

California WaterFix Fish Facilities Tech Team (FFTT) Effort

4/30/2018

WORK PLAN

Intake Design Criteria and Performance Monitoring Development

June 28, 2013

TABLE 1
Purpose of Pre-construction Studies

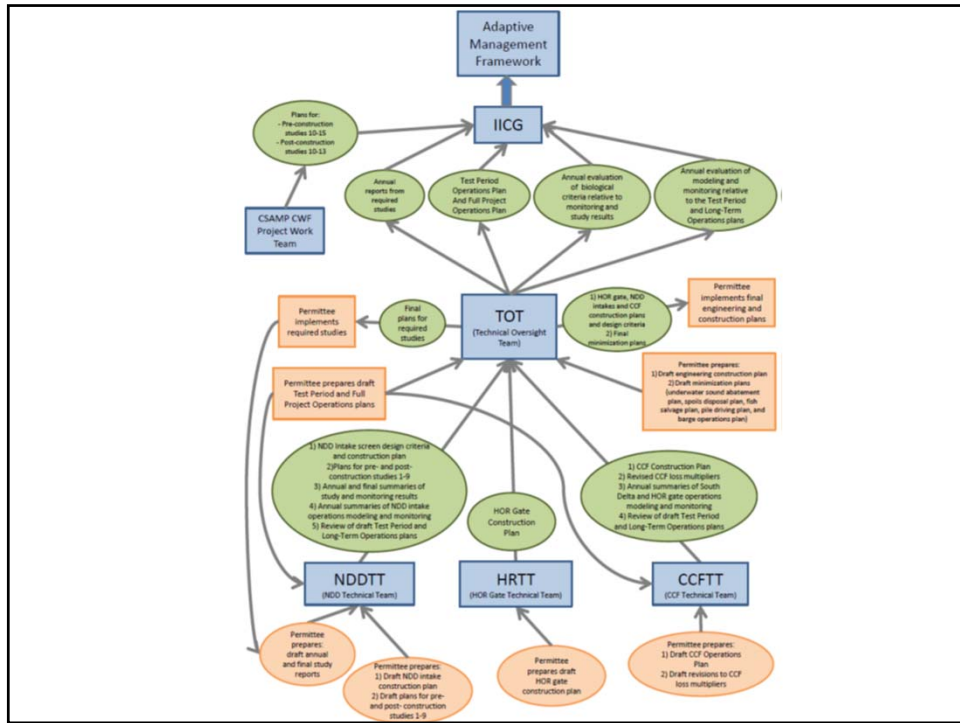
Study	Purpose
Part A: Studies to Inform Facility Design	
1. Site Locations Lab Study	Optimize hydraulics and sediment transport issues at the selected sites
2. Site Locations Numerical Study	Develop site-specific numerical hydraulic models to characterize the tidal and river hydraulics and the interaction with the intakes under all proposed design operating conditions
3. Refugia Lab Study	Test and verify final recommendations for location, size, and configuration of refugia for the project
4. Refugia Field Study	Evaluate the effectiveness of using refugia as part of intake structure and fish screen design to provide holding habitat for juvenile fish passing the screen to recover from swimming fatigue and to avoid exposure to predatory fish
5. Predator Habitat Locations	Identify the locations and physical and biological characteristics for locations where predatory fish congregate, and develop design and management criteria that would serve to reduce predation risk at the proposed north Delta diversions
6. Predator Reduction Methods	Compile and synthesize information on effective methods to control predation on covered fishes by predatory fish, birds, and mammals
7. Flow Profiling Field Study	Characterize the water velocity distribution at river transects within the proposed river reach under varying flow conditions for calibration of the hydraulic models
8. Deep Water Screens Study	Identify the hydraulic characteristics for deep fish screen panels on the Sacramento River
Part B: Studies to Establish Biological Baselines	
9. Baseline Predator Density and Distribution	To determine the baseline densities and distribution of predatory fish within the lower Sacramento River where north Delta diversion structures are proposed to be sited and in adjacent control reaches
10. Reach-Specific Baseline Juvenile Salmonid Survival Rates	To determine baseline rates of survival for juvenile Chinook salmon and steelhead within the lower Sacramento River in the vicinity of proposed north Delta diversions
11. Baseline Fish Surveys	To determine baseline densities and seasonal and geographic distribution of all life stages of covered fish species inhabiting the reaches of the Sacramento River where the proposed north Delta diversion structures may be sited

CA WaterFix –
Fisheries Technical Teams

- NMFS BO, USFWS BO, and CDFW ITP require formation of interagency technical teams to further develop specific actions
 - Technical Oversight Team (TOT) (advisory/overarching)
- **Fish Facilities Technical Team (FFTT/NDDTT)**
 - Clifton Court Forebay Technical Team (CCFTT)
 - Habitat Mitigation Technical Team (HMTT)
 - Barge Operations Technical Team (BOTT)
 - Head of Old River (HOR) Barrier Technical Team (HGTT)

CA WaterFix –
Fisheries Technical Teams

- Tech Teams would be charged with review of draft work plans that identify specific studies, analyses, and/or other requirements in BOs, ITP, and AMP
- Would also coordinate/collaborate with other groups (e.g., IICG, DOSS, DAT, IEP, CSAMP/CAMT)



CA WaterFix – FFTT Work Plan (preliminary)

- FFTT Purpose and Charge:
 - Develop and oversee baseline studies, monitoring, design, and operational activities of the north Delta diversions
 - Identify / form Study Teams specific to different investigation areas of focus:

Investigation Area	Study Focus
Predation	Predation Design/Refugia Predator Baseline Studies Predator Reduction
Operations	Operations Plans Georgiana Slough
Native Fish Monitoring	
SWP and CVP Salvage	
Fish Screen Evaluation	
Hydraulic Modeling	

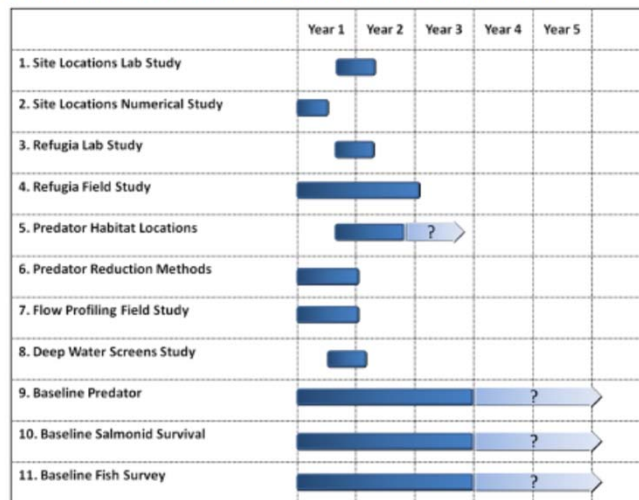
CA WaterFix – FFTT Work Plan (preliminary)

- **Prioritization**

1. Pre-Construction (Start Immediately)
 - a) Multi-Year Baseline Studies
 - b) Facility Design Input
2. Pre-Operations (Complete within 5 years)
3. Post-Construction / Operations

Schedule

The preliminary schedule for the pre-construction studies is presented here, along with the anticipated sequence of studies. The schedule does not show actual calendar dates because it is not currently known when these studies would be approved and funded. Although the timing of study implementation will be influenced by several factors, the general priority and sequence of studies should remain the same.



CA WaterFix – FFTT Work Plan (preliminary)

Pre-Construction (Start Immediately)

	Study Focus	Study Plan	Permit Measures	2013 Work Plan	
PRE-CONSTRUCTION	Predation				
	Predation Design/Refugia	Predation Minimization Design Recommendations		BO 3ai, 3aiii, 3bii	
		Refugia Lab Study		ITP Pre-Con #3	3
		Refugia Field Study		ITP Pre-Con #4	4
		Predator Habitat Locations Study		ITP Pre-Con #5, BO 3c	5
	Predator Baseline Studies	Baseline Predator Density Monitoring Plan		BO 3aii, ITP Pre-Con #9	9
	Predator Reduction	Predator Reduction Methods		ITP Pre-Con #6	6
	Hydraulic Modeling				
		Site Locations Lab Study		ITP Pre-Con #1	1
		Site Locations Mathematical Study		ITP Pre-Con #2	2
		Flow Profiling Field Study		ITP Pre-Con #7	7
		Deep Water Screens Study		ITP Pre-Con #8	8
Native Fish Monitoring					
	NDD Intake Baseline Salmon Survival Rates		ITP Pre-Con #10	10	
	Baseline Delta Smelt and Longfin Smelt Survey		ITP Pre-Con #11	11	
	Through Delta Baseline Salmon Survival Rates		ITP Pre-Con #12		

CA WaterFix – FFTT Work Plan (preliminary)

Pre-Operations (Complete within 5 Years)

	Study Focus	Study Plan	Permit Measures	
PRE-OPERATIONS	Operations			
		Test Period Operations Plan		BO 5a-5c, ITP 9.6.7
		Full Project Operations Plan		ITP 9.6.8
		Real Time Operations Plan		BO: 11a, 12d, 12e ITP: 9.9.4.2, 9.9.5, 9.9.5.1
	Georgiana Slough	Georgiana Slough Research and Monitoring Plan		BO 11b-11d
		Monitoring Sacramento Reverse Flows		ITP Pre-Con #13
	Fish Screen Monitoring			
		Fish Screen Monitoring Plan		BO 4a-4aviii
	SWP and CVP Salvage			
		Protocol for Pumping Restrictions and Loss		BO 14b
	Protocol for Fish Salvage, Handling, and Reporting		BO 14c	

CA WaterFix – FFFT Work Plan (preliminary)

Post-Construction

	Study Focus	Study Plan	Permit Measures
POST-CONSTRUCTION	Predation		
	Predation Design/Refugia	Refuge Effectiveness	ITP Post-Con #5 - related to Pre-Con #3 and #4
	Predator Baseline Studies	Predator Density and Distribution	ITP Post-Con #9 - related to Pre-Con #9
	Native Fish Monitoring		
		NDD Intake Salmon Survival Rates	ITP Post-Con #10 - related to Pre-Con #10
		Delta Smelt and Longfin Smelt Survey	ITP Post-Con #11 - related to Pre-Con #11
		Through Delta Baseline Salmon Survival Rates	ITP Post-Con #12 - related to Pre-Con #12
	Operations		
	Georgiana Slough	Monitoring Sacramento Reverse Flows	ITP Post-Con #13 - related to Pre-Con #13
	Fish Screen Monitoring		
		Hydraulic Screen Evaluations to Set Baffles	ITP Post-Con #1
		Long-Term Hydraulic Screen Evaluations	ITP Post-Con #2
		Periodic Visual Inspections	ITP Post-Con #3
	Velocity Measurement Evaluations	ITP Post-Con #4	
	Sediment Management	ITP Post-Con #6	
	Evaluation of Screen Impingement	ITP Post-Con #7	
	Evaluation of Screen Impingement	ITP Post-Con #8	