Summary of CVPIA Anticipated Projects

FISHERIES RESOURCE AREA

CENTRAL VALLEY BASIN FISHERIES PROGRAMS

The **Anadromous Fish Restoration Program, 3406 (b)(1)** (AFRP) will work on numerous projects to benefit salmonids and steelhead throughout the Central Valley. Projects are located on 9 rivers in the north (Sacramento River and above), plus the Merced and Stanislaus Rivers.

American River

- The Lower American River Floodplain Restoration Project will be under construction in FY2013, creating spawning and rearing habitat at 6 gravel augmentation sites (50,000 cubic yards) and 3 side-channel sites.

Antelope Creek

- The Antelope Creek Juvenile Fish Passage Project to prevent entrainment of out-migrating salmonids at 2 diversion canals will undergo environmental compliance and determine the design of a bypass system.
- The Tehama Wildlife Area Fish Passage Project will undergo post-project monitoring to include topographic surveys. This project had removed a road crossing, and replaced it with a modern bridge, improving fish passage to 6.5 miles of spawning and holding habitat.

Cosumnes River

- The Cougar Tidal Wetland Restoration Project to reconnect historic tidal sloughs on the Cosumnes River will be constructed, restoring 85 acres of floodplain consisting of riparian and tidal shallow water habitat.

Cottonwood Creek

- The South Fork Cottonwood Fish Passage Improvement Project will provide upstream fish passage at a fish barrier at the Hammer Diversion dam, opening up 5 miles of habitat. In FY 2013, this project will proceed with environmental compliance and pre-project monitoring.

Merced River

- The Merced River Ranch Floodplain and Side-Channel Restoration project to restore 6 acres of riparian floodplain and 1 mile of spawning habitat will involve environmental compliance, construction and post-project monitoring. Permitting and construction, including placement of 13,000 cubic yards of gravel, will be complete by the end of FY2013.
- The Snelling Channel Restoration and Snelling Floodplain Restoration projects will continue with construction of up to 2 miles of in-channel habitat, 80 acres of riparian floodplain and 2 stream

miles of habitat restoration. Project components include reconfiguring ponded floodplain sections and restoring and replenishing gravel beds.

Mill Creek

- The Mill Creek Fish Passage project will address fish passage at diversion structures on Mill Creek and will provide access to 44 miles of previously inaccessible spawning habitat. In FY 2013, the Program will conduct environmental compliance and pre-project monitoring.

Yuba River

- The Narrows Channel Restoration and the Daguerre Alley Floodplain Restoration Projects will enter the pre-project monitoring phase to characterize the project sites and calculate pre-project salmonid habitat quality. The Daguerre Alley Floodplain Restoration Project will restore up to 180 acres of floodplain habitat and approximately 2.5 miles of side channel habitat. This project will benefit steelhead and Chinook salmon and address the AFRP Final Restoration Plan Evaluation 4 for the Yuba River. The Yuba River Narrows Channel Restoration Project will restore up to 0.5 miles of in-channel habitat by restoring and replenishing gravel and removing shot rock debris from the Narrows Reach. This project will benefit Fall- and Spring-run Chinook salmon and Steelhead and address the AFRP Final Restoration Plan Evaluation 4 for the Yuba River.
- The Hammon Bar Riparian Habitat Restoration Project which restored 5 acre of riparian habitat and 3.5 miles of rearing habitat, serves to evaluate site inundation frequency and pole cutting response and will undergo post-project monitoring.

Stanislaus River

- The Knights Ferry Floodplain Restoration Project designed to restore up to 1 acre of side-channel and floodplain habitat and will involve environmental compliance, design, and pre-project monitoring.
- The Stanislaus River Floodplain Restoration Project at Buttonbush to restore up to 18 acres of side-channel and floodplain habitat and 2,800 feet of side-channel habitat will involve project design.
- The Stanislaus River Floodplain and Side-Channel Restoration Project at Lancaster Road which restored 640 feet of side-channel and 2 acres of floodplain habitat will undergo post-project monitoring.

Research will be conducted by the AFRP on the following projects: San Joaquin River Sturgeon Acoustic Study for fish distribution and habitat use, using acoustic transmitters; the San Joaquin River Sturgeon Habitat Assessment for fish habitat using bathymetry surveys, hydraulic mapping and bed sediment characterization; the USGS Habitat Mapping project to identify sturgeon spawning habitat using flow and substrate data; and the Mill and Deer Creeks Wild Chinook Acoustic Tagging Investigations to evaluate the effects of changes in flow and related water project operation on their survival and movement patterns by implanting juvenile spring- and fall-run Chinook with acoustic transmitters.

Modeling to be funded by the AFRP includes projects on the Stanislaus River using LIDAR groundtruthing, Cottonwood Creek using PHABSIM models, Sacramento River using PHABSIM models, and Yuba River modeling juvenile rearing habitat before and after pole cutting installation.

The **Dedicated Yield Program, 3406 (b)(2)** will manage up to 800,000 acre-feet of CVP water for fish, wildlife, and habitat restoration purposes. These management activities may include augmenting river releases from CVP reservoirs and reducing CVP exports in the Delta to improve flow and habitat conditions for multiple life history stages of anadromous salmonids and to help meet the AFRP salmon doubling goals. The program will also contribute funding to monitor fall- and late-fall run Chinook salmon and Central Valley steelhead redd locations and physical data on the Sacramento River; and outmigration studies estimating juvenile Chinook salmon survival on the San Joaquin River and through the Delta as it relates to temperature, flow, exports, and the Old River barrier.

The **Instream Water Acquisition Program, 3406 (b)(3)** will acquire from Merced ID up to 25,000 AF of water to supplement meeting San Joaquin River FY2013 spring pulse flow targets at Vernalis, with the option of acquiring an additional 25,000 AF.

The **Tracy (Jones) Pumping Plant Program, 3406 (b)(4)** will conduct research into the following projects at the Tracy Fish Collection Facility (TFCF): Carbon Dioxide as an Alternative Predator Removal Technique; Award Secondary Louver Replacement Contract at the TFCF; Plan Improvements to the Primary Channel at the TFCF; Debris Removal from Circular Holding Tanks; Use of Electricity for Predator Removal; Evacuation Rates of Acoustic Tags in Striped Bass; Solutions to Retain More Larval Fish; Using Fine Mesh Screening on Holding Tanks; Influence of Acoustic Tags on Chinook Salmon Predation; Moving Retractable Chain System to Move Predators Through the Primary Channel; Chinook Salmon and Central Valley Steelhead Facility Losses at the TFCF; Negative Pressure on Selected Fishes Salvaged at TFCF; Barging into Salvaged Fish Release Procedures; TFCF Holding Tank Screen Entrainment Efficiency for Juvenile Delta Smelt; and Fish Density on Water Quality in the New Haul-Out Bucket and Fish-Haul Trucks at the TFCF. The Program will also perform water quality monitoring at the TFCF.

The **Red Bluff Diversion Dam Program, 3406 (b)(10)** will construct a 25-acre open water and revegetated mitigation site to fulfill regulatory permit obligations. The Program will also decommission the gate facility by permanently fixing the gates in the up position, close fish ladders and remove old pumping plants. The Program will perform operations and maintenance at the new facility and test the hydraulic performance of the fish screen.

The **Clear Creek Restoration Program, 3406 (b)(12)** will finish a feasibility study on channel maintenance flows using funding from the State of California. The Program will conduct environmental compliance for the Environmental Water Program geomorphic flows, whereby Reclamation will re-operate Whiskeytown Dam to achieve a minimum 3,250 cfs flow event in Clear Creek for a 24-hour period, with the frequency of such an event occurring seven times during a ten-year period. The Program will undergo construction at the Lower Clear Creek Floodway Restoration Project - Phase 3B to enhance previously completed projects and revegetate 5 acres of riparian habitat. The environmental compliance and planning requirements for the Long-term Gravel Supply Project will be completed in 2013; this project will supply 17,000 tons of gravel annually. Ground-breaking work such as site preparations and construction of a gravel processing plant for construction phases will take place in 2013. The Lower

Clear Creek Parkway Project will be completed with the construction of the pedestrian bridge. The Program will fund pumping costs for the McConnell Foundation Water Exchange/Pumping project. Biological monitoring will occur for juvenile spring Chinook salmon using rotary screw traps; mapping of fall Chinook salmon spawning area; evaluations of spawning gravel habitat; and continued geomorphic monitoring of Clear Creek to evaluate the channel configuration changes resulting from restoration actions.

The **Gravel Program, 3406 (b)(13)** will design, place 7,000 tons of gravel, and construct a 1,000-foot side-channel and 3-acre floodplain for the Nimbus Basin project at a location to be determined on the American River. The Program will place 10,000 tons of gravel at a site to be determined on the Sacramento River. And the Program will place 3,000 tons of gravel and construct a 1,400-foot side-channel and 7-acre floodplain at the Two-Mile Bar site on the Stanislaus River. The Program will also monitor past projects including 7 sites on the American River, conduct redd mapping on the Stanislaus River and use aerial photos to document Chinook spawning river-wide on the American River.

The **Comprehensive Assessment and Monitoring Program, 3406 (b)(16)** will conduct the following projects: continue developing a database/tool that will store, analyze, and report juvenile Chinook salmon production estimates from several Central Valley watersheds; monitor production of juvenile Chinook salmon from the Stanislaus River using rotary screw traps; monitor production of juvenile Chinook salmon and abundance of juvenile steelhead in the American River using rotary screw traps; mark juvenile salmon at the Feather River, Coleman and Nimbus Fish Hatcheries as part of the Constant Fractional Marking Program; and assess the proportion of wild- vs. hatchery-origin salmon in the Cow and Cottonwood creek watersheds. CAMP will initiate the Science Based Management Framework (SBMF) to revise the way in which CVPIA is being implemented, the CVP is operated, and how mitigation and restoration activities are undertaken. This new science-based decision making process will enhance the manner in which CVPIA is implemented and its performance measured. CAMP will issue the CVPIA Data Acquisition and Management Plan and continue support for GIS integration of the data sets.

The **Anadromous Fish Screen Program, 3406 (b)(21)** will provide cost-share funding for the construction of a 400 cfs fish screen at RD 2035 on the Sacramento River. AFSP will conduct research on a fish deterring device at Sycamore Mutual Water Company on the Sacramento River.

The **Modeling Program, 3406 (g)** will make use of the following modeling platforms and technologies: CalSim 3.0, CalLite, C2VSIM, SELFE, CalSim II, and Artificial Neural Networks (ANNs). Specific models include the Joint San Joaquin Basin Hydrodynamic Model and the American River Habitat Topographic Surface Model. These, in addition to other models, will be used to evaluate alternative operations of CVP/SWP, simulate recent RPA actions in the San Joaquin Basin, verify the San Joaquin River HEC5Q model, estimate spawning and rearing habitat on the American River, study the historic evolution of surface and groundwater resources in the Central Valley, and simulate salinity flow runs in the Delta.

SAN JOAQUIN BASIN FISHERIES PROGRAM

The **San Joaquin River Restoration Program, 3406 (c)** will construct a new Sack Dam to accommodate fish passage including a new transportation channel and fish ladder, and a new trash-rack upstream of the structure.

TRINITY RIVER BASIN FISHERIES PROGRAM

The **Trinity River Restoration Program, 3406 (b)(1) other & (b)(23)** is designed to restore the attributes of a healthy, alluvial river system by implementing variable annual instream flows, physical channel rehabilitation, sediment management, and watershed restoration. The Program's overarching goal is to restore anadromous fish populations to pre-dam levels. FY 2013 restoration activities include the continued implementation of the TRRP's restoration strategy. The Program will plan and implement restoration flow releases; construct two channel rehabilitation projects at Lorenz Gulch and Douglas City to restore approximately 19 acres of riparian habitat and 1.6 river miles of channel; and execute watershed restoration activities to manage fine sediment. Annual restoration flow releases will be based on water year type. Channel rehabilitation projects will include a combination of habitat improvement projects that will focus on side channel construction, floodplain lowering, woody debris placement, spawning gravel processing and augmentation, and juvenile fish rearing habitat enhancements. Annual coarse sediment augmentations will be based on water year type, results of past augmentations, and 2-dimensional modeling runs.

In addition to the various restoration actions, 20 activities from the TRRP's Integrated Assessment Plan are proposed under six CVPIA Annual Work Plan categories: Environmental Compliance, Pre-Project Monitoring, Post-Project Monitoring, Monitoring (Programmatic), Research (Evaluations, Studies, Investigations), and Modeling. These activities are generally intended to (1) evaluate long-term progress toward achieving Program goals and objectives; and (2) provide short-term feedback to improve Program adaptive management actions by testing key hypotheses and reducing management uncertainties. The activities relate to the influence of restoration actions on fish, wildlife, vegetation and the physical environment that contribute to a healthy river.

CVP WATER OPERATIONS RESOURCE AREA

The **Flow Fluctuation and Reservoir Storage Program, 3406 (b)(9) & (b)(19)** will perform forecast analyses for the Trinity and Shasta reservoirs to attain storage target. The Program will also perform fish surveys and rescue operation on the American and Stanislaus Rivers.

REFUGES RESOURCE AREA

The **Refuge Water Supply Program, 3406 (d)(1, 2 & 5)**, which consists of refuge water acquisitions, conveyance and construction, will purchase an estimated 53,435 acre feet (AF) of water for Incremental Level 4 supplies consisting of 24,438 AF of surface water from the Exchange contractors; 10,000 AF of groundwater from Grassland Water District; and 18,997 AF from to-be-determined sellers. The Program will fund the cost to convey Level 2 water supplies of 294,363 AF to the boundaries of the CVPIA refuges, the costs to pump groundwater and the power costs to move the water. The Program also funds the costs associated with the delivery of Incremental Level 4 water supplies and groundwater costs. The

Program will collect and evaluate data to determine water losses on the East Bear Creek Unit of the San Luis NWR complex and will negotiate 2 reimbursement power agreements for conveyance for CVPIA State Wildlife Areas. The Program will also conduct water quality analysis at Gray Lodge Wildlife Area. The construction component of the Program will undergo activities for the following projects: Gray Lodge/Biggs West Gridley conveyance facilities improvement design and construction; Gray Lodge/Pixley wells modification project for erosion repairs; and East Bear Creek modification project to sustain functionality of infrastructure, motors and electrical devices.

OTHER RESOURCE AREA

The **Habitat Restoration Program, 3406 (b)(1) other** will fund habitat restoration of CVP-impacted habitats; land acquisition to protect CVP-impacted species and their habitats; research actions that correlate to support land acquisition and/or habitat restoration projects; and captive propagation and reintroduction projects to assist with recovery of federally listed species and their populations. These actions will occur through a grant award process.

The **Land Retirement Program, 3408 (h)** will pursue land acquisition to meet the goals of retiring 8,000 acres and restoring 400 acres per year of land at the Atwell Island site in the Tulare Basin. To date, 7,266 acres of land have been acquired leaving 734 acres remaining.