



Engineering, Operations, & Technology Committee

Mills and Jensen Finished Water Reservoirs Rehabilitation

Item 7-4

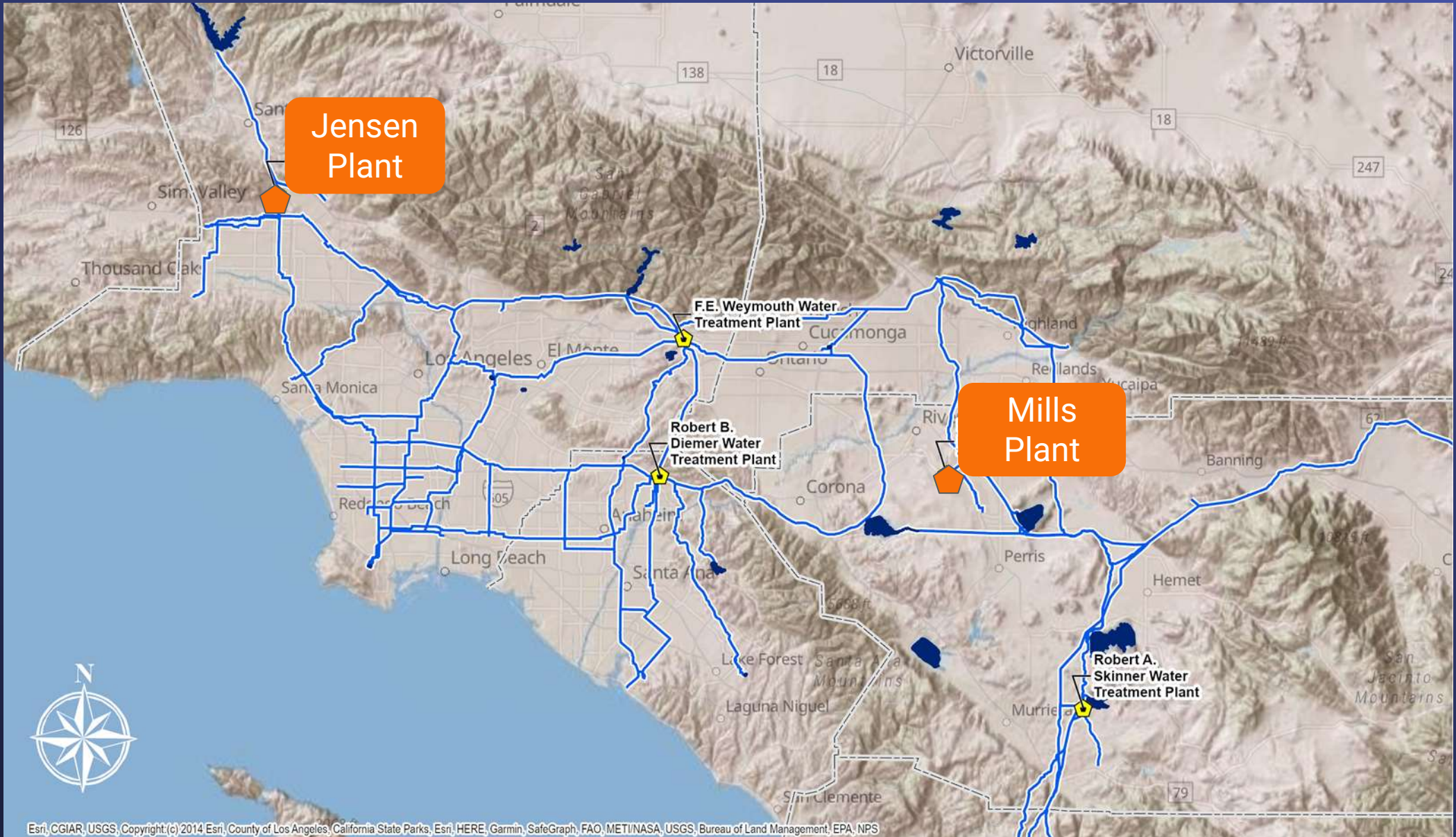
January 9, 2023

Current Action

- Award an agreement with Arcadis U.S., Inc. in an amount not to exceed \$2 million to complete preliminary design for the rehabilitation of three finished water reservoirs at the Mills & Jensen plants

Mills and Jensen Finished Water Reservoirs Rehabilitation

Distribution System



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Mills and Jensen Finished Water Reservoirs Rehabilitation

Background

- Reservoirs provide storage capacity to regulate treated water deliveries to member agencies
- State Division of Drinking Water requires that all finished water reservoirs be covered
- Mills plant finished water reservoirs with floating covers
 - FWR No. 1 – hypalon cover installed in 1996
 - FWR No. 2 – polypropylene cover installed in 1996
- Jensen plant finished water reservoirs
 - FWR No. 1 – concrete roof
 - FWR No. 2 – polypropylene cover installed in 1997
- Floating covers at both plants have exceeded the recommended 20-year service life

Finished Water Reservoirs

Henry J. Mills Water Treatment Plant

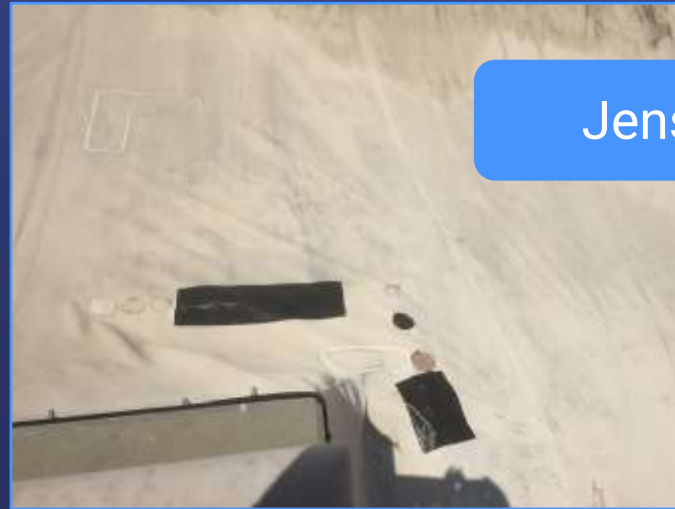


Joseph Jensen Water Treatment Plant



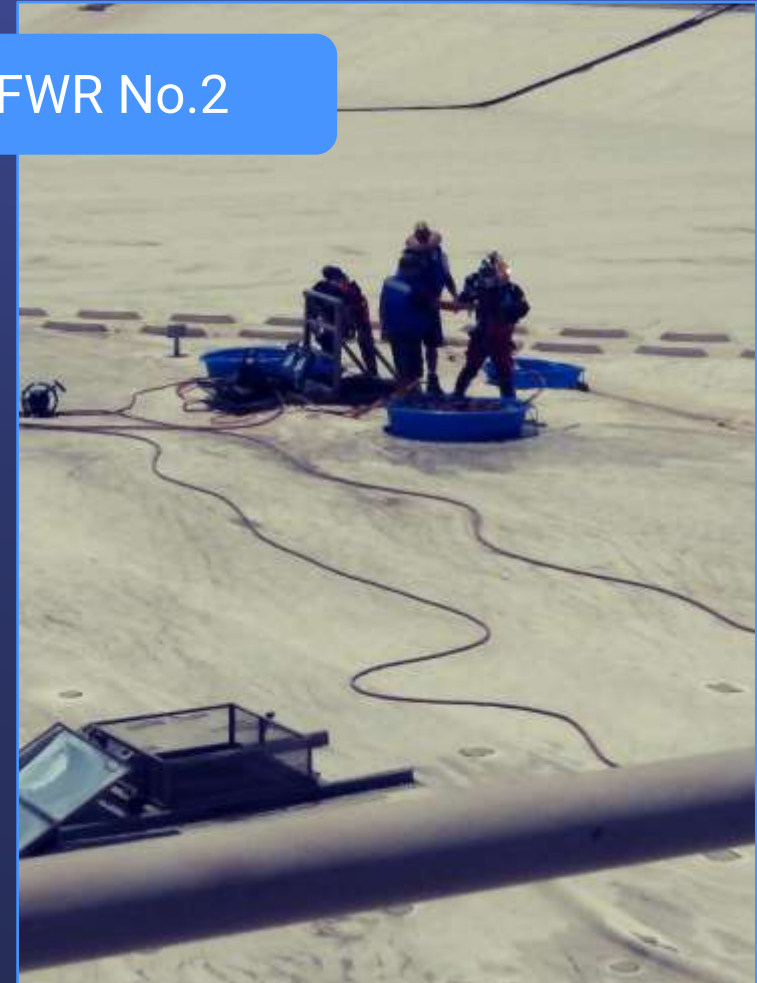
Background - Floating Cover Tears and Repairs

Mills and Jensen Finished Water Reservoirs Rehabilitation



Jensen FWR No.2

Patches to cover



Staff performing cover repairs

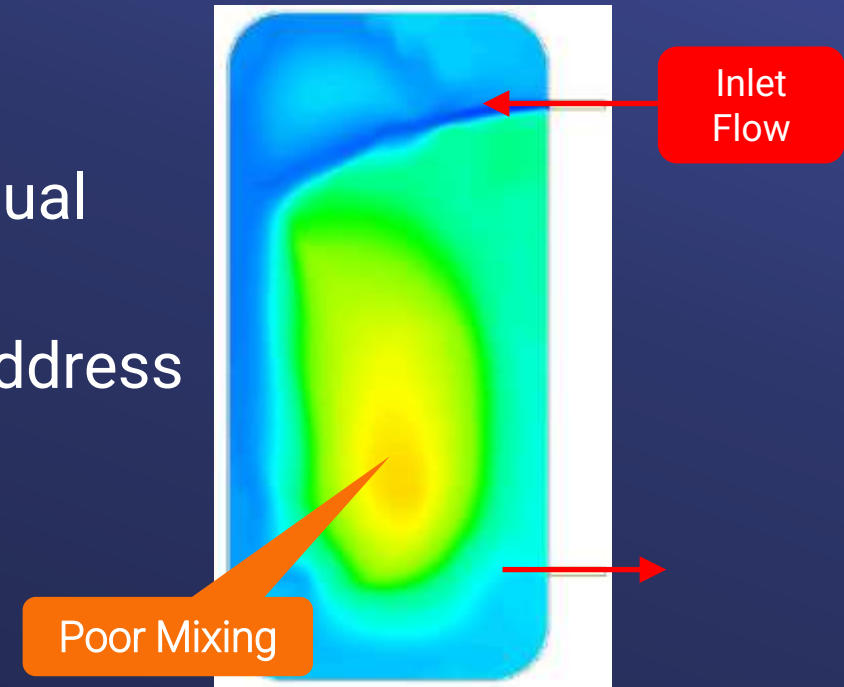


Cover tear releasing water

Mills and Jensen Finished Water Reservoirs Rehabilitation

Background - Hydraulic Modeling

- Treatment plants may be impacted by low flow conditions
- During low flow conditions, poor water circulation leads to potential water quality concerns in the reservoir
 - Increased water age
 - Inadequate mixing
 - Non-uniform chlorine residual
- Detailed hydraulic modeling required to understand and address deficiencies



Mills FWR No. 2

Mills and
Jensen
Finished Water
Reservoirs
Rehabilitation

Project Scope

- Reservoir rehabilitation
 - Replace floating covers and liners
 - Refurbish existing operating equipment
 - Install new reservoir equipment
 - Replace reservoir instrumentation
- Evaluate mixing scenarios for water dispersion
- Optimize inlet flow modifications to improve mixing and reduce tearing of floating covers

Mills and Jensen Finished Water Reservoirs Rehabilitation

Alternatives Considered

- Metropolitan staff to complete all preliminary design activities
 - Resource needs exceed staff availability
 - Specialized simulation expertise required to evaluate multiple mixing scenarios & optimize inlet flow modifications
- Selected Option
 - Staff & consultant work as a team
 - Consultant to complete mechanical, electrical, civil, & structural design
 - Metropolitan staff to perform instrumentation design & provide technical oversight of consultant's work

Mills and
Jensen
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Rehabilitation

New Agreement – Arcadis U.S., Inc.

- Selected through RFP No. 1328
- Scope of Work
 - Complete preliminary design – mechanical, electrical, civil, structural
 - Evaluate mixing scenarios for water dispersion & retention & optimize inlet flow modifications
 - Prepare preliminary design report
- SBE participation level: 25%
- NTE amount: \$2,000,000

Mills and
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Reservoirs
Rehabilitation

Metropolitan Scope

- Design of new reservoir instrumentation & control features
- Piping & instrumentation diagrams (P&IDs)
- Project management, technical oversight & review of consultant's work

Allocation of Funds

Mills and Jensen Finished Water Reservoir Rehabilitation

Metropolitan Labor

Studies & Investigations \$ 744,000

Program mgmt. & envir. support 566,000

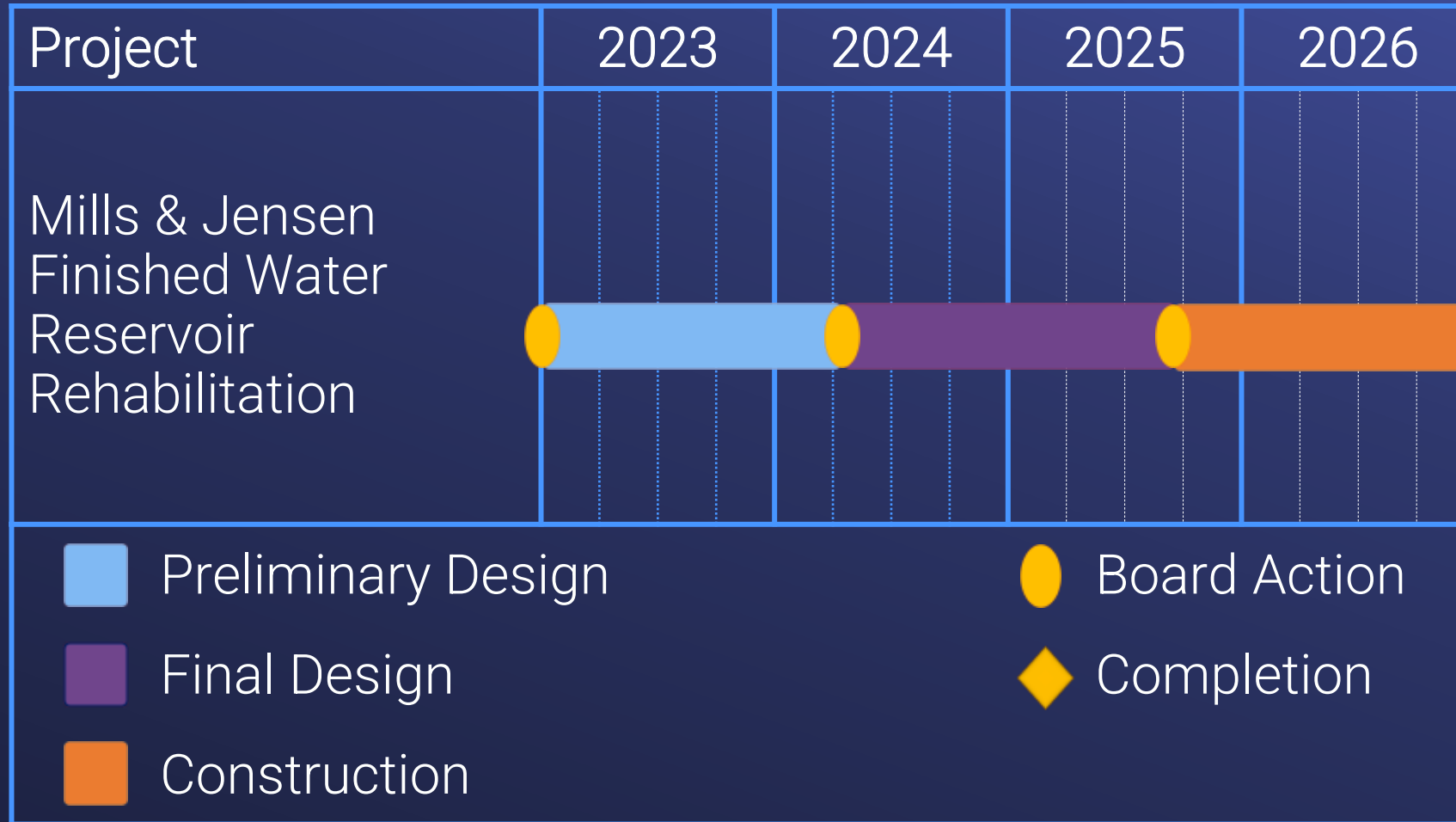
Professional /Technical Services

Arcadis U.S., Inc. 2,000,000

Remaining Budget 340,000

Total \$ 3,650,000

Project Schedule



Board Options

- Option #1

Authorize an agreement with Arcadis U.S., Inc. in an amount not to exceed \$2 million for preliminary design to rehabilitate the finished water reservoirs at Henry J. Mills and Joseph Jensen Water Treatment Plants.

- Option #2

Do not proceed with the project at this time.

Staff Recommendation

- Option #1

