

LBWD's Experiences with Permitting a Seawater Desalination Prototype Test Facility



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Coastal and Inland Desalination Principles,
Practices and Concentrate Management

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Long Beach Water Department

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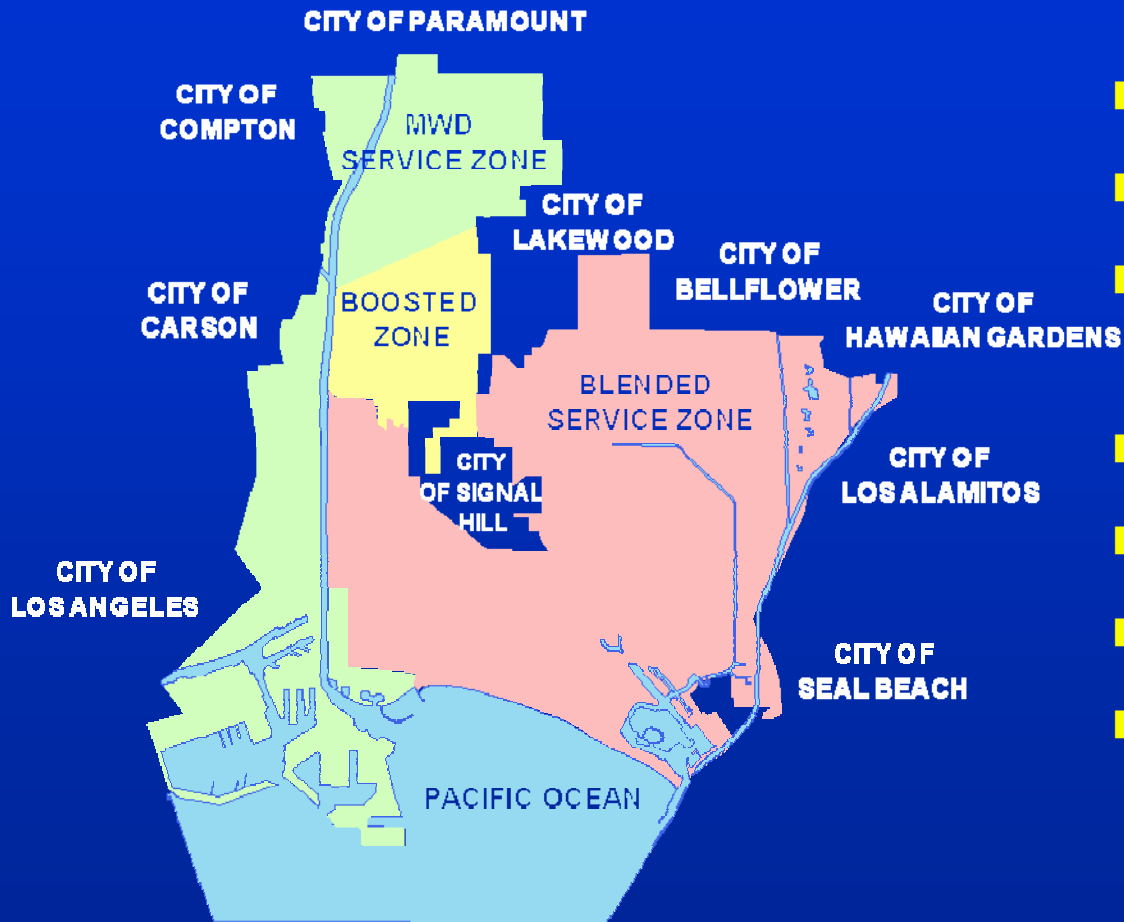
Presentation Outline

- Long Beach Overview
- Permits for Construction and Operation
- Long Beach's Experience
- Special Focus (closer look at one permit)
- Summary

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Long Beach Water Department



- Established in 1911
- 52 mi² area
- Service population of 487,100
- 50% surface water
- 42% groundwater
- 8% reclaimed water
- Treats groundwater from 30 wells

LBWD's Seawater Desalination Program

- Pilot program to test feasibility of NF² process since 2001
- Successful demonstration led to design/construction/operations of larger prototype-scale facility (operational 2006)
- Eventual 9-mgd desalination facility planned to be operational by 2015

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Permits for Construction and Operation

Issues

Permitting Agency

Endangered Species

- Fish and Wildlife Service
- National Marine Fisheries Service
- California Dept. of Fish and Game

Coastal Land Use

- State Lands Commission
- California Coastal Commission
- Local Planning and Building

Waterway Use

- Mineral Management Service
- Army Corp of Engineers
- Coast Guard

Regulation

- Environmental Protection Agency
- South Coast Air Quality Management District
- Regional Water Quality Control Board
- California Department of Health Services

Endangered Species

■ Fish and Wildlife Service (FWS)

- ◆ *Federal Endangered Species Act – landward portions of the project*
 - Section 7 – 404 consultations with the Corps for listed species, habitats
 - Section 10(a) – permit for incidental “take” of listed species, habitats

■ National Marine Fisheries Service (NMFS)

- ◆ *Endangered Species Act – marine resources in U.S. Exclusive Economic Zone*
- ◆ *Marine Mammal Protection Act – Incidental Harassment Authorization for incidental “take” of marine mammals in Federal Waters*

Endangered Species (cont'd)

- California Department of Fish and Game (CDFG)
 - ◆ *California Endangered Species Act – landward, Coastal Zone, State Waters*
 - Section 2081 - permit for incidental “take” of state listed species, habitats
 - Section 1602 – Notification, Lake or Streambed Alteration Agreement

Coastal Land Use

- State Lands Commission (SLC)
 - ◆ *Grants land use leases for activities in navigable and tidal waters up to 3 nautical miles from shore (“sovereign lands”)*
 - ◆ *Local city government grants land use leases in SLC lands legislatively granted*
- California Coastal Commission (CCC)
 - ◆ *California Coastal Act – governs action in Coastal Zone*
 - ◆ *Coastal Zone Management Act – consistency review authority in Federal Waters*
- Local Planning and Building (P&B)
 - ◆ *Local governments (w/certified Local Coastal Program) have permitting authority in Coastal Zone*

Waterway Use

- Minerals Management Service (MMS)
 - ◆ *Outer Continental Shelf (OCS) Lands Act – lease and right-of-way grants on submerged lands within U.S. Exclusive Economic Zone (3 – 200 nautical miles)*
- Army Corps of Engineers (Corp)
 - ◆ *Clean Water Act (Section 404) – discharge of dredge or fill material into jurisdictional Waters of the U.S.*
 - ◆ *Rivers and Harbors Act (Section 10) – obstructions to navigable Federal Waters*
- Coast Guard (CG)
 - ◆ *Marine Safety Manual – safety of navigation in State and Federal Waters*

Regulations

- Environmental Protection Agency (EPA)
 - ◆ *National Environmental Policy Act (NEPA)*
 - Applicability
 - Assess project's environmental Impact
 - Environmental Process
 - Categorical Exclusion
 - Negative Declaration
 - Environmental Impact Statement
 - ◆ *California Environmental Quality Act (CEQA)*
 - Applicability
 - Supplemental information for state, local agency permit applications
 - Environmental Process
 - See NEPA

Regulations

- South Coast Air Quality Management District (AQMD)
 - ◆ *Clean Air Act – limits criteria pollutant emissions 3 – 25 nautical miles*
 - Established by EPA
- Regional Water Quality Control Board (RWQCB)
 - ◆ *Clean Water Act*
 - Established by EPA
 - Section 402 – National Pollutant Discharge Elimination System (NPDES) Permit for ocean discharge of diluted brine from desalination process
 - Section 403 – additional regulatory requirements

Regulations

- California Department of Health Services (CDHS)
 - ◆ *Safe Drinking Water Act compliance*
 - ◆ *Drinking Water Program – grants Domestic Water Supply Permit*
 - ◆ *Source may be subjected to 97-005 (Impaired Source Water)*

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Long Beach's Experience

■ Prototype Testing Facility

◆ *Strategy*

- Temporary facility to test process
- Attempted to obtain permit waivers and exemptions where possible
- Avoid waterway issues
- Avoid drinking water permitting issues
- Limit discharge permitting issues

Long Beach's Experience (cont'd)

Issues

Endangered Species

- Fish and Wildlife Service (FWS)
- National Marine Fisheries Service (NMFS)
- California Dept. of Fish and Game (CDFG)

Permitting Agency

■ Exemption

- ◆ *Temporary testing facility*
- ◆ *Using power plant intake*

Long Beach's Experience (cont'd)

Issues

Permitting Agency

Coastal Land Use

- State Lands Commission (SLC)
- California Coastal Commission (CCC)
- Local Planning and Building (P&B)

- SLC - Deeded authority to local P&B
- CCC - Given authority to local P&B with certified local coastal program
- Local P&B
 - ◆ *Applied for conditional use coastal permit*
 - ◆ *Approved permit in accordance with local use program*
 - ◆ *CCC did not appeal finding*

Long Beach's Experience (cont'd)

Issues

Permitting Agency

Waterway Use

- Mineral Management Service (MMS)
- Army Corp of Engineers (CORP)
- Coast Guard (CG)

■ MMS – Exempted

■ Corp

- ◆ *Avoided navigable water by locating intake within power plant's intake structure*

■ CG

- ◆ *Avoided navigable water by locating intake within power plant's intake structure*

Long Beach's Experience (cont'd)

Issues

Permitting Agency

Regulation

- Environmental Protection Agency (EPA)
- South Coast Air Quality Management District (AQMD)
- Regional Water Quality Control Board (RWQCB)
- California Department of Health Services (CDHS)

- EPA (NEPA & CEQA)

- ◆ *Categorical exclusion*

- AQMD – Exempted

- RWQCB

- ◆ *Obtained NPDES permit*

- CDHS - Exempted

- ◆ *Water will not be served to public*

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Special Focus

- Regional Water Quality Control Board (RWQCB)
 - ◆ *Clean Water Act - NPDES Permit for discharge of diluted brine*
 - ◆ *California Ocean Plan – prohibits brine discharges into Areas of Special Biological Significance*
 - ◆ *California Water Quality Control Plan – limits temperature of thermal brine discharges*
 - ◆ *Section 401 – certifies brine discharges under Federal permits in State Waters*

Special Focus (cont'd)

■ Discharge Issues

- ◆ *Chemicals added during desalination process*
- ◆ *Includes scale inhibitor, acid, chlorine, sodium bisulfite, and membrane cleaning solutions*
- ◆ *Membrane cleaning solutions are mixed in batches and hauled off-site for disposal*
- ◆ *Permeate and brine contains low levels of other chemicals*
- ◆ *Attempted to obtain discharge waiver through performing mass balance on system and demonstrating limited impacts*
- ◆ *Attempt was unsuccessful*

Special Focus (cont'd)

■ Discharge Issues

- ◆ *Chemicals are added during desalination process*
- ◆ *Discharge limits for metals are very low*
- ◆ *Copper discharge limit is 3.2 $\mu\text{g/L}$, seawater background level is 2.8 $\mu\text{g/L}$*
- ◆ *Analysis of metals in seawater matrix difficult*
 - *Analytical interferences from high salt concentrations can result in erroneous readings (high bias)*
- ◆ *Ultimately was issued a discharge permit, contained provisions for routine monitoring and reporting*

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Summary

- Don't wait until the last minute – There are a lot of agencies involved and a lot of overlap so looking ahead is critical
- Need to systematically go through issue of concern to capture all potentially applicable permits
- Very site specific
- Don't be misled that waivers are always obtainable
- Plan on plenty of time in case a permit is needed