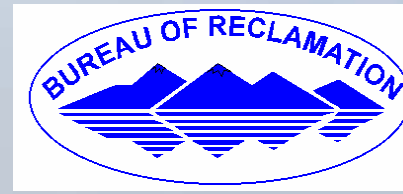




US Army Corps
of Engineers



Information Meeting

Flood Damage Reduction and Dam Safety Improvement Projects

Folsom Dam and Reservoir

February 20, 2007

Purpose of the Meeting

- Information. Promote awareness among neighboring communities of the scope of flood control, dam safety and other projects planned or underway at Folsom Dam and Reservoir over the next 10 – 15 years
- Communication. Listen, understand and consider community interests as an essential element in completing these critical projects

Agenda

- Folsom Dam and Reservoir
- Facility Operations
- Flood Control and Dam Safety Basics
- Folsom Dam Improvements
- Project Decision Process
- Public Involvement
- Open Discussion



Folsom Dam and Reservoir

- American River Basin Development Act (P.L. 81-356, Oct 14, 1949) and related statutes.
 - Authorized Folsom Dam for specific purposes
 - Required Folsom Dam to be operationally and financially integrated with the Central Valley Project
 - Construction by the U.S. Army Corps of Engineers
 - Ownership transferred to Reclamation upon completion for operation and maintenance
 - Authorized Reclamation to construct, operate and maintain the Folsom Powerplant and other facilities

Folsom Dam and Reservoir (cont'd)

- Authorized purposes. Folsom Dam is a multipurpose facility operated by law for the following purposes:
 - Flood control
 - Water supply (Irrigation / Municipal and Industrial)
 - Fish and Wildlife
 - Water Quality
 - Hydropower generation
 - Navigation
- Recreation at Folsom Lake is administered by DPR on behalf of Reclamation under authority of the Federal Water Project Recreation Act of 1965.

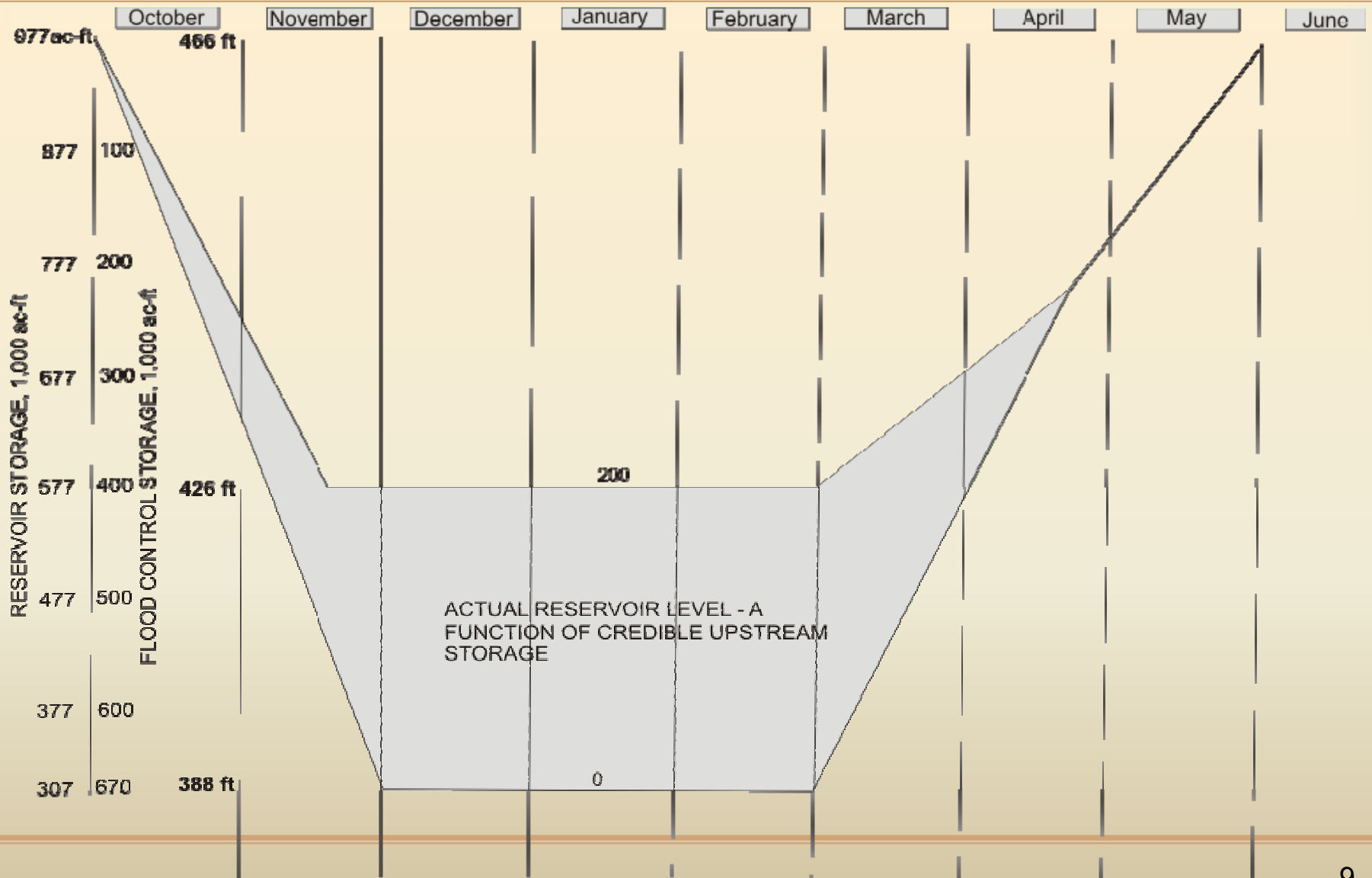
Facility Operations

Annual Water Deliveries	Annual Power Generation	Annual Recr Visitation
<ul style="list-style-type: none"> • Irrigation <u>0 a/f</u> • M&I <u>up to 736,000 a/f</u> <ul style="list-style-type: none"> - San Juan WD - City of Roseville - City of Folsom - Folsom Prison - SMUD - EBMUD - Sac County WA - City of Sacramento - Sac Suburban WD - EID/EDCWA • Other <u>1.7 – 2.7 MAF</u> <ul style="list-style-type: none"> - Flood Control releases - Fish and Wildlife flows 	<ul style="list-style-type: none"> • Folsom P/plant <u>631,000 GWh</u> • Nimbus P/plant <u>65,400 GWh</u> • Project Use Customers: <ul style="list-style-type: none"> - Fish and Wildlife - Irrigation Pumping - M&I Pumping - Station Power • Preference Customers: <ul style="list-style-type: none"> - Federal agencies - Military bases - Municipalities - Public Utility Districts - State Agencies 	<ul style="list-style-type: none"> • Folsom Lake <u>1.5 m</u> • Nimbus Fish Hatchery <u>1 m</u> • Natoma Aquatic Ctr <u>26,000</u> • ARWEC <u>45,000</u> <ul style="list-style-type: none"> - School Tours - Special events <ul style="list-style-type: none"> -- Salmon Festival -- Interpretative programs

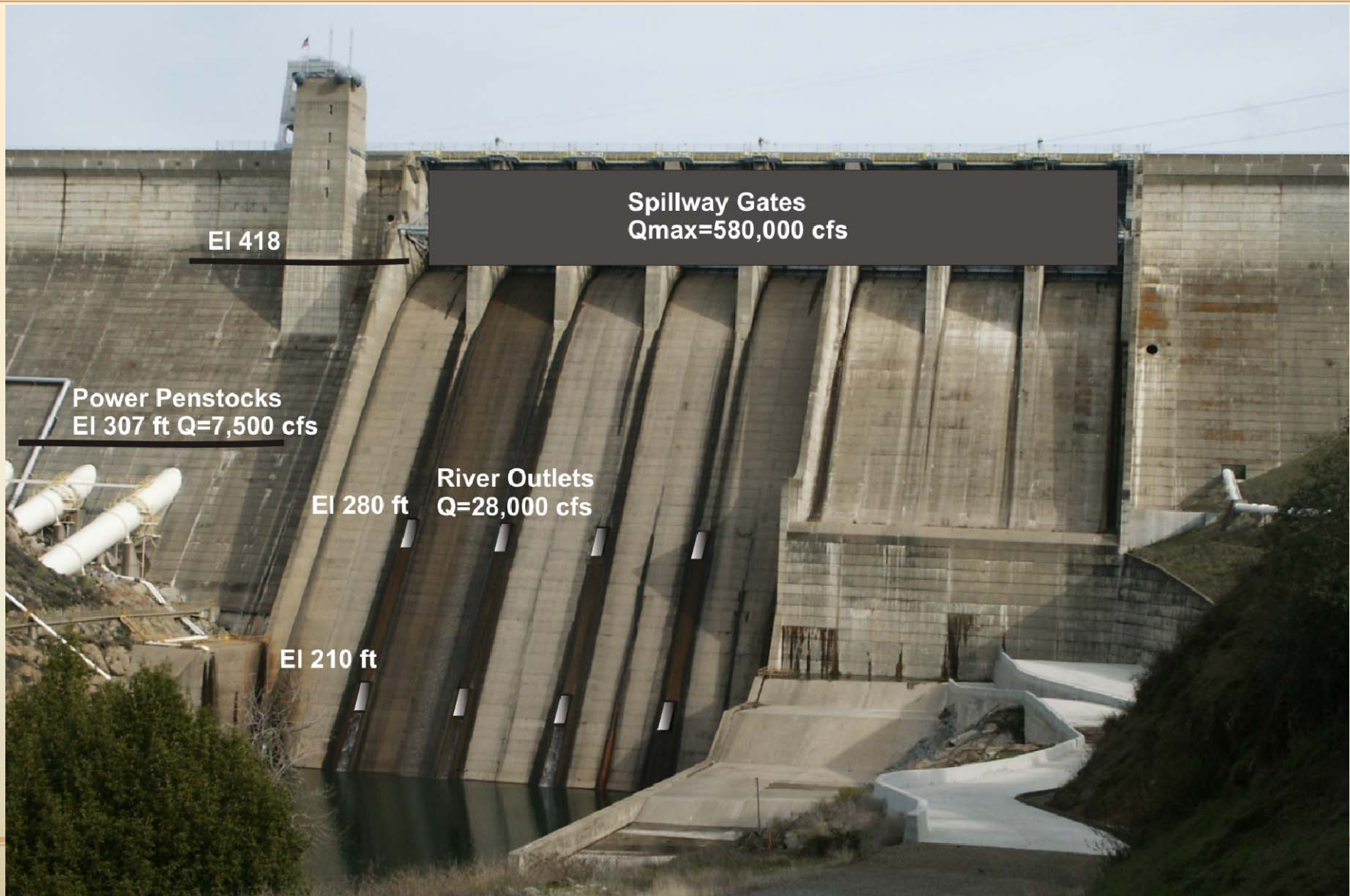
Flood Control Basics

- Flood control = Reserved Storage + Release Capacity
("catch and pass")
- Flood control operations at Folsom Dam are a matter of available storage space combined with reservoir releases in relation to:
 - Watershed hydrology (projected and actual inflow)
 - Operation of upstream reservoirs
 - Carrying capacity of the downstream levee system
 - Operation with other CVP and SWP facilities

Reserved Storage Space – Folsom Reservoir



Release Capacity – Folsom Dam



Flood Control Protection - Folsom

- Flood control protection by Folsom Dam is less than originally calculated
 - Originally designed for a “Standard Project Flood” (estimated by SAFCA to be 1/500 year protection)
 - Level of flood protection was periodically recalculated based upon subsequent flood events:

1964 (1/120)	1986 (1/60)	1997 (1/100)
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- Reserved storage and release capacity at Folsom must be improved in order to provide greater flood protection

Reclamation Dam Safety

- Risk-based evaluation. Two main risk factors:
 - Condition of the facility (annual failure probability)
 - Consequences (potential loss of life)
- Comprehensive facility review in 2000 identified potential risks:
 - Hydrologic: potential overtopping of dams and dikes during a major storm event
 - Seismic: potential sliding and/or breaching in the event of an earthquake
 - Static: potential seepage and piping



Dike 5



Initial Authorized Projects

- The Folsom Dam Outlet Modifications. Water Resources Development Act 1999 (Section 101(a)(6) P.L. 106-53)
- The Folsom Dam Raise. Energy and Water Appropriations Act of 2004 (PL 108-137)
- Dam Safety Corrective Actions. Reclamation Safety of Dams Act of 1978 (P.L. 95-578) as amended.

Joint Agency Objectives

- Design and construct a Joint Federal Project for Folsom Dam that expedites action by Reclamation and USACE to:
 - Provide 200-year or better flood protection
 - Address the dam safety hydrologic risk (pass Probable Maximum Flood)
- Complete other Dam Safety (DS) improvements
- Complete other Flood Damage Reduction (FDR) improvements

Joint Federal Project

- Auxiliary spillway comprised of:
 - Approach channel
 - Control structure: six submerged tainter gates at invert elevation 368' MSL
 - 1700' concrete lined spillway
- Gate dimensions, invert elevation or spillway may be optimized during final design to maximize performance and/or reduce costs

$Q_{max} = 280,000 \text{ cfs}$

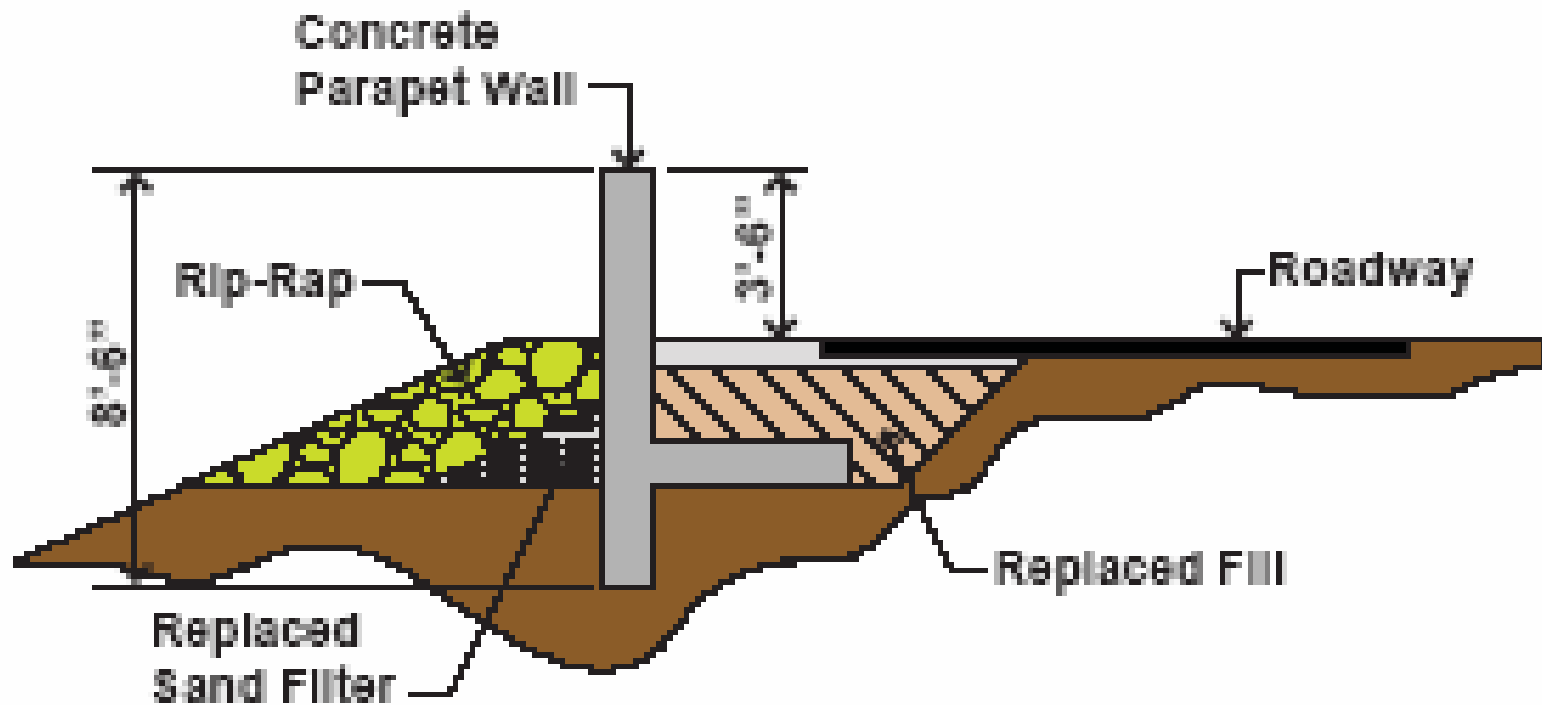
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Other FDR and DS Improvements

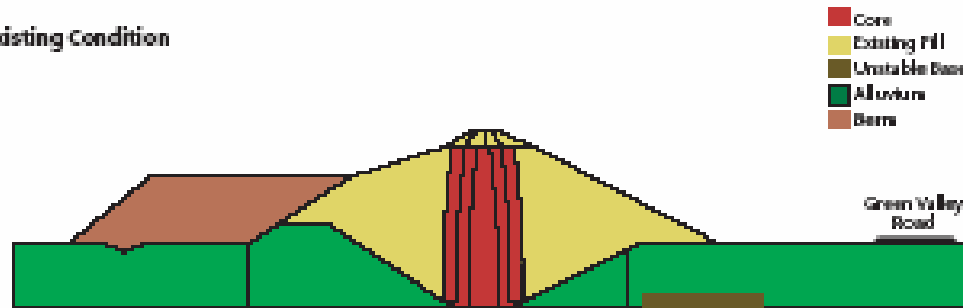
- Other Flood Damage Reduction-only projects
 - 3.5' raise of the embankments
 - Modification or replacement of existing spillway gates
- Other Dam Safety-only seismic projects
 - Mormon Island Auxiliary Dam (MIAD)
 - Main concrete structure
- Other Dam Safety-only static projects
 - Dikes 4 – 6
 - Left and Right Wing Dams
 - MIAD

Other FDR Improvements: 3.5' Parapet Wall

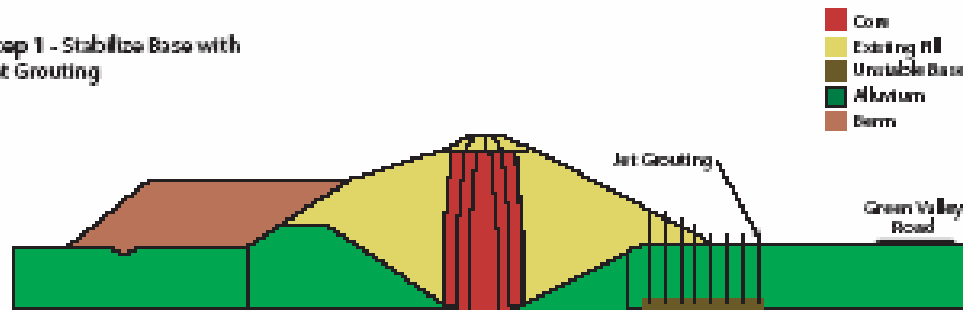


Other DS Improvements: MIAD

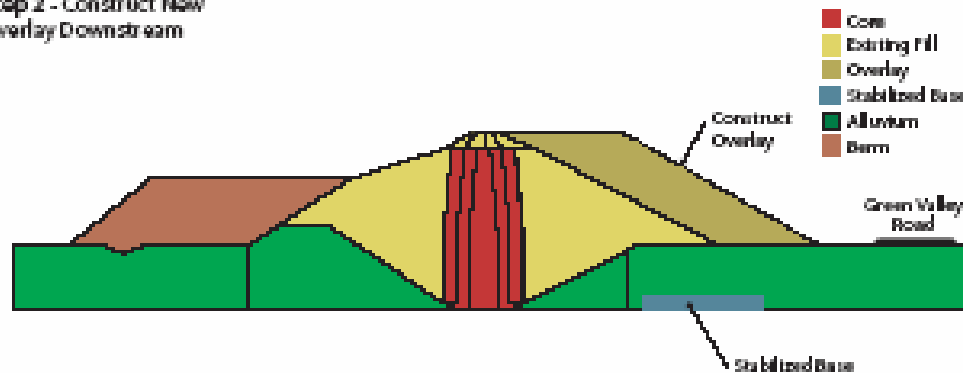
Existing Condition



Step 1 - Stabilize Base with Jet Grouting



Step 2 - Construct New Overlay Downstream



Other Projects at Folsom

<u>Project</u>	<u>Dates</u>
• Construction	
→ Permanent bridge	2007 - 2008
→ Security	2007 - 2008
→ Raw water bypass	Pending
→ EID Temperature Control Device	2006 - 2008
• Operations	
→ Permanent Re-operation	2007 - 2014
→ Revised Flow Management Standard Lower American River	2004 - 2008
• Powerplant Replacements	2009 - 2011

Other Projects – Folsom Bridge



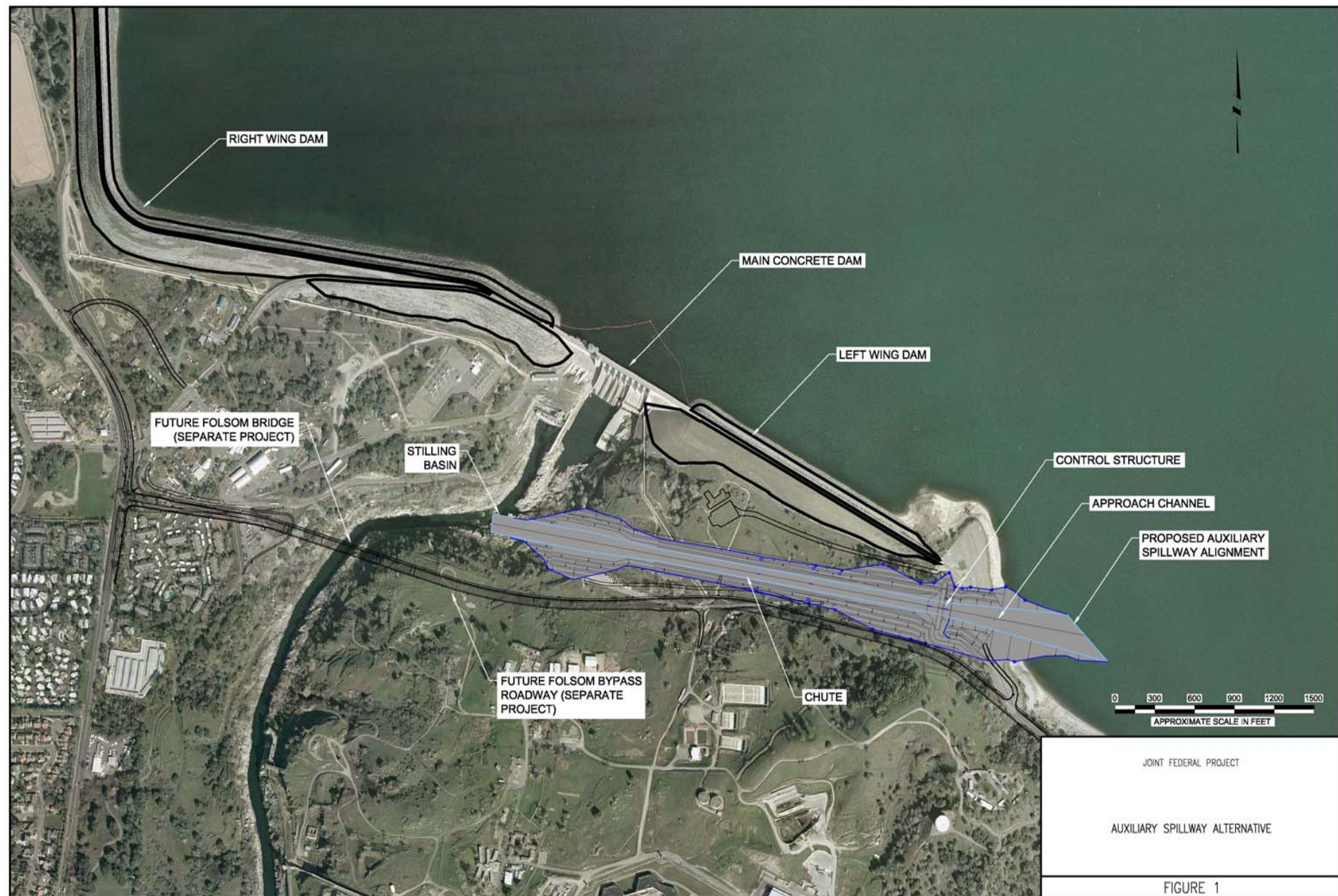


FIGURE 1

Construction Sequence (FY)

Feature	Lead	07	08	09	10	11	12	13	14	15	16	17	18
DS Seismic: MIAD	Recl												
DS Static: Dikes 4 - 8	Recl												
JFP Spillway Interim Excavation	Recl												
JFP Spillway Final Grade Excavation	Recl/ USACE												
Construct JFP Auxiliary Spillway	USACE												
FDR 3.5' Raise	USACE												
FDR Gate Mods	USACE												



Dike 1

Dike 2

Granite Bay

Dike 3

Dike 4

Dike 5

Dike 6

Right Wing Dam

Main Concrete Dam

Left Wing Dam

Auxiliary Spillway

Mormon Island Aux Dam

Dike 8

Dike 7

Folsom Dam Facility



Project Decision Documents

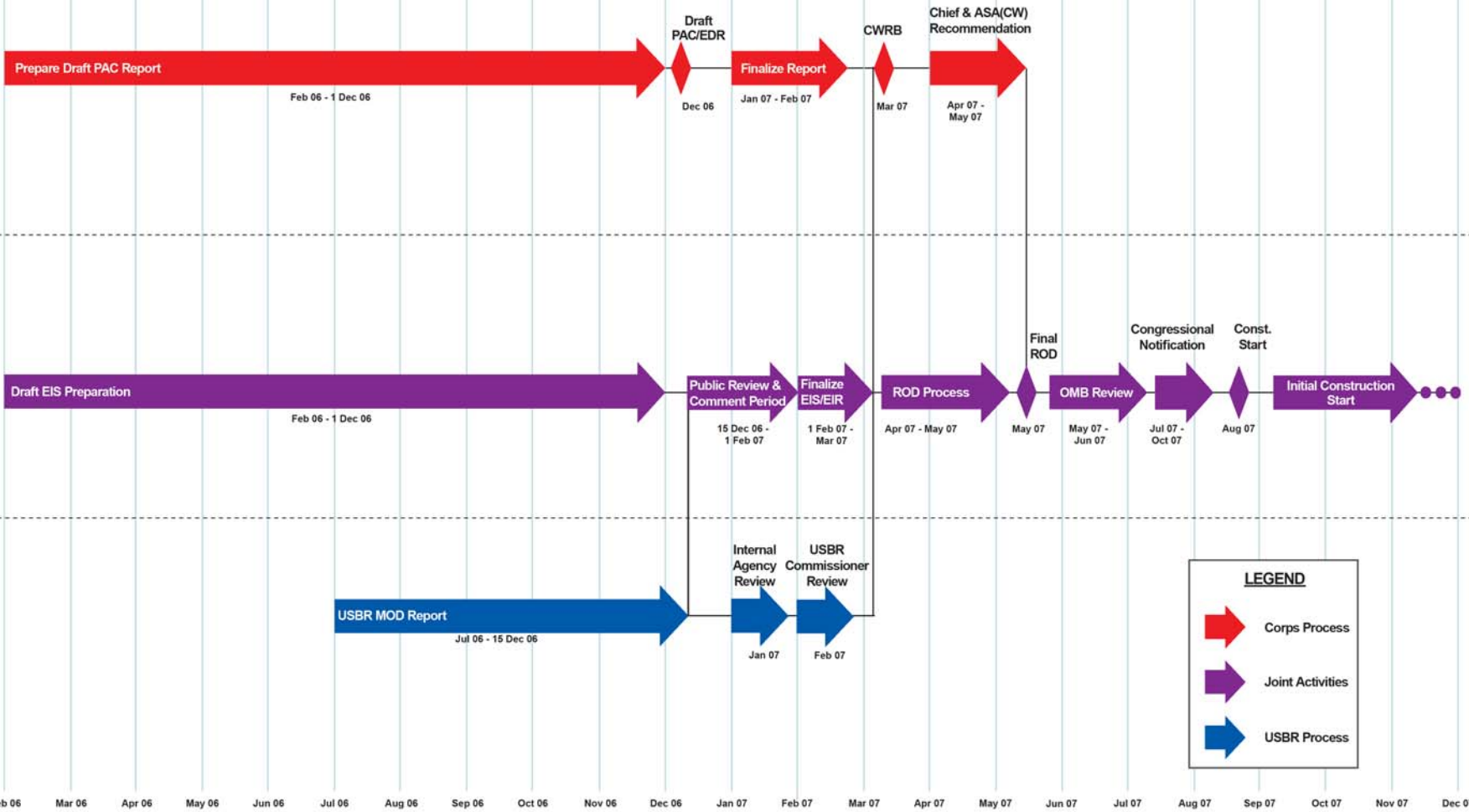
- Corps: Post Authorization Change (PAC) Report
- Reclamation: Dam Safety Modifications (Mod) Report
- Joint: Environmental Impact Statement/Report
 - Joint Federal Project (gates spillway)
 - Other FDR-only projects (3.5' raise, gate mods)
 - Other DS-only projects (seismic, static)
 - Reclamation security improvements

NEPA Process

- Define purpose and need for the federal action
- Public scoping
- Draft Environmental Impact Statement (disclosure)
 - Public Meetings
 - Formal comment period required
- Final Environmental Impact Statement (disclosure)
 - Minimum 30-day “cooling off” period
 - Agencies may accept and consider comments
- Record of Decision (ROD)

Feb 06 Mar 06 Apr 06 May 06 Jun 06 Jul 06 Aug 06 Sep 06 Oct 06 Nov 06 Dec 06 Jan 07 Feb 07 Mar 07 Apr 07 May 07 Jun 07 Jul 07 Aug 07 Sep 07 Oct 07 Nov 07 Dec 07

FOLSOM JOINT FEDERAL PROJECT REPORTS PROCESS



Public Involvement

- NEPA Process
- Information Meetings
- Long-term dialogue