proposed</td>
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<td></td>
<td></td>
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<tr>
<td>at 1.36 MAF/Y Inflows</td>
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<td>In-Sea Evaporation Pond/EES</td>
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<td>Fish Harvesting</td>
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<td>0.1</td>
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<tr>
<td>Shoreline Cleanup</td>
<td>0.5</td>
<td>0.2</td>
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<tr>
<td>North Shorebird Ponds</td>
<td>15.0</td>
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<td></td>
</tr>
<tr>
<td>Wildlife Disease</td>
<td>0.0</td>
<td>0.1</td>
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<tr>
<td><strong>Alternative Costs at 1.36 MAF/YR</strong></td>
<td>$ 368.5</td>
<td>$ 6.4</td>
<td>$ 16.4</td>
<td></td>
</tr>
</tbody>
</table>

Components added

| at 1.06 MAF/Y Inflows |                  |                          |                |                |
|-----------------------|                  |                          |                |                |
| Displacement Dike     | 1.06             | 450.0                    | 1.4            |                |
| Flood flows (existing)| 10.0             | 0.4                      |                |                |
| **Additional Costs at 1.06 MAF** | $ 460.0 | 1.8 | 0.0 |
Other Possible Long Term Actions

Salton Sea Alternatives

Export to Dry Lake Bed

Export to Gulf of Mexico

Import From Pacific

Export to Pacific

Import From Central Arizona Salinity Interceptor

Salton Sea

San Felipe Creek

New River

Alamo River

Whitewater River

Displacement Dike