CALIFORNIA BAY-DELTA FEDERAL BUDGET CROSSCUT

The California Bay-Delta program is a cooperative effort among the Federal Government, the State of California, local governments, and water users, to proactively address the water management and aquatic ecosystem needs of California's Central Valley. This valley, one of the most productive agricultural regions in the world, is drained by the Sacramento River in the north and the San Joaquin River in the south. The two rivers meet southwest of Sacramento, forming the Sacramento-San Joaquin Delta, and drain west into San Francisco Bay.

The Bay-Delta is the hub of the Nation's largest water delivery system, providing drinking water to 25 million Californians. According to the State of California, it supports about $400 billion of annual economic activity, including a $28 billion agricultural industry and a robust and diverse recreational industry.

The extensive development of the area's water resources has boosted agricultural production, but has also adversely affected the region's ecosystems. Bay-Delta program participants recognized the need to provide a high-quality, reliable and sustainable water supply for California, while at the same time restoring and maintaining the ecological integrity of the area and mitigating flood risks. This recognition resulted in the 1994 Bay-Delta Accord, which laid the foundation for the CALFED Bay-Delta Authorization Act of 2004 (P.L. 108-361). The program has since adapted and evolved into a broader Bay-Delta program that includes the Bay-Delta Conservation Plan, the Delta Science Program, and the Delta Plan, released in May of 2013. Federal activities are currently coordinated though the Interim Federal Action Plan (established in 2010), under the leadership of the White House Council on Environmental Quality, the Department of the Interior, and California's Delta Stewardship Council.

The Interim Federal Action Plan uses an adaptive management approach to water resources development and management, and continues to develop strategies to balance and achieve the program's four objectives: a renewed Federal-state partnership, smarter water supply and use, habitat restoration, and drought and floodplain management. The partners signed a Record of Decision in 2000 and a Memorandum of Understanding in 2009, detailing the different program components and goals. The program uses scientific monitoring to track progress made towards reaching near-term objectives and longer-range success. Federal agencies contributing to the Bay-Delta program include: the Department of the Interior's Bureau of Reclamation, U.S. Fish and Wildlife Service, and U.S. Geological Survey; the Department of Agriculture's Natural Resources Conservation Service; the Department of Defense's Army Corps of Engineers; the Department of Commerce's National Oceanic and Atmospheric Administration; and the Environmental Protection Agency.

This crosscut includes an estimate of Federal funding by each of the participating agencies, fulfilling the reporting requirements of P.L. 108-361. Participating Agencies have provided additional tables and narratives that further account for recent programmatic and funding changes which are available online at http://www.budget.gov/budget/Analytical_Perspectives. Please note that some funding amounts included in previous budgets have been updated to align with the programs and activities outlined in the Interim Federal Action Plan. More information about the Interim Federal Action Plan can be found at this website: http://www.doi.gov/news/doinews/upload/CAWaterWorkPlan.pdf.

Bay-Delta Federal Funding Budget Crosscut

(in millions of dollars)	--- Enacted ---																					Pres. Bud.
Agency / / / Fiscal Year	98	99	00	01	02	03	04	05	06	07	08	09 [1]	10	11	12	13	14	**15**	**16**	**17**	**18**	**19**
Bureau of Reclamation	153	115	139	80	103	74	76	81	100	101	66	157	95	186	175	121	157	138	128	128	125	129
Corps of Engineers	101	103	94	54	58	58	73	52	91	87	51	141	73	98	45	54	86	50	148	181	154	229
Natural Resources Conservation Service	0	15	13	17	39	38	49	36	35	27	41	44	40	56	56	45	52	53	46	34	37	37
NOAA Fisheries (NMFS)	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2
Geological Survey	3	3	4	5	5	5	5	5	5	4	4	4	3	6	8	7	6	9	8	11	11	8
Fish and Wildlife Service	1	1	4	18	6	11	14	9	11	8	22	24	7	5	5	5	5	5	6	6	6	6
Environmental Protection Agency [2]	3	3	57	53	54	21	63	98	37	36	68	161	124	78	86	80	83	83	80	79	79	62
Totals:	262	240	311	228	266	208	279	283	279	264	253	532	341	430	376	312	391	339	417	441	415	474

[1] The FY 2009 total includes American Recovery and Reinvestment Act projects and activities.

CALIFORNIA BAY DELTA FEDERAL CROSS-CUT

Fiscal Year 2019

Agency Activities, Projects, and Programs contributing to the Environmental Restoration of California's Bay Delta

Disclaimer:

The numbers and descriptions included in this report are based on the best estimates available at the time of the preparation of this report, do not necessarily reflect final FY2018 Enacted or FY2019 Budget numbers, and are subject to change.

INTERIM FEDERAL ACTION PLAN SUMMARY TABLE

FEDERAL BAY-DELTA FUNDING SUMMARY
California Bay-Delta Related Funding
(in millions of dollars)

Interim Federal Action Plan (Bay-Delta)

	--- Enacted ---							Pres Bud
	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Total, All Agencies	**376.04**	**312.46**	**390.92**	**338.72**	**416.78**	**440.58**	**414.64**	**473.81**
Renewed Federal Partnership	3.07	2.86	2.77	2.85	9.73	8.97	9.53	12.09
Smarter Water Supply and Use	90.60	73.63	69.54	86.17	81.16	69.94	71.44	70.61
Habitat Restoration	242.18	197.55	226.22	203.87	201.96	188.25	195.88	178.52
Drought Floodplain and Management	40.19	38.42	92.39	45.83	123.94	173.43	137.80	212.59
Bureau of Reclamation	**175.16**	**120.92**	**157.38**	**137.68**	**128.24**	**128.02**	**125.02**	**128.65**
Renewed Federal Partnership	*2.00*	*1.80*	*1.70*	*1.70*	*1.70*	*2.20*	*2.19*	*1.70*
Smarter Water Supply and Use	*17.69*	*11.05*	*14.85*	*7.95*	*7.20*	*5.81*	*5.27*	*3.85*
Habitat Restoration	*155.47*	*108.08*	*140.83*	*128.03*	*119.34*	*120.01*	*117.56*	*123.10*
Drought Floodplain and Management	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Corps of Engineers	**44.53**	**53.80**	**86.07**	**49.96**	**147.70**	**181.08**	**154.49**	**229.28**
Renewed Federal Partnership	*0.10*	*0.10*	*0.10*	*0.10*	*6.83*	*5.56*	*6.17*	*9.21*
Smarter Water Supply and Use	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Habitat Restoration	*4.38*	*15.42*	*23.72*	*4.18*	*17.08*	*2.24*	*10.66*	*7.62*
Drought Floodplain and Management	*40.05*	*38.28*	*62.25*	*45.69*	*123.80*	*173.29*	*137.65*	*212.45*
USDA - NRCS	**56.08**	**44.91**	**52.16**	**52.97**	**46.01**	**33.79**	**37.20**	**37.20**
Renewed Federal Partnership	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Smarter Water Supply and Use	*35.59*	*27.50*	*17.67*	*41.10*	*38.64*	*29.11*	*31.20*	*31.20*
Habitat Restoration	*20.48*	*17.41*	*4.48*	*11.88*	*7.37*	*4.68*	*6.00*	*6.00*
Drought Floodplain and Management	*0.00*	*0.00*	*30.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
NOAA Fisheries	**1.39**	**1.30**	**1.39**	**1.52**	**1.64**	**1.57**	**1.51**	**1.90**
Renewed Federal Partnership	*0.18*	*0.17*	*0.18*	*0.26*	*0.41*	*0.42*	*0.38*	*0.39*
Smarter Water Supply and Use	*1.00*	*0.94*	*1.00*	*1.18*	*1.11*	*1.03*	*0.98*	*1.36*
Habitat Restoration	*0.21*	*0.20*	*0.21*	*0.07*	*0.13*	*0.13*	*0.15*	*0.15*
Drought Floodplain and Management	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Geological Survey	**8.14**	**6.88**	**6.04**	**8.63**	**7.57**	**11.06**	**11.06**	**8.46**
Renewed Federal Partnership	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Smarter Water Supply and Use	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Habitat Restoration	*8.14*	*6.88*	*6.04*	*8.63*	*7.57*	*11.06*	*11.06*	*8.46*
Drought Floodplain and Management	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Fish & Wildlife Service	**4.86**	**4.86**	**4.86**	**4.86**	**5.96**	**5.96**	**5.94**	**5.94**
Renewed Federal Partnership	*0.79*	*0.79*	*0.79*	*0.79*	*0.79*	*0.79*	*0.79*	*0.79*
Smarter Water Supply and Use	*0.99*	*0.99*	*0.99*	*0.99*	*0.99*	*0.99*	*0.98*	*0.98*
Habitat Restoration	*2.94*	*2.94*	*2.94*	*2.94*	*4.04*	*4.04*	*4.02*	*4.02*
Drought Floodplain and Management	*0.14*	*0.14*	*0.14*	*0.14*	*0.14*	*0.14*	*0.14*	*0.14*
EPA	**85.90**	**79.79**	**83.01**	**83.10**	**79.65**	**79.10**	**79.43**	**62.39**
Renewed Federal Partnership	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Smarter Water Supply and Use	*35.34*	*33.15*	*35.03*	*34.95*	*33.23*	*33.00*	*33.00*	*33.22*
Habitat Restoration	*50.56*	*46.63*	*47.99*	*48.15*	*46.43*	*46.10*	*46.43*	*29.17*
Drought Floodplain and Management	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*

FISCAL YEAR 2019

U.S. FISH AND WILDLIFE SERVICE

Renewed Federal State Partnership

Authority: Anadromous Fish Conservation Act, (P.L. 89-304), Endangered Species Act of 1973, as amended, (16 U.S.C. 1531-1544), Fish and Wildlife Act of 1956, as amended, (16 U.S.C. 742(a)-754), Fish and Wildlife Conservation Act, as amended, (16 U.S.C. 2901-2911), Fish and Wildlife Coordination Act, as amended, (16 U.S.C. 661-666(e)), and the Partners for Fish and Wildlife Act, (16 U.S.C. 3771 et. seq.).

FY 2019 Budget Request: $790,000

Project Description: The U.S. Fish and Wildlife Service (Service) is working to build and maintain Federal and State partnerships that are invested in restoring the California Bay-Delta. With support from our partners, the Service will identify water flow and habitat restoration actions to recover endangered and sensitive species and their habitats as well as address long-term critical water issues facing California. These efforts support the Bay-Delta Conservation Plan (BDCP) and the Administration's Interim Federal Action Plan (IFAP).

Proposed Actions for 2019:

- Following the publication of the Supplemental Draft Environmental Impact Statement (SDEIS) on the BDCP and close of a formal public comment period, the Service will continue providing assistance to the State of California to facilitate the completion of a final BDCP as soon as feasible.
- Associated with the IFAP, the Service will work to align and function with new California State legislation focused on efforts to restore the Bay-Delta Estuary and better meet the State's water needs.
- The Service will continue to work with State and local interests to plan and implement activities under the IFAP.

Smarter Water Supply & Use

Authority: Endangered Species Act of 1973, as amended, (16 U.S.C. 1531-1544), Fish and Wildlife Act of 1956, as amended, (16 U.S.C. 742(a)-754), Fish and Wildlife Conservation Act, as amended, (16 U.S.C. 2901-2911), and the Fish and Wildlife Coordination Act, as amended, (16 U.S.C. 661-666(e)).

FY 2019 Budget Request: $982,000

Project Description: The Service will continue to collaborate with other Federal, State and local agencies to promote opportunities to maximize water supply for California. The Service will

provide the technical expertise and environmental reviews to improve water conservation and management.

Proposed Actions for 2019:

- The Service will participate in consideration and implementation of smart water supplies and its uses during BDCP planning and implementation efforts.
- Associated with the IFAP, Federal agencies will align their water conservation programs and focus efforts to help reduce demand in targeted regions. One of the most important features of the recently-enacted State legislation is the adoption of State-wide conservation strategies as a part of a comprehensive water supply plan for California's future. The Service will facilitate IFAP implementation by providing technical assistance and environmental review.

Habitat Restoration

Authority: Anadromous Fish Conservation Act, (P.L. 89-304), Endangered Species Act of 1973, as amended, (16 U.S.C. 1531-1544), Fish and Wildlife Act of 1956, as amended, (16 U.S.C. 742(a)-754), Fish and Wildlife Conservation Act, as amended, (16 U.S.C. 2901-2911), Fish and Wildlife Coordination Act, as amended, (16 U.S.C. 661-666(e)), Migratory Bird Conservation Act, (16 U.S.C. 715-715d), National Wildlife Refuge System Administration Act of 1966, as amended, (16 U.S.C. 668dd et. Seq.), The National Wildlife Refuge System Improvement Act of 1997, (P.L. 105-57), and the Partners for Fish and Wildlife Act, (16 U.S.C. 3771 et. seq.).

FY 2019 Budget Request: $4,023,000

Project Description: The Service is leading habitat restoration activities within the Bay-Delta Estuary. This includes working with other Federal, State, and local agencies to plan and implement numerous programs, including the CALFED Ecosystem Restoration Program, Bay Delta Conservation Program, portions of the Interim Federal Action Plan, the Central Valley Joint Venture, the Cooperative Endangered Species Conservation Fund, Endangered Species Recovery Program, Partners for Fish and Wildlife Program, Land Acquisition Program, the North American Wetlands Conservation Fund, and the Interagency Ecological Program. This overall effort so far has resulted in thousands of acres of restored and conserved habitats, providing benefits to numerous fish and wildlife species and the American public.

Proposed Actions for 2019:

- The Service will continue to assist implementing Ecosystem Restoration Program restoration grants and to work to approve additional projects as funding and authorization allow.
- The Service will reinforce cross-agency collaboration in its Bay-Delta Non-Native Invasive Species (NIS) program. The program will focus on preventing the introduction of new invasives (ex., quagga mussels), limiting or eradicating existing invasives (ex., *Egeria densa*), and reducing adverse impacts from infestations.
- The Service's work on the BDCP will assist that effort to identify and implement a set of water flow and habitat restoration actions to contribute to recovery of endangered and sensitive species and their habitats in the Bay-Delta Estuary.

- The Service will continue to lead the Federal, State, and City partnership, to support development of a facility designed to support the propagation and restoration of Delta native fish species.
- The Service will participate in short-term habitat restoration efforts such as restoration of flows on the San Joaquin River from Friant Dam to the confluence of the Merced River, and in efforts to restore self-sustaining habitat in Battle Creek, Cache Slough, and the Yolo Bypass Floodplain.
- The Service estimates it will restore, enhance, and protect thousands of acres of Delta and Delta watershed wetland and waterfowl-friendly agricultural habitats and will secure full water supplies for Central Valley State and Federal refuges.
- The Service, working with numerous landowners, estimates it will restore thousands of acres of Delta and Delta watershed wetland, riparian, and instream habitat for numerous fish and wildlife species and will provide extensive technical assistance.

Drought & Floodplain Management

Authority: Endangered Species Act of 1973, as amended, (16 U.S.C. 1531-1544), Fish and Wildlife Act of 1956, as amended, (16 U.S.C. 742(a)-754), Fish and Wildlife Conservation Act, as amended, (16 U.S.C. 2901-2911), and the Fish and Wildlife Coordination Act, as amended, (16 U.S.C. 661-666(e)).

FY 2019 Budget Request: $142,000

Project Description: The Service is participating with other Federal and State agencies to provide drought protection and floodplain management in California's Central Valley and Bay-Delta Estuary region.

Proposed Actions for 2019:
- The Service will continue to participate in planning and rapid response for permitting actions associated with drought protection in the State of California.
- The Service will participate with California's flood management effort, including participation in the Department of Water Resource's Delta Levees Flood Protection Program, FloodSAFE California Program and Central Valley Flood Protection Plan; and will continue to participate with the U.S. Army Corps of Engineers in its efforts to provide flood protection in the Delta and Delta watershed area.

FISCAL YEAR 2019

USDA NATURAL RESOURCES CONSERVATION SERVICE

Renewed Federal State Partnership

Authority: Public Law 74-46, the Soil Conservation and Domestic Allotment Act of 1935 and the Soil and Water Resources Conservation Act of 1977, Conservation Operations.

FY 2019 Budget Request (000's): Technical assistance funding is included in the base budget for Private Lands Conservation Operations.

Project Description: NRCS provides technical assistance for natural resource concerns with emphasis on conservation planning for on-farm owner/operators, non-industrial private forestland owners, and Tribes. NRCS works closely with other Federal, State, local, and environmental constituents on Bay Delta conservation issues.

Current Status: NRCS provides Federal leadership for Interim Federal Action Plan (IFAP) on-farm conservation activities. NRCS actively participates in numerous IFAP related Federal and State working groups related to Bay Delta planning and implementation coordination efforts.

Smarter Water Supply & Use

Authority: Environmental Quality Incentive Program, 16 U.S.C. 3839aa et seq.; Regional Conservation Partnership Program, 16 U.S.C. 3871 et seq.; the Soil Conservation and Domestic Allotment Act of 1935 and the Soil and Water Resources Conservation Act of 1977, Conservation Operations.

FY 2019 Budget Request (000's): Technical assistance funding is included in the base budget for Private Lands Conservation Operations.

Project Description: NRCS provides technical assistance for on-farm water conservation and water quality planning with owner/operators, assists non-industrial private forestland owners to reduce sediment for cleaner water supply, and assists tribal landowners and Tribes with water supply related conservation planning through its Conservation Operations authority, and provides technical assistance to agricultural producers and non-industrial private landowners (including Tribes) to assist with water conservation and other natural resource concerns through the Farm Bill authorities.

Current Status: NRCS provides Federal leadership for on-farm water conservation activities. The agency also provides technical and financial assistance to agricultural producers to assist with water conservation and other IFAP natural resource concerns. NRCS works closely with other Federal, State, local, and environmental constituents on water conservation issues through the State Technical Committee. NRCS is partnering with the Bureau of Reclamation on IFAP water conservation opportunities.

Water Conservation and Water Quality Projects

Authority: Environmental Quality Incentives Program (EQIP), 16 U.S.C. 3839aa et seq.

FY 2019 Budget Request (000's): $11,000,000.

Project Description: EQIP has on-farm water conservation as an eligible financial assistance project. Signups are held at local service centers located in the Bay Delta geographic area. Approved projects optimize environmental benefits while addressing natural resource concerns and are awarded based on local ranking criteria consistent with the performance goals of NRCS EQIP and complementing the Water Supply category of IFAP. NRCS continues partnering with the Bureau of Reclamation on IFAP water conservation opportunities.

Habitat Restoration

Authority: Agricultural Conservation Easement Program, 16 U.S.C. 3865 et seq.; Environmental Quality Incentive Program, 16 U.S.C. 3839aa et seq.; Regional Conservation Partnership Program, 16 U.S.C. 3871 et seq.; the Soil Conservation and Domestic Allotment Act of 1935 and the Soil and Water Resources Conservation Act of 1977, Conservation Operations.

FY 2019 Budget Request (000's): Technical assistance funding is included in the base budget for Private Lands Conservation Operations.

Project Description: NRCS provides technical assistance for natural resource concerns with emphasis on conservation planning for on-farm owner/operators, non-industrial private forestland owners, and Tribes through its Conservation Operations authority, and provides technical assistance to producers to assist with their natural resource concerns through the Farm Bill.

Current Status: NRCS continues to provide Federal leadership for on-farm natural resources conservation activities and other natural resource concerns.

Habitat Restoration Projects

Authority: Agricultural Conservation Easement Program, 16 U.S.C. 3865et seq.; Environmental Quality Incentive Program, 16 U.S.C. 3839aa et seq.; Regional Conservation Partnership Program, 16 U.S.C. 3871 et seq.; the Soil Conservation and Domestic Allotment Act of 1935 and the Soil and Water Resources Conservation Act of 1977, Conservation Operations.

FY 2019 Budget Request (000's): $6,000,000.

Project Description: Continue to support existing Agricultural Conservation Easement Program (ACEP) projects that complement the objectives contained in the IFAP Habitat Restoration Program and the objectives of ACEP.

Continue to support existing EQIP projects that complement the objectives contained in the IFAP Habitat Restoration Program for riparian and aquatic ecosystem restoration while focusing on-farms. There are no specific funding targets for the Bay Delta region; however funding is expected to continue near current levels within funding limitations.

Current Status: The California NRCS State office has expanded its field-based wetlands teams and expects ACEP-WRE applications to expand proportionately within the state, and also expects producer interest in habitat restoration to continue under EQIP.

Drought & Floodplain Management

Authority: Emergency Watershed Protection Program- Floodplain Easement Program (EWPP-FPE) is authorized by 16 U.S.C. 2203. Environmental Quality Incentive Program, 16 U.S.C. 3839aa et seq.; Public Law 74-46, the Soil Conservation and Domestic Allotment Act of 1935 and the Soil and Water Resources Conservation Act of 1977, Conservation Operations.

FY 2019 Budget Request (000's): Specific project funding through EWPP or EQIP is requested per event.

Project Description: Implement projects using the Floodplain Easement Program (FPE) funding as provided through the Emergency Watershed Protection Program (EWPP). EWPP provides for the purchase of floodplain easements as an emergency measure. Floodplain easements restore, protect, maintain, and enhance the functions of the floodplain; conserve natural values including fish and wildlife habitat, water quality, flood water retention, ground water recharge, and open space; reduce long-term Federal disaster assistance; and safeguard lives and property from floods, drought, and the products of erosion. FPE complements the objectives contained in the IFAP.

Current Status: When emergency conditions indicate a need for emergency assistance, requests are made for funding consideration. EQIP eligible conservation practices include water use efficiency on irrigated lands, providing conservation cover on highly erodible lands subject to severe windblown erosion if they are not irrigated, and assisting grazing lands with water supply for livestock. NRCS will request additional needed funding for emergencies as the magnitude and scale of a given emergency is defined.

FISCAL YEAR 2019

BUREAU OF RECLAMATION (RECLAMATION)

Renewed Federal State Partnership

CALFED Program Management, Oversight, and Coordination

Authority: P.L. 108-361, Title I, Section 103 (f)(4)

FY 2019 Budget Request: $1,700,000

Project Description: Activities include Program support; program-wide tracking of schedules, finances, and performance; agency oversight and coordination of Program activities to ensure program balance and integration; development of agency crosscut budget; coordination of public outreach and involvement, including tribal, environmental justice, and public advisory activities; and Reclamation's administration of the storage, conveyance, water use efficiency, ecosystem restoration, science, and water transfer programs.

Smarter Water Supply & Use

Water Conservation

Authority: P.L. 97-293 Section 210, P.L. 102-575, Section 3405 (e), P.L. 111-11

FY 2019 Budget Request: $2,250,000

Project Description: The Mid-Pacific Regional Office's Water Conservation Team (Team) administers the Central Valley Project (CVP) Water Conservation Program (Program) activities with assistance from the Area Offices. The Team performs duties required under the Central Valley Project Improvement Act of 1992 (CVPIA) (P.L. 102-575) and the Reclamation Reform Act of 1982 (RRA) (P.L. 97-293), which include the development and administration of various Criteria – the Standard Criteria for Evaluating Water Management Plans, the Regional Criteria for the Sacramento Valley, and the Criteria for Developing Refuge Water Management Plans. Section 3405 (e) of the CVPIA, P.L. 102-575, directs the Secretary of the Interior to establish and administer an office of Central Valley water conservation best management practices that shall ". . . develop criteria for evaluating the adequacy of all water conservation plans developed by project contractors, including those plans required by Section 210 of the RRA, P.L. 97-293."

In FY 2017, the Team implemented water conservation measures through two competitive, water use efficiency Funding Opportunity Announcements (FOAs) offered to water districts, irrigation districts, resource conservation districts, urban water agencies, *etc.* that have a CALFED Bay-Delta connection. Each year, the FOAs enable Reclamation to encourage and match local funding of water conservation projects that implement Best Management Practices and the objectives of the CALFED Water Use Efficiency Program. Funded projects contribute to ecosystem restoration and increase both water supply

reliability and water quality.

Since FY 2011, Reclamation and the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) have partnered to release an FOA, "California Bay-Delta Restoration Program: Agricultural Water Conservation and Efficiency Grants," that funds water conservation activities that have an on-farm component. Through USDA programs such as the Environmental Quality Incentives Program and the Agricultural Water Enhancement Program, NRCS provides farmers accelerated technical and financial assistance.

Current Status: The Team continues to provide Federal leadership and expertise to implement locally-funded and supported water conservation activities that have a CALFED Bay-Delta connection. Such activities include, but are not limited to: water management plans, canal lining, meter installation, rebates, and technological innovations that better manage water deliveries and quickly detect leaks and other inefficiencies. Through multiple public outreach efforts, such as funding fairs, trade fairs, site visits, the Conservation Connection Newsletter, and the WaterShare website (www.usbr.gov/mp/watershare), the Team maintains a pro-active, efficient, and creative water conservation program for Reclamation's contractors and the public. For FY 2017, the competitive grant selection process was completed in June 2017. Through both FOAs, 4 projects were awarded in the first quarter of FY 2018; the average water savings per grant was 965 acre-feet per year with an estimated total amount of water saved over the lifetime of all four projects is 187,200 acre-feet.

Proposed Actions for FY 2019: A majority of the funding will fund and administer water conservation and efficiency projects through the two competitive FOAs: the water use efficiency FOA and the agricultural water conservation FOA. These FOAs fund projects that support local efforts to conserve water through more efficient delivery systems, better water management, and on-farm conservation activities. The remaining funds will support the Team's outreach to water users and the public.

Los Vaqueros (LV) Expansion Feasibility Study

Authority: P.L. 108-7, Section 215, Title II, Division, February 20, 2003; P.L. 108-137, Title II, Section 211, December 1, 2003

FY 2019 Budget Request: $300,000

Project Description: Reclamation initiated the feasibility study in 2003 in cooperation with non-Federal partners, the California Department of Water Resources (DWR), and Contra Costa Water District (CCWD). Reclamation and CCWD are studying the potential expansion of Los Vaqueros (LV) Reservoir to 275 thousand acre-feet (TAF) and related conveyance facilities. The 2010 Final Environmental Impact Statement/Environmental Impact Report (FEIS/R) included a phased approach to expand LV Reservoir, with an initial reservoir expansion to 160 TAF. The CCWD completed the initial expansion in 2012 without the benefit of a Federal feasibility report. The current phase of the feasibility study will evaluate the expansion of the reservoir to 275 TAF to provide additional regional water supply reliability and statewide environmental benefits.

Current Status: Activities in FY 2018 will continue environmental and feasibility studies that were funded in prior years and prepare a Public Draft Feasibility Report for release by January 2018. Additionally, oversight and review of activities under existing contracts to revise feasibility analyses, additional engineering of the Neroly High Lift Pump Station and other features, conduct an Independent Design, Estimate and Construction review, cost allocation and ability to pay analysis, and compile public

comments and draft responses for consideration into the Final Feasibility Report (FFR) are scheduled.

Proposed Actions for FY 2019: Funds will be used to complete most of the FFR and Supplement to the Final EIS/R for Administration review and transmittal to the Congress. The CCWD and Reclamation plan to release the FFR and Supplement by November 30, 2018.

Upper San Joaquin River Basin Storage Investigation

Authority: P.L. 108-7, Section 215, Title II, Division, February 20, 2003; P.L. 108-137, Title II, Section 211, December 1, 2003

FY 2019 Budget Request: $75,000

Project Description: Reclamation is amending and completing the Final Feasibility Study in cooperation with the San Joaquin Valley Water Infrastructure Authority (SJVWIA) for the Upper San Joaquin River Basin Storage Investigation. The purpose of the study is to determine the type and extent of Federal interest in a multiple purpose project to provide additional storage in the upper San Joaquin River watershed. The primary planning objectives are to improve water supply reliability and enhance water temperature and flow conditions in the San Joaquin River downstream from Friant Dam, which will be beneficial for salmon and other fish. Secondary objectives include flood damage reduction, water quality, recreation, and hydropower.

Current Status: The FFR and EIS were reviewed by the Secretary of the Interior's Office in January 2017. Subsequently, the SJVWIA decided to request that a new operational alternative be added to the FR. The Amended Final Feasibility Report and EIS will be re-submitted to the Secretary in August 2018, for review. The current funding level will meet the needs to respond to questions on the Final FR/EIS and coordinate with Reclamation's cost-sharing partners as described below.

Proposed Actions for FY 2019: Consistent with the Secretary of the Interior's direction to seek cost-share partners for the storage projects prior to authorization, Reclamation has signed a cost-sharing agreement with the SJVWIA. Reclamation is working with the cost-share partner on operational refinements to meet local needs and completion of an Amended Final FR and EIS. Funding will be used to address questions and followup on the Amended Final Feasibility Report and EIS.

North of Delta Off-Stream Storage (Sites Reservoir) Investigation

Authority: P.L. 108-7, Section 215, Title II, Division, February 20, 2003; P.L. 108-137, Title II, Section 211, December 1, 2003

FY 2019 Budget Request: $875,000

Project Description: Reclamation is conducting the investigation with Sites Joint Powers Authority (JPA) as the non-Federal cost sharing partner to determine the feasibility and extent of Federal interest in a multiple purpose project to construct and operate a 1.3 to 1.8 million acre-foot off-stream reservoir in the Sacramento Valley. The proposed project would increase water supply to help meet existing and new contract requirements, including improved water supply reliability and greater flexibility in water management for agricultural, municipal, and environmental purposes; increase the survival of

anadromous fish populations in the Sacramento River, as well as the survivability of other aquatic species; improve drinking and environmental water quality in the Delta; and provide flexible generation through a daily pump-back operation which would help integrate wind, and solar energy into the electrical grid. The investigation includes planning and technical analyses and determinations of engineering, environmental, economic, and financial feasibility as the basis for any recommended Federal investment in a new storage project.

Current Status: Activities in FY 2018 include continued collaboration with the Sites JPA, governmental agencies and stakeholders. Key activities include refining and responding to public comments and developing work

Proposed Actions for FY 2019: Public involvement and outreach is essential to completing a Final Feasibility Report and EIS. Funding will be used to coordinate with the Sites JPA, government agencies and stakeholders.

Shasta Lake Water Resources Investigation (SLWRI)

Authority: P.L. 96-375, 1980

FY 2019 Budget Request: $75,000

Project Description: Reclamation completed a Final Feasibility Report and EIS for the SLWRI that was forwarded to Congress by the Secretary of the Interior in July 2015. The report identified additional actions required in order to develop a Recommended Plan. The purpose of the SLWRI is to determine the type and extent of Federal interest in a multiple purpose project to modify Shasta Dam and Reservoir to increase survival of anadromous fish populations in the upper Sacramento River; increase water supplies and water supply reliability to agricultural, municipal and industrial, and environmental purposes; and to the extent possible through meeting these objectives, include features to benefit other identified ecosystem, flood damage reduction, and related water resources needs. The potential effects of a final array of alternative plans and mitigation requirements have been evaluated and are consistent with the CALFED Bay-Delta Program objectives to improve water supply reliability, ecosystem restoration, and water quality.

Current Status: Activities in FY 2018 include limited ongoing coordination with Reclamation and the Department, agency and public stakeholder outreach, developing and accessing new operation and financing plans with potential cost share partners and other activities consistent with Secretarial direction.

All alternatives were found to be technically feasible in the Final Feasibility Report, the Final Feasibility Report did not provide a recommendation to Congress due to outstanding considerations, primarily related to cost-sharing. However, the Final Feasibility Report identified CP4A as the NED Plan and provided representative financial feasibility evaluations for CP4A. Completion of the feasibility study phase activities is pending Congressional action and resolution of unresolved issues specified in the final documents. Westlands Water District has signed an agreement in principle to share construction costs. The California Department of Water Resources and the California Water Commission remain unable to participate, partner in, or fund any potential Shasta Enlargement due to their interpretation of the State Public Resources Code, Proposition 1 provisions, and current State water law.

Proposed Actions for FY 2019: Funds will be used to support the on-going alternative operations studies, seeking cost share partners, responding to Congressional inquiries, and developing construction cost share agreements with beneficiaries, consistent with the Final Feasibility Report. Reclamation is actively working with stakeholders to identify cost share partners and alternative sources of funding and to update operational studies as needed.

San Luis Low Point Improvement Project (SLLPIP)

Authority: P.L.108-361, Section 103(f)(1)(A), as amended by P.L. 114-322 to extend all Title 1 provisions from 2017 to 2019

FY 2019 Budget Request: $260,000

Project Description: Reclamation is continuing a Feasibility Study in coordination with the Santa Clara Valley Water District, and other cooperating agencies for the SLLPIP. The purpose of the project is to determine the type and extent of Federal interest in a multiple purpose project to address water delivery reliability, water quality issues caused by algae blooms at low water levels

Current Status: Reclamation completed an Administrative Draft Feasibility Report and EIS/EIR in April 2014, which includes the No Action/No Project Alternative and four action alternatives. A December 2013 Appraisal Report completed by Reclamation concluded that detailed studies were warranted to increase storage as part of the SLLPIP feasibility study. In response, the Administrative Draft SLLPIP feasibility report and EIS/EIR were revised and the Public Draft was completed in August 2017. In September of 2017 Reclamation received a Congressional request to study the feasibility of expanding Pacheco Reservoir as a solution for meeting the project objectives and to revise the study documents by adding the Pacheco Reservoir Expansion Alternative.

Proposed Actions for FY 2019: Funds will be used to continue partner and stakeholder coordination and public involvement and outreach.

Habitat Restoration

Suisun Marsh Protection

Authority: P.L. 99-546, 100 Stat. 3052, October 27, 1986

FY 2019 Budget Request: $1,304,000

Project Description: The Suisun Marsh Preservation Agreement (SMPA) was executed on March 2, 1987, between Reclamation, California Department of Water Resources (DWR), California Department of Fish and Game (now California Department of Fish and Wildlife), and Suisun Resource Conservation District. The revised SMPA was executed on November 24, 2015, to reflect significant events and changed conditions that had occurred since the original SMPA was signed. The objective of the SMPA is to assure that a dependable water supply is maintained to mitigate the adverse effects on Suisun Marsh from the CVP and State Water Project (SWP) and a portion of the adverse effects from other upstream diversions. Reclamation (CVP) is responsible for up to 40 percent of the construction and annual operation and maintenance costs associated with implementation of the SMPA; the State of California (SWP) is responsible for 60 percent of the implementation costs.

Current Status: The updated 2015 SMPA consolidated three existing agreements (the revised SMPA, revised Suisun Marsh Mitigation Agreement, and revised Suisun Marsh Monitoring Agreement). The 2015 SMPA also incorporates (1) the negotiated 1997 Preservation Agreement Implementation (PAI) fund for small scale infrastructure projects in lieu of the large scale facilities described in the original Suisun Marsh Plan of Protection; and (2) actions in Suisun Marsh identified in the CALFED Ecosystem Restoration Program. These latter two actions were addressed in the Suisun Marsh Plan (SMP) whose Record of Decision was completed in April 2014. The 2015 SMPA was signed by DWR, California Department of Fish and Wildlife, Suisun Resource Conservation District and Reclamation.

The PAI funding was negotiated in 1997 between Reclamation, DWR and the State Water Resources Control Board (SWRCB) for Reclamation and DWR to provide $3.7 million for small scale infrastructure projects to improve managed wetland flood and drain capabilities in the marsh. The PAI fund supports Reclamation and DWR's mitigation obligations for CVP and SWP operations. Reclamation's share would be $1.48 million in 1997 dollars and will need to be adjusted for inflation using Reclamation's cost index. The PAI funded projects will be tracked budget-wise separately from other SMPA funded activities.

There are five major water control facilities which require funding for operations and maintenance in Suisun Marsh and are owned, operated and maintained by the Delta Field Division (DFD) of DWR. These O&M activities may also include labor and materials from other DWR offices including the Division of Engineering, North-Central Regional Office and Division of Environmental Services.

Funds are also required for multiple external contracts to accomplish SMPA objectives. CDFW provides terrestrial surveys to measure populations of special status avian and mammal species. They also monitor water diversions and water quality and conduct vegetation surveys. They help implement the goals of the SMPA and associated permits. The University of California at Davis provides wetland ecological research to inform wetland habitat management. Other contracts with consultants provide biological surveys/maintenance, Delta Smelt Resiliency Strategy Studies/Aquatic Ecology Studies and hydraulic modeling support.

Proposed Actions for FY 2019: Funding will continue Federal participation with the State of California to identify structural and nonstructural actions for the protection and preservation of Suisun Marsh to improve water quality, while preserving the CVP storage yield. Costs have increased due to aging infrastructure and deferred maintenance. Funding will support Reclamation's participation with DWR to ensure a dependable water supply of adequate quantity and quality to protect wildlife habitat in Suisun Marsh for the protection and preservation of fish and wildlife, including continued funding of operation and maintenance costs of the SMPA facilities and implementation of the revised 2015 SMPA.

Anadromous Fish Restoration Program (AFRP)

Authority: Title XXXIV, P.L. 102-575, Section 3406 (b)(1)

FY 2019 Budget Request: $9,758,000

Project Description: The objectives of the AFRP are to: (1) improve habitat for all life stages of anadromous fish through provision of flows of suitable quality, quantity, timing, and physical habitat; (2) improve survival rates by reducing or eliminating entrainment of juveniles at diversions; (3) improve the opportunity for adult fish to reach their spawning habitats in a timely manner; (4) collect fish population, health, and habitat data to facilitate evaluation of restoration actions; (5) integrate habitat restoration efforts with harvest and hatchery management; and (6) involve partners in the implementation and

evaluation of restoration actions.

Current Status: The AFRP continues to fund habitat restoration projects that improve quantity and/or quality of habitat, survival, and passage of anadromous fish in Antelope, Cow, Cottonwood, Deer, Mill creeks, and the American, Cosumnes, Merced, Stanislaus, and Yuba rivers. The program will continue to collect fish population data for Cottonwood, Cow, Deer, Dry and Mill creeks and in the Cosumnes, Merced, San Joaquin, Stanislaus, and Yuba rivers to facilitate evaluation of restoration actions.

The AFRP has completed 23 percent of the 289 actions and evaluations in the Final Restoration Plan since the program was implemented. The average natural production estimate of Central Valley-wide Chinook salmon (spring, fall, late-fall, and winter run) in the period from 1992-2016, as calculated by Chinookprod is currently 372,577. The Chinook salmon natural production levels were robust during the early 2000's (692,921 in 2000; 583,510 in 2001, and 624,822 in 2002), but have experienced noticeable declines after 2005. The declines may be attributed to various factors, of which ocean conditions have been commonly implicated. The natural production levels have been slowly rebounding since 2010 and had shown a moderate improvement in recent years with 181,054 in 2011 increasing to 437,037 in 2013, but with a significant decrease to 2016 with only 160,466 salmon produced. Central Valley-wide escapement for natural Chinook salmon (spring, fall, late-fall, and winter run) has shown a similar pattern increasing from 2011 (131,136) through 2013 (358,634) with a significant decline to 99,752 in 2016. Estimated returns of fall-run Chinook salmon to Central Valley-wide rivers and streams in 2016 decreased to approximately 84,514 fish. The declines in salmon production numbers through 2016 may be in part attributed to the serious drought in California.

Proposed Actions for FY 2019: The AFRP is funding new projects, beginning in FY 2018, continuing in FY 2019, that align with the scientifically developed priorities specified in the Science Coordinators FY 2018 Technical Memorandum. The Science Coordinator worked with the Science Integration Team (SIT) in a Structured Decision Making (SDM) process to determine the highest priorities for habitat creation/rehabilitation. AFRP works with local watershed groups and other partners to implement watershed restoration plans, and to give first priority to SIT Priorities to restore natural habitat and processes both in-channel and in associated riparian habitats. The AFRP focuses on watersheds with the greatest potential to increase and sustain natural production of CVPIA target species (specifically, all runs of Chinook salmon, steelhead, green sturgeon and white sturgeon) where the greatest opportunities exist for efficient implementation of high priority actions and evaluations. The highest priority will be to complete ongoing projects. The next priority is to implement on the ground projects in line with the SIT priorities that result in the greatest increases in fish production. The primary emphasis of these ongoing projects continues to be on improving access for spawning adults to upstream habitat, protecting and restoring riparian and shaded riverine aquatic habitat, improving access for juvenile fish to floodplain habitats, and reducing loss to predation of juveniles along their rearing and migratory corridors. Completing on-going fish screens and fish passage project planning and permitting will be a high priority. Furthermore, AFRP will collaborate and provide technical assistance to large-scale restoration efforts on the Sacramento and San Joaquin rivers and in the Delta.

Habitat Restoration Program (Other CVP Impacts)

Authority: Title XXXIV, P.L. 102-575, Section 3406 (b)(1) Other

FY 2019 Budget Request: $1,500,000

Project Description: Protect and restore native habitats and species impacted by the CVP that are not specifically addressed in the Fish and Wildlife Restoration activities section of the CVPIA. The focus is on habitats known to have experienced the greatest percentage decline in habitat quantity and quality since construction of the CVP, where such decline can be attributed to the CVP (based on direct and indirect loss of habitat from CVP facilities and use of CVP water). These include rare serpentine soil habitats, alkali scrub and grassland habitats, vernal pools, Central Valley wetlands, riverine dunes, and riparian habitats.

Current Status: To date, the program has directed $38.6 million to fund 147 conservation actions. These actions include habitat protection (fee title/conservation easement acquisition), habitat restoration, research, and captive propagation of federally listed species. As of FY 2017, the program has contributed to the permanent protection of more than 127,000 acres and the restoration of more than 19,000 acres of habitats for federally listed species. The program has also funded over 28 research actions. It is anticipated that in FY 2018 the program will provide funding for protection and/or restoration of at least 1,000 acres of CVP impacted habitats.

Proposed Actions for FY 2019: Funding will be used for protection of habitats through purchase of fee title or conservation easements, and restoration of habitats for federally listed species impacted by the CVP. The program will focus on protecting and restoring vernal pool wetlands throughout the Central Valley, grassland and alkali scrub habitats in the San Joaquin Valley and Tulare Basin, serpentine soil habitats, and aquatic/riparian habitats throughout the Central Valley. Projects to be funded will be selected from proposals submitted through a Funding Opportunity Announcement (FOA) posted on www.grants.gov. Projects selected from the FOA will be based on the most current species and habitat priorities identified by the U.S. Fish and Wildlife Service (FWS). It is anticipated that at least 50 percent of project funds will go toward land protection through fee title acquisition and conservation easements benefitting federally listed species. The activities are required as part of the Programmatic Section 7 Consultation for CVPIA and other BiOps related to CVP operations. All projects will focus on improving conditions for CVP impacted species.

Anadromous Fish Screen Program (AFSP)

Authority: Title XXXIV, P.L. 102-575, Section 3406 (b)(19)

FY 2019 Budget Request: $1,200,000

Project Description: The primary objective of the AFSP is to protect juvenile Chinook salmon (all runs), steelhead trout, and green and white sturgeon from entrainment at priority diversions in California's Central Valley including the Sacramento and San Joaquin Rivers, their tributaries, the Delta, and the Suisun Marsh. Section 3406 (b)(21) of the CVPIA requires the Secretary of the Interior to assist the State of California in developing and implementing measures to avoid losses of juvenile anadromous fish resulting from unscreened or inadequately screened diversions.

Current Status: AFSP funding has contributed to the completion of 48 fish screen projects in addition to planning activities for proposed fish screen projects involving feasibility studies, environmental compliance, permitting, and project design activities.

In FY 2017, the following AFSP activities were performed:

- The following fish screen projects were completed: (1) Clover Creek/Millville Diversion (tributary to Cow Creek); (2) Locke Ranch (Mokelumne River); and (3) River Partners' Hidden Valley Ranch Diversion (San Joaquin River).

- Continued working on fish screen design, permitting, and environmental compliance activities for the following fish screen projects: (1) West Stanislaus Irrigation District Joint Use Diversion (San Joaquin River); (2) Oswald Water District (Feather River); (3) Tehama County Resource Conservation District's Antelope Creek Fish Passage/Screen; (4) Family Water Alliance's Garden Highway Mutual Water Company (Feather River); and (5) Family Water Alliance's Butte Creek Diversion 55.

- Completed construction activities for the Reclamation District 2035/Woodland-Davis Clean Water Agency Joint Intake/Fish Screen project.

In collaboration with Reclamation's Research and Development Office, a study to improve fish screen hydraulic evaluations was completed at Reclamation's Hydraulics Laboratory. In FY 2018, the AFSP anticipates completing the Oswald Water District fish screen project. The AFSP will also continue to provide technical assistance for projects in the planning phase (identified above) and potential new fish screen projects that meet the AFSP priorities.

Proposed Actions for FY 2019: Funds are anticipated to be used for cost share funding for environmental compliance, design, construction, and monitoring activities for several fish screen projects. The selection of these projects will be made based on CVPIA prioritization criteria which include: willing applicant, project costs, biological benefits, availability of Federal funding, and availability of the required non-Federal cost share.

Water Acquisition Program (WAP)

Authority: Title XXXIV, P.L. 102-575, Section 3406 (b)(3)-(d)(2)

FY 2019 Budget Request: $27,800,000

Project Description: The three key objectives of the WAP are to:

(1) Provide supplemental water supplies for refuges, referred to as Incremental Level 4 (IL4), for critical wetland habitat supporting resident and migratory waterfowl, threatened and endangered species, and wetland dependent aquatic biota [CVPIA Sections 3406 (b)(3) and (d)(2)]. The Refuge Water Supply Program – Water Acquisitions Component (WAP-Refuge) acquires this water from willing sellers.

(2) Convey acquired IL4 water supplies (surface water and groundwater) to CVPIA refuges in accordance with the refuges' water delivery schedules. Conveying such water supplies is accomplished via numerous agreements with various entities including the U.S. FWS, California Department of FWS, Grassland Water District, San Luis Delta-Mendota Water Authority, and various other water districts utilizing their respective water conveyance facilities (diversions, canals, groundwater wells, etc.).

(3) Acquire water to improve spawning and rearing habitat and increase migration in-stream flows for fall, winter and spring run Chinook salmon and steelhead in support of the AFRP [CVPIA Section 3406 (b)(3)]. The WAP- In-stream acquires water from willing sellers.

Current Status: In FY 2018 the WAP will continues its efforts to: (1) Provide supplemental refuge water supplies (IL4) through annual purchase and exchange agreements. As a supplement to surface water acquisitions the WAP – Refuge will continue to investigate and implement, as appropriate, groundwater projects and L2 exchanges in order to lower costs and increase reliability of providing supplemental refuge water supplies. Refuge water quality data will be collected and analyzed to assess the potential for long-term groundwater projects while providing short-term IL4 supplies; (2) Convey L2 and IL4 water supplies to CVPIA refuges in accordance with water delivery schedules to meet wetland habitat management requirements in support of resident and migratory birds. The delivery of water supplies to refuges involves close collaboration with refuge stakeholders (refuge managers, Central Valley Joint Venture, water districts, and Central Valley Project Operations); (3) Provide additional in-stream flows in support of the Central Valley-wide fish doubling goal, as described in (b)(1) and acquire water to enhance in-stream flows, thus improving spawning and rearing habitat for salmon and steelhead in support of the AFRP. The WAP – In-stream's acquisition of such water is subject to water and funding availability.

Proposed Actions for FY 2019: The WAP - Refuge expects to acquire water supplies through a variety of sources which may include short-term, long-term and permanent purchase agreements. A large percentage of this water will be acquired within the San Joaquin Valley where most of the wetlands are located. Sources of water may include reservoir storage transfers, groundwater pumping, tertiary treated recycled water, banked groundwater, and temporary or permanent transfers of surface supplies by water right holders or project contractors. Some water supplies may be transferred through the Delta, if excess pumping capacity at the C.W. 'Jones' Pumping Plant is available and used at San Joaquin Valley refuges.

The WAP—Refuge anticipates working very close with refuge stakeholders in the delivery of IL4 water supplies to CVPIA refuges.

The WAP – In-stream anticipates acquiring water, subject to availability of funds and water, to supplement the quantity of water dedicated under (b)(2) for fish, wildlife and habitat restoration purposes. Such water acquisitions will focus on in-stream flows to support the Central Valley-wide fish doubling goal as described in (b)(1).

Dedicated Project Yield

Authority: Title XXXIV, P.L. 102-575, Section 3406 (b)(2)

FY 2019 Budget Request: $700,000

Project Description: The Department of the Interior has the responsibility to dedicate and manage annually 800,000 acre-feet of CVP water (b)(2) water for fish, wildlife, and habitat restoration purposes and assist the State of California in its efforts to protect the waters of the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. The program objectives are to: (1) improve habitat conditions for anadromous fish in CVP controlled rivers and streams and the Bay-Delta to help meet the AFRP doubling goals; (2) increase survival of out migrant juvenile anadromous fish, especially in the Bay-Delta; (3) enhance recovery of listed threatened and endangered fish species; and (4) monitor and evaluate to assess the effectiveness of (b)(2) measures.

Current Status: The May 2003 Decision on Implementation of Section 3406(b)(2), will be implemented for the 15th year in 2018, upstream actions will be implemented; and monitoring and evaluation to

assess the effectiveness of (b)(2) environmental measures will continue.

Proposed Actions for FY 2019: Funding will be used to continue efforts associated with the annual dedication and management of 800,000 acre-feet of CVP yield for the primary purpose of anadromous fish restoration as directed by the CVPIA. The May 2003 Decision on Implementation of Section 3406(b)(2), will be implemented for the 16th year in 2019; upstream actions will be implemented; and monitoring and evaluation to assess the effectiveness of (b)(2) environmental measures will continue.

Clear Creek Restoration

Authority: Title XXXIV, P.L. 102-575, Section 3406 (b)(12)

FY 2019 Budget Request: $730,000

Project Description: The purpose of the Clear Creek Restoration Program is to: (1) restore stream channel form and function necessary to optimize habitat for salmon and steelhead and the aquatic and terrestrial communities on which they depend; (2) determine long-term flow needs for spawning, incubation and rearing by conducting an In-stream Flow Incremental Methodology study as mandated in Section 3406 (b)(12); (3) provide flows of adequate quality and quantity to meet the requirements of all life stages of Chinook salmon and steelhead trout known to use Clear Creek; (4) provide spawning gravel to replace the natural supply of gravel that is blocked by Whiskeytown Dam; and (5) monitor project results.

Current Status: In FY 2018, Clear Creek restoration focuses on starting construction of the final habitat restoration actions for Clear Creek Phase 3C and finishing up construction on Phase 3B. The Program continues to augment gravel in the creek. Monitoring continues to inform restoration actions and describe their effectiveness.

Releases from Whiskeytown Dam will be managed to provide sufficient habitat resources based on flow-to-weighted usable area relationships, to comply with the National Marine Fisheries Service's (NMFS's) BiOp water temperature targets, and to encourage an upstream distribution of threatened Central Valley spring-run Chinook salmon within Clear Creek. Final aspects of the design and permitting are being completed for the Lower Clear Creek Aquatic Habitat and Mercury Abatement Project (LCCAHMAP) that will use abandoned dredger mine tailings as an inexpensive source of spawning gravel for future placements. Implementation of the State funded portion of LCCAHMAP continues in FY 2018. The National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) for the long-term programmatic environmental permits (Lower Clear Creek Anadromous Fish Habitat Restoration and Management Project) to support various future restoration actions in Clear Creek are nearly complete. Environmental compliance planning will continue for the Environmental Water Program's "geomorphic/channel maintenance flows." Monitoring activities, coordinated with the Science Integration Team, will include work to ascertain impacts of restoration actions on fishery and geomorphic resources and determine the amount of gravel needed for spawning habitat and geomorphic function.

Proposed Actions for FY 2019: Major habitat creation and rehabilitation activities described in the Clear Creek conceptual plan will come to completion in FY 2019. The phased habitat projects aggressively implemented Chinook salmon and steelhead habitat enhancement projects through partnerships with local landowners, public and private agencies, and universities. The habitat restoration projects emphasized restoration actions that will increase populations of spring-run Chinook salmon and steelhead, both listed

as threatened under the Federal Endangered Species Act (ESA). The Program will continue to implement its annual in-stream spawning gravel placement projects. The Clear Creek Restoration program will continue monitoring juvenile production, juvenile habitat use, spawning area mapping, gravel quality, benthic macro invertebrate sampling, and water quality and water temperature. Planning continues for the Environmental Water Program to implement its first pilot "geomorphic/channel maintenance flows" discharge of 3,250 cfs to help promote proper functioning of more natural fluvial geomorphic processes in Clear Creek.

Spawning Gravel/Riparian Habitat

Authority: Title XXXIV, P.L. 102-575, Section 3406 (b)(13)

FY 2019 Budget Request: $4,500,000

Project Description: The purpose of the Spawning Gravel/Riparian Habitat Program is to increase the availability of spawning and juvenile salmonid rearing habitat for: (1) Sacramento River Basin Chinook salmon and steelhead trout in the reach of the main-stem Upper Sacramento River from Keswick Dam downriver to Red Bluff Diversion Dam; (2) American River Basin Chinook salmon and steelhead trout in the reach of the American River downriver from Nimbus Dam; and (3) Stanislaus River Chinook salmon and steelhead trout in the reach of the Stanislaus River downriver from Goodwin Dam.

Current Status: Sacramento River: Gravel placement occurs annually in the Sacramento River downstream from Keswick Dam. Gravel is replenished at existing augmentation sites as the placed gravel is washed downstream. Twenty-four side channel/floodplain juvenile rearing habitat and spawning habitat improvement sites are being permitted and constructed and additional project sites are being scoped to address rearing and spawning habitat limitations. Monitoring of past projects is ongoing and new effectiveness monitoring activities are beginning.

American River: The Program identified specific spawning and rearing habitat project sites on the American River as part of a multi-year series of projects. The Program began fielding those projects in 2008, between Nimbus Dam and Paradise Beach to address spawning habitat and rearing habitat limitations. Projects have been completed at eight sites. Projects include gravel placement, side channel creation, woody material additions, and floodplain enhancements for spawning and rearing habitat targeting steelhead and Chinook salmon. Evaluation of the effectiveness of completed projects is ongoing.

Stanislaus River: The Program identified rearing habitat as a key limitation to Chinook salmon production. Program projects target available sites to enhance rearing and spawning habitat. The National Oceanic and Atmospheric Administration Reasonable and Prudent Alternative for operations of the CVP and SWP included an action to place 50,000 cubic yards of gravel in the Stanislaus River by 2014 (extension was granted by NMFS) and 8,000 cubic yards per year thereafter (for steelhead) which was achieved in 2012 during the Honolulu Bar restoration work. Stanislaus projects are striving to meet this action. Limited access to the river from landowners (public and private) restricts the ability to implement habitat improvement projects. Evaluating the effectiveness of past projects is ongoing.

Proposed Actions for FY 2019: Funding will be used for gravel restoration and rearing habitat projects on the Upper Sacramento, American, and Stanislaus rivers immediately downstream from Keswick, Nimbus, and Goodwin dams, respectively. Species to benefit include Sacramento, American and

Stanislaus River Basin Chinook salmon and steelhead trout. The public involvement and permitting phases of project planning will determine final site selection in all three rivers. Monitoring will be incorporated into all projects to determine the effectiveness of projects at maintaining and enhancing salmonid habitat.

California WaterFix (formerly Bay Delta Conservation Plan (BDCP))

Authority: P.L. 85-624, Fish and Wildlife Coordination Act; P.L. 92-149, Certain Study Costs Nonreimbursable

FY 2019 Budget Request: $2,250,000

Project Description: The BDCP planning process began in 2006 to address the myriad of issues affecting the Sacramento-San Joaquin River Delta (Delta), and was approached as a combined Habitat Conservation Plan (HCP) under Section 10 of the Federal ESA and a Natural Community Conservation Plan (NCCP) under the California Natural Community Conservation Planning Act. The goal was to develop a long-term plan, aimed at providing water supply reliability by building new water infrastructure and investing in habitat restoration to improve the ecological health of the Delta, while minimizing impacts to local communities and farms.

In December 2014, California Governor Brown announced a change in direction that would separate the habitat restoration portion from the water conveyance element of the project. The BDCP Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS) released on July 10, 2015, includes three new alternatives that do not have a HCP/NCCP component and are focused on new conveyance and associated operations. One of these new alternatives, California WaterFix (CWF), was selected as the preferred alternative. The CWF (Alternative 4A) consists of three new intakes capable of diverting up to 9,000 cfs located in the north Delta along the Sacramento River, screened with state-of-the art fish screens. Water from the Sacramento River would be diverted through two-40 foot diameter tunnels carrying the water approximately 35 miles south to the existing State and Federal pumping plants in the south Delta. This alternative also includes mitigation measures and environmental commitments to meet the requirements of the Federal ESA Section 7 and Section 2081(b) of the California ESA.

Current Status: A final Biological Opinion (BiOp) for CWF was released by the National Marine Fisheries Service (NMFS) on June 16, 2017, and U.S. Fish and Wildlife Service (USFWS) on June 23, 2017. Reclamation, as the Federal lead agency under NEPA, together with DWR, prepared the Final Environmental Impact Report/Draft Environmental Impact Statement (EIR/EIS) for CWF. The full document was posted on December 22, 2016, and DWR signed the Notice of Determination on July 21, 2017. Reclamation has not signed a Record of Decision due to ongoing processes that could change the regulatory requirements of the CWF.

Reclamation does not have the authority to fund the construction of the CWF; however CVP contractors may choose to "participate" in the CWF by contracting with DWR to contribute funding. Reclamation recently distributed a letter to all CVP contractors outlining an approach for interested CVP contractors to be able to participate in the CWF and subsequently receive its water supply benefits. This approach was developed with the intention of providing additional information to assist the CVP contractors in making their decision of whether to participate. On September 19th, Westlands Water District Board voted to not participate in the CWF. With the exception of Santa Clara Valley Water District's provisional support vote, no other CVP water contractors have voted to participate and partially fund the CWF.

Proposed Actions for FY 2019: Funding will be used to continue activities associated with CWF legal and permitting requirements including compliance with ESA, supplemental NEPA, and development of a Record of Decision, and State Water Resources Control Board petition process. Funding will also be used to implement the Program's Adaptive Management and Monitoring element and the development of an operations plan. It is also anticipated that solicitor assistance will be required as well as assistance to comply with Freedom of Information Act requests.

Red Bluff Fish Passage Monitoring and Evaluation

Authority: Title XXXIV, P.L. 102-575, Section 3406 (b)(10)

FY 2019 Budget Request: $400,000

Project Description: The Red Bluff Diversion Dam is in the Sacramento River Division of the CVP. It was identified as an impediment to upstream and downstream passage of salmonid species, as well as the green sturgeon. Reclamation completed a new pumping plant for the Tehama Colusa Canal Authority to maintain the diversions with the Red Bluff Diversion Dam Gates open year round. Now fish have unimpeded access upstream and downstream in the Sacramento River past the site.

Current Status: The pumping plant is complete and delivering water to the Tehama-Colusa and Corning Canals. The Terrestrial Mitigation with plant establishment was continued through to October 2017. High flows in 2017 affected fish survival in the mitigation site so maintenance may be needed. The hydraulic performance verification of the new fish screen that has been underway.

Proposed Actions for FY 2019: Funds will be used for continuation of the new fish screen performance evaluation as required by the BiOp addressing construction of the new pumping plant.

San Joaquin River Restoration Program (SJRRP)/San Joaquin River Basin Management

Authority: San Joaquin River Restoration Settlement Act**,** Title X, P.L. 111-11, and Title XXXIV, P.L. 102-575, Section 3406 (c)

FY 2019 Budget Request: $37,000,000

Project Description: In 1988, a coalition of environmental groups, led by the Natural Resources Defense Council (NRDC), filed a lawsuit challenging the renewal of the long-term water service contracts between the United States and the Central Valley Project, Friant Division contractors. After more than 18 years of litigation of this lawsuit, known as *NRDC et al. v. Kirk Rodgers, et al.*, a Settlement was reached. On September 13, 2006, the Settling Parties agreed on the terms and conditions of the Settlement, which was subsequently approved by the U.S. Eastern District Court of California on October 23, 2006. The Settlement establishes two primary goals:

- To restore and maintain fish populations in "good condition" in the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally reproducing and self-sustaining populations of salmon and other fish (Restoration Goal); and
- To reduce or avoid adverse water supply impacts to all of the Friant Division long-term contractors

that may result from the Interim Flows and Restoration Flows provided for in the Settlement (Water Management Goal).

The Settlement calls for a variety of physical improvements within and near the San Joaquin River, within the Friant-Kern and Madera canals, and within the service areas of the Friant Division long-term contractors to achieve the Restoration and Water Management goals. The San Joaquin River Restoration Settlement Act (Act), included in the Omnibus Public Land Management Act of 2009, was signed by the President on March 30, 2009 and became Public Law 111-11. The Act authorizes and directs the Secretary of the Interior to implement the Settlement.

Reclamation, in coordination with the other Federal and State agencies implementing the Settlement, the parties to the Settlement, and downstream landowners and water districts potentially impacted by the Settlement, completed an updated schedule and budget for the implementation of the San Joaquin River Restoration Program, called the 2015 Revised Framework for Implementation (Revised Framework). The efforts proposed below are generally those identified for FY 2017and FY 2018 in the Revised Framework.

Current Status: Reclamation has been working with the other parties to the Settlement, the State of California, affected downstream landowners and water districts, and other Federal agencies to conduct the environmental review, planning, and initial design activities to implement the Settlement and the Act. Actions in progress or that will be initiated in FY 2018 include the following:

- Administration and Program Management – Program management actions, including providing funding for the U.S. FWS and NMFS to assist in implementing the Settlement and Act.

- Mendota Pool Bypass and Reach 2B Improvements Project – Funds will be used to begin construction of the Mendota Pool Bypass component of the Mendota Pool Bypass and Reach 2B Channel Improvements Project. The construction of the Mendota Pool Bypass has been broken into different construction contracts based on anticipated funding and in an effort to better meet Reclamation's small business goals. Due to litigation and challenges in acquiring lands for this project, Reclamation is a year behind in implementation actions. In FY 2018, Reclamation anticipates acquiring the first piece of land that will be necessary to begin construction and awarding the construction contract for the Columbia Canal Siphon and Intake Structure. Reclamation also anticipates acquiring one additional property to continue construction actions planned for FY 2019.

  This project implements two of the highest priority projects identified in the Settlement. This project includes expanding the channel capacity of 11 miles of the San Joaquin River from the Chowchilla Bifurcation Structure to near Mendota Pool (known as Reach 2B) to convey at least 4,500 cubic feet per second and to provide floodplain and riparian habitat for rearing juvenile salmon. The project also includes the creation of a bypass channel around Mendota Pool to prevent fish entrainment in the water diversion facilities in the pool. The bypass channel would be designed and constructed in a way that allows for the Secretary of the Interior to make deliveries of San Joaquin River water to the Mendota Pool, when necessary. The Mendota Pool is a key point for irrigation water distribution on the San Joaquin Valley.

- Reach 4B, Eastside Bypass and Mariposa Bypass Channel and Structural Improvements Project – Continued efforts on the Reach 4B, Eastside and Mariposa Bypass Channel and Structural Improvements Project, including continued planning, environmental compliance, and design efforts working towards the release of a Draft EIS for this project in FY 2018. This project implements five of the highest priority projects identified in the Settlement.

- Arroyo Canal Fish Screen and Sack Dam Fish Passage Project – Continue subsidence monitoring and awarding a financial assistance agreement to Henry Miller Reclamation District to begin the additional environmental compliance and re-design efforts to account for subsidence for this project. The project implements two of the highest priority projects identified in the Settlement. The project includes a fish screen on the Arroyo Canal to prevent entrainment of juvenile Chinook salmon in the canal and modifications to Sack Dam to allow for fish passage around the structure. Arroyo Canal and Sack Dam are owned and operated by Henry Miller Reclamation District. The dam and canal are the sole diversion and conveyance facilities for the District which provides water to approximately 47,000 acres of highly productive agricultural lands in the San Joaquin Valley, along with moving water to Federal and State wildlife refuges and private duck clubs. This project was originally planned for construction in FY 2013, but has been delayed due to the need to further explore recently discovered changes in conditions at the site due to ground subsidence and adjust the design accordingly.

- Fisheries Reintroduction Activities – Fish reintroduction actions planned for FY 2018 include the following: continued operations and maintenance of the Program's Salmon Conservation and Research Facility; donor stock collection; trapping and hauling of salmon around passage barriers; and monitoring genetics of the Program's salmon population.

- Flow Related Activities – Continue release of long-term flows (termed Restoration Flows) from Friant Dam. Continue to implement a comprehensive groundwater seepage management and monitoring program, including implementation of seepage management actions and projects to protect adjacent landowners. From FY 2016 to FY 2019, the Program is focusing on addressing seepage concerns to allow for up to 1,300 cubic feet per second capacity in all reach of the river and bypass system. Reclamation is working with all landowners that may be impacted by the flow and anticipates implementing physical projects or reality actions, in coordination with the landowner, as designs and appraisals are completed. Achieve channel capacity in all reaches of at least 700 cubic feet per second and continue to reconnect the upper San Joaquin River with the Sacramento-San Joaquin Delta. Funds will be used to continue the activities of the Channel Capacity Advisory group and the annual determination of then-existing channel capacity, as well as for steelhead monitoring as required in the Program's Biological Opinion. In addition, funding will be used for the following: daily flow management and monitoring activities; stream gaging and replacement of gaging equipment; management of Unreleased Restoration Flows; data management; and, preparation of the Program's annual report to the SWRCB on the Program's compliance with the conditions in Reclamation's water right orders.

- Paragraph 16 Activities, Restoration Flow Guidelines, and Recovered Water Account – Staff time to continue to monitor and facilitate water recapture and recirculation opportunities consistent with Paragraph 16 of the Settlement and to the Recovered Water Account.

- Friant-Kern and Madera Canal Capacity Restoration Projects – Complete the Feasibility Study and environmental compliance efforts for the Madera Canal Capacity Correction. Determine a path forward for the Friant-Kern Canal Capacity Restoration Project in coordination with the Friant Division contractors.

- Reverse Flow Facilities – Continue to oversee planning, environmental compliance and design efforts of this project in preparation for construction to begin in FY 2019.

Proposed Actions for FY 2019: The SJRRP will continue planning, engineering, environmental

compliance, fishery management, water operations, and public involvement activities related to the Restoration and Water Management goals in the Settlement. Significant actions planned for implementation in FY 2019 include the following:

- Administration and Program Management – Program management actions, including providing funds for U.S. FWS and NMFS to assist in implementing the Settlement and Act.

- Mendota Pool Bypass and Reach 2B Improvements Project – Funds will be used to continue construction of the Mendota Pool Bypass component of the Mendota Pool Bypass and Reach 2B Channel Improvements Project. Funds in FY 2019 would be used to award and partially fund an estimated $31 million dollar construction contract for the grading and excavation of the Mendota Pool Bypass. The construction of the Mendota Pool Bypass has been broken into different construction contracts based on anticipated funding and in an effort to better meet Reclamation's small business goals. This would be the second of a number of contracts issued for this project. Reclamation also anticipates making substantial progress towards acquiring a number of additional properties to continue construction actions planned in future years.

- Reach 4B, Eastside Bypass and Mariposa Bypass Channel and Structural Improvements Project – Continue efforts on the Reach 4B, Eastside and Mariposa Bypass Channel and Structural Improvements Project, including continued planning, environmental compliance, and design efforts. Completion and release of the Final EIS for this project is scheduled for FY 2019.

- Fisheries Reintroduction Activities – Fish reintroduction actions planned for FY 2019 include the following: continued operations and maintenance of the Program's Salmon Conservation and Research Facility; donor stock collection; trapping and hauling of salmon around passage barriers; and monitoring genetics of the Program's salmon population; and installation of a segregation weir..

- Flow Related Activities – Continue release of Restoration Flows from Friant Dam and implement the comprehensive groundwater seepage management and monitoring program. Continue to increase channel capacity in all reaches the river and continue to reconnect the upper San Joaquin River with the Sacramento-San Joaquin Delta. Funds will be used to continue the activities of the Channel Capacity Advisory group and the annual determination of then-existing channel capacity, as well as for steelhead monitoring as required in the Program's Biological Opinion. In addition, funding will be used for the following: daily flow management and monitoring activities; stream gaging and replacement of gaging equipment; management of Unreleased Restoration Flows; data management; and, preparation of the Program's annual report to the SWRCB on the Program's compliance with the conditions in Reclamation's water right orders.

- Paragraph 16 Activities, Restoration Flow Guidelines, and Recovered Water Account – Staff time to continue to monitor and facilitate water recapture and recirculation opportunities consistent with Paragraph 16 of the Settlement and to manage the Recovered Water Account.

- Reverse Flow Facilities – Staff time to oversee and complete the construction of the reverse flow facilities.

Comprehensive Assessment and Monitoring Program (CAMP)

Authority: Title XXXIV, P.L. 102-575, Section 3406 (b)(15)

FY 2019 Budget Request: $4,000,000

Project Description: The CAMP monitors fish and wildlife resources in the Central Valley assessing the biological results and effectiveness of actions implemented pursuant to section 3406(b) of the CVPIA, Title 34 of Public Law 102-575. The program has two objectives: (1) assess the overall (cumulative) effectiveness of actions; and (2) assess the relative effectiveness of categories of actions. The CAMP funds collection of monitoring data, coordinates and compiles information funded by partners, and develops an annual report.

Current Status: Ongoing CAMP activities monitor and evaluate the progress of CVPIA implementation actions and inform adaptive management actions for the AFRP efforts with results summarized in an annual report. The majority of the data used by CAMP is collected from other entities and provided to the CAMP. The CAMP continues to coordinate with partners to update and revise strategies for data collection and analysis. Data collected under the CAMP supports the Structured Decision Making (SDM) effort underway for fisheries and SDM results will provide needs to guide future CAMP actions and develop short-term and long-term data management plans.

Proposed Actions for FY 2019: The CAMP continues to fund and coordinate actions to monitor and evaluate the progress of CVPIA implementation actions as well as the progress toward achieving the anadromous fish doubling goals. The U.S. FWS, in coordination with Reclamation prepares an Annual Report documenting the status of anadromous fish toward the doubling goal described in Section 3406(b)(1); continue tracking CVPIA programmatic and project specific monitoring efforts; identify future monitoring priorities; and synthesizing data into usable reports. This information will inform the adaptive management process for CVPIA. As a result of assessing future priorities through SDM, CAMP will fund a limited number of high priority monitoring projects necessary to develop the Annual Report including escapement surveys, habitat assessments, rotary screw traps, and other such measures.

Funding provides the necessary assessments for operation of the CVP in coordination with the Dedicated Yield, Clear Creek Restoration, and Restoration of Riparian Habitat and Spawning Gravel Programs in addition to the information required by the Anadromous Fish Restoration Program. In addition, this Program has been restructured from an independent program to integrating numerous fishery program activities that were previously distributed under other CVPIA programs.

Tracy (Jones) Pumping Plant Mitigation Program

Authority: Title XXXIV, P.L. 102-575, Section 3406 (b)(4)

FY 2019 Budget Request: $1,136,000

Project Description: This activity identifies and implements physical improvements and operational changes assessing fishery conditions, and assessing salvage operations at the Tracy Fish Collecting Facility (TFCF) per the CVPIA and Coordinated Long-term Operation of the CVP and SWP BiOps.

Current Status: Research and operation assessment efforts continue in order to better understand current operating performance of the TFCF, and to implement physical and operational changes in order to improve overall fish salvage capabilities. This is consistent with current CALFED South Delta Fish Facility Forum recommendations and Coordinated Long-term Operation of the CVP and SWP BiOps.

Reports related to verification of visually identified smelt larvae from the TFCF using Genetic Analysis, as well as biological and hydrologic evaluation the new Secondary Channel Traveling Screens at the TFCF will be forthcoming. Additionally we are progressing from the pilot phase for the fish release site predation study. In FY 2018 the study is scaled up and continues through 2019-2020. The preliminary design work for the new fish release site should be completed. Some planning has been completed, the site selection planning will continue through FY 2019.

Proposed Actions for FY 2019: The significant actions for FY 2019 include the reconstruction of the Antioch Fish Release Site and possible design engineering work on the New Fish Release Site, which is not only a BiOps requirement but a CVPIA requirement as well.

Other proposed actions include: planning and designs to reduce predator abundance with regular treatments a CO2 Injection System into the TFCF bypass tubes and secondary channel. In subsequent years experiments will be conducted with striped bass in the TFCF to determine collection efficiencies and survival for various size classes. We will determine if the CO2 Injection System affects collection rates or survival of Salmon smolts under varied conditions. Additionally, Reclamation and DWR will implement a coordinated randomized fish release schedule (Action IV.4.3 (3)) of the 2 Federal sites and 3 State of California sites. In FY 2018 we begin the development and installation of passive integrated transponder (PIT) tag antennas at the TFCF to facilitate a study design to estimate whole-facility efficiency for juvenile Chinook salmon, this continues through FY 2019.

All work will continue to be published in the Tracy Research Volume Series through the Tracy Research website (https://www.usbr.gov/mp/TFFIP/).

Yolo Bypass Salmonid Habitat Restoration and Fish Passage

Authority: P.L. 57-161, Reclamation Act of 1902, P.L. 75-392, Rivers and Harbor Act of 1937

FY 2019 Budget Request: $1,588,000

Project Description: The NMFS Biological and Conference Opinion on the Coordinated Long-term Operation of the CVP and SWP included reasonable and prudent alternative (RPA) actions associated with the Yolo Bypass to avoid jeopardizing species and adverse modification of designated and proposed critical habitat. In response, Reclamation and DWR jointly prepared the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Implementation Plan (Implementation Plan) to address two specific RPA actions associated with restoration of floodplain rearing habitat (RPA Action I.6.1) and fish passage (RPA Action I.7).

Reclamation and DWR developed an Initial Study/Environmental Assessment in accordance with CEQA and NEPA for the Fremont Weir Adult Fish Passage Project, as an early implementation action under California Eco Restore. Funding in FY 2017 and FY 2018 goes towards construction of this project, which began in late 2017. Additional similar projects under the RPA and EcoRestore are planned for 2018 and 2019.

In addition, Reclamation and DWR have initiated a detailed planning and environmental compliance process to further implement the above RPA actions. This multi-disciplinary effort includes preparing an EIS/EIR in accordance with NEPA and CEQA; technical studies consisting of planning, environmental, economics, and engineering reports to support selection of a preferred alternative; a biological assessment in accordance with the ESA; and other documentation as necessary to support required permitting and

environmental compliance processes. The project incorporates significant stakeholder involvement including meetings and on-going communication with the Yolo Bypass Fisheries Enhancement Planning Team and partnering agencies and local government representatives.

Current Status: A contract was awarded in 2012 to commence the planning and environmental compliance process including preparation of an environmental impact statement/environmental impact report in accordance with NEPA and CEQA; technical studies consisting of planning, environmental, economics, engineering reports to support selection of a preferred alternative; a biological assessment in accordance with the Endangered Species Act; and other documentation as necessary to support required permitting and environmental compliance. A Notice of Intent/Notice of Preparation to initiate the NEPA/CEQA scoping process was issued in March 2013, and the alternatives development process is underway. The NEPA/CEQA process is estimated to be completed in 2018. Additional design and permitting will be required beyond 2018, including potentially cultural resources and flood control management.

Proposed Actions for FY 2019: Continue work on design, permitting, planning and environmental compliance process as well as ongoing stakeholder involvement and landowner discussions. Increase in funding supports the elements of the Yolo Bypass Project that are determined to qualify under the California Eco Restore and are consistent with the 2009 NMFS BiOp. Funding will help set the agencies up for construction in FY 2020 or FY 2021, depending on design and permitting.

Interagency Ecological Program (IEP)

Authority: Title XXXIV, P.L. 102-575, Section 3406 (b)(1).

FY 2019 Budget Request: $10,603,000

Project Description: The IEP is a consortium of six federal and three state agencies that conducts physical, chemical, and biological monitoring in the Sacramento-San Joaquin Delta and San Francisco Bay as required by the joint Federal-State water right permit that allows the CVP and SWP to export water from the Delta (D-1641) and by biological opinions issued by the U.S. FWS and the NMFS on long-term operation of the CVP and SWP. Collectively, these monitoring activities constitute the IEP Core Program. The resulting data sets are used for real time water operations and for documenting and assessing the status and trends of ESA-listed fish populations and Bay-Delta environmental conditions. All data is posted on line and accessible via the IEP website http://www.water.ca.gov/iep. The IEP data is widely used by agency and stakeholder scientists to meet a wide variety of needs. The IEP also coordinates applied research on Delta hydrodynamics, sediment transport, nutrient cycling, primary production, invertebrate production and fish community abundance and structure. Funding for the University of California-Davis Delta Smelt Culture Facility is also coordinated through the IEP. The IEP conducts an annual workshop each spring to share information, new science, and collaborate with other organizations working in the Delta.

Current Status: The IEP continues to serve as the principal source of physical, chemical and biological data that are essential to effective management and operation of the CVP and SWP. The data and resulting information are also used for California Water Fix, California Eco Restore, and other planning efforts for future projects involving Reclamation and its partners.

Proposed Actions for FY 2019: Funding will be used to continue mandated monitoring activities. These activities include the operation of continuous tidal flow, turbidity and thermograph stations, the Environmental Monitoring Program, upper estuary phytoplankton and zooplankton sampling, the fall mid-water trawl and Summer Townet surveys, estuarine and Bay shrimp monitoring, Delta juvenile salmon monitoring, the Spring Kodiak trawl, larval fish and 20mm delta smelt surveys and screw trap monitoring for juvenile salmonids in the Sacramento River at Knights Landing.

CALFED Science Activities Pelagic Organism Decline (POD)

Authority: Title XXXIV, P.L. 102-575, Section 3406 (b)(1).

FY 2019 Budget Request: $5,350,000

Project Description: This project investigates the causes and consequences of abrupt declines in the relative abundance of pelagic organisms in the Bay-Delta, including the delta smelt, a species listed as threatened under the ESA, and provides data and information that inform the development and implementation of actions intended to reverse these declines.

Current Status: Data collected from these efforts provide indices of relative abundance of four species of pelagic fishes in the Sacramento-San Joaquin Estuary, including the ESA-listed delta smelt and CESA-listed longfin smelt. These indices continue to show that these species are still at low numbers. There is a growing consensus that the Delta has undergone a 'regime shift' due in part to project operations, loss of habitat due to levee construction, decreasing turbidity and the proliferation of exotic aquatic vegetation. There is also broad agreement that delta smelt and other pelagic organisms are food-limited, particularly in the 'low salinity zone,' the historical center of delta smelt population distribution. The conceptual models underlying Delta science activities have thus been modified to reflect this new understanding.

Proposed Actions for FY 2019: Activities will continue to implement recommendations from the POD Synthesis Report and the Synthesis of Studies in the Fall Low-Salinity Zone of the San Francisco Estuary, September-December 2011 document published as a U.S. Geological Survey (USGS) Report and the Interagency Ecological Program's Management Analysis and Synthesis Team report in January 2015 and the 2016 Delta Smelt Resiliency Strategy. These activities will include continued monitoring and tracking of the pelagic fish indices, follow-up work identified in the synthesis reports, and development and implementation of adaptive management experiments (e.g., summer and fall outflow action, North Delta food enhancement experiment) to further understand the causes of the POD and start the process of reversing it. Tasks will include field monitoring, laboratory evaluations, special studies, statistical evaluations, mathematical model construction, hydrodynamic and particle tracking modeling and program administration. Principal investigators will continue to publish their findings in peer-reviewed journals.

Collaborative Science and Adaptive Management Studies

Authority: Title XXXIV, P.L. 102-575, Section 3406 (b)(1).

FY 2019 Budget Request: $5,000,000

Project Description: The Collaborative Science and Adaptive Management Program (CSAMP) was implemented as part of the Remanded EIS/EIR of the Coordinated Long-term operations of the CVP and SWP to take directed actions to understand the effects of operation of the CVP and SWP on ESA-listed

species. The CSAMP was formed in April 2013 with the goal to develop a robust science and adaptive management program, with collaboration of the scientists and experts from the Public Water agencies and non-governmental organization community. The intent of CSAMP is to inform the management actions are incorporated into the existing BiOps (and Reasonable and Prudent Alternatives) and consideration of alternative management actions. The CSAMP has focused on developing near-term work plans studying key hypotheses regarding the impacts of the CVP and SWP operations and undertaking monitoring for operational adaptive management experiments to reduce scientific uncertainty.

Current Status: Recommended studies focus on science and adaptive management associated with contentious operations issues in the 2008 USFWS and 2009 BiOps for the Coordinated Long-term Operation of the CVP and SWP. These recommended studies will improve information for planning and implementing activities as part of the Water Infrastructure Improvements for the Nation Act. The monitoring and research performed is in coordination with local, State, and other Federal agencies, to develop and test alternative ways of improving water reliability and protecting ESA listed species from entrainment by the pumps at the CVP and SWP. These activities will provide new information to fill gaps in structured decision models and life cycle models for ESA listed species that are being used in Federal NEPA and ESA consultations for the CVP to improve operational flexibility and protect and restore water-related resources. This work leverages cost share and expertise in the collaborative science processes underway with water users, partner agencies, and other interested parties to improve the effectiveness and efficiency of efforts to deliver water while protecting species.

Proposed Actions for FY 2019: Activities proposed include studies on (1) the factors affecting Delta smelt entrainment, (2) the seasonal outflow effects on ESA listed species, (3) the effects of water operations on juvenile salmonid migration and survival in the South Delta, (4) the effects of water temperature on juvenile salmonid survival in the Sacramento River, and (5) rearing habitats for salmonid and smelt in the Delta and Yolo Bypass.

Drainage Management Program

Authority: P.L. 86-488, San Luis Unit, Central Valley Project

FY 2019 Budget Request: $2,167,000

***Project Description*:** The San Luis Act of 1960 obligated Reclamation to provide drainage service to lands within the San Luis Unit (SLU). In 2011, Reclamation developed a Control Schedule to accomplish this based on the 2007 Record of Decision and 2008 Feasibility Study. Reclamation has provided drainage service for the Northerly SLU districts and adjacent farmland since 1996 with the Grassland Bypass Project (GBP) and since 2016 with the Demonstration Treatment Plant.

***Current Status*:** On September 15, 2015, Reclamation signed a Settlement Agreement to resolve drainage service in Westlands Water District (Westlands). The Control Schedule was stayed with regard to Westlands pending the enactment of legislation authorizing this Settlement Agreement. On March 28, 2017, U.S. Congressman David Valadao (R CA-21) introduced H.R. 1769, the "San Luis Unit Drainage Resolution Act" that would authorize the Settlement Agreement. The stay expired on January 15, 2018 and the court did not issue an additional stay.

The GBP has eliminated all discharges of agricultural drainage water from the Northerly SLU districts and adjacent farmland to the San Joaquin River, resulting in significant reductions in salts and selenium in the river and adjacent wetlands. The 2009 Agreement for Continued Use of the San Luis Drain (Use Agreement), which implements the GBP, imposes mitigation fees for the discharge of selenium from the drain. However, the GBP districts are still subject to these fees for other water discharged from the drain derived from rainstorms and seepage from adjacent wetlands. The Use Agreement will end December 31, 2019.

***Proposed Actions for FY 2019*:** Proposed activities for FY 2019 include the implementation of a revised Control Schedule within Westlands since legislation authorizing the Westlands Settlement Agreement has not passed. If the legislation is passed, Reclamation will implement the terms and conditions of the Settlement Agreement.

FY 2019 funding will allow Reclamation to continue drainage service for the Northerly SLU districts. Reclamation will continue to administer the 2009 Use Agreement and conduct the environmental monitoring program to confirm the success of the GBP. Reclamation anticipates negotiating a new agreement to use the San Luis Drain after 2019 to convey storm water and seepage.

Reclamation will continue to operate and maintain the Demonstration Treatment Plant to benefit the Northerly SLU districts and adjacent farmlands. The long-term future of the Demonstration Treatment Plant has not been determined at this time. Reclamation may negotiate a contract with an independent operator, transfer it to a Northerly SLU district, or begin preparations to shut down the plant in a future year.

Land Retirement

Authority: Title XXXIV, P.L. 102-575, Section 3408 (h)

FY 2019 Budget Request (000's): $50,000

Project Description: The purpose of the Land Retirement Program is to evaluate impacts and benefits of retiring 15,000 acres of land from irrigated agriculture. Five years of monitoring conducted as part of the Land Retirement Demonstration Project (LRDP) indicate that retired lands have great potential to be restored to productive wildlife habitat, with potentially important endangered species benefits. Other benefits include agricultural drainage source reduction, water quality improvement, wildlife protection and restoration, weed control through grazing, and water use efficiency and conservation.

Current Status: Over 2,000 acres of drainage impaired land have been retired from irrigated agriculture in the San Luis Unit by Reclamation as part of the LRDP authorized by the Central Valley Project Improvement Act. Retirement of these lands has reduced the production of poor quality agricultural drain water, and created opportunities for Reclamation to manage these lands for the beneficial uses of wildlife habitat, grazing, and recreation. Land retirement has also created the opportunity to use the Central Valley Project (CVP) water allocation associated with these lands on other, more productive land in the San Luis Unit. Reclamation will administer and provide oversight to public and non-public requests to use these lands and the CVP water allocation associated with them.

Restoration efforts on retired lands have increased wildlife biodiversity and abundance, including Special Status Species. Wildlife surveys of restored units observed important findings of sensitive San Joaquin Valley wildlife species, including Tipton kangaroo rat, San Joaquin kit fox, burrowing owl, coast horned

lizard, San Joaquin Valley Coachwhip, Swainson's hawk and a sensitive plant called Hoover's Woolystar.

Proposed Actions for FY 2019: The program will continue to manage lands acquired and restored as part of the LRDP. Labor costs are related to the management of leases and agreements for these retired lands. Annual assessments on Reclamation-owned lands within the boundaries of Westlands Water District are payable to the Westlands Water District.

San Joaquin River Salinity Management

Authority: Fish and Wildlife Coordination Act of 1934, Public Law 85-624, 16 U.S.C. 661 et seq., as amended, and Section 7(a) of the Fish and Wildlife Coordination Act (70 Stat 1122; 16 U.S.C. 742f(a)); as limited and delegated by the Secretary of the Interior to the Bureau of Reclamation at 255 OM 1.1 B and subject to limitations listed in "Reclamation Manual Delegations of Authority" Paragraph 6.F.(2).

FY 2019 Budget Request: $3,800,000

Project Description: The San Joaquin River Salinity Management Project implements the stakeholder developed "Westside Regional Drainage Plan" (WRDP) to manage, reduce, and eliminate agricultural drainage to the lower San Joaquin River and adjacent wetlands water supply channels. The WRDP is an element of Reclamation's Action Plan to Address the Lower San Joaquin River Salinity total maximum daily load (TMDL) and provide drainage service to the San Luis Unit.

The key management components of the WRDP are: 1) Source Control; 2) Groundwater Management; 3) Drainage Reuse Projects; and 4) Drain Water Treatment /Salt Disposal. Most of the WRDP activities have occurred within the San Joaquin River Improvement Project (SJRIP) that is owned and operated by Panoche Drainage District. To date, the Federal investment has been $45 million.

Current Status: Reclamation has supported the WRDP for more than seventeen years. Federal funds, with equivalent recipient match, have been used to design and construct infrastructure to manage and distribute agricultural drainwater across the entire 6,000 acre SJRIP, plant salt tolerant crops, provide environmental mitigation, and pay personnel costs. As a result, the SJRIP has displaced more than 265,550 acre-feet of agricultural drainwater, containing more than 1,474,450 tons of salts and 47,220 pounds of selenium. Absent the SJRIP, this drainwater would have been discharged into the San Joaquin River.

Proposed Actions for FY 2019:
Federal funding will continue support of the WRDP through the development of the SJRIP, including design and construct infrastructure; plant salt tolerant crops; and convert open ditches to buried pipelines or line them with concrete. Federal funds may be used to for similar projects to manage drainage water outside the SJRIP in Charleston Drainage District. Under separate funding, Reclamation will continue to operate a demonstration treatment facility (see Drainage Management) that will remove salts, selenium, and boron from shallow groundwater beneath the SJRIP.

Program to Meet Standards (PTMS)

Authority: P.L. 87-874, River and Harbor Act of 1962, P.L. 108-361, Section 103(d)(2)(D).

FY 2019 Budget Request: $750,000

Project Description: The PTMS was initiated pursuant to P.L. 108-361, Section 103(d)(2)(D), which directs the Secretary of the Interior, in consultation with the Governor of California, to meet all existing water quality standards (WQS) for which CVP has responsibility. The WQS should be met prior to increasing export limits from the Sacramento-San Joaquin Delta (Delta) for the purposes of conveying water to CVP contractors south of the Delta or increasing deliveries through an intertie between the California Aqueduct and Delta Mendota Canal. The PTMS may provide greater flexibility in meeting the existing WQS for which the CVP has responsibility and reduce the demand on water from New Melones Reservoir used for that purpose, and to assist the Secretary in meeting any obligations to CVP contractors from the New Melones Project. Reclamation is coordinating implementation with key stakeholders in the San Joaquin Valley and participating in the appropriate regulatory stakeholder groups. Funding for the PTMS is primarily provided to ensure that the actions identified in the program, many of which are funded under individual authorities, move in concert to achieve the overall program objectives.

Current Status: Reclamation continues to implement activities described in the State of California State Water Resources Control Board Order WR 2010-0002 and Reclamation's 2014 Management Agency Agreement (2014 MAA). The Agreement's activities include monitoring within the South Delta and San Joaquin River, review and analyses of data, development of data management practices, participation in stakeholder meetings and implementing watershed models for the San Joaquin basin. Other outcomes include facilitating the identification of salt sources and the use of that information to improve the timing of wetland discharges under the real-time management program (RTMP). Reclamation continues to evaluate salinity control measures. The Central Valley Regional Water Quality Control Board (CVRWQCB) staff and Reclamation are participating in the Central Valley Regional Salinity Management Plan development and meeting the provisions outlined in 2014 MAA. Reclamation worked with irrigation district and wetland stakeholders to develop a real time management framework document, which has been approved by the San Luis and Delta Mendota Water Authority and the CVRWQCB. Reclamation also hosts the Technical Research Team which is a meeting designed to publicize the modeling effort and give the public an opportunity to participate in the model refinement process. Reclamation intends to continue these efforts in 2019.

Additionally, Reclamation worked with the San Joaquin Water Districts and provided technical support for water quality monitoring and data management. These efforts improved wetland water conservation and increased awareness of implementing a RTMP for the San Joaquin River. Reclamation is currently preparing an updated PTMS plan to incorporate new information, changing conditions, and results of the first 10 years of the program.

Other projects that support the PTMS include the Grassland Bypass Project, WaterSMART Water and Energy Efficiency Grants, New Melones Operations Plan, Reclamation Science and Technology Program, and the San Joaquin River Restoration Program. Due to the complex nature of water supply and water quality issues on the lower San Joaquin River, continued implementation of these programs are needed to contribute to the program's objectives.

Proposed Actions for FY 2019: Funding will support application of the model for forecasting assimilative capacities of various reaches of the San Joaquin River; provide technical support to irrigation districts and wetlands stakeholders for implementation of salt load visualization tools; support working

with CVRWQCB staff, irrigation districts and wetlands stakeholders in implementing RTMP; provide technical support to address San Joaquin River salinity issues upstream of Vernalis; attend stakeholder meetings regarding San Joaquin water quality initiatives; and conduct meetings to inform and educate stakeholders on Reclamation activities. Reclamation will continue working with the water districts to plan and develop approaches for meeting salt and boron TMDLs and other water quality criteria, including highly accessible web-based approaches.

Battle Creek Salmon and Steelhead Restoration Project

Authority: Title XI P.L. No. 104-333, November 12, 1996; Title XXXIV, P.L. 102-575, Section 3406(b)(1); P.L. 85-624, August 12, 1958

FY 2019 Budget Request: $1,500,000

Project Description:
Battle Creek, a tributary to the Sacramento River is being restored through the Battle Creek Restoration Project; one of the largest cold-water anadromous fish restoration efforts in North America. The project is restoring approximately 42 miles of habitat on Battle Creek and an additional 6 miles of habitat on tributaries to Battle Creek for threatened and endangered Chinook salmon and Central Valley steelhead, through the modification of Battle Creek Hydroelectric Project facilities. Battle Creek has the unique geology, hydrology, and habitat suitability to support threatened and endangered Chinook salmon and Central Valley steelhead, even during drought conditions, and is especially critical to Winter-run Chinook salmon. Since Battle Creek receives year-round cold water from springs, it offers a safe haven to threatened and endangered anadromous fish so that they can thrive, even during drought conditions. The Battle Creek Restoration Project is providing safe passage, through dam removals and construction of fish screens and ladders, for these anadromous fish to reach the cold water temperatures and flows needed for their survival and to increase their populations, so that ultimately these species are de-listed. Restoration of Battle Creek offers the best promise of increasing fish populations, which will improve the reliability in State and Federal water operations and the salmon harvest.

Overall, the project consists of three phases and involves the removal of five diversion dams; the placement of screens and ladders on three other diversion dams; the construction of a fish barrier weir (to protect an upstream trout hatchery); an increase to instream flows; dedication of water rights for instream purposes at dam removal sites; the prevention of mixing Battle Creek's North Fork and South Fork waters; and the implementation of adaptive management.

Current Status: To date, a diversion dam and canal/pipeline system has been removed; fish screens and fish ladders have been installed on two diversion dams; an approximate one mile long bypass and tailrace connector has been constructed; and a fish barrier weir been constructed, resulting in about 16 miles of stream habitat restoration.

Phase 1A – Work is complete at the Wildcat site on North Fork Battle Creek; Wildcat Diversion Dam and conveyance system (including Wildcat pipeline and canal) were removed in 2010. Fish screens and fish ladders were constructed at the Eagle Canyon Diversion Dam and North Battle Creek Feeder (NBCF) Diversion Dam sites on North Fork Battle Creek; however, as the result of hydraulic evaluations of these new facilities (in 2012) and physical modeling of the NBCF fish ladder and fish screen (in early 2013), it was determined that modifications are necessary at the NBCF site to improve the canal diversion, fish screening and fish passage, and to address safety requirements. Installation of automatic modulation control for head gate actuators at NBCF and Eagle Canyon Diversion Dams occurred in October 2015 and

additional modifications were implemented in 2017 and continue to be implemented in 2018. The NBCF access road (including cut-slope stabilization) was completed in 2014. A fish barrier weir on Baldwin Creek was constructed in 2013.

Phase 1B – Construction of an Inskip Powerhouse bypass and tailrace connector on South Fork Battle Creek was completed at the end of 2012, however, in early December 2012 a significant storm event occurred, which damaged the newly constructed access roads and drainage system, and created erosion at the penstock bypass and tailrace connector outlets. Access road repairs and sediment erosion cleanup occurred in 2013, and safety and facility access improvements occurred in 2014 and in 2015.

Phase 2 – Designs are in development for the installation of a fish screen and ladder at Inskip Diversion Dam; construction of a South Powerhouse tailrace connector tunnel; removal South Diversion Dam and Canal; and removal of Lower Ripley Creek Feeder, Soap Creek Feeder, and Coleman Diversion Dams. Phase 2 will be implemented under three construction contracts.

Proposed Actions for FY 2019: Phase 2 design efforts will continue in FY 2019 and two Phase 2 contracts (one to construct a tailrace connector tunnel from South Powerhouse to Inskip Canal and another to remove South Diversion Dam and Canal and Soap Creek Feeder Diversion Dam) are planned to be awarded in FY 2019 and be completed between 2020 and 2021.

FISCAL YEAR 2019

ARMY CORPS OF ENGINEERS

Renewed Federal State Partnership

Habitat Restoration

Hamilton City, CA

Authority: Water Resources Development Act of 2007, §. 1001(8), P. L. 110-114

FY 2019 Budget Request (000's): *$6,000*

Project Description: The project area includes Hamilton City and the surrounding rural area. The Sacramento River is to the east, the Glenn Colusa Canal to the west, and the project boundary extends about two miles north and six miles south of Hamilton City. The project area lies just north of the existing Sacramento River Flood Control project levees and within the area of extent of the Chico Landing to Red Bluff bank protection project. The project will construct a setback levee, degrade an existing levee and revegetate the setback area to restore 1,100 acres of riparian woodland, 248 acres of riparian shrub, and 67 acres of floodplain meadow. Restoration of this floodplain will benefit the recovery of eight federally listed or proposed species in the area. The project will reduce flood risk for the town of Hamilton City and adjacent agricultural lands while providing significant habitat acreage in the floodplain.

Current Status: The design agreement was executed in 2005 and designs were completed in FY 2011. The project received new start construction funds in FY 2014. The Project Partnership Agreement was executed July 2014 with Reclamation District 2140. The presumed FY 2018 allocation of $8,325,000 will be used to award Phase 1 Revegetation Plant Establishment for the first year, award Phase 2B orchard removal contract, and award an option on the Phase 2A levee contract. The FY 2019 budget request of $6,000,000 will be used to award phase 1 revegetation establishment for the second year and phase 2B plant establishment.

Key Milestones:

- Second year of the Phase 1 revegetation plant establishment, and initiate first year of the Phase 2A plant establishment
- Phase 2A & 2B Revegetation contract

Sacramento River (30 Foot) Project, CA

Authority: Rivers and Harbors Act of 1946

FY 2019 Budget Request (000's): *$2,300*

Project Description: The Sacramento Deep Water Ship Channel (DWSC) extends approximately 43 miles from the western region of the central valley near Collinsville to the port located in West Sacramento. The project is located in the counties of Sacramento, Yolo, and Solano. The channel directly supports a critical Coast Guard station for the California Bay Delta. The port is a vital link to the richest agricultural and industrial regions in the world and failure to maintain the channel will severely impact the economic recovery of California and the nation. USACE is responsible for maintaining the channel to an authorized depth of 30 feet and maintaining 33 miles of dual purpose navigation and flood protection levees.

Current Status: The total FY 2019 budget request is $2,300,000, all for navigation and directly related to the Bay Delta Interim Federal Action Plan. The funding provides for critical routine levee maintenance and critical routine dredging to maintain the channel to its authorized depth of 30 feet.

San Joaquin River, Port of Stockton, CA

Authority: Rivers and Harbors Act 1876, 1927 & 1950

FY 2019 Budget Request (000's): $5,000

Project Description: The Stockton Deep Water Ship Channel extends 41 miles from the Port of Stockton to Antioch, CA. The project is located in the counties of Contra Costa, Sacramento and San Joaquin. USACE is responsible for maintaining the channel to the authorized depth of 35 feet and maintaining existing bank protection. The Port of Stockton is the largest inland port and the fifth busiest in California. The port is a vital link to the agriculture industry of the central valley, transporting more than 90% of the fertilizer used by the region's growers and more than 50% of California's bagged rice to Japan. Strict water quality standards set by the state have increased requirements for sampling and handling of dredged material. The presence of endangered species has resulted in shortened dredging windows that have created problems in maintaining channels to authorized depths each year.

Current Status: The total FY 2019 budget request is $5,000,000, all for navigation and directly related to the Bay Delta Interim Federal Action Plan. The funding provides for critical minimal level routine dredging to maintain the ship channel to its authorized depth of 35 feet, mandated water quality certification, and dissolved oxygen environmental compliance mitigation.

Sacramento River and Tributaries (Debris Control), CA

Authority: Rivers and Harbors Act of 1935

FY 2019 Budget Request (000's): *$1,893*

Project Description: Englebright and North Fork Dams are both thin wall concrete arch dams constructed by the California Debris Commission to contain mining debris. Englebright Dam is about 20 miles east of Marysville on the Yuba River. North Fork Dam is on the North Fork of

the American River about 5 miles northeast of Auburn. The projects are located in the counties of Nevada and Yuba. The dams prevent mining debris from contaminating and clogging the California Bay Delta.

Current Status: The total FY 2019 budget request of $1,893,000 for navigation, recreation and environmental stewardship activities. Only $798,000 for navigation activities is directly related to the Bay Delta Interim Federal Action Plan. The navigation funding provides for operations of Englebright Dam, maintenance of all appurtenant structures including monitoring and analysis of instrumentation and data collection, and mandated environmental compliance with the recent Yuba River biological opinion including federal, state and local coordination.

Yuba River, CA

***Authority*: Rivers and Harbors Acts of 1896 & 1902**

FY 2019 Budget Request (000's): $1,615

Project Description: The project consists of a debris barrier, Daguerre Point Dam, with dikes across overflow channels and protective works (groins) downstream to maintain the Yuba River in its confined channel to the junction with the Feather River at Marysville. The project is located in Yuba County. Federal responsibility consists of maintaining dikes and protective works to keep the Yuba River in its confined channel. The project provides fish passage at Daguerre Point Dam and prevents mining debris from contaminating and clogging delta waters.

Current Status: The total FY 2019 budget request is $1,615,000 for navigation and environmental stewardship activities. The request is for permanently required activities that address Section 7 of the Endangered Species Act until the listed species (Spring Run Chinook Salmon, Green Sturgeon and Central Valley Steelhead) are delisted.

Drought & Floodplain Management

American River, Common Features, Natomas Basin, CA

Authority: Water Resources Development Act (WRDA) of 1996 (Public Law 104-303), Section 101 (a) (1); WRDA 1999 (Public Law 108-132), Section 366; Energy and Water Development Appropriations Act (EWDAA), 2004 (Public Law108-137), Section 129; EWDAA 2008 (Public Law 110-161), Section 130

FY 2019 Budget Request (000's): $42,000

Project Description: The Water Resources Reform and Development Act of 2014 authorized the construction of modifications of the ring levee system protecting the Natomas Basin of the Sacramento Valley. Specific features of this authorization include construction of approximately 42 miles of levee widening, 35 miles of seepage cutoff wall and 8 miles of seepage berm. The

ring levee protection of the Natomas Basin is a complete system of levees and therefore, the project is a complete system improvement.

Current Status: New start funding was included in FY 2016 to initiate work on the Natomas Basin project. The Project Partnership Agreement (PPA) was signed in August 2016. FY 2019 funds of $42 million are being used to continue construction.

Key Milestones:

- Reach I, Contract 1 Close out
- Reach I, Contract 2 Contract Award
- Reach B/Riverside Canal Construction Contract Award
- Reach A, E, F, and G Real Estate Acquisitions

Black Butte Lake, CA

Authority: Flood Control Act of 1944

FY 2019 Budget Request (000's): *$2,620*

Project Description*:* The project is located on Stony Creek, a tributary of the Sacramento River, about 9 miles west of the town of Orland, California and consists of an earthfill dam with a maximum height of 140 feet, six dikes, an ungated spillway, and a reservoir with a gross storage capacity of 160,000 acre-feet. The project is located in Glenn and Tehama Counties. The project controls flows to the delta during flood events, reducing the risk of delta island levee failure and saltwater intrusion. The project also provides irrigation water for central valley farming, reducing water consumption from the delta.

Current Status: The total FY 2019 request is $2,620,000 for flood risk management, recreation and environmental stewardship activities. Only $1,620,000 for flood risk management activities is directly related to the Bay Delta Interim Federal Action plan. The flood risk management funding provides for routine required dam operations and maintenance. Operations include limited gate operations, dam safety and post-earthquake inspections, emergency actions, instrumentation monitoring, water management, and real estate inspections. Maintenance includes critical maintenance, repairs to major equipment, vegetation control, and water control data systems modifications.

Buchanan Dam, H.V. Eastman Lake, CA

Authority: Flood Control Act of 1962

FY 2019 Budget Request (000's): $*2,104*

Project Description*:* The project is about 16 miles northeast of the City of Chowchilla on the Chowchilla River. The project is located in Madera and Mariposa Counties. The project

consists of an earthfill dam and a reservoir with gross storage capacity of 150,000 acre-feet. The project also includes about 2 miles of channel improvement work and levee construction on Ash and Berenda Sloughs, tributary channels of the river. The dam controls flows to the delta during flood events, reducing the risk of delta island levee failure and saltwater intrusion. The reservoir provides irrigation water for central valley farming, reducing water consumption from the delta.

Current Status: The total FY 2019 budget request is $2,104,000 for flood risk management, recreation and environmental stewardship activities. Only $1,342,000 for flood risk management activities is directly related to the Bay Delta Interim Federal Action Plan. The flood risk management funding provides for routine required dam operations and maintenance. Operations include limited gate operations, dam safety and post-earthquake inspections, emergency actions, instrumentation monitoring, vegetation control, water management, and real estate inspections. Maintenance includes limited critical maintenance, repairs to major equipment, vegetation control, and water control data systems modifications.

Farmington Dam, CA

Authority: Flood Control Act of 1944

FY 2019 Budget Request (000's): $*478*

Project Description*:* The project is located on Littlejohn Creek about 3½ miles upstream from Farmington and about 18 miles east of Stockton, and consists of a 56 foot high earthfill dam, an ungated saddle spillway, and a reservoir with a gross storage capacity of 52,000 acre-feet. The project is located in San Joaquin and Stanislaus Counties. The dam controls flows to the delta during flood events, reducing the risk of delta island levee failure and saltwater intrusion. The reservoir provides irrigation water for central valley farming, reducing water consumption from the delta.

Current Status: The total FY 2019 budget request is $478,000 for flood risk management activities directly related to the Bay Delta Interim Federal Action Plan. The flood risk funding provides for routine required dam operations and maintenance. Operations include limited gate operations, dam safety and post-earthquake inspections, emergency actions, instrumentation monitoring, water management, and real estate inspections. Maintenance includes limited critical maintenance, repairs to major equipment, vegetation control, and water control data systems modifications.

Hidden Dam, Hensley Lake, CA

Authority: Flood Control Act of 1962

FY 2019 Budget Request (000's): $2,182

Project Description*:* The project consists of a 163 feet high earthfill dam on the Fresno River about 15 miles northeast of Madera, with a reservoir with gross storage capacity of 90,500 acre-

feet. The project is located in Madera County.

Current Status: The total FY 2019 budget request is $2,182,000 for flood risk management, recreation and environmental stewardship activities. Only $1,333,000 for flood risk management activities is directly related to the Bay Delta Interim Federal Action Plan. The flood risk management funding provides for routine required dam operations and maintenance. Operations include limited gate operations, dam safety and post-earthquake inspections, emergency actions, instrumentation monitoring, water management, and real estate inspections. Maintenance includes limited critical maintenance, repairs to major equipment, vegetation control, and water control data systems modifications.

Inspection of Completed Works (ICW), CA

Authority: Flood Control Act of 1944

FY 2019 Budget Request (000's): $3,450

Project Description: This program covers levees, floodwall systems and reservoirs throughout California. Upon completion, infrastructure built under this program is transferred to the sponsoring cities, towns, and special use districts that own and operate the projects. The projects require maintenance after construction in order to ensure the project will continue to function as intended. The priority of the ICW program has been levees because of public safety aspects. The basic objectives of the USACE Levee Safety Program are (1) to develop balanced and informed assessments of the nation's levees; (2) to evaluate, prioritize and justify levee safety decisions, and (3) to make recommendations to improve public safety associated with levee systems. One of the main activities is inspections of federally authorized projects operated and maintained by a non-federal sponsor. The purpose of the inspections is to determine if levee systems will perform as expected; identify deficiencies or areas which need monitoring or immediate repair; identify any changes over time; and collect information in order to be able to make informed decisions about future actions. Other activities include updating information in the National Levee Database; screening levees to begin ranking them in order of risk; coordinating Levee Safety Program efforts with public sponsors or stakeholders; reviewing sponsor proposed alterations, improvements, excavations or construction which are in accordance with USACE policy and guidance for such proposal i.e. Section 208/408 proposals; and updating project operation and maintenance manuals.

Coordination between USACE and other federal, state, and local agencies is essential for proper accomplishment of this program. In addition to satisfying USACE requirements, the improved inspection results will be made available on the National Levee Database and will be of great value to federal, state and local agencies tasked with the development and implementation of state and local Levee Safety Programs.

Current Status: The total FY 2019 budget request is $3,450,000, all for flood risk management and directly related to activities and projects in the Bay Delta Interim Federal Action Plan. The program includes routine inspections of levee systems, consultation for conflicts relating to levee

vegetation policy, communicating with local sponsors, providing policy updates, issuing PL 84-99 eligibility notifications, and technical review of Section 208.10 and section 408 alteration requests to modify existing federal infrastructure.

Isabella Lake, CA

Authority: Flood Control Act of 1944

FY 2019 Budget Request (000's): *$1,389*

Project Description*:* The dam is located about 50 miles northeast of Bakersfield, near the confluence of the north and south forks of the Kern River; the auxiliary dam is about ½ mile east of the main dam. The project comprises a 185 foot high earthfill dam, an ungated concrete spillway, and a 100 foot high earthfill auxiliary dam, creating a reservoir with a gross storage capacity of 570,000 acre-feet. The project is located in Kern County. The project controls releases for farming irrigation in the Central Valley and reduces water consumption from the delta for agriculture needs. Isabella Lake is connected to Kern Friant Canal to deliver water through the Cross Valley Canal to the California Aqueduct for consumptive use.

Current Status: The total FY 2019 budget request is $1,389,000 for flood risk management and environmental stewardship activities. Only $1,249,000 for flood risk management activities is directly related to the Bay Delta Interim Federal Action Plan. The flood risk management funding provides for routine required dam operations and maintenance. Operations includes limited gate operations, dam safety and post-earthquake inspections, emergency actions, instrumentation monitoring, water management, and real estate inspections. Maintenance includes limited critical maintenance, repairs to major equipment, vegetation control, and water control data systems modifications.

Isabella DSAP, CA

Authority: Flood Control Act of 1944

FY 2019 Budget Request (000's): *$118,000*

Project Description*:* The dam is located about 40 miles NE of Bakersfield, near the confluence of the north and south forks of the Kern River, in Kern County. The auxiliary dam is about ½ mile east of the main dam. The project comprises a 185-foot-high earth fill dam, an ungated concrete spillway, and a 100-foot-high earth fill auxiliary dam, which creates a reservoir with a gross storage capacity of 570,000-acre-feet. The Isabella Lake project dams are currently classified as being at a high risk of failure with significant consequences downstream. There are three primary deficiencies (hydrologic, seismic, and seepage/piping) at the project which could lead to significant life loss in the event of a dam failure. Work to be performed includes continuing preconstruction engineering and design (PED) of the Dam Safety Modification (DSM) project and start of construction. The recommended risk management plan consists of the following: 1) A new Emergency Spillway which will be a 900-foot wide Labyrinth Spillway

with a 16-foot dam raise to pass the probable maximum flood (PMF); 2) buttress and foundation treatments at the Auxiliary dam to increase seismic stability and remediate seepage concerns; 3) a filter and drain system in the downstream slope of the Main dam to increase stability; 4) modifying the existing spillway to raise the spillway walls, anchor the walls and ogee crest for the additional head during operation, and line the chute with concrete to mitigate for plucking and erosion; and 5) relocation or realignment of the Borel canal to reduce seepage and piping risks.

Current Status: FY 2018 funding is being used for borel easement acquisition, Phase II Dams and Spillway Construction, Phase II Engineering During Construction, Labor and Construction Management and vegetation mitigation. The FY 2019 budget request is being used to continue Phase II Dams and Spillway construction, vegetation mitigation and ED Design Support Permanent operations building.

Key Milestones:

- Continue Phase II Dams and Spillway construction
- Phase III Real Estate Acquisition

Los Angeles County Drainage Area, CA

Authority: Flood Control Act of 1936 (as amended 1937, 1941, 1950)

FY 2019 Budget Request (000's): *$22,633*

Project Description*:* The project is located in the County of Los Angeles, California. The project includes routine operation and maintenance of five large flood risk management dams (Whittier Narrows, Santa Fe, Lopez, Hansen, and Sepulveda), and Haines Canyon Debris Basin as well as about 34 miles of 517 total miles of flood control channels within Los Angeles County.

Current Status: The total FY 2019 budget request is $22,633,000 for flood risk management, recreation and environmental stewardship activities. Only $22,192,000 for flood risk management activities is directly related to the Bay Delta Interim Federal Action Plan. The flood risk management funding provides for routine required dam operations and maintenance. Operations include dam safety, water management, and real estate inspections. Maintenance includes maintenance of all appurtenant structures including flood control channels, reservoir operations, maintenance of permanent operating equipment, and instrument maintenance.

Merced County Streams, CA

Authority: Flood Control Act of 1944

FY 2019 Budget Request (000's): *$458*

Project Description*:* The project consists of the following flood control improvements:

1) Five flood retention dams
    Mariposa, 88 feet high (15,000 acre-feet), 18 miles east of Merced.
    Owens 75 feet high (3,600 acre-feet), 16 miles east of Merced.
    Bear, 92 feet high (7,700 acre-feet), 16 miles east of Merced.
    Burns, 53 feet high (7,000 acre-feet), 13 miles NE of Merced.
    Castle, 40 feet high (6,400 acre-feet), 6 miles NW of Merced.
2) Black Rascal and Owens Diversion Canals
3) Channel improvements on various streams in the vicinity of Merced

The project is located in Mariposa and Merced Counties. The dams control flows to the delta during flood events, reducing the risk of delta island levee failure and saltwater intrusion. The dams and diversion canals provide irrigation water for central valley farming, thereby reducing water consumption from the delta.

Current Status: The total FY 2019 budget request is $458,000 for flood risk management activities which are directly related to the Bay Delta Interim Federal Action Plan. The flood risk management funding provides for routine required dam operations and maintenance. Operations include limited gate operations, dam safety and post-earthquake inspections, emergency actions, instrumentation monitoring, water management, and real estate inspections. Maintenance includes limited critical maintenance, repairs to major equipment, vegetation control, and water control data system modifications.

New Hogan Lake, CA

Authority: Flood Control Act of 1962

FY 2019 Budget Request (000's): *$2,878*

Project Description: The project is located on the Calaveras River, about 28 miles northeast of Stockton, and comprises a rock-fill dam with an impervious earth core and a maximum height of 200 feet together with four dikes with a maximum height of 18 feet, and a gated spillway creating a reservoir with a gross storage capacity of 325,000 acre-feet. The project is located in Calaveras County. The project controls flows to the delta during flood events, reducing the risk of delta island levee failure and saltwater intrusion. New Hogan Lake provides irrigation water for central valley farming, thereby reducing water consumption from the delta.

Current Status: The total FY 2019 budget request is $2,878,000 for flood risk management, recreation and environmental stewardship activities. Only $1,526,000 for flood risk management activities is directly related to the Bay Delta Interim Federal Action Plan. The flood risk management funding provides for routine required dam operations and maintenance. Operations include limited gate operations, dam safety and post-earthquake inspections, emergency actions, instrumentation monitoring, water management, and real estate inspections. Maintenance includes limited critical maintenance, repairs to major equipment, vegetation control, and water control data systems modifications.

New Melones Lake, CA

Authority: Flood Control Act of 1962

FY 2019 Budget Request (000's): *$1,652*

Project Description*:* The project extends along the Stanislaus River from Goodwin Dam to the confluence with the San Joaquin River. The project provides recreation access to the Lower Stanislaus River. The project is located in Calaveras, San Joaquin, Stanislaus, and Tuolumne counties. New Melones Dam controls flows to the delta during flood events, reducing the risk of delta island levee failure and saltwater intrusion. New Melones Lake provides irrigation water for central valley farming thereby reducing water consumption from the delta.

Current Status: The total FY 2019 budget request is $1,652,000 for flood risk management, recreation, and flood risk management activities. Only $391,000 for flood risk management activities is directly related to the Bay Delta Interim Federal Action Plan. The flood risk management funding provides for routine required dam operations and maintenance. Operations and maintenance includes minimum channel operation and maintenance to prevent failure and maintain integrity of the project; reducing inspections and engineering consultations.

Pine Flat Lake, CA

Authority: Flood Control Act of 1944

FY 2019 Budget Request (000's): *$4,437*

Project Description*:* Pine Flat Dam, located on the Kings River about 25 miles east of the city of Fresno, is a straight, gravity-type concrete structure, 429 feet high, with a gate-controlled spillway in the central section, and creates a reservoir of 1,000,000 acre-feet. The project is located in Fresno County. The project controls releases for irrigation in the central valley and reduces water consumption from the delta for agriculture needs. Pine Flat Lake is connected to Kern Friant Canal to deliver water through the Cross Valley Canal to the California Aqueduct for consumptive use.

Current Status: The total FY 2019 budget request is $4,437,000 is for flood risk management, recreation and environmental stewardship activities. Only $3,221,000 for flood risk management activities is directly related to the Bay Delta Interim Federal Action Plan. The flood risk management funding provides for routine required dam operations and maintenance. Operations include gate operations, dam safety and post-earthquake inspections, emergency actions, instrumentation monitoring, water management, and real estate inspections. Maintenance includes limited critical maintenance, repairs to major equipment, vegetation control, and water control data system modifications.

Santa Ana River Basin, CA

Authority: Flood Control Act of 1936 (as amended 1938)

FY 2019 Budget Request (000's): *$12,537*

Project Description*:* The project is located in the counties of Riverside, Los Angeles and Orange. The project includes routine operation and maintenance of five dams (San Antonio, Prado, Carbon Canyon, Brea, and Fullerton) with four recreational areas and about 15.7 miles of flood control channels along San Antonio and Chino Creeks within the Santa Ana River Basin.

Current Status: The total FY 2019 budget request is $12,537,000 for flood risk management, recreation and environmental stewardship activities. Only $12,185,000 for flood risk management activities is directly related to the Bay Delta Interim Federal Action Plan. The flood risk management funding provides for routine required dam operations and maintenance. Operations includes: water management, dam safety, and real estate inspections. Maintenance includes: maintenance of all appurtenant structures including flood control channels, reservoir operations, maintenance of permanent operating equipment, and instrument maintenance.

Scheduled Reservoir Operations, CA

Authority: Flood Control Act of 1944

FY 2019 Budget Request (000's): *$1,344*

Project Description: The project is a nationwide program to facilitate and coordinate the operations of federal and non-federal dams for which there is a federal interest and investment in providing dedicated flood space. The project includes coordination and management of channel flows and releases from 15 California Section 7 dams, and reduces the risk of delta island levee failure and saltwater intrusion.

Current Status: The total FY 2019 budget request is $1,344,000, all for flood risk management and directly related to activities and projects in the Bay Delta Interim Federal Action Plan. The program includes data collection efforts and coordination for operational decisions with other federal and non-federal dams, especially for channel flows and flood releases, water control manual coordination under NEPA and ESA, and other activities associated with safe operation of Section 7 dams.

Success Lake, CA

Authority: Flood Control Act of 1944

FY 2019 Budget Request (000's): *$3,543*

Project Description*:* The project is located on the Tule River, about 6 miles east of Porterville,

and comprises an earthfill dam with a maximum height of 142 feet with an ungated saddle spillway, and an auxiliary earthfill dam or dike about 40 feet high, creating a reservoir gross storage capacity of 85,000 acre-feet. The project is located in Tulare County. The project controls releases for farming irrigation in the central valley and reduces water consumption from the delta for agriculture needs. Success Lake is connected to the Kern Friant Canal to deliver water through the Cross Valley Canal to the California Aqueduct for consumption use.

Current Status: The total FY 2019 budget request is $3,543,000 for flood risk management, recreation and environmental stewardship activities. Only $2,506,000 for flood risk management is directly related to the Bay Delta Interim Federal Action Plan. The flood risk management funding provides for routine required dam operations and maintenance. Operations include limited gate operations, dam safety and post-earthquake inspections, emergency actions, instrumentation monitoring, water management, and real estate inspections. Maintenance includes limited critical maintenance, repairs to major equipment, vegetation control, and water control data systems modifications.

Terminus Dam, Lake Kaweah, CA

Authority: Flood Control Act of 1944

FY 2019 Budget Request (000's): *$2,785*

Project Description*:* The project is located on the Kaweah River about 20 miles east of Visalia, and comprises an earth fill dam with a height of 200 feet, with an auxiliary earth fill dam 130 feet high and fuse gates adjacent to the left abutment of the dam, creating a reservoir with a storage capacity of 185,630 acre-feet. The project is located in Tulare County. Terminus Dam controls releases for irrigation in the central valley which reduces water consumption from the delta for agriculture needs. Lake Kaweah is connected to the Kern Friant Canal delivering water through the Cross Valley Canal to the California Aqueduct for consumptive use.

Current Status: The total FY 2019 budget request is $2,785,000 for flood risk management, recreation and environmental stewardship activities. Only $1,753,000 for flood risk management activities is directly related to the Bay Delta Interim Federal Action Plan. The flood risk management funding provides for routine required dam operations and maintenance. Operations include limited execution of gate operation, dam safety and post-earthquake inspections, emergency actions, instrumentation monitoring, water management, and real estate inspections. Maintenance includes limited critical maintenance, repairs to major equipment, vegetation control, and water control data systems modifications.

FISCAL YEAR 2019

U.S. GEOLOGICAL SURVEY

Habitat Restoration

FY 2019 Budget Request (000's): *$8,458*

The California Bay-Delta Ecosystem (Delta) is recognized as one of the world's threatened treasures of biodiversity, supporting unique native species and their critical tidal and wetland habitats. Like other urban estuaries, this system has a history of anthropogenic changes involving multiple stressors including altered hydrodynamics, environmental contaminants, and invasive species that have degraded the ecosystem. The native fish fauna has been much reduced and key species are now protected by the Endangered Species Act. Among these species, the threatened Delta smelt most prominently impacts human decisions about the movement of water through the system. The conservation of this species while supporting human uses of Delta water requires an improved understanding of habitat and ecosystem functions within the Delta. Over time and as the population of California increases, policymakers must plan for systemic changes that influence all stressors and parts of the system, including watersheds, rivers, deltas, bays, and the ocean. To assist water and ecosystem managers, U.S. Geological Survey (USGS) scientists have developed a network of real-time flow monitoring stations in the Delta. These stations are being continually improved to better monitor sediment movement and real-time turbidity dynamics in the Delta, which have important implications for efficient water project operations during the winter and spring months. The USGS has expanded its research efforts to understand how flow conditions, water quality, and fish behavior affect fish survival, including both native smelts and commercially important runs of Chinook salmon. In doing so, the USGS is advancing our understanding of the practical implications of Delta water dynamics and the interplay among the physical, chemical, biological, human factors and natural hazards associated with the Delta system. New USGS science informs crucial near- and long-term policy analysis and public investment decisionmaking by Federal and State agencies, water users, academics, and other, non-governmental organizations. The USGS is also working to make the data and findings more useable by all public and private parties, with improved support for access, visualization, and sharing of data and information about the Delta system. The 2019 budget reflects the continued focus on this important work.

Interagency Ecological Program

Authority: Organic Act of March 3, 1879, as amended (43 U.S.C. 31 et seq.)

FY 2019 Budget Request (000's): $2,744
Ecosystems (000's): *$581*
Natural Hazards (000's): *$538*
Water Resources (000's): *$722*
Core Science Systems (000's): *$903*

Project Description: In cooperation with other agencies in the Interagency Ecological Program (IEP: U.S. Fish & Wildlife Service, U.S. Bureau of Reclamation, USGS, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, CA Water Resources Control Board, CA Department of Water Resources, and CA Department of Fish & Game), the USGS is measuring within-Delta salt and water transfers and Delta outflow into the Bay, providing information needed for documenting salt transport mechanisms and managing freshwater flow and export pumping operations to meet salinity standards. These studies also include areas in Suisun Marsh and South San Francisco Bay, as well as measuring temperature and suspended sediment at the entrance of the San Joaquin River into the Delta and special scientific studies of flows and turbidity in the Cache Slough and Liberty Island area.

Added in 2010 was the addition of 16 flow stations and 14 turbidity sensors, associated with some of the added flow stations, to monitor and assess turbidity patterns and intensities in the Delta. These data may be used to compare to occurrences of Delta smelt in an attempt to collect information relating Delta smelt migration to turbidity.

Current Status: The hydrodynamic flow and salinity stations funded by the IEP are an integral part of the entire flow network for the Delta. The data from this flow network are used in real-time decisions by water operators to manage export pumping from the Delta to other parts of California (south and parts of the greater San Francisco bay area). More than 25 million Californians drink water originating from the Delta; as well, Delta water irrigates millions of acres of highly productive agricultural land. The monitoring network also plays a key role in ongoing monitoring and management of commercially important and threatened and endangered fish species in the Delta (salmon, steelhead, sturgeon, native smelts, etc.), and provides the framework for understanding the physical, chemical and biological interactions that are key to informing long-term policy on the complex ecological and water supply issues in the Delta.

Related activities include studies of flow and salt transport in the central and south Delta, and Suisun Marsh, and flow and turbidity fields in relation to phytoplankton and Delta smelt in the northern Delta.

Delta Science Program Oversight (Lead Scientist)

Authority: Organic Act of March 3, 1879, as amended (43 U.S.C. 31 et seq.)

FY 2019 Budget Request (000's): *$662*
Delta Science Program Oversight (000's): *$662*

Project Description: The U.S. Geological Survey provides support for the California Delta Science Program's Lead Scientist and a USGS staff Delta Liaison.

Public policy in the Delta is the product of a multi-decade, multi-billion dollar cooperative effort of more than 20 State and Federal agencies working to improve the quality and reliability of California's water supplies and to conserve the Estuary's ecosystems. California's Delta Stewardship Council (DSC) is the agency primarily responsible for setting and implementing state policy for the Delta, which emphasizes the statutorily defined "co-equal goals" of water

supply reliability and environmental conservation. The DSC houses a Delta Science Program to set policy for public science in the Delta and ensure that best-available, unbiased scientific information is developed and identified as a resource for policymakers. The Science Program is tasked with: providing a comprehensive and integrated scientific context for Delta activities; ensuring the advance of science needed to guide Bay-Delta decisions and water project operations; establishing a framework to identify and articulate relevant areas of scientific uncertainty; and developing strategies to reduce uncertainties and track progress toward Delta goals. This is carried out through funding research, synthesizing and communicating scientific information to policymakers and decision-makers, promoting disinterested, independent expert review, organizing and running public workshops on science topics of interest and coordinating with management agencies to promote science-based adaptive management.

The Delta Science Program is led by a term-appointed Lead Scientist who is housed at the USGS. The Lead Scientist is an important rotating leadership position that is conferred upon a very senior external scientist who works to ensure the effectiveness and professionalism of publicly supported science in the upper Estuary. The Lead Scientist oversees the work of Delta Science Program staff and works with the Delta Independent Science Board, Delta implementing agency managers and scientists, and the scientific community at large to implement the DSC's Delta Science Plan and, in general, to promote the production of high-quality, peer-reviewed science to inform Bay-Delta management decisions.

The Delta Lead Scientist is by agreement housed at the USGS, to ensure independence from State fish and wildlife and water management politics. The arrangement enhances the Lead Scientist's credibility to oversee technical review processes and provide unbiased scientific advice to policymakers, stakeholders, and the public. As well, the arrangement enhances and underscores scientific cooperation between the State and Federal governments to help ensure that high-quality, agenda-free scientific information is developed or identified to support decision-making pertaining to water and environmental issues affecting the Delta.

Current Status: The Lead Scientist and Staff continue to facilitate the collaboration among all the Bay-Delta partners and work with Delta Science Program staff to ensure science projects address issues identified by the partners.

Adaptive Management of SF Bay

Authority: Organic Act of March 3, 1879, as amended (43 U.S.C. 31 et seq.)

FY 2019 Budget Request (000's): $581
Ecosystems (000's) *$581*

Project Description: The objective of this work is to provide science in support of adaptive management of ecosystems that have near-term societal concern and significant long-term societal value. These studies are designed to serve local ecosystem management needs and to provide transferable knowledge and approaches. Efforts focus in areas where new integrated science approaches can be developed to address the needs of a diverse group of decision-makers. Activities require collaboration and integration of expertise to achieve a system-scale

understanding of the natural and anthropogenic factors affecting ecosystems and to better understand the interactive nature of resources and the environment.

Current Status: Primary support for interdisciplinary studies of fish, wildlife, and their habitats to understand the evolving state of the Estuary and its effects on California's crucial water delivery infrastructure, and to develop scientific tools to support Interior and State of California policy development. Current studies cover a range of activities from the watershed and Delta through Suisun Bay to South Bay and the Golden Gate dealing with climate forecasting, hydrodynamic processes, sediment budgets, and management-relevant contaminant and ecological processes. The information and knowledge produced is integral to the developing understanding of water project effects, wetland management and restoration effectiveness and performance, salt pond reclamation, salinity control, and the success of native fish and their movements within and through the Delta.

Status and Trends of Water Quality in the Bay-Delta Watershed – National Water Quality Program

Authority: Organic Act of March 3, 1879, as amended (43 U.S.C. 31 et seq.)

FY 2019 Budget Request (000's): *$4,471*
Water Resources (000's): *$4,471*

Project Description: A program component of the National Water Quality Program (NWQP) is the National Water Quality Assessment (NAWQA) Project which is designed to assess the status and trends of water quality in some of the largest and most important watersheds and aquifers in the Nation. The Bay-Delta watershed is included in the assessment with particular attention to the Central Valley, and to understanding the factors that affect water-quality conditions and trends. Specifically, the NWQP goals are to characterize the condition of streams and ground water in the basin, evaluate how the water quality is changing over time, and to identify how natural features and human activities affect the quality of streams and ground water. The NAWQA Project is a long-term, cyclical study that began in 1991, and is now in its third decade – Cycle 3.

In Cycle 3, efforts focus on five major activities: (1) Assessment of trends in water-quality and ecological communities in streams; (2) Assessment of water-quality trends in ground-water quality, especially drinking water sources; (3) Numerical and statistical modeling of groundwater flow and quality to identify key governing processes and extrapolate impacts, and (4) Real-time monitoring of selected constituents to determine the scales of short-term variability and possible causes in both streams and groundwater. Note that most NAWQA activities are cyclic, so that the specifics may vary from year to year.

Current Status: Whereas planning and field work had previously been conducted separately in the Sacramento and San Joaquin watersheds, in Cycle 3 NAWQA Project activities for the entire Central Valley have been integrated. New to NAWQA Project studies is support for continuous monitoring of the concentration (and flux) of nitrate transported to the Delta from the

Sacramento River in real time. Nutrient flux to the Delta is a key variable defining the ecosystem, and real-time monitoring will reduce uncertainty in the flux while shedding light on sources and causes of variability.

Because of the large and ever-changing array of agricultural chemicals in use – and hence available for transport to the Delta – the NAWQA Project has greatly expanded its analytical suite for Cycle 3. Samples from streams entering the Delta are now analyzed for 240 organic contaminants, including classes of new pesticides (such as selected neonicitinoids and pyrethroids) as well as additional degradation products of pesticides long in use. An example of a critical addition is fipronil: this insecticide is broadly used as a replacement for organophosphate insecticides that have been recently phased out. Because of the high toxicity of insecticides, and particularly their high use during the orchard dormant spray period, this data will be helpful for those assessing chemical stressors in the Delta. Biological communities at three trophic levels (algae, invertebrates, and fish) will also be measured at all surface water sites in the Central Valley in Cycle 3 for trends assessment.

The recent drought in California brought the critical linkage between surface and groundwater resources to the fore, as the agricultural sector in the San Joaquin Valley turned to groundwater resources to replace cancelled surface water deliveries from the Delta. Balancing the goals of sustainable agriculture in the Central Valley and ecosystem restoration in the Delta are addressed by NWQP groundwater studies that provide information on the status and trends in groundwater quality. Most of the decadal-scale groundwater sampling in the Central Valley has already been completed; however, additional studies are underway examining the short term variability in drinking water quality and vertical distribution of contaminants along a transect, both in the Fresno area. These field sites are embedded in a groundwater flow model that is being developed to shed light on the transport of contaminant at the local to sub-regional scale. Finally, numerical and statistical models are being constructed and melded at the scale of the entire Central Valley to explain the spatial distribution of specific contaminants (such as arsenic and nitrate) as well as the critical governing process (such as oxidation-reduction potential, and groundwater flow velocity and direction). In 2019, the NWQP will continue to conduct long-term surface water quality monitoring at five sites; long-term groundwater quality monitoring in the Central Valley aquifer system; and surface and groundwater quality modeling.

FISCAL YEAR 2019

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Renewed Federal State Partnership

General Oversight and Coordination

Authority: Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.)

FY 2019 Budget Request (000's): $205

Project Description: Activities include participation at CALFED agency coordination meetings, Bay-Delta Public Advisory Committee meetings, California Bay-Delta Authority meetings, input into the development of and review of CALFED program plans, crosscut budgets, and annual reports.

Current Status: NOAA is coordinating with other CALFED agencies to implement the Delta Vision Strategic Plan, a product of the Governor's Delta Vision Blue Ribbon Task Force. This coordination has focused on identifying existing governance structures and opportunities for integrating CALFED, Delta Vision implementation, and other planning efforts that are underway in the Delta, including the development of the Ecosystem Restoration Program (ERP) Conservation Strategy.

Interagency Ecological Program

Authority: Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.)

FY 2019 Budget Request (000's): $182

Project Description: The Interagency Ecological Program (IEP) is an estuarine ecological monitoring and special study collaboration by three state and six federal agencies with management and/or regulatory responsibilities in the San Francisco Estuary and Sacramento-San Joaquin Delta, California. The three state agencies are the California Department of Fish and Wildlife (CDFW), California Department of Water Resources (DWR), and California State Water Resource Control Board (SWRCB); the federal agencies include the U.S. Fish and Wildlife Service (USFWS), U.S. Bureau of Reclamation (USBR), National Oceanic and Atmospheric Administration (NOAA), U.S. Geological Survey (USGS), U.S. Environmental Protection Agency (USEPA), and the U.S. Army Corps of Engineers (USACE). The purpose of this collaboration is to gather in an efficient, coordinated and cooperative way the ecological information required by the agencies to effectively carry out their management and regulatory responsibilities.

The goals and objectives to address the mission of the IEP are (1) describe the status and trends of aquatic ecological factors of interest in the estuary; (2) develop an understanding of environmental factors that influence observed aquatic ecological status and trends; (3) use knowledge of the previous information in a collaboration process to support natural resource planning, management, and regulatory activities in the estuary; (4) continually reassess and enhance long-term monitoring and research activities that demonstrate scientific excellence; (5) provide scientific information about the estuary that is accurate, accessible, reliable, and timely; and (6) respond to management needs in a timely fashion.

Current Status: The IEP is comprised of long-term monitoring, water operations monitoring and special studies. The IEP is committed to conducting the mandated monitoring studies required by NOAA and FWS biological opinions and SWRCB Water Rights Decision D-1641. There is also a commitment to continue providing the "real-time" data needed to make water operation decisions. NOAA is one of nine agencies with IEP implementation responsibility. At present, the Assistant Regional Administrator represents NOAA as the IEP Director at quarterly meetings and staff participates on various work groups as needed. NOAA issued the IEP Scientific Collection permit.

Smarter Water Supply & Use

Water Operations Oversight and Coordination

Authority: Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.)

FY 2019 Budget Request (000's): $1,363

Project Description: On June 4, 2009, NOAA issued its biological opinion on the long-term operations of the CVP and SWP. USBR and the DWR are implementing the Opinion in consultation and coordination with NOAA.

Current Status: NOAA staff is assisting USBR and DWR in the implementation of NOAA's Operations Criteria and Plan (OCAP) Opinion, including ongoing reviews of operations forecasts, participating on technical teams, and assisting in adaptive management decisions regarding real time operations within the sideboards of the OCAP Opinion. Some of the reasonable and prudent alternative (RPA) actions require NOAA technical review of new studies and monitoring stations. Following issuance of the OCAP Opinion, Endangered Species Act (ESA) section 7 consultations on infrastructure projects, long-term water contracts, fish screens, temperature control structures, and fish passage above dams have been needed.

The USBR requested reinitation of Section 7 consultation for the OCAP project on August 2, 2016. The reinitiation request was based on new information related to multiple years of drought, recent date demonstrating extremely low listed-salmonid population levels for winter-run Chinook salmon, and new information relating to current science. NOAA is working with USBR to develop a program management plan and in addition, helping USBR develop the appropriate NEPA documents for the project.

Habitat Restoration

Ecosystem Restoration Program (ERP) Oversight & Coordination

Authority: Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), Magnuson-Steven Fishery Conservation and Management Act (16 U.S.C. 1801 et seq.)

FY 2019 Budget Request (000'): $71

Project Description: As an Ecosystem Restoration Program (ERP) implementing agency, NOAA will continue ERP planning efforts in collaboration with the FWS, CDFW and the California Bay-Delta Authority (CBDA). Activities include program planning and implementation, tracking schedules, finances, and performance; coordination of Program activities to ensure Program balance and integration with other CALFED Programs; coordination of public outreach and involvement, including tribal, environmental justice, and public advisory activities in accordance with the Federal Advisory Committee Act. NOAA, through an interagency process, is also involved in planning and developing the format and guidelines for preparing Action Specific Implementation Plans (ASIP) for all CALFED projects in order to meet the requirement of the ESA, California Endangered Species Act, and the Natural Community Conservation Planning Act (California).

Current Status: NOAA will continue management-level participation in CALFED and CBDA coordination meetings, continue work on multi-year planning documents, work on defining and streamlining the ASIP, participate in developing the Delta Regional Ecosystem Implementation Plan, the South Delta Improvements Package, and the Proposal Solicitation Process (PSP), and serve on annual PSP selection panels to review and fund specific projects in the CALFED program. Staff and Management participate in quarterly ERP Science Board meetings to assist coordination of implementation and integration of the ERP program overall in meeting CALFED goals and objectives.

Screen Engineering and Review

Authority: Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), Magnuson-Steven Fishery Conservation and Management Act (16 U.S.C. 1801 et seq.).

FY 2019 Budget Request (000's): $81

Project Description: Activities include technical review and comment of proposed projects under the Anadromous Fish Screen Program (AFSP). The AFSP is to protect juvenile Chinook salmon (all runs), steelhead trout, green and white sturgeon, striped bass and American shad from entrainment at priority diversions throughout the Central Valley. Section 3406(b)(21) of the Central Valley Project Improvement Act (CVPIA) requires the Secretary of the Interior to assist the State of California in developing and implementing measures to avoid losses of

juvenile anadromous fish resulting from unscreened or inadequately screened diversions on the Sacramento and San Joaquin Rivers, their tributaries, the Delta, and the Suisun Marsh. Additionally, all AFSP projects meet Goal 3 of the CALFED Ecosystem Restoration Program's (ERP) Draft Stage 1 Implementation Plan (8/1/01, Page 22) which states that "the goal is to maintain and/or enhance populations of selected species for sustainable commercial and recreational harvest, consistent with the other ERP Strategic Goals."

Current Status: Efforts in this program element have scaled down over the past couple of years due to decreased emphasis on screening diversions and greater emphasis on habitat restoration by the ERP program in general. However, staff will continue to review CALFED-funded fish screens and improvement projects as they develop for compliance with section 7 of the ESA and existing biological opinions. Specific issues for program staff include reviewing the State Water Project and Central Valley Project Fish Collection Facilities in the Delta. Staff participates on the Tracy Technical Advisory Team, South Delta Fish Facility Forum, and Central Valley Fish Facility Team, all of which are involved in developing new ways to salvage fish from water and debris and return them unharmed to the Delta. Staff review and comment on fish studies, research projects, facility evaluations, and operations and maintenance of the Delta fish facilities for compliance with current biological opinions.

Many of the research projects are funded by either CVPIA or CALFED. Staff works with our engineers in Santa Rosa and at the Bureau of Reclamation to approve CVPIA funded fish screen projects. Current staffing is one biologist part-time in support of this program element. In the future there are studies and screen improvements required in the OCAP biological opinion that will have to be evaluated and commented on with respect to listed fish concerns.

FISCAL YEAR 2019

ENVIRONMENTAL PROTECTION AGENCY

EPA's support of the Interim Federal Action Plan comprises four programs: San Francisco Bay-Delta Estuary Program, National Estuary Program, Clean Water State Revolving Fund, and Drinking Water State Revolving Fund.

The San Francisco Bay-Delta Estuary program is aimed at protecting and restoring water quality and ecological health of the estuary through partnerships, interagency coordination, and project grants. The FY 2018 Annualized Continuing Resolution includes $4.8 million to continue a competitive grant program to implement projects that improve water quality and restore habitat in San Francisco Bay watersheds. In FY 2019, the President's Budget request does not include funding for the San Francisco Bay Delta, instead returning the responsibility for funding local environmental efforts and programs to state and local entities.

In FY 2019, the President's Budget request does not include funding for the National Estuary Program. The EPA will encourage the state of California and local entities to continue to support the San Francisco Estuary Partnership's implementation of their Comprehensive Conservation and Management Plan (CCMP), including activities to address water quality impairments and habitat loss.

EPA's State Revolving Funds (SRFs) will continue to provide capitalization grants for state loan programs for water and wastewater infrastructure, with specific projects identified at the state and local levels. The estimated FY 2019 amounts ($29.2 million for the Clean Water SRF and $33.2 million for the Drinking Water SRF) are based on a projected distribution of California's total SRF allocation based on land area in the Bay-Delta watershed.