

Draft CVPIA Fiscal Year 2009 Annual Work Plan

December 1, 2008

Program Title

Clear Creek Restoration - CVPIA Section 3406(b)(12).

Responsible Entities

Staff Name	Agency	Role
Jim De Staso	USBR	Lead
Matt Brown	USFWS	Co-Lead

Program Goals and Objectives for FY 2009

Goal A - Provide flows to allow sufficient spawning, incubation, rearing, and outmigration for salmon and steelhead.

Objectives: 1) provide available habitat that is at least 90 percent of the maximum possible weighted usable area, 2) do not exceed Igo gauge water temperature criteria including 60°F from June 1 through September 15, and 56°F from September 15 through October 31, and 3) provide passage allowing at least 70 percent of adult anadromous fish able to pass upstream of the former McCormick-Saeltzer Dam location.

Goal B – Restore the stream channel and associated instream habitat.

Objectives: 1) restore 2 mile section of Clear Creek degraded by aggregate and gold mining, and 2) annually inject 25,000 tons of spawning gravel to recharge system.

Task 1.9.1 - Prepare programmatic environmental permits for restoration actions including spawning gravel additions, placement of instream habitat structures, and fall-run/spring-run separation picket weir

Task 1.9.2 - Prepare environmental permits for implementation of the Long-Term Clear Creek Gravel Supply Project

Task 1.10.1- Prepare plan and designs for Long-Term Clear Creek Gravel Supply Project

Goal C – Determine impacts of restoration actions on anadromous fishery and geomorphology.

Objective: Conduct fishery and geomorphic monitoring at levels necessary to ascertain project effects on fishery and geomorphic resources.

Task 1.12.1 - Conduct geomorphic monitoring to determine amount of gravel needed to recharge the system

Task 1.12.2 - Conduct adult and juvenile monitoring using snorkeling rotary screw trapping and other techniques.

Table A. Clear Creek Program Goals and Performance Measures
GOALS: Restore Clear Creek habitat and provide instream flows.

	Salmon Spawning Habitat	Water Temperature	Stream Channel Restoration	Gravel Placement
Measure	Percent of weighted usable spawning area ^a	Percent of days daily temperature target not met	Percent of two stream miles restored	Tons of gravel placed
Target	Interim target – At least 90 percent of maximum possible habitat	Zero	100%	25,000
Timeframe	Annual	Annual	2010	2016, Annual thereafter, as needed
Reporting	Annual Work Plan (AWP), Monitoring Report	AWP, Monitoring Report	AWP, Monitoring Report	AWP, Monitoring Report
Accomplished	Annually, based on annual evaluation	Annually	Upon completion of construction	Annually
Results				
1992	36%			
1993	36%			
1994	36%			
1995	36%			
1996	80%			7,500 (30%) ^b
1997	80%			3,500 (14%)
1998	80%		10%	9,000 (36%)
1999	91%	0%		8,000 (32%)
2000	91%	29%	20%	10,977 (44%)
2001	77%	1%	40%	12,501 (50%)
2002	89%	1%	50%	2,106 (8%) ^b
2003	94%	1%	50%	6,971 (28%)
2004	94%	1%	50%	12,258 (49%) ^b
2005	94%	18%	50%	9,735 (39%) ^b
2006	94%	0%	50%	2,600 (10%)
2007	94%	1%	75%	10,000 (40%)
2008	94%	1%	75%	8,485 (34%)

^a Based on original 1985 Instream Flow Incremental Methodology (IFIM) study. IFIM study underway to determine updated future target. Water provided by CVP re-operation and (b) 2 Program.

^b Includes gravel placements funded by other programs.

Supporting documents

1) CVPIA Section 3406 (b)(12); 2) Record of Decision, Central Valley Project Improvement Act; 3) CALFED Bay-Delta Programmatic Record of Decision, proposed Ecosystem Restoration Program stage 1 actions; 4) CALFED Ecosystem Restoration Program Strategic Plan For Ecosystem Restoration, action 3, page D-23; and 5) Biological Opinion on the Long-Term

Status of the Program

Flows

Interim flow increases began in 1995 and have occurred every year since. Pre-CVPIA baseline flows were 50 cfs between January and October and 100 cfs in November and December. Under (b)(2), interim flows were increased to 200 cfs from mid September through mid June and approximately 70 to 90 cfs during the summer for temperature control. This interim flow prescription was recommended by the AFRP Working Paper which derived its recommendations from an IFIM study conducted in the mid 1980's. The USFWS began a new IFIM study in 2004 to reassess flow requirements taking into account changes in instream habitat resulting from CVPIA restoration efforts. A new long-term flow schedule will likely be proposed following completion of the IFIM study in about 2009.

The CALFED Environmental Water Program (EWP) and the USFWS have proposed to Reclamation a re-operation of Whiskeytown Dam, between March 1 and May 15, such that a glory hole spill produces a minimum target release of 3,250 cfs for one day occurring three times in a ten year. It is thought that flows of this magnitude and duration would reactivate fluvial geomorphic processes to re-create and maintain diverse instream and floodplain habitat required to support and recover aquatic and riparian species.

McCormick-Saeltzer Dam Passage

McCormick-Saeltzer Dam was removed in the fall of 2000. Passage of spring-run Chinook has increased from 0 to 70 percent allowing for establishment of a new population of this threatened species. Stream surveys and juvenile monitoring results also suggest that dam removal is allowing re-establishment of spring-run Chinook as well as a new population of threatened Central Valley steelhead.

Stream Channel Restoration

The Stream Channel Restoration project is a construction project designed to eliminate gravel extraction pits, restore a functional floodplain, and increase salmonid spawning and juvenile rearing habitat in a 2 mile section of creek significantly degraded by gold and aggregate mining. Four Phases of the project are complete including: Phase 1 in 1998, Phase 2A in 1999, Phase 2B in 2001, Phase 3A in 2002, Redding Bar in 2003 and Phase 3B in 2008.

Construction of Phase 1, 2A and 2B primarily resulted in gravel extraction pits being filled-in and restoration of function floodplains. Phases 3A and 3B relocated approximately 5,000 ft of stream channel as well as restoration of functional floodplains. Spawning area use in the new 3A channel is now more than 400 % greater than in the previous un-restored channel. Use of the new channel for juvenile Chinook rearing was higher than expected. Geomorphic monitoring performed by Graham Matthew and Associates has shown that the new stream channel and floodplain have functioned as intended during target flows: 1) the stream bed mobilizes; 2) the floodplain inundates; 3) fine sediments needed for development of riparian vegetation, deposit on the floodplain; 4) the stream channel migrates laterally across the floodplain; and 5) spawning, incubation, rearing and outmigration habitat for salmon and steelhead is being created

and maintained. In addition, re-vegetation efforts have been very successful in creating overstory habitats. However, according to neotropical migratory bird monitoring performed by the Point Reyes Conservation Science, there is a need to increase understory vegetation and overall structural diversity in the future. Phase 3B implementation began in June 2007 with expected completion in 2009. Phase 3C, the last phase of the project, is currently being considered for design and permitting in future years.

Spawning Gravel Supplementation

Spawning gravel supplementation is a long-term need created by the construction of Whiskeytown Dam, which blocks gravel from moving downstream into the areas of Clear Creek where salmonids spawn. By the year 2020 the overall goal is to provide 347,288 square feet of usable spawning habitat between Whiskeytown Dam downstream to the former McCormick-Saeltzer Dam, the amount that existed before construction of Whiskeytown Dam. Between 1995 and 2008, a total of approximately 110,000 tons of spawning gravel was added to the creek. The 2001 Gravel Management Plan was revised in 2007 and provides an overall gravel injection strategy for the creek and the amount of gravel needed to restore gravel transport continuity. The programs' interim annual spawning gravel addition target was 25,000 tons per year, but only an average of 7,972 tons were placed annually since 1996 due to lack of funding.

Erosion Control

An Erosion Inventory Report was completed in 1996 and between 1997 and 2001 the highest priority erosion control projects were implemented by cooperators from the USFWS, National Park Service, and the Bureau of Land Management. All feasible and cost effective projects were finished by 2001.

Adaptive Management/Monitoring

Ongoing monitoring studies involve salmonid use of restored habitat, fish stranding and passage, juvenile salmonid out-migration, adult population estimates, redd mapping, neotropical migratory bird populations, riparian vegetation, wetlands, groundwater, stream flows, water temperatures, bedload movement, channel geomorphology, and spawning gravel quality. Monitoring is conducted at levels allowing accurate statistical assessments of program impacts on salmonid escapement, production, and habitat.

FY 2008 Accomplishments

Flows

Base flows of 200 cfs between October 1 and May 31 were achieved. Flows to achieve temperature control of 60°F from June 1 through September 15 and 56°F from September 15 through October 31 were met 100 percent of the time.

The IFIM study being conducted by the USFWS, completed data collection on fall-run Chinook salmon spawning study sites in the lower reach of Clear Creek and data collection for juvenile fall-run Chinook salmon rearing habitat suitability criteria, and started data collection for fall-run Chinook salmon juvenile rearing study sites in the lower reach of Clear Creek. The USFWS began hydraulic modeling of fall-run Chinook salmon spawning study sites in the lower reach of Clear Creek and began work on a draft report for juvenile spring-run Chinook salmon and steelhead rearing in the upper reaches of Clear Creek.

Reclamation, the USFWS, and the CALFED EWP continued to analyze the feasibility of re-operating Whiskeytown Dam to provide intermediate magnitude and duration flows. Two documents were prepared including: the draft Evaluation of EWP Pilot Re-operation of Whiskeytown Dam, and the final draft Technical Memorandum NO.WHI-8130-IE-2007-1 EWP: Pilot Re-operation of Whiskeytown Dam.

Stream Channel Restoration

Implemented channel relocation and floodplain reconstruction components of Phase 3B in 2007 and 2008. Designs for floodplain revegetation were completed in September 2008 with implementation expected between November 2008 and January 2009.

Spawning Gravel Supplementation

Spawning gravel addition occurred at Whiskeytown Dam (1,000 tons), Placer Road Bridge (3,000 tons), Phase 3A (1,500 tons), and Phase 2A (3,000 tons).

Adaptive Management / Monitoring

Monitoring continues to document the success of the project and the importance of dealing with the remaining limiting factors including flow, and spawning and rearing habitat. In 2007, fall-run Chinook escapement was 4,129 compared to the average baseline escapement of 1,689 between 1967 and 1991. The adult spring-run Chinook population index continues to increase from a low of zero in 2001 to a high of 200 in 2008. Adult steelhead populations also continue to increase, as indicated from redd counts, increasing from about 38 in 2001 to 159 in 2008. In spite of increases in adult anadromous fish, juvenile production has decreased since 1996 from 7.4 to 4.7 million fish. And the number of juvenile fall-run Chinook produced per adult female has decreased from about 2900 in 1998 to 907 in 2006. These decreases are due in part to excessive amounts of fine sediment in the stream channel that could be removed by intermediate flows or prevented by erosion control.

Direct observation studies of the Phase 3A and Phase 3B restoration projects continued to indicate that overall both projects performed well at providing juvenile Chinook rearing habitat,

although boulder clusters and one type of rootwad structure performed poorly. Spawning surveys indicated that Phase 3B was completed too late in the season to allow fall-run Chinook spawning in FY 2008.

New monitoring initiated in FY 2008 included benthic macro-invertebrate sampling to compare the effectiveness of the restoration projects, mercury sampling during storms to evaluate the impact of Phase 3B on total mercury in Clear Creek, and a riparian encroachment and restoration opportunity inventory that was later put on hold due to a shortage of Restoration Funds. This inventory will provide information to evaluate the need for further physical habitat restoration in Clear Creek.

CVPIA funded geomorphic monitoring in the upper-anadromous reach related to spawning gravel supplementation. Detailed topographic and thalweg surveys, stream gaging, tracer rock studies and photo-points completed in FY 2008 are used to design future gravel projects and to assess how far gravel has moved and how much habitat has been created. This information will be used to determine how much gravel to place and how often for particular restoration sites. In addition, CALFED provided funds for geomorphic monitoring in the lower-anadromous reach related to stream channel restoration. Monitoring of riparian vegetation and neotropical migratory birds is funded by CALFED.

Table 1. FY 2009 Tasks, Costs, Schedules and Deliverables

Task or Subtask Number	Name of Activity	FTE's	Description of Activity	Completion Date	Total Cost	Funding Source RF	Funding Source WRR
1.1	Program Management						
1.1.1		0.25	USBR	9/30/2009	\$50,000	\$25,000	\$25,000
	<u>Subtotal Costs</u>				\$50,000	\$25,000	\$25,000
1.2	Program Support						
1.2.1		0.25	USFWS	9/30/2009	\$50,000	\$50,000	\$0
	<u>Subtotal Costs</u>				\$50,000	\$50,000	\$0
1.9	Environmental Compliance						
1.9.1	Priority Medium		Prepare programmatic environmental permits for restoration actions including spawning gravel additions, placement of instream habitat structures, and fall-run/spring-run separation picket weir This task can be reduced by \$50,000 if funding cut occurs	9/30/2009	\$100,000	\$100,000	\$0
1.9.2	Priority High		Prepare environmental permits for implementation of the Long-Term Clear Creek Gravel Supply Project	9/30/2009	\$75,000	\$75,000	\$0
	<u>Subtotal Costs</u>				\$175,000	\$175,000	\$0
1.10	Design						
1.10.1	Priority High		Prepare plan and designs for Long-Term Clear Creek Gravel Supply Project	9/30/2009	\$100,000	\$100,000	\$0
	<u>Subtotal Costs</u>				\$100,000	\$100,000	\$0
1.12	Monitoring						
		0.875					
1.12.1	Priority High		Conduct geomorphic monitoring to determine amount of gravel needed to recharge the system	9/30/2009	\$156,905	\$156,905	\$0
1.12.2	Priority Medium		Salmonid monitoring conducted by the USFWS could include (depending upon which elements are funded by CALFED): juvenile habitat use, spawning area mapping, juvenile habitat suitability indices, adult salmonid escapement, juvenile salmonid production, spawning gravel quality, survival-to-emergence, fish rescue, benthic macro-invertebrate sampling, water quality (Hg) and water temperature. This task can be reduced by \$58,750 if funding cut occurs	9/30/2009	\$175,000	\$175,000	\$0

Task or Subtask Number	Name of Activity	FTE's	Description of Activity	Completion Date	Total Cost	Funding Source RF	Funding Source WRR
	<u>Subtotal Costs</u>				\$331,905	\$331,905	\$0
1.14	Other						
1.14.1	Priority High		Provide funding to Bella Vista Water District for power use energy to wheel McConnell Foundation water		\$18,095	\$18,095	\$0
	<u>Subtotal</u>				\$18,095	\$18,095	\$0
	Total Costs				\$725,000	\$700,000	\$25,000
	Service Funding (lines 1.2.1, 1.12.2)				\$225,000	\$0	\$0
	Reclamation Funding (lines 1.1.1, 1.9.1, 1.9.2, 1.10.1, 1.12.1, 1.14.1)				\$500,000	\$0	\$0
	Potential 15% funding cut		\$58,750 from task 1.12.1; \$50,000 from task 1.9.1		\$108,750	\$108,750	\$0
1.15	Unfunded Needs		Gravel Supplementation		\$250,000	\$250,000	\$0
1.15.1			Conduct multi-year geomorphic monitoring		\$125,000	\$125,000	\$0
1.15.2			Prepare plan, designs and bid package for Long-Term Clear Creek Gravel Supply Project		\$200,000	\$200,000	\$0
				TOTAL:	\$575,000	\$575,000	\$0

Table 2. Budget Breakout

Task	Agency	FTE	LABOR			CONTRACTS			Misc. Costs	Total Costs
			Direct Salary and Benefits Costs	Overhead Costs on Salary & Benefits	USFWS Overhead Assess: 22% of Direct Salary and Benefits Costs	Contract, Grant, and Agreement Costs	USFWS Overhead Assess: 6% Contract Costs			
1.1 Program Management	USFW S	0	0	0	0	0	0	0	0	
	USBR	0.25	50,000	0	0	0	0	0	50,000	
1.2 Program Support	USFW S	0.25	26,639	14,344	9,016	0	0	0	50,000	
	USBR		0	0	0	0	0	0	0	
1.9 Environmental Compliance	USFW S		0	0	0	0	0	0	0	
	USBR		0	0	0	175,000	0	0	175,000	
1.10 Design	USFW S		0	0	0	0	0	0	0	
	USBR		0	0	0	100,000	0	0	100,000	
1.12 Monitoring	USFW S	.875	93,238	50,205	31,557	0	0	0	175,000	
	USBR		0	0	0	156,905	0	0	156,905	
1.14 Other	USFW S		0	0	0	0	0	0	0	
	USBR		0	0	0	18,095	0	0	18,095	
1.15 Unfunded needs:	USFW S		0	0	0	0	0	0	0	
	Gravel Supplementation	USBR	0	0	0	250,000	0	0	250,000	
	Geomorphologic monitoring	USBR	0	0	0	125,000	0	0	125,000	
	Acquire long-term gravel supply	USBR	0	0	0	200,000	0	0	200,000	
USFWS Total Costs		1.125	119,877	64,549	40,573	0	0	0	225,000	
USBR Total Costs		0.25	50,000	0	0	450,000*		0	500,000*	
TOTAL ALL		1.375	169,877	64,549	40,573	450,000*	0	0	725,000*	

*Unfunded needs are not included in the total costs in the bottom row.

Table 3. Three Year Budget Plan FY 2010 – 2012

(\$ Thousands)

Year	Description of Activities	Requested RF Funding	Requested W&RR Funding
2010	1.1 and 1.2 Program Management.	\$120	\$0
	1.4.1 Gravel additions at about 8 sites to provide approximately 25,000 tons (100 percent of CPAR gravel goal).	\$750	\$0
	1.10.1 Complete plan, designs, permits and bid package for the	\$200	\$0

Year	Description of Activities	Requested RF Funding	Requested W&RR Funding
	<p>Cloverview Long-Term Gravel Supply Project Phases 1 and 2.</p> <p>1.12.2 Salmonid monitoring conducted by the USFWS could include (depending upon which elements are funded by CALFED): juvenile habitat use, spawning area mapping, juvenile habitat suitability indices, adult salmonid escapement, juvenile salmonid production, spawning gravel quality, survival-to-emergence, fish rescue, benthic macro-invertebrate sampling, water quality (Hg) and water temperature.</p> <p>Task 1.12.1 – Multi-year contract to conduct geomorphic stream monitoring to determine amount of gravel needed to recharge the system and success of restoration projects. Evaluate relationship between amount of gravel added and the amount of spawning habitat created.</p> <p>TOTAL</p>	<p>\$175</p> <p>\$125</p> <p>\$1,370</p>	<p>\$0</p> <p>\$0</p> <p>\$0</p>
2011	<p>1.1 and 1.2 Program Management.</p> <p>1.4 Implement Cloverview Long-Term Gravel Supply Project Phase 1.</p> <p>1.12.2 Salmonid monitoring conducted by the USFWS could include (depending upon which elements are funded by CALFED): juvenile habitat use, spawning area mapping, juvenile habitat suitability indices, adult salmonid escapement, juvenile salmonid production, spawning gravel quality, survival-to-emergence, fish rescue, benthic macro-invertebrate sampling, water quality (Hg) and water temperature.</p> <p>TOTAL</p>	<p>\$130</p> <p>\$800</p> <p>\$250</p> <p>\$1,180</p>	<p>\$0</p> <p>\$0</p> <p>\$0</p> <p>\$0</p>
2012	<p>1.1 and 1.2 Program Management.</p> <p>1.4 Implement Cloverview Long-Term Gravel Supply Project Phase 2.</p> <p>1.12.2 Salmonid monitoring conducted by the USFWS could include (depending upon which elements are funded by CALFED): juvenile habitat use, spawning area mapping, juvenile habitat suitability indices, adult salmonid escapement, juvenile salmonid production, spawning gravel quality, survival-to-emergence, fish rescue, benthic macro-invertebrate sampling, water quality (Hg) and water temperature.</p> <p>1.12.1 Multi-year contract to conduct geomorphic stream monitoring to determine amount of gravel needed to recharge the system and success of restoration projects. Evaluate relationship between amount of gravel added and the amount of spawning habitat created.</p> <p>TOTAL</p>	<p>\$140</p> <p>\$800</p> <p>\$350</p> <p>\$100</p> <p>\$1,390</p>	<p>\$0</p> <p>\$0</p> <p>\$0</p> <p>\$0</p> <p>\$0</p>

Note: The FY 2010 – 2012 Budget Plan provides estimates of capability only. The amounts are displayed are those that might be reasonably appropriated each year. These figures do not reflect the future Congressional Appropriations process. All of these estimates will be adjusted annually as RF collections are realized.

