It Takes a Team to Build a Dam

Chris Kern
The CEQA Master

Debbie Craven-Green
The Permitting Wiz

Nicole Sandkulla
The Stakeholder

Dan Wade
The “Dam” Expert & Program Manager

Cullen Wilkerson
Protector of the Environment During Construction
Major Construction Needed on Two Dams to Restore Capacity

Lower Crystal Springs Dam

Calaveras Dam
Hetch Hetchy Regional Water System Crosses 3 Major Earthquake Faults
WATER SYSTEM IMPROVEMENT PROGRAM

- 87 Projects
  - 2 dams
  - 3 tunnels
  - 3 treatment facilities
  - Pipelines, pump stations, reservoirs, tanks, etc.
  - Bioregional Habitat Restoration (BHR) Sites
- 7 Counties
- $4.8 Billion
- 2019 Completion
A (Very) Public Program

With Many Stakeholders

Governmental/Regulatory Agencies
Special Interest Groups
Labor/Contractor
Elected Officials
Oversight Bodies
Impacted Communities
Wholesale/Retail Customers
ENVIRONMENTAL STRATEGY

• Commitment and stewardship
• Pre-Construction
  ➢ Avoidance of Impacts
  ➢ Minimization of Impacts
  ➢ Mitigation of Impacts
• Construction
  ➢ BMPs
  ➢ Training
  ➢ Monitoring / Reporting
• Operations
  ➢ Adaptive Management
Lower Crystal Springs Dam

- Constructed in 1890
- Forms Lower Crystal Springs Reservoir
- Maximum Capacity: 22.15 Billion Gallons
- Current Capacity: 18.5 Billion Gallons
Existing Dam Configuration

- Parapet Wall
- Spillway
- Stilling Basin
Dam Improvements

- Retrofitted Parapet Wall
- New Spillway
- New Stilling Basin
LCSD - New Spillway
LCSD - New Stilling Basin
Calaveras Dam

1918 Dam Almost Completed

1918 Dam Failure

1925 Completion
**SCOPE OF WORK**

- Replacement Dam
- Spillway
- Stilling Basin
- Intake/Outlet Works
- Borrow Areas
- Disposal Sites
- Haul Road
- Staging Areas
- Fish Passage
- Habitat Restoration
CROSS SECTION OF REPLACEMENT DAM

- Zoned Earth and Rock-Filled Dam
- 220 feet high & 1200 feet in length
- 80 feet wide at crest and 1200 feet wide at base
Start of Embankment Dam Construction
PROTECTION OF SPECIAL STATUS SPECIES
Upper Alameda Creek

Lower Alameda Creek
Alameda Creek Diversion Dam in Operation – December 1931
FISH PASSAGE FACILITIES AT ALAMEDA CREEK DIVERSION DAM

- Fish Ladder
- Power and Controls
- Alameda Creek
- ACDT Inlet
- Fish Screens
- Conveyance Pipes
Fish Passage Facilities at Alameda Creek Diversion Dam
What We Learned
Visionary Leadership
Lead up, Down, and Sideways
One Team Culture
Trust the Team
Consistency and Resiliency
Transparency & Accountability
CEQA Timeline

• Project Initiation and Scoping
  ➢ Fall 2005

• Technical Studies & Draft EIR Preparation
  ➢ 2006 – 2009

• Public Review and Response to Comments
  ➢ 2010 – 2011

• Final EIR Certification January 2011
Project EIR + Program EIR

- Water System Improvement Program EIR
- 38 project level EIRs
Habitats

- Study area: 1,900 acres
- Wetlands: 34 acres
- Streams: 14.3 miles
- Open Water (Reservoir): 1,012 acres
- Grasslands: 863 acres
- Oak woodlands: 327 acres
- Scrub: 79 acres
- Riparian forest: 38 acres
Special-Status Species

- Callippe Silverspot Butterfly
- California Red-Legged Frog
- California Tiger Salamander
- Foothill Yellow-Legged Frog
- Alameda Whipsnake
- Bald Eagle
- Berkeley Kangaroo Rat
- Western Pond Turtle
- Raptors
- Loggerhead Shrike
- Grasshopper Sparrow
- Tricolored Blackbird
- American Badger
- Townsend’s Big-Eared Bat
- Pallid Bat
- Western Mastiff Bat
Naturally Occurring Asbestos

- Excavation and handling of 4 million cubic yards of NOA containing material
- Worker safety
- East Bay Regional Parks employees
- Park visitors
- Dust control
- Monitoring and Reporting
- Shutdown conditions
- Appeal filed by East Bay Regional Parks
Project Changes DEIR to FEIR

- Changes to instream flow schedules for Steelhead
- Fish ladder added at Alameda Creek diversion dam
- Fish screens added at Alameda Creek diversion tunnel and Calaveras dam adits
- Adaptive management plan for Steelhead added

- Spillway grade control structures added
- Intake tower modifications
- Additional instrumentation
- Electrical distribution line upgrade added
- Right dam abutment excavation expanded
- Borrow area E modified
- West haul road work area modified
Permitting CDRP & LCSD
CDRP Spoils Disposal
LCSD Fountain Thistle
Ecosystem Level Mitigation
Mitigation for Permitted Impacts
Bioregional Habitat Restoration (BHR)
Paleontologists at work recovering a whale vertebrae

Environmental Construction Compliance
What’s Wrong with this Picture?
And this One?
SFPUC is Committed to Compliance

• Agency Mission
  ➢ Manage the resources—human, physical, and natural—entrusted to its care
• CEQA/NEPA mitigation measures, permit conditions, and Standard Construction Measures
• Avoid:
Environmental Construction Compliance Integrated in All Project Phases

**CEQA/Permitting Phase**
- Assist with impacts analysis
- Review mitigation measures and permit conditions for feasibility
- Determine level of compliance services needed strategy

**Bid and Award/Preconstruction**
- Prepare environmental specifications
- Prepare environmental training
- Prepare environmental compliance tracking tables
- Attend Kick-off Meetings

**Construction**
- Conduct pre-con surveys
- Install field signs
- Review contractor submittals
- Obtain plan approvals by other agencies
- Environmental training
- Inspect and document compliance
- Biological and archaeological monitoring
- Manage unanticipated discoveries (e.g., cultural resources)
- Support SWPPP compliance

**Post-Construction**
- Prepare/submit CEQA and permit compliance reports
- Revegetation monitoring
Construction Management Plan and Procedures

These procedures apply to all personnel working on the Water System Improvement Program (WSIP) to the extent that their work is affected by these WSIP Construction Management (CM) Procedures and does not conflict with specific SFPUIC policies or the contract under which the work is executed. Every CM function should have a procedure which describes that activity’s implementation process, its control and desired result.

The following are all current WSIP Construction Management Procedures:

- WSIP Construction Management Procedures - Table of Contents
- P001 - Preparation and Control of WSIP CM Procedures
- P002 - Request for Information (RFI)
- P003 - Value Engineering Change Proposal (VECP)
- P004 - Submittals
- P005 - Meeting Minutes
- P006 - Document Control & Management and Correspondence
- P007 - QA Daily Inspection Reports
- P008 - Pre-construction Conference
- P009 - Non-Compliance Notices - Quality
- P010 - Applications for Payment
- P011 - Construction Quality Management
- P012 - Safety Reporting Procedures
- P013 - Construction Claims Management
- P014 - Drawing Control
- P015 - Construction Schedule Management
- P016 - Construction Change Management
- P051 - Environmental Requirements Table
- P052 - Environmental Inspection and Special Environmental Monitoring
- P053 - Environmental Non-compliance Notice
- P054 - Environmental Minor Project Deviation (MPD)
- P055 - Monthly Environmental Compliance Report
- P056 - Environmental Quarterly Compliance Reporting Table
- P057 - Environmental Daily Monitoring Log
- P058 - Environmental Daily Inspection Reports
WSIP Typical Construction Management Organization

Legend
- SFPUC
- PCM Consultant
- RCM Consultant
- BEM Consultant

This is a “typical” organizational chart for larger WSIP projects. CM positions shown may differ for some projects. Smaller WSIP projects may include a greater number of SFPUC CM staff.
Regular Field Meetings
Training

- Training
Compliance Protocols and Methods

- Environmental Inspector manual
- Checklists and tracking tables
- Non-compliance resolution process
- Minor project changes process

<table>
<thead>
<tr>
<th>Permit Compliance Verification Checklist</th>
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</thead>
<tbody>
<tr>
<td>Condition Summary</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>6.3 Activities halted due to non-compliance with IPP and/or failure to implement reasonable measures selected by Designated Biologist to avoid take of Covered Species</td>
</tr>
<tr>
<td>6.4 All workers environmentally trained by Designated Biologist prior to working on the Project</td>
</tr>
<tr>
<td>6.5 Construction Monitoring Binder is complete and includes list of signatures of all Project personnel who have completed environmental training</td>
</tr>
<tr>
<td>6.6 Trash contained in covered receptacles and removed daily</td>
</tr>
<tr>
<td>6.7 Dust adequately controlled to ensure visibility is acceptable</td>
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SFPUC Alameda Creek Diversion Dam Fish Passage Facilities Project
CDFW Incidental Take Permit No. 2081-2015-005-03
Designated Biologist Daily Compliance Certification

Name: Chris Patterson  Date: 4/7/17

Summary of Work Performed:
- Sluice #3 Formileber
- Earth Work
- Wet Installation
Managing Migratory Birds
Handling Paleontological Discoveries

- *Carcharodon megalodon* or *Carcharocles megalodon*
  - related to modern great white shark
  - reached lengths greater than 52 feet
Maintaining Creek Flow Simultaneous with Dewatering
Benefits of Commitment to Compliance

12 years of WSIP construction with

• No violations
• Few incidents of listed species take
• Strong relationships with resource agencies
  ➢ Self-reporting encourages trust
• Effective handling of discoveries
• Meeting project schedules