



Upper San Joaquin River Basin STORAGE INVESTIGATION



Water Supply Subcommittee Initial Alternatives Information Report Briefing

September 14, 2005

A Study By:

RECLAMATION
Managing Water in the West



California Department
of Water Resources

In Coordination With:



Agenda

- ◆ Investigation Background
- ◆ Summary of IAIR
 - Surface Water Storage Measures Screening
 - Preliminary Water Operations Scenarios
 - Conjunctive Management Approach
 - Findings and Accomplishments
- ◆ Schedule



CALFED ROD Recommendations

- ◆ Enlarge Millerton Lake by 250 to 700 TAF, or
- ◆ Develop a functionally equivalent program to store San Joaquin River Flow

Primary Study Objectives

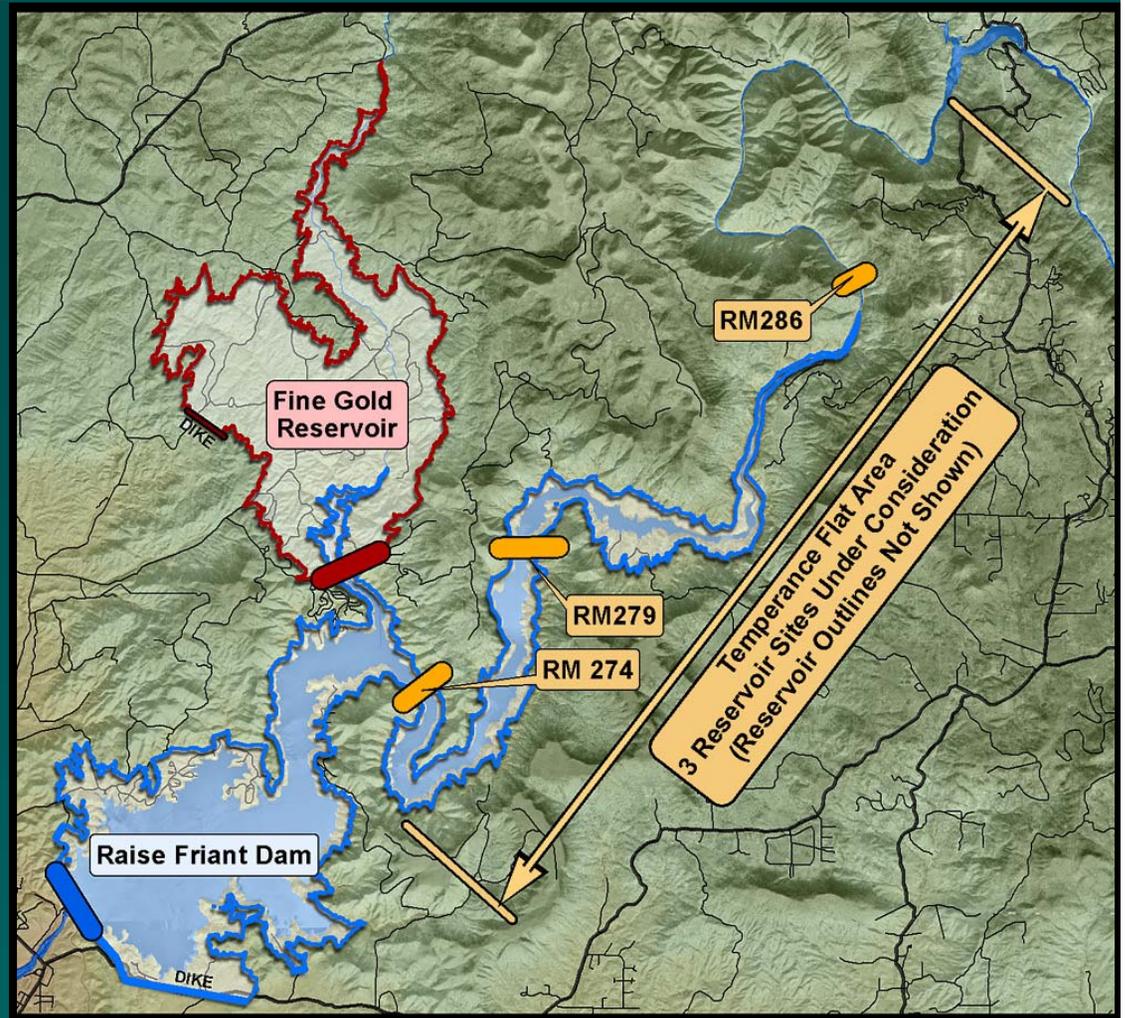
- ◆ Contribute to restoration of the San Joaquin River
- ◆ Improve water quality of the San Joaquin River
- ◆ Facilitate conjunctive water management and exchanges that improve urban water quality

Secondary Study Objectives

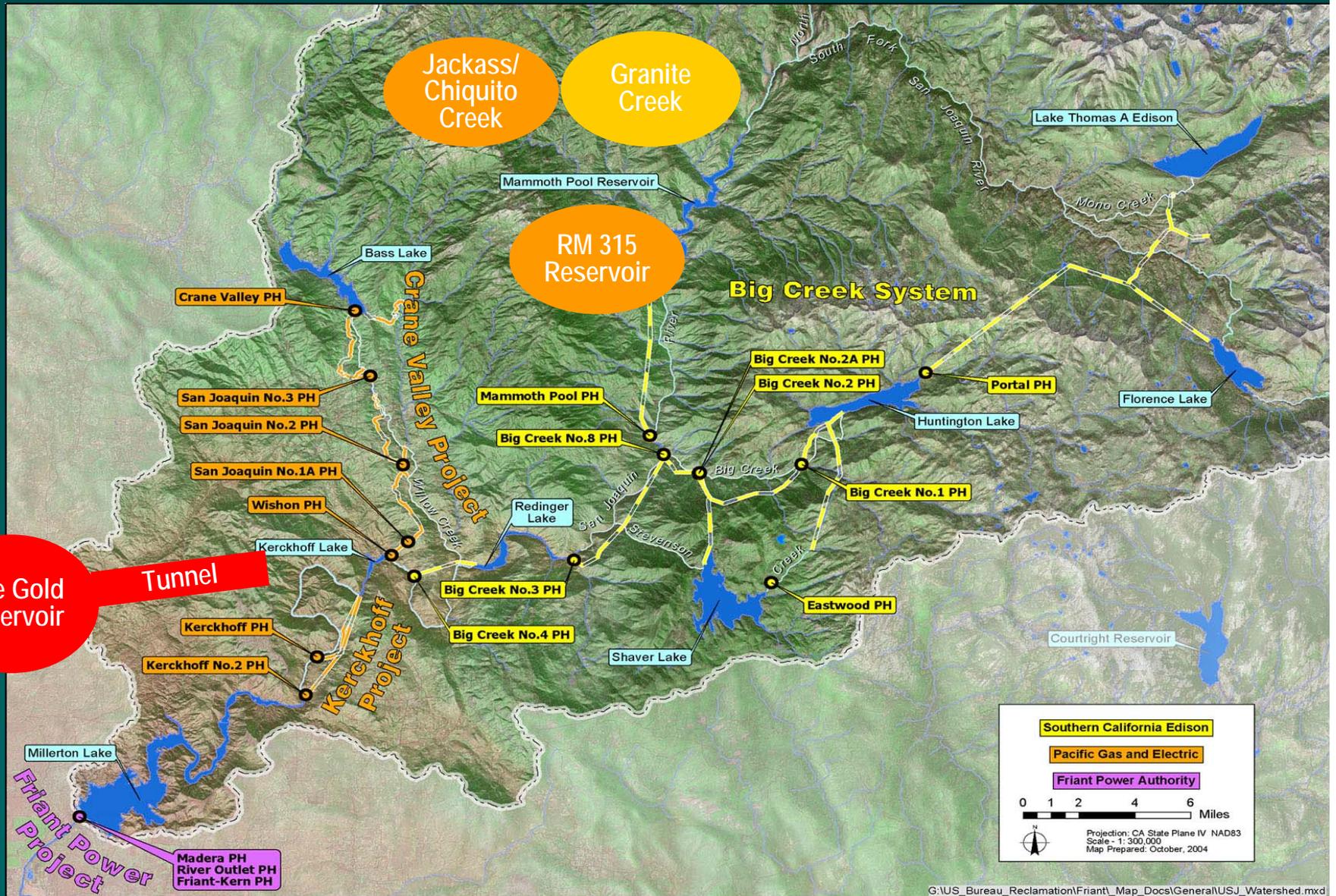
- ◆ Increase control of flood flows at Friant Dam
- ◆ Contribute to Long-term EWA water supply
- ◆ Develop hydropower generation opportunities
- ◆ Develop recreation opportunities

Surface Storage Sites Retained from Phase 1

- ◆ San Joaquin River
 - Raise Friant Dam
 - Temperance Flat
 - RM 274
 - RM 279
 - RM 286
- ◆ Off-Stream
 - Fine Gold Creek
 - Yokohl Valley



Suggested Measures to Avoid Power Impacts



Results of SCE/PG&E Measures Analyses

- ◆ Measures provide minimal water supply
- ◆ Measure(s) would need to be combined with a downstream measure to provide any appreciable yield
- ◆ Combined cost of a multi-reservoir alternative is high and not cost effective
- ◆ Further consideration of these measures would require participation by a non-Federal sponsor with an interest in power development



Two Step Approach to Screening Storage Measures

- ◆ Step 1 – Evaluate each site for:
 - ◆ New water supply
 - ◆ Hydropower generation effects
 - ◆ Estimated costs
 - ◆ Environmental considerations
- ◆ Step 2 – Compare measures with similar yield:
 - ◆ Consider cost, hydropower, and environmental issues



Surface Water Storage Measures Screening

Step 1

Surface Water Storage Measure	New Storage Capacity (TAF)	New Water Supply (TAF/year)	Status Following Site Evaluations
Raise Friant Dam			
25-foot Raise	130	24	Retained
60-foot Raise	340	68	Retained
140-foot Raise	920	146	Dropped
Fine Gold Reservoir			
Elevation 900	120	17	Dropped
Elevation 1,020	400	65	Retained
Elevation 1,110	800	113	Retained
Yokohl Valley Reservoir			
Elevation 790	450	60	Dropped
Elevation 860	800	97	Dropped
Storage Measures Suggested During Scoping			
Granite Project	114	23	Dropped
Jackass-Chiquito Project	180	37	Dropped
RM 315 Reservoir	200	40	Dropped
Fine Gold Reservoir Elevation 960	230	80	Dropped



Surface Water Storage Measures Screening Step 1 (continued)

Surface Water Storage Measure	New Storage Capacity (TAF)	New Water Supply (TAF/year)	Status Following Site Evaluations
Temperance Flat RM 274			
Elevation 800	460	88	Retained
Elevation 865	725	122	Retained
Elevation 985	1,310	165	Retained
Elevation 1,100	2,110	197	Dropped
Temperance Flat RM 279			
Elevation 900	450	86	Retained
Elevation 985	725	122	Retained
Elevation 1,115	1,350	168	Retained
Elevation 1,200	1,910	188	Dropped
Elevation 1,300	2,740	215	Dropped
Temperance Flat RM 286			
Elevation 1,200	460	88	Retained
Elevation 1,275	725	122	Retained
Elevation 1,400	1,360	168	Retained



Surface Water Storage Measures Screening

Step 2

NEW WATER SUPPLY 0 – 50 TAF/YR

Raise Friant Dam 25 ft.	130 TAF
Fine Gold Reservoir	120 TAF
Granite Project	114 TAF
Jackass-Chiquito Project	180 TAF
RM 315 Reservoir	200 TAF

Raise Friant Dam
25 ft.
130 TAF

NEW WATER SUPPLY 50 – 100 TAF/YR

Raise Friant Dam 60 ft.	340 TAF
Temperance Flat RM 274	460 TAF
Temperance Flat RM 279	450 TAF
Temperance Flat RM 286	460 TAF
Fine Gold Reservoir	230 TAF
Fine Gold Reservoir	400 TAF
Yokoh Valley Reservoir	450 TAF
Yokoh Valley Reservoir	800 TAF

Temperance Flat
RM 279
450 TAF

Fine Gold
Reservoir
400 TAF

NEW WATER SUPPLY 100 – 150 TAF/YR

Raise Friant Dam 140 ft.	920 TAF
Temperance Flat RM 274	725 TAF
Temperance Flat RM 279	725 TAF
Temperance Flat RM 286	725 TAF
Fine Gold Reservoir	800 TAF

Temperance Flat
RM 279
725 TAF

Fine Gold
Reservoir
800 TAF

STORAGE
MEASURES FOR INITIAL
ALTERNATIVES

NEW WATER SUPPLY GREATER THAN 150 TAF/YR

Temperance Flat RM 274	1,310 TAF
Temperance Flat RM 274	2,100 TAF
Temperance Flat RM 279	1,350 TAF
Temperance Flat RM 279	1,910 TAF
Temperance Flat RM 279	2,740 TAF
Temperance Flat RM 286	1,360 TAF

Temperance Flat
RM 274
1,310 TAF



Summary of Retained Storage Measures

Storage Measure	Additional Capacity (TAF)	Average New Water Supply (TAF/year)	New Power Generation (GWh/year)		Net Power Generation (GWh/year)		Total Construction Cost (\$ Million)	
Raise Friant Dam 25 ft	130	24	32		0		220	
Fine Gold Reservoir	400	65	not evaluated		not evaluated		470	
	800	113	114		-40		640	
Temperance Flat RM 274	1,310	165	291		-216		1,000	
Temperance Flat RM 279	450	86	not evaluated		not evaluated		670	800
	725	122	386	484	-121	-23	870	1,000

Costs are preliminary and do not include mitigation, relocated or new recreation facilities, acquisition of impacted power facilities, or replacement power for lost generation



Preliminary Water Operations Scenarios

Scenario	Allocation of New Supply
San Joaquin River Restoration Operations Scenarios	
1	Restoration with Diversion at Mendota Pool
2	Restoration with Bypass at Mendota Pool
3	Restoration using Annual Supply of 175 TAF with Carryover
San Joaquin River Water Quality Operations Scenarios	
4	River Water Quality with Carryover
Water Supply Reliability Operations Scenarios	
5	Canal Delivery with Existing Operations Rules
6	Canal Delivery with Carryover
All operational scenarios assume: Existing contracts, flood control rules, and downstream releases (120 TAF) No re-allocation of existing supplies New storage of 1,400 TAF	



Conjunctive Management Approach

- ◆ Step 1 – Identify potential for conjunctive management
 - Completed during Phase 1 of Investigation
- ◆ Step 2 – Identify potential projects via DWR's Regional Conjunctive Management Opportunities Study
 - Completed stakeholder input/interviews
 - Screening over 100 projects to 12 potential projects
 - ◆ Potential yield
 - ◆ Ability to contribute to multiple (local/regional) CALFED objectives
 - ◆ Potential stakeholder acceptance and support



Conjunctive Management Approach - continued

- ◆ Step 3 – Evaluate short list of conjunctive management projects against specific criteria to support objectives
 - Yield, cost, location
 - Effect on groundwater overdraft and quality
 - Ability to contribute to river releases for restoration and water quality
 - Institutional and implementation issues
- ◆ Step 4 – Document and integrate analyses and findings in Investigation Plan Formulation Report



Key Findings and Accomplishments

- ◆ Retained six surface storage measures
- ◆ No new net energy can be developed
 - Power replacement options have been considered to minimize overall hydropower impacts
 - Retained measures do not affect SCE
- ◆ Preliminary water operations scenarios were developed to illustrate a range of potential allocation and management strategies with new storage
- ◆ Preliminary conjunctive management projects were identified that may contribute to Investigation objectives



Schedule

- ◆ Screen Storage Measures
- ◆ Develop Operational Scenarios
- ◆ Define Initial Alternatives
- ◆ Evaluate Initial Alternatives
- ◆ Determine Benefits and Costs
- ◆ Define Final Alternatives
- ◆ Conduct Impact Analysis
- ◆ Evaluate Final Alternatives
- ◆ Complete Cost Allocation
- ◆ Recommend Preferred Alternative





Upper San Joaquin River Basin STORAGE INVESTIGATION



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