Draft CVPIA Fiscal Year 2010 Annual Work Plan
October 1, 2009

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 2010

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 to pass upstream of the former McCormick-Saeltzer Dam location.

Task 1.14.1 - Fund wheeling cost for Bella Vista Water District

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 1.4.1 - Add 3,000 tons of spawning gravel at 1-3 sites to provide approximately 12 percent of program goal (25,000 tons annually)

Task 1.9.1 - Complete environmental permits for the Long-Term Spawning 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 adult and juvenile monitoring using snorkeling rotary screw trapping and other techniques

Task 1.12.2 - Conduct geomorphic monitoring to determine amount of gravel needed to recharge the system

Task 1.12.3 - Conduct stream gauge operation and maintenance and generate data set for FY 2009

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 Central Valley Project and State Water Project Operations Criteria and Plan, June 2009.

Status of the Program

All actions in this Annual Work Plan are required by the Reasonable and Prudent Alternative of the Central Valley Project Operation Criteria and Plan Final Biological Opinion from the National Marine Fisheries Service.

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 2010.

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 period. 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. CALFED contracted with USFWS to fund planning and pilot re-operation. Funds were frozen in December 2008 due to State of California budget crisis.

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 remnant gravel extraction pits being filled-in and restoration of functional floodplains. Phases 3A and 3B relocated approximately 5,000 linear feet of stream channel as well as restoration of functional floodplains. Spawning area use in the new 3A channel is now more then 400 percent greater than in the previous un-restored channel. Use of the new channel for juvenile Chinook rearing was higher than expected. Geomorphic monitoring has shown the new stream channel and floodplain have functioned as intended during target flows including: 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 riparian habitats. However, according to neotropical migratory bird monitoring performed by the Point Reyes Conservation Science, there is a need to increase understory riparian vegetation and overall structural diversity in the future. Phase 3B implementation began in June 2007 and was completed in 2008 except for some revegetation that lost funding do to the State of California budget crisis. 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 1996 and 2009, a total of approximately 116,000 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 8,286 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 2009 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 99 percent of the time.

The IFIM study, being conducted by the USFWS, completed a draft report on fall-run Chinook salmon spawning study sites in the lower reach of Clear Creek and data collection for fall-run Chinook salmon juvenile rearing study sites in the lower reach of Clear Creek.

USFWS and the CALFED EWP entered into a contract to provide an implementation plan and pilot re-operation of Whiskeytown Dam to provide intermediate flows to re-create and maintain diverse instream and floodplain habitat required to support and recover aquatic and riparian species. Funds for this contract were frozen in December 2008 due to the State of California budget crisis.

Stream Channel Restoration

Phase 3B floodplain revegetation was not completed due to funds being frozen in December 2008 due to the State of California budget crisis.

Spawning Gravel Supplementation

A 10-year programmatic environmental assessment for restoration on Clear Creek was finalized.

Spawning gravel addition occurred at Below Dog Gulch (1,000 tons), Above Peltier Valley Bridge (770 tons), at Paige Bar (1,790 tons), Above NEED Camp (980 tons), and Below NEED Camp (1,230 tons). Above Peltier Valley Bridge injection used gravel sluicing to place gravel.

Adaptive Management / Monitoring

CALFED funds for fishery monitoring were suspended in December 2008 due to the State of California budget crisis. Although all field work was completed, other tasks were not completed because of staff reductions due to the uncertainty of funding.

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 2008, fall-run Chinook escapement was 7,677 compared to the average baseline escapement of 1,689 between 1967 and 1991. Fall Chinook escapement was slightly greater than the average post-CVPIA (1992 to 2008) escapement of 7,350. In the past few years, the Central Valley fall Chinook fishery has collapsed producing less than 25 percent of the 1992 to 2007 average. No other Central Valley watershed has survived the collapse as well as Clear Creek. Although increases in adult fall Chinook have been sustained since 1995, juvenile production has

decreased since 1998 from 7.4 to 5.1 million fish by 2007. The number of juvenile fall-run Chinook produced per adult female has also decreased from about 2,900 in 1998 to 1,945 in 2007. 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.

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 a record high of 409 in 2009, a nearly 400 percent increase over the average of 2001-2008.

Spawning surveys in 2008 showed that Phase 3B increased the total amount of spawning habitat by 15 percent.

Continued benthic macro-invertebrate sampling to compare the effectiveness of the restoration projects. Mercury sampling during storms suggested that Phase 3B did not increase the amount of total mercury in Clear Creek and suggest that efforts to remediate mercury coming from gravel pits decreased the amount of total mercury.

Table 1. FY 2010 Tasks, Costs, Schedules and Deliverables

Task or Subtask Number	Name of Activity	FTE	Description of Activity	Completion Date	Restoration Fund Anticipated	Water and Related Resources Anticipated	State or Other Sources Anticipated	Total All Sources Anticipated
1.1	**Program Management**							
1.1.1		0.25	Reclamation - overall program management, budget, prepare and oversee contracts	9/30/2010	$60,000	$0	$0	$60,000
1.1.2		0.26	FWS - overall program management, budget, conducts monitoring	9/30/2010	$60,000	$0	$0	$60,000
	Subtotal Costs	0.51			$120,000	$0	$0	$120,000
1.4	**Restoration Actions**							
1.4.1	Priority High		Spawning gravel injections (Conducted by Reclamation via contractor; AFRP Final Restoration Plan Clear Creek Action 5; add 3,000 tons of spawning gravel to 1-3 sites; provides 12 percent of CPAR gravel goal; benefit primarily spring-run Chinook and steelhead; increase quantity and quality of spawning habitat)	9/30/2010	$109,929	$0	$0	$109,929
	Subtotal Costs				$109,929	$0	$0	$109,929
1.9	**Environmental Compliance**							
1.9.1	Priority High		Long-Term Spawning Gravel Supply Project permitting (Conducted by Reclamation via contractor. Use dredge mine tailings as an inexpensive source of spawning gravel; funding will allow completion of environmental permits needed for eventual project implementation beginning sometime between 2012-2013)	9/30/2010	$80,071	$0	$0	$80,071
	Subtotal Costs				$80,071	$0	$0	$80,071
1.12	**Monitoring**							
1.12.1	Priority High	0.76	Conduct adult and juvenile monitoring using snorkeling rotary screw trapping and other techniques (Conducted by USFWS, Red Bluff; data steward and stored at USFWS, Red Bluff)	9/30/2010	$175,000	$0	$0	$175,000
1.12.2	Priority Medium		Conduct geomorphic monitoring to determine amount of gravel needed to recharge the system (Conducted by Reclamation via contractor; data steward and stored at Reclamation, Northern California Area Office)	9/30/2010	$65,000	$0	$0	$65,000
1.12.3	Priority Medium		Conduct stream gauge operation and maintenance and generate data set for FY 2009 (Conducted by Reclamation via contractor; Reclamation and USFWS responsible as data stewards and storage)	9/30/2010	$30,000	$0	$0	$30,000

Task or Subtask Number	Name of Activity	FTE	Description of Activity	Completion Date	Restoration Fund Anticipated	Water and Related Resources Anticipated	State or Other Sources Anticipated	Total All Sources Anticipated
	Subtotal Costs	0.76			$270,000	$0	$0	$270,000
1.14	**Other**							
1.14.1	Priority High		Fund wheeling cost for Bella Vista Water District	9/30/2010	$20,000	$0	$0	$20,000
	Subtotal				$20,000	$0	$0	$20,000
	Total Costs	1.27			$600,000	$0	$0	$600,000
	Reclamation Total	**0.25**			$365,000	$0	$0	$365,000
	Service Total	1.01			$235,000	$0	$0	$235,000
1.15	**Unfunded Needs**							
1.15.4	Priority High		FWS monitoring		$425,000	$0	$0	$425,000
1.15.3	Priority High		Long term gravel supply design and bid package		$150,000	$0	$0	$150,000
1.15.2	Priority High		Pursue EWP flows		$1,000,000	$0	$0	$1,000,000
1.15.1	Priority High		Gravel supplementation		$660,000	$0	$0	$660,000
1.15.5	Priority High		Model water temperatures		$50,000	$0	$0	$50,000
	Total Unfunded Needs				$2,285,000	$0	$0	$2,285,000

Table 2. Budget Breakout

Task	Agency	FTE	LABOR		CONTRACTS		USBR Only Misc. Costs	Total Costs
			Direct Salary, Benefits, and Admin Costs [1/]	FWS Only Overhead Assess: 22% of Direct Salary and Benefits Costs [2/]	Contract, Grant, and Agreement Costs	FWS Only Overhead Assess: 6% Contract Costs [2/]		
1.1 Program Management	FWS	0.26	$49,180	$10,820	$0	$0		$60,000
	USBR	0.25	$60,000		$0		$0	$60,000
1.4 Restoration Actions	FWS		$0	$0	$0	$0		$0
	USBR		$0		$109,929		$0	$109,929
1.9 Environmental Compliance	FWS		$0	$0	$0	$0		$0
	USBR		$0		$80,071		$0	$80,071
1.12 Monitoring	FWS	0.76	$143,443	$31,557	$0	$0		$175,000
	USBR		$0		$95,000		$0	$95,000
1.14 Other	FWS		$0	$0	$0	$0		$0
	USBR		$0		$20,000		$0	$20,000
Administrative Total - FWS			$192,623	$42,377		$0		$235,000
Contracts, Grants and Agreements Total - FWS					$0			$0
FWS Total Costs		1.02	$192,623	$42,377	$0	$0		$235,000
Administrative Total - USBR			$60,000				$0	$60,000
Contracts, Grants and Agreements Total - USBR					$305,000			$305,000
USBR Total Costs		0.25	$60,000		$305,000		$0	$365,000
TOTAL ALL		**1.27**	**$252,623**	**$42,377**	**$305,000**	**$0**	**$0**	**$600,000**

1/ For FWS only: The FWS develops a bio-rate which is the combination of both the salary/benefit and related administrative costs. The FWS simple definition reads, "It is an average $$ rate that is developed and used for estimating project costs. It incorporates a biologists' salary and benefits, supervisory, clerical and biologist support costs and all other office operating costs related to completing project tasks.

2/ FWS assesses an O/H Burden charge of 6 percent on all contracts/agreements related to budget object codes starting with 25, 41, and 32, and a charge of 22 percent on costs under all other budget object codes.

Table 3. Three Year Budget Plan FY 2011-2013

($ amounts in thousands)

Year	Description of Activities	Requested RF Funding	Requested W&RR Funding
2011	**1.1 and 1.2** Program Management.	$130	$0
	1.4.1 Implement Cloverview Long-Term Gravel Supply Project Phase 1.	$800	$0
	1.4.2 Gravel additions at about 8 sites to provide approximately 25,000 tons (100 percent of CPAR gravel goal).	$750	$0
	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.	$250-$500	$0
	TOTAL	$1,930	$0
2012	**1.1 and 1.2** Program Management.	$140	$0
	1.4.1 Implement Cloverview Long-Term Gravel Supply Project Phase 2.	$800	$0
	1.4.2 Gravel additions at about 8 sites to provide approximately 25,000 tons (100 percent of CPAR gravel goal).	$750	$0
	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.	$350	$0
	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.	$100	$0
	TOTAL	$2,140	$0
2013	**1.1 and 1.**2 Program Management.	$140	$0
	1.4.2 Gravel additions at about 8 sites to provide approximately 25,000 tons (100 percent of CPAR gravel goal).	$750	$0
	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	$350	$0

Year	Description of Activities	Requested RF Funding	Requested W&RR Funding
	production, spawning gravel quality, survival-to-emergence, fish rescue, benthic macro-invertebrate sampling, water quality (Hg) and water temperature.		
	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.	$100	$0
	TOTAL	$1,340	$0

Table 4. FY 2010 CVPIA Monitoring Projects

Project Description:	Install and maintain weir to prevent fall Chinook from accessing spring Chinook spawning areas, which would result in increased hybridization, redd superimposition and competition.
FY 2009 Project Complete?	No, the operating season runs from August to November.
CVPIA annual work plan subtask number:	Monitoring 1.12.1
Scope of the monitoring effort:	Clear Creek
Product/deliverable:	Reported in Annual Spring Chinook Report
Cost:	$31,600
Questions posed:	•Are fall Chinook able to access areas spring Chinook spawning areas? •What is the genetic makeup of spring Chinook on Clear Creek?
Objectives:	•Prevent fall Chinook from spawning in areas with Spring Chinook to prevent hybridization and competition. •Make possible adult and juvenile spring Chinook population estimates. •Collect genetic, coded wire tag and scale samples.
Results – expected or actual:	Fish-tightness of the weir will be estimated at least 3 times a week.
Data collection methods:	Weir will be directly inspected for fish-tightness. Carcasses will be sampled for genetics, coded-wire tags and scale samples.
Data management:	Data will be entered into a PDA in the field and

	downloaded into a database housed at the Red Bluff Fish and Wildlife Office.
Assessment:	Fish-tightness and impacts of vandalism will be assessed relative to length of time fish could pass, and the number of fish passed. Analysis of samples occurs under other monitoring activities.
Use of information in future decision making:	Estimates of fish tightness and tampering with the weir are used to evaluate the quality of adult and juvenile population estimates, in decisions of where to place the weir, and how to reduce tampering.
NMFS OCAP BO RPA	RPA requirement 11.2.1.3. Monitoring and Reporting on page 585, bullets 8a and 7; EFH page 23 Clear Creek bullet number 2.

Project Description:	Estimate adult spring Chinook population size, distribution and spawning success using snorkel surveys in 2009 Only.
FY 2009 Project Complete?	No, the 2009 field season recently began and continues until November 2009.
CVPIA annual work plan subtask number:	Monitoring 1.12.1
Scope of the monitoring effort:	Clear Creek
Product/deliverable:	Annual Spring Chinook Report
Cost:	$67,709 for broodyear 2009 but not broodyear 2010. $141,300 for a full year of monitoring both broodyears.
Questions posed:	•Are restoration efforts for spring Chinook successful in Clear Creek? •What is the abundance of spring Chinook in Clear Creek? Is the population trend increasing, decreasing, or stable, and why? •Where does spawning occur in relationship to water temperatures, habitat restoration, fall Chinook and the segregation weir? •Do Chinook use the restored spawning habitat?
Objectives:	•Estimate the number of live Chinook, carcasses and redds. •Describe the distribution of holding and spawning. •Measure and evaluate environmental conditions during holding, spawning, incubation and rearing. •Collect scale, genetic, and otolith samples and coded wire tags.

Results – expected or actual:	The 2009 cohort increased over the 2006 cohort for these Chinook that return as 3 year-olds. Clear Creek spring Chinook have increased in all 8 cohorts since restoration began.
Data collection methods:	Live fish and redds are visually counted and carcasses are sampled by snorkelers. Water temperatures are measured using temperature loggers.
Data management:	Data is entered in the field into a GPS-linked database and downloaded into the central computer system at the RBFWO.
Assessment:	•Population status and trend data, combined with spawning habitat use data and environmental data such as flow and water temperature, will be used to evaluate the effect of habitat restoration actions on the recovery of threatened anadromous salmonids. •Genetic samples are used to estimate the genetic origin of spring Chinook. •Otolith samples will be used to estimate the natal origin and rearing location of Chinook successfully returning to Clear Creek.
Use of information in future decision making:	•Spring Chinook population status and trend data are used to evaluate and adaptively manage the CVPIA and CALFED restoration in Clear Creek including habitat restoration and flow and temperature management. •Information is used to determine if temperature targets are being met, if the target or location should be changed and to manage impacts to different life history stages. •Information is used to improve the placement, size and amount of supplemental spawning gravel. •Limiting factors are evaluated (quality and quantity of holding habitat, occurrence of disease or predation, and water quality including fine sediments, which can negatively effect salmonid productivity.
NMFS OCAP BO RPA	RPA requirement 11.2.1.3. Monitoring and Reporting on page 585, bullets 8a and 7, and Action I.1.3. Spawning Gravel Augmentation.

Project Description:	Estimate fall Chinook spawning distribution and density.
FY 2009 Project Complete?	Yes, the 2008 field season ended in December 2008 and a data summary will be completed by the end of the 2009 fiscal year.
CVPIA annual work plan subtask number:	Monitoring 1.12.1
Scope of the monitoring effort:	Clear Creek
Product/deliverable:	Annual data summary. If funding is obtained for 2010, an annual report for 2009 may also be funded and a 2010 annual report would be produced.
Cost:	•FY09: $25,302. •FY10: $67,701. •FY10 cost is for a stand alone project. Cost savings would occur if multiple monitoring activities in the Red Bluff Fish and Wildlife Office (RBFWO) are funded.
Questions posed:	• Where are salmonids spawning? • Are salmonids using the spawning gravel or restored habitat provided by the program? • How effective is the program at increasing spawning habitat? •Where is additional restoration needed?
Objectives:	•Describe the distribution and amount of spawning in relationship to restoration actions as spawning changes over time. • Evaluate the effectiveness of spawning habitat restoration. •Measure and evaluate environmental conditions affecting salmonid spawning. •Provide direction for future habitat restoration.
Results – expected or actual:	Spawning area mapped in 2008 was greater than in all of the 8 previous years, suggesting that the program has been successful at creating new spawning habitat, perhaps due to implementation of stream channel restoration Phase 3B. Our prediction that phase 3B would increase spawning habitat by 15% was right on, as16% of the spawning in the creek occurred in this reach in 2008 but less than 2% in the past.
Data collection methods:	In 2008 data was collected by two different techniques: 1) the traditional method of drawing the shapes of redd aggregates on aerial photos while in the field at the end of the spawning season, and subsequently digitizing the shapes of the redds for analysis in GIS and 2) using

	sub-foot accuracy GPS units to outline redd aggregates while in the field and directly imported into GIS.
Data management:	Final reports and data are archived in the central computer system at the RBFWO.
Assessment:	•Spawning area is summarized by both 1,000 foot reaches and by geomorphic-based reaches and compared between years and between reaches. •Relationships between changes in spawning area and spawning escapement, redd counts, water temperature, stream flow, and restoration actions including spawning gravel supplementation are examined to evaluate the success at the watershed and project level.
Use of information in future decision making:	•Information has been used to evaluate the benefits of Saelter Dam removal and other restoration projects. •Information is used to guide future stream flow such as NMFS OCAP BO Action I.1.2. “Channel Maintenance Flows”. •Information is used to improve the placement, size and amount of supplemental spawning gravel.
NMFS OCAP BO RPA	Yes. Action I.1.3. “Spawning Gravel Augmentation” states "Reclamation shall provide a report to NMFS on implementation and effectiveness of the gravel augmentation program." FWS currently provides reports on effectiveness of the gravel program by documenting use of the spawning gravel by fall Chinook using this method. This information is used to learn what works in creating fall Chinook spawning habitat and is applied to spring Chinook habitat restoration projects. Action I.1.6. “Adaptively Manage to Habitat Suitability/IFIM Study Results” The SAM habitat suitability evaluation provides biological validation for the IFIM studies needed to implement the Action.

Project Description:	Finish Reports on Clear Creek Rotary Screw Trapping
FY 2009 Project Complete?	This is a new project.
CVPIA annual work plan subtask number:	Monitoring 1.12.1
Scope of the monitoring effort:	Clear Creek
Product/deliverable:	Annual Report for 2005

Cost:	$10,774.
Questions posed:	•What was juvenile salmonids passage in Clear Creek in 2005?
Objectives:	• Finish report for 2005. • If possible, work on last remaining annual report- for 2006.
Results – expected or actual:	Report is currently in draft stage.
Data collection methods:	Data was collected using two rotary screw traps.
Data management:	Final reports and data will be archived in the central computer system at the RBFWO.
Assessment:	•Passage estimates are related to environmental variables, other population parameters and restoration activity.
Use of information in future decision making:	•Information has been used to evaluate the benefits of habitat and stream flow restoration.
NMFS OCAP BO RPA	RPA requirement 11.2.1.3. Monitoring and Reporting on page 585, bullets 8a and 7

Project Description:	Conduct Geomorphic Monitoring
FY 2009 Project Complete?	No, project expected to continue 2-3 additional years
CVPIA annual work plan subtask number:	Monitoring 1.12.2
Scope of the monitoring effort:	Clear Creek
Product/deliverable:	Report
Cost:	$65,000
Questions posed:	•Determine the amount spawning gravel needed to recharge the system
Objectives:	•Complete field work and report •Refine spawning gravel injection strategy to efficiently and cost effectively restore lost habitat
Results – expected or actual:	•Complete report including injection strategy
Data collection methods:	•Data collected in the field using bedload sampling and post-data collection analysis using bedload transport model
Data management:	Final report and data will be archived in the central computer system at Reclamation's NCAO and the FWS' RBFWO
Assessment	•Surveys conducted to verify increases in available spawning habitat and use by anadromous fish

Use of information in future decision making:	•Information will assist in determining future gravel addition amounts and injection locations
NMFS OCAP BO RPA	Action I.1.3. Spawning Gravel Augmentation

Project Description:	Stream Gauge Data Management
FY 2009 Project Complete?	This is a new project
CVPIA annual work plan subtask number:	Monitoring 1.12.3
Scope of the monitoring effort:	Clear Creek
Product/deliverable:	Stream gauge data
Cost:	$30,000
Questions posed:	NA
Objectives:	Conduct quality control on stream gauge data
Results – expected or actual:	Data required for use in IFIM
Data collection methods:	NA
Data management:	Data will be archived in the central computer system at Reclamation's NCAO and the FWS' RBFWO.
Assessment:	•Field data collected on available habitat versus flow
Use of information in future decision making:	•IFIM will be used to determine future flow regime
NMFS OCAP BO RPA	Action I.1.6. Adaptively Manage to Habitat Suitability/IFIM Study Results