

## Draft CVPIA Fiscal Year (FY) 2014 Annual Work Plan

April 29, 2013

### *Program Title:*

Red Bluff Fish Passage- CVPIA Section 3406(b)(10).  
-Construction  
-Planning

### *Responsible Entities:*

<b>Staff Name</b>	<b>Agency</b>	<b>Role</b>
<i>Don Reck</i>	<i>Bureau of Reclamation</i>	<i>Lead-Planning</i>
<i>Jim Smith</i>	<i>US Fish &amp; Wildlife Service (Service)</i>	<i>Co-Lead-Planning</i>
<i>Bill Vanderwaal</i>	<i>Bureau of Reclamation</i>	<i>Lead - Construction</i>

### *Program Goals and Objectives for FY 2014*

- ***Background:***

The Red Bluff Diversion Dam was constructed by 1964 and features 11 gates that can be lowered into the Sacramento River (closed) and form a long, shallow lake that allowed for gravity diversion of irrigation water into the Tehama-Colusa and Corning Canals. Soon after construction of the Red Bluff Diversion Dam problems were identified with upstream and downstream anadromous fish passage. Although the dam originally had fish ladders on either side, upstream migrating adult fish were delayed or did not successfully negotiate the ladders and green sturgeon could not pass at all. In an attempt to improve fish passage, the gates were operated in the lowered position for less and less time annually, until the operational season was too short to be adequate for irrigators.

The CVPIA called for improving fish passage at Red Bluff and the Fish Passage Improvement Project at the Diversion Dam was developed to improve or eliminate passage problems while also allowing for diversion of irrigation water. The Project consists of a state-of-the-art new pumping plant and protective fish screen to replace the function of the Diversion Dam and allow the dam gates to be out of the river permanently. As part of permit-required mitigation for habitats permanently lost due to construction of the new facility, a 25 acre side channel habitat mitigation feature is being constructed across the river from the new pumping plant.

- ***Source Documents and Plans that Guide the Program***

Section 3406(b)(10) of the CVPIA directed the Secretary of the Interior to “Develop and implement measures to minimize fish passage problems for adult and juvenile anadromous fish at the RBDD in a manner that provides for the use of associated Central Valley Project conveyance facilities for the delivery of water to the Sacramento Valley National Wildlife Refuge complex.” The Anadromous Fish Restoration Plan also asks that efforts “continue the evaluation to identify solutions to passage at RBDD, including measures to improve passage when the RBDD gates are in the raised position from

September 15 through at least May 14.” Additionally, the program goals include compliance with the mandates of the 2009 NMFS OCAP BO by replacing dam-based gravity diversions with a screened pumping plant, while continuing to deliver water to the Tehama Colusa Canal Authority’s customers. The NMFS 2009 OCAP BO also provides objectives and a number of RPA’s and monitoring studies designed to evaluate fish passage at RBDD.

- ***Construction:***

The new pumping plant and fish screen was completed in 2012.

High Speed Interrupter Switches will be installed for the primary power supply to improve the reliability of the new pumping plant.

Complete physical construction of the habitat mitigation project and begin the maintenance phases of that contract. Execute the Decommissioning Contract portion of the Project which will include securing the dam gates in the up position (open) and removal of salvageable materials from the dam and various research and interim pumping plants.

- ***Planning:***

The Reasonable and Prudent Alternative (RPA) detailed in the NOAA Fisheries biological opinion on the long-term operation of the Central Valley Project included Action I.3.4, geographically specific research needed to determine green sturgeon life history and recovery needs. Specifically, Reclamation was to fund research to characterize green sturgeon populations in the upper Sacramento Basin, their movements, and habitat useage.

In 2013, the planned studies to address this RPA Action will be completed. Reports associated with this research effort should be completed by the end of FY 2013, or by the end of the calendar year.

The Red Bluff fish passage program’s CPAR goals include both outcome and output measures. The outcome goals are passage of 80-100% of adult spring-run Chinook and passage of 50-100% of adult green sturgeon and the outcome goal is completion of infrastructure improvements to supply 115,000 acre-feet of refuge water to the Sacramento National Wildlife Refuge. These goals have been accomplished. The construction of the new fish screens and pumping plant is also one of the 73 structural actions identified as a PART goal and this goal was accomplished in 2012.

### ***Status of the Program***

- ***Construction Progress:*** The Pumping Plant and Fish Screen construction is complete with the Terrestrial Mitigation construction nearing completion which will enable transition to the maintenance phase. Hydraulic performance verification testing at the new fish screen is scheduled to be conducted during the summer of 2013. Biological monitoring may also be executed during 2013, but is also scheduled to occur in 2014. Completion of this work is expected to complete the fisheries' requirements of 3406(b)(10). Completion of the refuge supply requirements occurred some years ago

with the construction of the Stony Creek Siphon on the Glenn Colusa Canal, which was determined to be the most effective way to convey water to the Sacramento Valley National Wildlife Refuges.

- **Planning Progress:** Spawning periodicity of green sturgeon has been determined to be 3 to 5 years, and in FY 2013, these returning green sturgeon and acoustically tagged green sturgeon tagged by other researchers elsewhere, were monitored to determine their movements near the RBDD. In 2013, reports on the 3+ year Sacramento River green sturgeon study will be completed.
- Hydraulic evaluations of the new fish screen is scheduled to begin in 2013 during the summer and will be followed by biological monitoring in FY 2013 or 2014. These evaluations, mandated in the NMFS 2009 pumping plant construction BO, will support efforts to determine the effectiveness of fish screens in meeting screen and biological criteria.

### ***Adaptive Management***

- **Construction Management:**

The hydraulic performance verification testing will be conducted in 2013 to adjust the fish screen louvers and investigate the water velocities across screen at a variety of pumping rates. Biological evaluations of the screen, and the incorporated small fish refugia features, will also be conducted during 2013 or 2014. During this same period, the construction phase of the habitat mitigation project will transition to the maintenance phase. All of these activities will facilitate evaluations of the effectiveness of the components of the Fish Passage Improvement Project, and consider the need for adaptive changes to operations or feature designs.

- **Planning:**

Reclamation has developed a hydraulic evaluation plan for the new pumping plant, and will continue to develop a biological evaluation plan for the new pumping plant in coordination with the NMFS, CDFG, the Service, and the Tehama-Colusa Canal Authority. The purpose of the evaluations is to assess the adequacy of the fish screen in meeting biological and engineering design criteria. The hydraulic evaluations will occur at a variety of river flows and pumping rates. Biological evaluations will use appropriate available technologies to evaluate the effectiveness of the screen.

Any adaptive management activities at the new fish screens and pumping plant, as mandated in the NMFS 2009 pumping plant construction BO are not expected to begin until after initial evaluations of the effectiveness of the new screen are complete. Pumping plant operation flexibilities may be identified to minimize and adverse effects to target species.

In response to the mandates set forth by the 2009 NMFS Central Valley Project operations BO, Reclamation will continue to cooperate with the Service and the University of California - Davis during report preparation detailing the 3+ year Sacramento River green sturgeon study.

Table 1. FY2014 Proposed Activities and Costs

CVPIA Section 3406 (b)(10), Red Bluff Diversion Dam

	3406 (b)(10) Requested Funding for Fiscal Year 2014				
	Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources
<b>Total Funding</b>	\$0	\$1,040,000	\$0	\$0	\$1,040,000
Reclamation	\$0	\$874,369			\$874,369
Service	\$0	\$165,631			\$165,631
CA DFG			\$0	\$0	\$0
CA DWR			\$0	\$0	\$0

1.1 Program Management			3406 (b)(10) Requested Funding for Fiscal Year 2014								
AWP Activity Number	Activity Name	Activity Description	Agency		Program Performance Goal	FY2014 Projected Performance	Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources
			Name	Fractional FTE							
1.1.1	Red Bluff Fish Passage Improvement Project	Hydraulic and biological evaluation of the new Red Bluff pumping plant. (A30-0725-6341)	BOR	0.40				\$42,698			\$42,698
1.1.2	Red Bluff Fish Monitoring	Hydraulic and biological evaluation of the new Red Bluff pumping plant. (FRFR4833081002)	FWS	0.10				\$23,961			\$23,961
							Sub-Total for Program Management, FY2014				
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources
<b>Subtotal Funding</b>							\$0	\$66,659	\$0	\$0	\$66,659
Reclamation							\$0	\$42,698			\$42,698
Service							\$0	\$23,961			\$23,961
CA DFG									\$0	\$0	\$0
CA DWR									\$0	\$0	\$0

1.2		Program Support										
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2014 Projected Performance	3406 (b)(10) Requested Funding for Fiscal Year 2014					
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
1.2.1	Fish and Wildlife Coordination Act Support	Fish and Wildlife Coordination Act support, technical assistance with hydraulic evaluation of the Red Bluff pumping plant. (FRFR4833081002)	FWS	0.10				\$21,866			\$21,866	
1.2.2	Red Bluff Fish Passage Improvement Project	Technical Advisory Support: Technical Advisory Group participation, and review work products related to Red Bluff pumping plant evaluation. (FRFR4833081002)	FWS	0.50				\$119,804			\$119,804	
							<b>Sub-Total for Program Support, FY2014</b>					
							<b>Restoration Fund</b>	<b>Water and Related Resources</b>	<b>State Cash</b>	<b>State In-Kind</b>	<b>Total All Sources</b>	
							<i>Subtotal Funding</i>	\$0	\$141,670	\$0	\$0	\$141,670
							<i>Reclamation Service</i>	\$0	\$0			\$0
							<i>CA DFG</i>	\$0	\$141,670			\$141,670
							<i>CA DWR</i>			\$0	\$0	\$0
									\$0	\$0	\$0	

2.7		Construction/Implementation									
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2014 Projected Performance	3406 (b)(10) Requested Funding for Fiscal Year 2014				
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources
2.7.1	Fish Passage Improvement Project Mitigation	Decommissioning contract management, including safety management, construction inspection and oversight, and contract administration. (A30-0725-6341)	BOR	0.20	Fish passage rate @ 80-100%	Manage Red Bluff facility decommissioning contract		\$34,063			\$34,063
2.7.2	Fish Passage Improvement Project	Installation of High Speed Interrupter Switches for primary power (including oversight)	BOR	0.20	Fish passage rate @ 80-100%	Provide more reliable power source for pumping plant					\$0
2.7.3	Fish Passage Improvement Project	Follow up on Hydraulic Performance of Fish Screen and adjustments	BOR	0.15	Fish passage rate @ 80-100%	Complete and confirm any adjustments to the fish screen flows.					\$0
2.7.4	Fish Passage Improvement Project	High Speed Interrupter Switchers installation to improve power plant reliability	BOR	0.00	Fish passage rate @ 80-100%	Provide more reliable power source for pumping plant		\$750,000			\$750,000
							<b>Sub-Total for Construction/Implementation, FY2014</b>				
							<b>Restoration Fund</b>	<b>Water and Related Resources</b>	<b>State Cash</b>	<b>State In-Kind</b>	<b>Total All Sources</b>
							\$0	\$784,063	\$0	\$0	\$784,063
							<i>Subtotal Funding</i>				
							<i>Reclamation</i>	\$0	\$784,063		\$784,063
							<i>Service</i>	\$0	\$0		\$0
							<i>CA DFG</i>			\$0	\$0
							<i>CA DWR</i>			\$0	\$0

2.8		Post-Project Monitoring										
AWP Activity Number	Activity	Activity Name & Description	Agency		Program Performance Goal	FY2014 Projected Performance	3406 (b)(10) Requested Funding for Fiscal Year 2014					
			Name	Fractional FTE			Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
2.8.1	Fish Passage Improvement Project Biological Evaluation	Fish Screen Biological Evaluation. May include, but not limited to, experimental fish releases for studying survival associated with the pumping plant, and fish movement and behavior observation using acoustic imaging, video, or direct observation technologies. (A30-0725-6341)	BOR	0.00	Fish passage rate @ 80-100%	0		\$47,608			\$47,608	
							Sub-Total for Post-Project Monitoring, FY2014					
							Restoration Fund	Water and Related Resources	State Cash	State In-Kind	Total All Sources	
							<i>Subtotal Funding</i>	\$0	\$47,608	\$0	\$0	\$47,608
							<i>Reclamation Service</i>	\$0	\$47,608			\$47,608
							<i>CA DFG</i>			\$0	\$0	\$0
							<i>CA DWR</i>			\$0	\$0	\$0

Outyear activities are estimates of funding capability only and do not reflect the future Congressional Appropriations process.

Table 2. FY2015 Proposed Activities and Costs

CVPIA Section 3406 (b)(10), Red Bluff Diversion Dam

	3406 (b)(10) Requested Funding For Fiscal Year 2015			
	Restoration Fund	Water and Related Resources	State Cash	Total All Sources
<b>Total</b>	\$0	\$874,000	\$0	\$874,000
<b>US Bureau of Reclamation</b>	\$0	\$850,000		\$850,000
<b>US Fish and Wildlife Service</b>	\$0	\$24,000		\$24,000
<b>California Dept of Fish and Wildlife</b>			\$0	\$0
<b>California Dept of Water Resources</b>			\$0	\$0

Task	Project Name	Project Description	Federal Costs(\$)				State Cost Share (\$)		Total Costs (\$)
			BOR Restoration Fund	BOR W&RR Fund	FWS Restoration Fund	FWS W&RR Fund	CA DFW	CA DWR	
<b>Program Mgmt &amp; Support</b>		Funding may also cover additional screening and other contingencies.		\$850,000		\$24,000			\$874,000

Outyear activities are estimates of funding capability only and do not reflect the future Congressional Appropriations process.

Table 2. FY2016 Proposed Activities and Costs  
 CVPIA Section 3406 (b)(10), Red Bluff Diversion Dam

			3406 (b)(10) Requested Funding For Fiscal Year 2016						
			Restoration Fund	Water and Related Resources	State Cash	Total All Sources			
<b>Total</b>			\$0	\$874,000	\$0	\$874,000			
US Bureau of Reclamation			\$0	\$850,000		\$850,000			
US Fish and Wildlife Service			\$0	\$24,000		\$24,000			
California Dept of Fish and Wildlife					\$0	\$0			
California Dept of Water Resources					\$0	\$0			
			Federal Costs(\$)				State Cost Share (\$)		Total Costs (\$)
Task	Project Name	Project Description	BOR Restoration Fund	BOR W&RR Fund	FWS Restoration Fund	FWS W&RR Fund	CA DFW	CA DWR	
Program Mgmt & Support		Funding may also cover additional screening and other contingencies.		\$850,000		\$24,000			\$874,000

**Table 3. Monitoring**

<b>Proposed Hydraulic Monitoring Activity</b>	
<b>Project Description:</b>	Monitoring and biological performance evaluation of the new Red Bluff pumping plant and fish screen.
<b>FY 2013 Project Complete?</b>	The construction project was completed in 2012, but evaluation is expected for two to three years thereafter.
<b>CVPIA annual work plan subtask number:</b>	Fish Screens – 2.8.1 – 2.8.4
<b>Scope of the monitoring effort:</b>	Monitoring and evaluation will consist of measuring, recording, and analyses of approach and sweeping water velocities across the fish screen at a variety of river flows and pumping rates. The evaluation is expected to take one to two years.
<b>Product/deliverable:</b>	To be determined
<b>Cost:</b>	\$797,608 in FY 2014
<b>Questions posed:</b>	Are screening and biological criteria met? If not, what are the problems and what measures might be required.
<b>Objectives:</b>	To meet NMFS/Department of Fish and Game fish protection criteria during operation of the pumps.
<b>Results – expected or actual:</b>	We expect to meet our goals.
<b>Data collection methods:</b>	Flow meter probe will be fitted to the fish screen cleaning brush to measure water velocities across the screen. Data will be stored electronically for later analyses. Methodologies for the biological evaluation of the screen have not yet been determined.
<b>Data management:</b>	To be determined
<b>Assessment:</b>	To be determined
<b>Use of information in future decision making:</b>	To be determined

**Table 3. Monitoring (cont.)**

<b>Proposed Biological Monitoring Activity</b>	
<b>Project Description:</b>	Monitoring and evaluating biological efficacy of the new Red Bluff pumping plant and fish screen.
<b>FY 2013 Project Complete?</b>	The construction project was completed in 2012, but monitoring is expected for two to three years thereafter.
<b>CVPIA annual work plan subtask number:</b>	Fish Screens – 2.8.1
<b>Scope of the monitoring effort:</b>	The scope of monitoring is to be determined. Monitoring of mitigation measures will begin in FY 2013 or 2014.
<b>Product/deliverable:</b>	To be determined
<b>Cost:</b>	To be determined. Amounts in budget now are place holders.
<b>Questions posed:</b>	Are screening criteria met? Do the fish refuges serve their intended purpose? Is fish predation a particular problem? What are the problems and what measures might be required?
<b>Objectives:</b>	To meet NMFS/Department of Fish and Game criteria during operation of the pumps.
<b>Results – expected or actual:</b>	We expect to meet our goals.
<b>Data collection methods:</b>	To be determined
<b>Data management:</b>	To be determined
<b>Assessment:</b>	To be determined
<b>Use of information in future decision making:</b>	To be determined