WATER SYSTEM IMPROVEMENT PROGRAM

Rebuilding Today for a Better Tomorrow

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Hetch Hetchy Water System

Service Area
END OF USEFUL LIFE

LACK OF REDUNDANCY
WHY FIX THE SYSTEM?
3 Major Earthquake Faults

San Andreas Fault

Hayward Fault

Calaveras Fault

Hetch Hetchy Regional Water System
It’s Not “IF” But “WHEN”
WATER SYSTEM IMPROVEMENT PROGRAM

• 83 Projects
  – 2 dams
  – 3 tunnels
  – 3 treatment facilities
  – Pipelines, pump stations, reservoirs, tanks, etc.

• 7 Counties
• $4.8 Billion
• 2019 Completion
OUR CHALLENGES

• Political landscape
• Institutional boundaries
• Environmental requirements
• System operation
• Wide geographic area
• Densely populated areas
HOW THE PROGRAM STARTED

- Ongoing master planning efforts
- Tipping Point: Loma Prieta
- Political Pressure → State Legislation
- 2002 ballot measures
- Refinement of project scopes, schedules, and budgets
- Adoption of Level of Service Goals
OUR GOALS

Seismic Reliability
Delivery Reliability
Water Quality
Water Supply
A (Very) Public Program

With Many Stakeholders

Governmental/Regulatory Agencies

Special Interest Groups

Labor/Contractor

Elected Officials

Oversight Bodies

Impacted Communities

Wholesale/Retail Customers
PROGRAM FUNDING

- Who should pay?
- Required political backing
- Funding options
- Customer rate increases
- Importance of cash flow projections
OVERALL MANAGEMENT APPROACH

• City-led program through matrix organization
• 3-Tier organizational structure
• Integration of consultants
• Use of state-of-the-art technology
• Key implementation strategies
  – Environmental
  – Contracting
  – Transparency
PROGRAM TRANSPARENCY

- Reaching out to stakeholders
- Accountability to oversight bodies
- Reviews by independent panels
- Extensive reporting
- WSIP Website (sfwater.org/wsip)
- Use of social media

Transparency + Accountability = Public Trust
A FEW LESSONS LEARNED

• **Program Controls**
  – Standardization and common understanding

• **Quality Management**
  – Make it a priority in all phases of implementation

• **Risk Management**
  – An integral part of day-to-day management

• **Change Management**
  – Controlling scope creep
COST OF CHANGE

Planning
Early Design
Late Design
Construction
Post Construction
GETTING OUR PROJECTS BUILT
HTWTP LONG-TERM IMPROVEMENTS
SEISMIC UPGRADE OF BDPL 3 & 4

- Trace A
- Trace B
- Trace C
- Hayward Fault
- Creek
- Environmental sensitive areas
- Archeological site
- Sewer
- Water
- Relocation of existing utilities
- Keep water flowing
- Intersection of 2 State Highways
- ROW Restrictions
- Close by residences
DESIGN CONCEPT AT TRACE B

- NEW 78"Ø BDPL 3 (OUTSIDE VAULT)
- NEW 72"Ø BDPL 3 (INSIDE VAULT)
- HAYWARD FAULT TRACE B
- PRIMARY FUTURE HAZARD ZONE
- NINE 20-FT-LONG 45° SKewed
- ARTICULATED VAULT SEGMENTS
- SOUTH END VAULT
- NORTH END VAULT
- BALL JOINT
- SLIDING SUPPORT
- SLIDING SUPPORT
- BALL JOINT
- SLIP JOINT
- GUIDED SUPPORT (4 TOTAL)
- MISSION BLVD
Seismic Upgrade of BDPL 3 & 4
KEYS TO OUR SUCCESS

• Visionary leadership
• Clearly defined needs and accepted goals
• Thoughtful implementation strategies
• Strong and diversified staff
• Focus on scope, quality, budget & schedule
• Transparency & accountability
• Trust of stakeholders
“I never handled any proposition where the engineering problems were so simple and the political ones so complex”

- Michael O’Shauighnessy, 1934
  (Architect of Hetch Hetchy System)