Colorado River Aqueduct Main Pump Rehabilitation

Engineering & Operations Committee
Item 8-1
October 10, 2016

Current Action

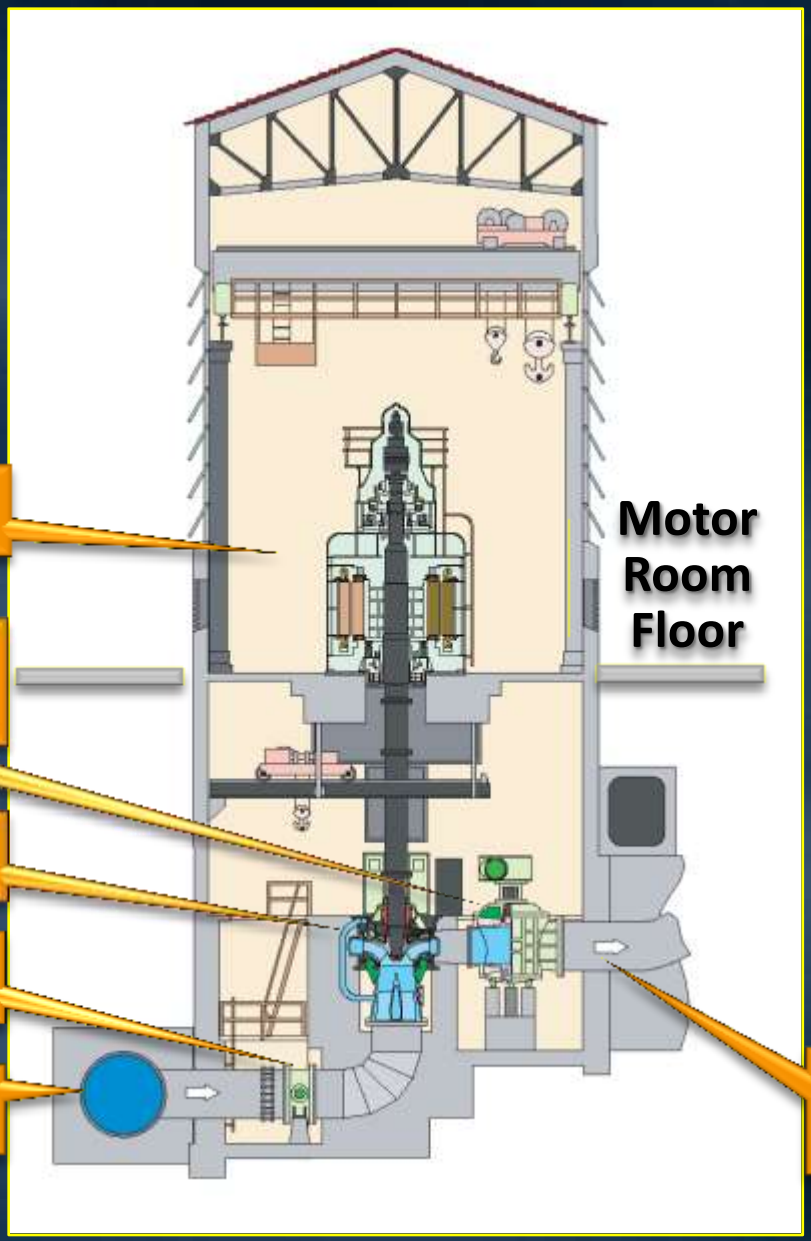
- Adopt CEQA determination
- Appropriate $7.9 M
- Authorize preliminary investigations to rehabilitate 45 main pumps at the CRA pumping plants
- Authorize design to rehabilitate a single main pump at Gene Pumping Plant
- Authorize agreement with Northwest Hydraulic Consultants, Inc. in an amount NTE $300,000

Location Map

Background

- 5 CRA pumping plants
  - 1934 - Initial construction
    - 3 pumps/plant
    - Pumping capacity - 605 cfs
  - 1959 - Final expansion
    - 6 pumps/plant
    - Pumping capacity - 1605 cfs
  - 45 main pumps
- Mixed set of pumps & motors
  - 3 pump manufacturers & 4 motor manufacturers

CRA Pump House Configuration



Auxiliary Systems

- Cooling system
- Lube oil system
- Associated piping & valves
- Electrical & control systems

Hinds Pump Floor – Auxiliary Systems

Pump Unit No. 9 Auxiliary Systems

Pump Unit No. 3 Auxiliary Systems

Previous Refurbishment

- Partial Refurbishment - 1987 to 1992
  - Main pumps refurbished
  - Pumping capacity - 1750 cfs
  - Auxiliary systems not refurbished
- Operated continuously for 30 yrs
  - Pumps showing signs of deterioration
  - Many auxiliary systems require replacement

Pump Cover & Impeller

Discharge Valve Cover – Assembly

Refurbishment (1987-1992)

Motor Rotor Disassembly

Re-assembling Rotor "Squirrel Cage"

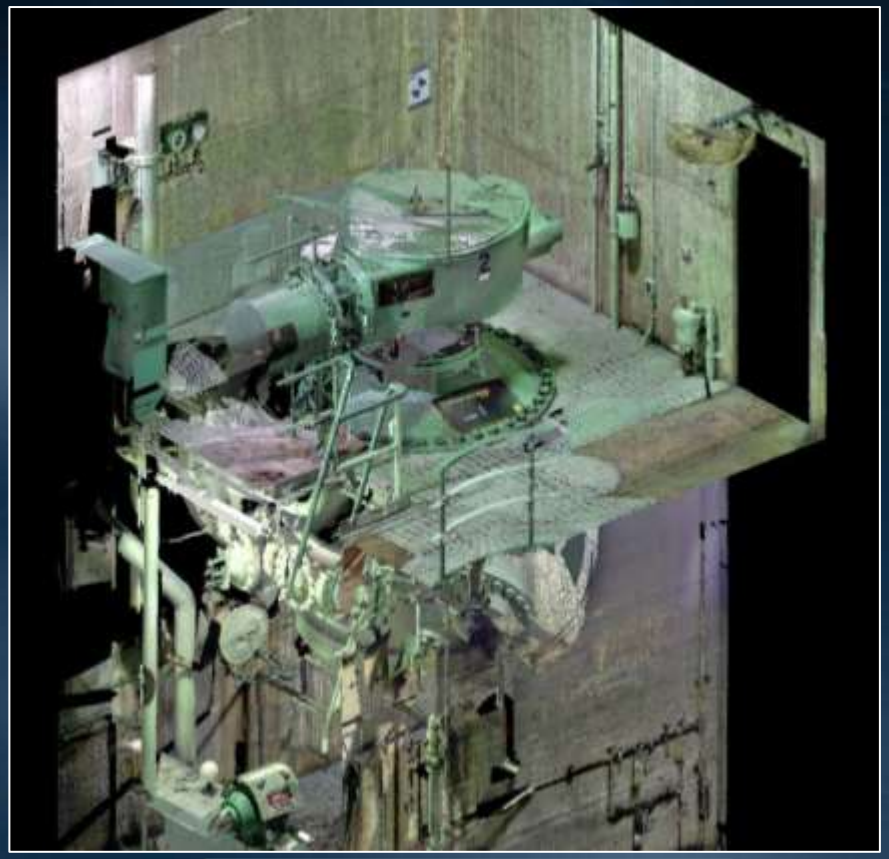
Application of "Glyptal" Coating

Planned Rehabilitation Program

- Stage 1 - Preliminary Investigations of All Pumps & Design of Demonstration Project
  - Detailed investigations of all major pump components
  - Design of demonstration project & auxiliary systems
- Stage 2 - Construction of Demonstration Project
  - Eqpt procurement & construction to rehabilitate one pump unit
- Stage 3 - Design of Full-Scale Rehabilitation
  - Design to rehabilitate remaining 44 pump units
- Stage 4 - Eqpt Procurement & Construction of Full-Scale Rehabilitation
  - Construction to rehabilitate remaining 44 pump units

1. Preliminary Investigations

- Metropolitan Scope
  - Compilation of exist. documentation & performance data
  - 3-D surveys
  - Inspection & testing of main pumps & support systems
  - Planning for full-scale project
  - Value engineering



Hinds Discharge Valve

1. Preliminary Investigations

- Hydraulic Modeling Scope
  - Development of site-specific hydraulic models
  - Surge analysis at all 5 plants
- Northwest Hydraulic Consultants, Inc.
  - Competitively selected
  - SBE participation level - 18%
  - Cost not to exceed $300,000

Reassembly of Discharge Valve

2. Demonstration Project Design

- Metropolitan Scope
  - Detailed engineering, preparation of const. drwgs & specs
  - Procurement of motor exciter system
  - Procurement & installation of testing eqpt
  - Prequalification of service providers & eqpt vendors

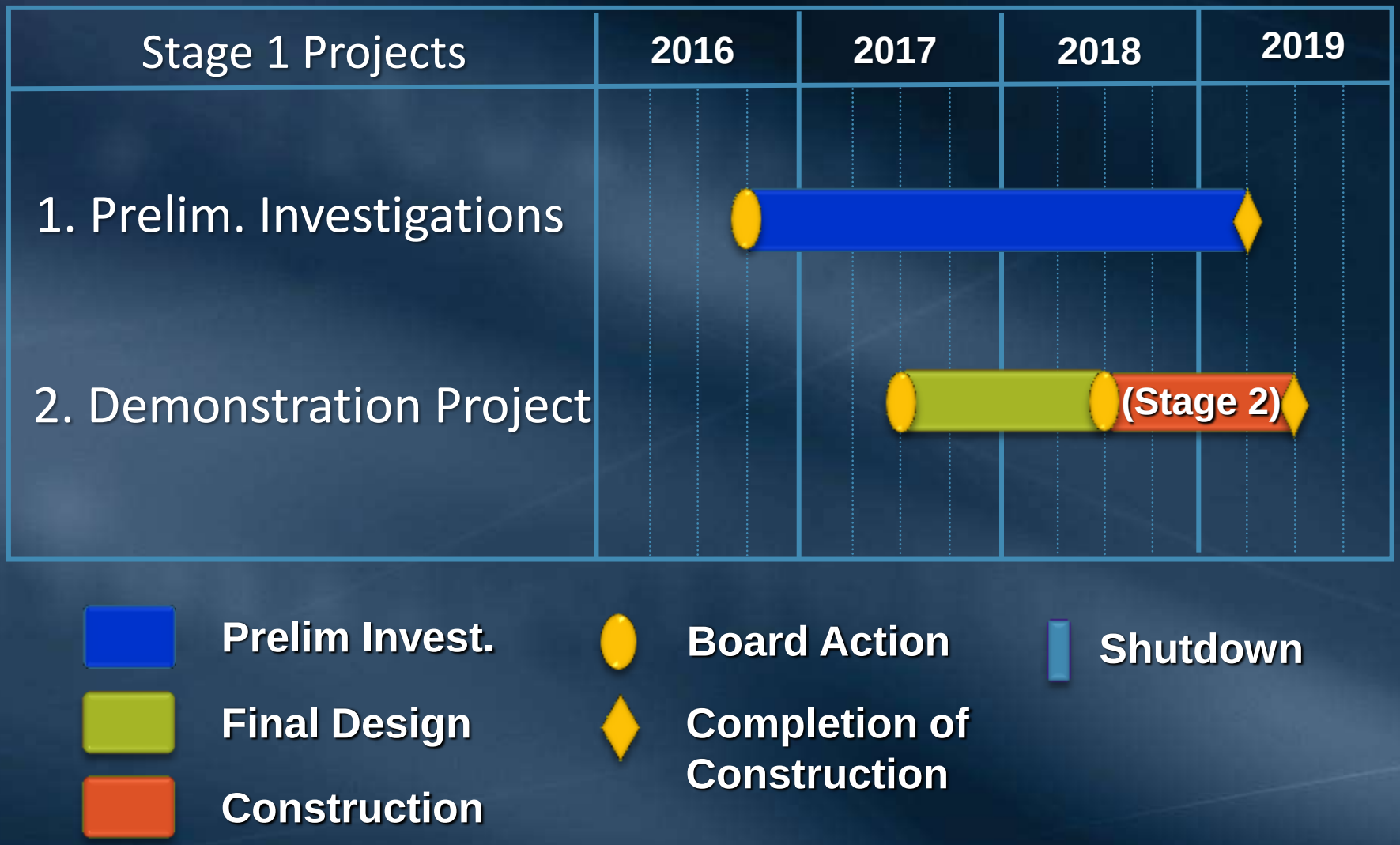

Motor Exciter

Requested Funds

	Preliminary Investigations	Demonstration Project Design
Labor		
PM, envir. docs.,	$ 626,000	$ 225,000
Studies & investigations	3,850,000	-
Final design	-	750,000
Met. force installation & testing	300,000	425,000
Professional services		
Northwest Hydraulic Consultants, Inc.	300,000	-
VE firm	64,000	-
Remaining budget	1,060,000	300,000
Subtotals	$ 6,200,000	$ 1,700,000

Total $7,900,000

Schedule


Stage 1 Projects
2016
2017
2018
2019
1. Prelim. Investigations
2. Demonstration Project
(Stage 2)
Prelim Invest.
Final Design
Construction
Board Action
Completion of Construction
Shutdown

Board Options

Option #1

- Adopt CEQA determination that proposed action is categorically exempt
- Appropriate $7.9 M
- Authorize preliminary investigations to rehabilitate 45 main pumps at the CRA pumping plants
- Authorize design to rehabilitate a single main pump at Gene Pumping Plant
- Authorize agreement with Northwest Hydraulic Consultants, Inc., in an amount NTE $300,000

Option #2

- Do not proceed with the projects at this time

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928