Presentation Contents

- Project overview
- Project use and benefits
- Technical issues and innovations
- Social problems and policy issues
Location

- Anaheim
- Spreading Basins
- Groundwater Basin Boundary
- Irvine
- Seawater Intrusion Barrier
- Proposed Site of Advanced Water Treatment Plant
- Ocean Outfall
- Pacific Ocean
Project Overview

- Length: 13-mile pipeline from Fountain Valley to Anaheim (along the Santa Ana River)
- Advanced Water Purification Facility in Fountain Valley
- Expansion of Sewater Intrusion Barrier facilities
- Completed in 2007
- Serves: Orange County residents
- Price:
  - Total Cost: $496.9 million dollars
- Funding
  - Mix of federal, state, and local funding
  - Equally split between Orange County Water District (OCWD) and Orange County Sanitation District (OCSD)
  - Low-interest state loans and grants
  - OCWD cover operating costs
## Project Cost

### Estimated Capital Costs

<table>
<thead>
<tr>
<th>Construction Contracts</th>
<th>Estimated Project Costs (in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Water Purification Facilities – microfiltration, reverse osmosis, ultraviolet light and hydrogen peroxide disinfection</td>
<td>$305.3</td>
</tr>
<tr>
<td>13-mile pipeline running from Fountain Valley to Anaheim</td>
<td>$64.2</td>
</tr>
<tr>
<td>Barrier Facilities</td>
<td>$17.1</td>
</tr>
<tr>
<td>GWR System Phase One facility</td>
<td>$20.6</td>
</tr>
<tr>
<td>Integrated information system, wells, workshops, insurance</td>
<td>$16.9</td>
</tr>
<tr>
<td>Design</td>
<td>$30.9</td>
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<tr>
<td>Construction management</td>
<td>$13.8</td>
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<tr>
<td>Administration</td>
<td>$15.6</td>
</tr>
<tr>
<td>Program contingency</td>
<td>$2.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$486.9 million</strong></td>
</tr>
</tbody>
</table>
Project Use

- Prevents salt water intrusion
- Replenishes ground water supply
- Mitigates effects of:
  - Drought
  - Increased population
  - Increased upstream water use
Social and Economic Benefits

- Social Benefits
  - Can support additional population
  - Reduces impact of county on ground water supply
  - Reduces amount of discharged wastewater

- Economic Benefits
  - Cheaper than building additional ocean outfall
  - Cost of wastewater reclamation 50% of importing water
Technical Issues

- Preventing saltwater intrusion
- Projected population growth
  - Designed with max capacity 100% higher than current use
- Water quality
  - Purifying water to within safe drinking levels
Among the most advanced purification systems in the world:
- Microfiltration
- Reverse Osmosis
- UV Light + Hydrogen Peroxide

Largest of its kind. Similar projects planned in Singapore, Australia.
Social/Policy Challenges

Initial EIS

- Found that project will have no significant adverse environmental impacts
- Quality of water expected to be BETTER than alternative water supplies
- Public still concerned about water quality

Risk Assessment

- Conducted by EOA Inc., a public and health engineering firm
- Advisory Committee consisting of experts in:
  - Microbiology, Virology Public Health
  - Environmental Engineering
  - Toxicology
  - Environmental Science
  - Health Effects
Risk Assessment

- Study based on two alternatives “No action” and “Proposed Action”
- Analyzed three water sources: Santa Ana River, imported water from Northern California and Colorado River
- Identified potential concerns in each water source
Risk Assessment

- Conclusions broken down into 3 parts – Risks Associated with:
  - Non carinogenic health effects
  - Carcinogenic health effects
    - Identified N-nitrosodimethylamine (NDMA) and 1,4 dioxane
    - California Department of Health Services had not established max levels
    - GWR System will remove emerging compounds
  - Microbiological Contaminant health effects
Community Support

• Proactive face-to-face outreach with more than 1200 presentations and 700 tours
• More than 200 community groups supporting
• 100% support from federal, state, and local elected officials in OCWD area
• No organized opposition to date
Funding

**Project Funding**

- EPA Grant: $500,000
- State Water Resources Control Board Grant: $5,000,000
- US Bureau of Reclamation Grant: $20,000,000
- Department of Water Resources Grant (Prop. 13): $30,000,000
- Santa Ana Watershed Project Authority Grant (Prop. 13): $37,000,000
- OCWD Contribution: $198,560,000
- OCSD Contribution: $198,560,000

**Projected vs. Actual Costs**

- Quarterly Expenditure $1,000/Q
- Projected Accumulation
- Actual Accumulation

Graph showing the comparison of projected and actual costs from Q2 2001 to Q2 2007.
Awards

- 2008 E3 Competition – Grand Prize for Design
- 2008 Stockholm Industry Water Award

Mr. Peter Forssman, Chairman, Stockholm Water Foundation (left), presented the 2008 Stockholm Industry Water Award to Mr. Larry R. Grandle, Vice Chair, Orange County Sanitation District, Mr. Denis Bilodeau, Director, Orange County Water District, and Mr. Doug Davert, Chair, Orange County Sanitation District at the award ceremony.
Any Questions?