

Monterey Peninsula  
Water  
Management  
District

## Summary of MPWMD Local Desalination Project Proposal

July 29, 2004 Board Workshop  
Monterey City Council Chambers  
Staff Contact: Henrietta Stern

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Monterey Peninsula  
Water  
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District

## Water Supply Project EIR

- Multi-year effort to identify proposed project, conduct engineering/technical studies and evaluate environmental effects.
- Board direction has changed over time.
- Other agencies and legislation affect process.
- Phased approach since early 2002:
  - Phase 1: engineering evaluation of desal, ASR and other alternatives (max. sizes, best mix);
  - Phase 2: more detailed engineering and prepare Draft EIR on proposed project.

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Monterey Peninsula  
Water  
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## Desal Terms: Intake/Disposal

- Radial beach well (vertical, with spokes).
- Offshore HDD well – horizontal directionally drilled; perpendicular to shoreline; blind hole method.
- Onshore HDD well – parallel to shore (along beach); pull-through method.
- Brine disposal through MRWPCA regional outfall pipeline.

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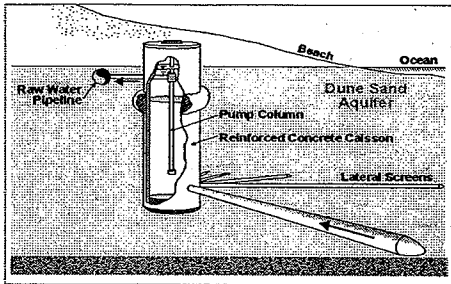
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### Radial Collector Well



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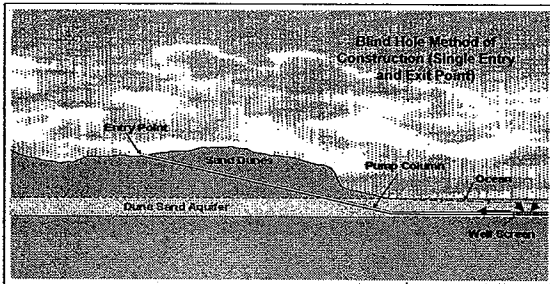
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### Offshore HDD Well (Perpendicular to Shoreline)



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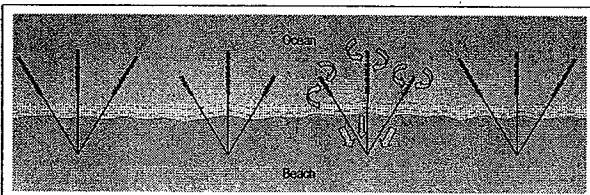
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### Offshore HDD Plan View



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## Seawater Collection Overview

- Seawater Collector Wells
  - Need 15 MGD seawater for 7.5 MGD (8,400 AFA) treated water production
  - Seawater source is Dune formation onshore or offshore
- Collector Well Options
  - Radial collector well
  - Offshore horizontal directionally drilled (HDD) collector wells
  - Onshore HDD collector well



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## Brine Disposal Overview

- Two Options Evaluated in EIR
  - Offshore HDD Disposal Wells at Former Fort Ord
    - Similar concept/layout as collector wells
  - Use of Outfall at Regional Wastewater Treatment Plant
    - Pipeline from plant through former Fort Ord to regional outfall



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## Early Yield Estimates

- "Review Draft" EIR (Dec 2003) is based on hydrologic data as of mid-2003.
- Potable water yield estimate was roughly 6,000 AFA with radial beach wells alone.
- Offshore HDD wells could potentially increase yield up to 11,000 AFA, but HDD has not been tried in local seawater setting; studies needed to confirm.

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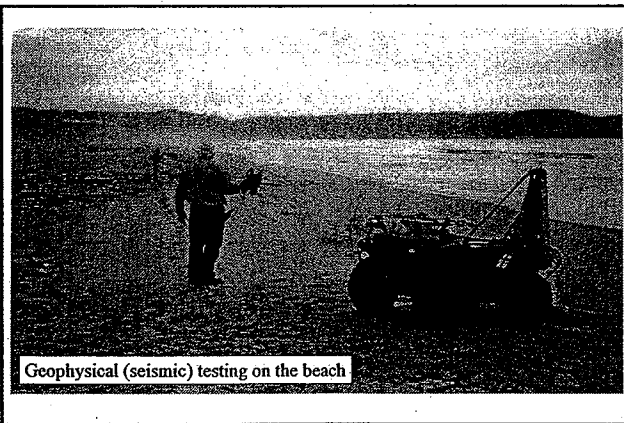
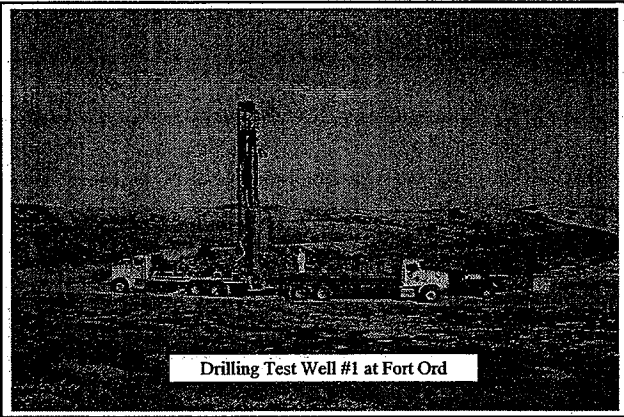
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## Hydrogeologic Studies

- Geotechnical (4 test wells) and geophysical (offshore/onshore subsurface soundings) studies conducted to better characterize coastal dune aquifer; affects HDD feasibility and plant yield.
- Field work and analysis conducted in Fall 2003 and Winter 2004.
- Presentation to Board on March 31, 2004 along with Technical Report.



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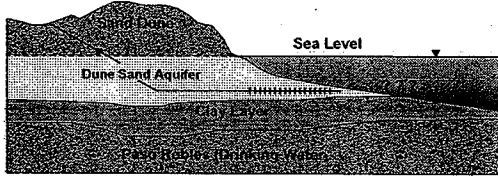
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### Previous Picture of Subsurface

- Clay Layer Separating Dune Sand aquifer from Paso Robles Drinking Water Aquifer
- Uncertainty in Onshore and Offshore Extent of Dune Sand Aquifer – limited coastal data



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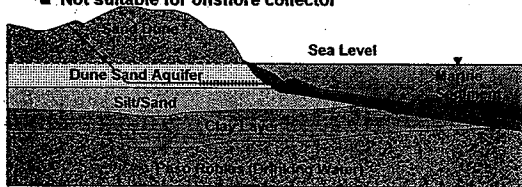
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### Revised Picture - Sand City Area

- Dune Sand aquifer eroded offshore
- Replaced with unconsolidated marine sediments
- Suitable for onshore collector
- Not suitable for offshore collector



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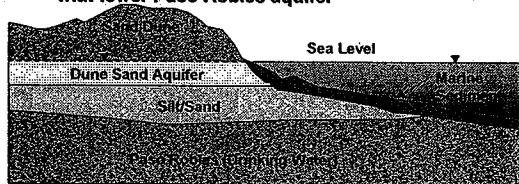
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### Revised Picture - Fort Ord

- Clay Layer Absent Beneath Former Fort Ord
- Onshore collector options feasible
- Brine disposal infeasible due to aquifer connection with lower Paso Robles aquifer



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### Seawater Intake Options – Radial Wells

- Construction Feasible - Land-based operations
- Collector Yield: Up to 10 MGD (11,200 AFA) using intake from four collectors
  - Supports 5 MGD plant producing 5,600 AFA treated water
- Expansion on former Fort Ord possible to get additional 2,800 AFA (8,400 AFA) production or more



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### Seawater Intake Using Offshore HDD

- Collection Infeasible at Sand City
  - Unsuitable drilling conditions with high potential for drilling muds escaping to Monterey Bay
  - Yield for Offshore HDD not estimated



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### Seawater Intake Options – Onshore HDD

- Collection Feasible - Land-based operations, where drilling muds can be contained
- Collector Yield: 15 MGD (16,800 AFA; supports 7.5 MGD Plant producing 8,000 AFA)
  - 2500-foot long collector
  - Need additional length or modified configuration to provide 8,400 AFA year-round
- Expansion Beyond 8,400 AFA Considerations
  - Extend to north - potential contamination from former landfill?
  - Construction more complex due to limited beach width



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## Implications for Brine Disposal Using Wells

- **Offshore HDD Disposal Wells at Former Fort Ord**
  - Technically feasible due to thicker Sand Dunes formation but limited to area beneath dunes
  - Potentially institutionally infeasible -- brine disposal in aquifer connected to drinking water aquifer
- **Brine disposal through regional outfall best option (possibly only option)**



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## Summary

- **Onshore HDD well at Sand City → plant production of 8,000 AFA**
  - Expansion on Fort Ord or re-configuration needed to get 8,400 AFA firm capacity or more
- **Radial wells in Sand City → plant production of up to 5,600 AFA with 4 wells**
  - Expansion on Fort Ord to get 8,400 AFA firm capacity or more



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## Summary - Continued

- **Expansion to 10 MGD (11,000 AFA) would require hybrid Project with combination onshore HDD and radial wells or onshore HDD wells**
- **Brine discharge likely limited to single option using outfall at regional wastewater treatment facility**



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### Facilities Analyzed in Current EIR

- ◆ Local Desalination Plant in Sand City - 8,400 AFA
  - Three sites
- ◆ Seawater Collection System with Pipelines
  - Radial wells at Seaside Beach
  - Offshore HDD wells at Seaside Beach and former Fort Ord
- ◆ Brine Disposal System with Pipelines
  - Offshore HDD wells at former Fort Ord
  - Brine pipeline to MRWPCA outfall (three routes)
- ◆ Treated Water Delivery Pipelines
  - Two routes

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### Alternatives Included in Draft EIR – Program Level of Detail

- ◆ No Project
  - Continuation of existing conditions
  - Enforcement of SWRCB Order WR 95-10
- ◆ Large ASR with Sand City Desalination Plant
- ◆ Carmel River Dam and Reservoir
- ◆ Moss Landing Desalination Plant (CPUC "Plan B")

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### Other Water Sources and Production Goals – Program Level

- ◆ Other water supply sources
  - Wastewater reclamation
  - Storm water reuse
  - Off-stream storage
  - Small ASR project
- ◆ Alternative water production goals (desalination and other sources)
  - 17,641 AFA (pre-Order 95-10 allocation)
  - 18,941 AFA (legal lots of record)

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**Major Environmental Issues**

- ◆ Construction
  - Habitat disturbance - dunes and beach
  - Traffic and utilities disruption
  - Visual changes - treatment plant and well sites
  - Construction noise and vibration - cumulatively significant and unavoidable
  - Construction air emissions - cumulatively significant and unavoidable



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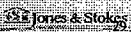
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**Major Environmental Issues**

- ◆ Operations
  - Increased flows and sediment movement in Carmel River
  - Improvement in Carmel River aquatic and riparian habitat
  - Expansion of potential bullfrog habitat in Carmel River
  - Increases in ocean salinity - offshore HDD wells and MRWPCA outfall
  - Effects on marine life from salinity increases



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**Major Environmental Issues**  
(cont.)

- ◆ Localized changes in water levels and flow patterns in shallow dune aquifer along coast
- ◆ Potential effect on collector system of small desalination plant proposed by City of Sand City
- ◆ Noise increase at desalination plant site
- ◆ > 6,400 kw net increase in electricity demand from RO plant and well operation



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## Policy Decisions Regarding Continuation of the CEQA Process

- ◆ Complete EIR with removal of offshore HDD
- ◆ Update EIR to incorporate onshore HDD and remove offshore HDD
- ◆ Expand EIR (onshore HDD) to include:
  - Moss Landing desalination projects and/or
  - Carmel River Dam
  - Consider Moss Landing or Carmel River Dam higher yields
- ◆ Defer action on EIR pending resolution of Moss Landing project and potential partnerships
- ◆ End EIR process

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## Option 1A - Local Desalination Using 3 Radial Wells

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| <ul style="list-style-type: none"> <li>◆ Facilities                     <ul style="list-style-type: none"> <li>• 3 radial wells at Seaside Beach                             <ul style="list-style-type: none"> <li>• 7,800 AFA (feedwater collected)</li> </ul> </li> <li>• Desalination plant at Sand City                             <ul style="list-style-type: none"> <li>• 3,900 AFA (treated water)</li> </ul> </li> <li>• Disposal through MRWPCA outfall                             <ul style="list-style-type: none"> <li>• 3,900 AFA (brine)</li> </ul> </li> </ul> </li> <li>◆ Total potable water production                     <ul style="list-style-type: none"> <li>• 3,900 AFA</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>◆ Schedule and cost factors                     <ul style="list-style-type: none"> <li>• CEQA - \$25-30 K</li> <li>• engineering - \$5-10 K</li> <li>• 3.5 months</li> </ul> </li> <li>◆ Total cost - \$30-40 K</li> </ul> |
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## Option 1B - Local Desalination Using 4 Radial Wells

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| <ul style="list-style-type: none"> <li>◆ Facilities                     <ul style="list-style-type: none"> <li>• 4 radial wells                             <ul style="list-style-type: none"> <li>• Seaside Beach: 3 wells</li> <li>• Fort Ord: 1 well</li> </ul> </li> <li>• 11,200 AFA (feedwater collected)</li> <li>• Desalination plant at Sand City                             <ul style="list-style-type: none"> <li>• 5,600 AFA (treated water)</li> </ul> </li> <li>• Disposal through MRWPCA outfall                             <ul style="list-style-type: none"> <li>• 5,600 AFA (brine)</li> </ul> </li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>◆ Total potable water production                     <ul style="list-style-type: none"> <li>• 5,600 AFA</li> </ul> </li> <li>◆ Schedule and cost factors                     <ul style="list-style-type: none"> <li>• CEQA - \$50-60 K</li> <li>• Engineering - \$10-15 K</li> <li>• 4 months</li> </ul> </li> <li>◆ Total cost - \$60-75 K</li> </ul> |
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### Option 2 - Local Desalination Using Radial Wells and ASR at Fort Ord

- Facilities
  - 3-4 radial wells at Seaside Beach
    - 7,800-11,200 AFA (feedwater collected)
  - Desalination plant at Sand City
    - 3,900-5,600 AFA (treated water)
  - ASR
    - 700 AFA
  - Disposal through MRWPCA outfall
    - 3,900-5,600 AFA (brine)
- Total potable water production
  - 4,600-6,300 AFA
- Schedule and cost factors
  - CEQA - \$90-150 K
  - engineering - \$20-30 K
  - 7 months
- Total cost - \$110-180 K

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### Option 3 - Local Desalination Using Onshore HDD Well

- Facilities
  - Onshore HDD well on Seaside Beach
    - 16,800 AFA (feedwater collected)
  - Desalination plant at Sand City
    - 8,400 AFA (treated water)
  - Disposal through MRWPCA outfall
    - 8,400 AFA (brine)
- Total potable water production
  - 8,400 AFA
- Schedule and cost factors
  - CEQA - \$50-60 K
  - Engineering - \$20-30 K
  - 5 months
- Total cost - \$70-90 K

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### Option 4 - Local Desalination Using Onshore HDD Well and ASR at Fort Ord

- Facilities
  - Onshore HDD well on Seaside Beach
    - 16,800 AFA (feedwater collected)
  - Desalination plant at Sand City
    - 8,400 AFA (treated water)
  - ASR at Fort Ord
    - 700 AFA
  - Disposal through MRWPCA outfall
    - 8,400 AFA (brine)
- Total potable water production:
  - 9,100 AFA
- Schedule and cost factors
  - CEQA - \$90-150 K
  - engineering - \$20-30 K
  - 7 months
- Total cost - \$110-180 K

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### Status of EIR and Project

- **December 15, 2003:** "Board Review Draft" EIR received; delay EIR circulation until hydrogeologic reports presented in March 2004; assess feasibility of yields above 8,409 AFA.
- **March 31, 2004:** Hydrogeologic results and revised yield estimates received; delay EIR circulation until more information on Moss Landing desalination obtained.
- **June 21, 2004:** No funds budgeted to complete and circulate Draft EIR on local desal project; but no formal action taken to terminate EIR.

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### Suggested Next Steps

- Formally investigate and assess Moss Landing desalination options and MRWPCA recycled water availability, including partnership opportunities.
- Consider completing Draft EIR based on Board-determined supply alternatives at Strategic Planning Workshop in September 2004.

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