Federal Investments For The California Bay-Delta Region

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I. Introduction

The San Francisco Bay/Sacramento-San Joaquin Delta (Bay-Delta) region of California is an ecosystem of national significance. It is also the hub of the nation's largest water delivery system—infrastructure that is the foundation for economic activity in the agricultural, industrial, and recreational sectors of the economy, and provides drinking water to a population of over 25 million Californians. This document is intended to provide an overview of the federal land and water programs in and around the Bay-Delta region, their purpose, options for future programs or actions, and an overview of the actions in which agencies are engaged already. Successful long term management of water resources and the environment to achieve the co-equal goals of the Bay Delta Conservation Plan (BDCP) and overall Delta sustainability requires continued improvement in managing California's finite water supply.

The urgent need for a comprehensive strategy to reduce reliance on and restore the ecosystem of the Delta for meeting California's growing water demand was a fundamental conclusion of the Delta Vision process that was incorporated into state law through the 2009 Delta Reform Act, and was reiterated in a recent National Research Council Report (*Sustainable Water and Environmental Management in the California Bay-Delta*, 2012). There is much to gain in both water supply reliability and ecosystem protection and restoration from improving water management in the Delta and throughout California. This is readily evident, in light of the fact that California is currently in the midst of an historic drought that is creating serious water resource challenges and threatening the health of the Bay-Delta ecosystem. There is a scientific and political consensus that failure to take action to address these problems and allowing the status quo of the Bay-Delta to continue to deteriorate is not viable, and can only lead to economic and environmental detriment for both California and the nation.

The proposed BDCP is just one element of a comprehensive approach that includes both state and federal resources to address California's water and environmental needs while reducing its reliance on water from the Delta. Many Federal agencies have long worked in the Bay-Delta region protecting habitat and wildlife, improving water quality, quantity, and supply, protecting the communities from flood risk, and supporting the vital and vibrant local and state-wide economies. In association with BDCP, it is vital for local, state, and federal governments to establish and maintain strong incentives and, where appropriate, provide financial support for initiatives that promote efficient use of water resources. Such investments will to meeting future need for municipal, industrial, agricultural and environmental purposes. These investments may take the form of infrastructure improvements and programs that contribute to water conservation, efficiency, and reuse; other water augmentation projects; water banking and transfer programs; and surface and groundwater storage, with an emphasis on actions that improve and restore habitat.

The following elements, though independent of the BDCP, will clearly help enhance its success in achieving the co-equal goals by promoting more flexibility and better management of water and the environment to satisfy current and future demands. These elements illustrate the strong state and federal combined commitment to using an Integrated Water Management approach to achieve: (1) Reductions in Water Demand; (2) Increases in Water Reliability and Supply; (3)

Improved Water Quality; (4) Conservation of Habitat and; (5) Improvements in Efficiency of Operations.

The state and federal governments recognize the importance of investments being made in improving water and ecosystem management in California through existing programs. Funding for any specific program or project is subject to availability of funds, however, and environmental review with public input will be necessary before proposed programs or specific actions can be implemented.

Overall, the existing programs and policies, and any new elements are intended to be implemented in the manner in which they have been applied historically—through voluntary agreements that are cost-shared in recognition of the benefits to both the public at large and the entities involved. As embodied by the updated California State Water Action Plan, the state embraces and supports a holistic approach to integrated water management. Building upon the state and federal partnership will support the state's major responsibility to fulfill the requirement of a reliable water supply. We anticipate that the state and federal governments can continue to implement existing actions as part of their broader responsibilities for California water planning and management, separate from but complementary to and supportive of the BDCP.

II. Bay Delta Big Picture: A Holistic Approach

State and Federal Integrated Water Management

This effort embraces an Integrated Water Management (IWM) approach within the upstream areas to the Delta, within the Delta proper, and throughout the Central Valley Project (CVP) and the California State Water Project (SWP) service areas. Within the IWM context, all water management programs and projects are integral and interconnected—it is through this interconnectivity that IWM programs and projects maximize their value. The value of IWM is to integrate water management, flood management, and ecosystem programs to maximize limited resources and yield multiple benefits, including life safety and reduction of flood risk, water supply reliability, economic stability, and environmental enhancements. IWM also provides value in integrating regional water supply reliability solutions with system-wide water solutions. Most California water management actions affect the Delta; therefore, sustainable integrated flood and water management should include considerations of the Delta ecosystem, water supply and conveyance roles, and comprehensive flood risk management.

Another critical benefit of IWM is that it promotes system flexibility to adapt to changing conditions (such as climate change, sea level rise, policies and legal requirements, etc.) and enhances the natural environment. This element will enhance solution opportunities by partnering across all levels of government and interest groups to align water planning, policies, and regulations.

In furtherance of this holistic approach, the federal and state governments, in coordination with other entities, carry out numerous programs and projects in the Delta and throughout California that are directed at different matters related to the Bay-Delta and California's water management system, including the following:

- Delta conveyance
- Delta flood emergency response
- Flood management (special projects and subvention programs)
- Fish passage improvements and reintroductions
- Tributary habitat restoration
- Long-term management of dredge materials
- Strategic levee system improvements
- Delta science, and
- Integrated Regional Water Management Plans.

Reducing Water Demand
The state and federal governments continue to invest in measures that have the potential to reduce water demand or increase supply reliability to make more efficient use of existing supplies. Water management actions under this element may utilize behavioral and technological improvements to use water more efficiently while still meeting existing and future needs for beneficial uses. These actions may include:

- *Water conservation:* California Department of Water Resources (DWR) and U.S. Bureau of Reclamation (Reclamation) could partner with districts that have potential for water saving by implementing water conservation practices and projects such as regulation reservoirs, canal lining, system automation, modernization projects and efficient irrigation practices.

- *Agricultural water use efficiency:* State and federal agencies could partner with water districts to encourage the use of drip and micro irrigation systems, irrigation scheduling, crop shifting, deficit irrigation, and other efficient water management practices. They could also provide assistance to enable implementation of the state's 2009 water legislation (SBx7-7) which requires certain agricultural water suppliers to measure water delivered to their customers and bill those customers based at least in part on volume delivered.

- *Urban water use efficiency activities:* State and federal agencies will assist with implementation the provision of SBx7-7 requiring California urban water suppliers to reduce urban per capita water use by 20 percent by the year 2020.

Increasing Water Reliability and Supply
This water management element involves finding or developing additional sources of water as well as improving management of existing water supplies to more efficiently store and provide water for California, especially in drought years. The types of water management actions that could be implemented to meet the goals of this element include:

- Conjunctive management and groundwater storage: There is considerable interest and opportunity for additional ground water storage south of the Delta. Generally these projects need a state or federal partner to assist in permitting. This is an area that could expand the quantity and efficiency of water supply, particularly in the San Joaquin valley.

- Advanced Water Treatment and Recycling: Potential options regarding desalination and use of other non-traditional water sources (e.g. wastewater and greywater recycling, or rainwater harvesting) could be explored to support conservation of Delta resources, and as a future water supply investment for the state.

- USDA Rural Development provides financial assistance to rural cities and towns and Indian tribes to develop water and wastewater facilities, including storm drainage. RD's emphasis is on restoring deteriorating water supplies, as well as improving inadequate water and waste facilities.

Improve Operational Efficiency and Transfers/Exchanges

Operational improvements of the state and federal water projects in California have the potential to both increase water supply efficiencies and enhance biological resources. The CVP generally has more storage and less conveyance flexibility; the opposite is generally true for the SWP. The SWP and CVP are operated by DWR and Reclamation, respectively. The operation of the two projects is coordinated in accordance with the 1986 Coordinated Operating Agreement. Though the operation is coordinated, the SWP and CVP are not operating as one unit. They each have different contractual obligations and operating constraints. Operational improvements using strengths and assets of both projects would result in improved operational efficiency. In addition, there is increased opportunity for water transfers and exchanges throughout the Central Valley including SWP, CVP, and non-project interests. The types of water management actions that could be implemented to meet the goals of this element include:

- *Conveyance:* The movement of water south of the Delta in order to facilitate efficient use of currently available supplies is limited by the absence of east/west conveyance. There are proposed projects for improving the movement of water from both east to west and west to east that have general support but lack funding to study and implement. Specific attention to these projects by State and federal permitting agencies could also improve the chance of success..

- *Project operation:* Reclamation and DWR will continue efforts to evaluate CVP/SWP system operation, and identify and implement as appropriate specific measures with quantifiable efficiencies..

- *Transfers/exchanges:* There is opportunity for increases in water transfers and exchanges throughout the Central Valley including SWP, CVP, and non-project interests. There is an opportunity to accelerate or expand on ongoing activities with additional support from the federal or state agencies. Examples include the 25-year Exchange Contractor transfer program and the North/South transfer program currently being evaluated under the National Environmental Policy Act. There is also interest from certain San Joaquin River and tributary interests in a Yuba Accord-type arrangement. Exchange opportunities also offer flexibility in timing of deliveries to better take advantage of existing water supplies to meet demands at certain times of the year.

Potential Federal Water and Ecosystem Management Actions
The BDCP is but one part of a comprehensive commitment to addressing California water issues. The Administration is working with the state of California to develop both short-term actions and a long-term strategy for providing a more reliable water supply and ecosystem restoration. Some of these potential actions include:

Recycled municipal water: To date, Reclamation has invested over $500 million in Title XVI recycle and reuse projects in California, resulting in about 250,000 acre feet of new water supplies annually. These reuse and recycling technologies provide additional opportunity to expand the usable water supply south of the Delta in both the SWP and CVP service areas. Accelerated completion of projects identified or underway could yield up to an additional 400,000 acre feet of water annually. This illustrates the significant potential for adding to the available water supply for CVP and SWP contractors.

Surface storage: The most potentially viable dam and reservoir sites have been identified and have been or are being assessed as part of previous or ongoing water resources studies. However, the need to determine and pursue the most viable options merits consideration as part of this element. Also, there may be opportunities to modify existing surface storage structures (e.g. modification to spillways and/or spillway gate structures or raising existing dams) in ways that can increase storage capacity or offer operational opportunities that can enhance both water supplies and the environment. Hence, an interagency team drawn from state and federal agencies could be established to focus on the storage projects that offer the most potential and provide information to be considered as part of additional sources of water. Once identified, those projects with the most potential for completion and the greatest cost effectiveness will be considered.

Levee system improvements: Recognizing the challenge of addressing the deficiencies throughout Central Valley levee systems, the U.S. Army Corps of Engineers (USACE) worked with the California Central Valley Flood Protection Board, as well as other federal, state and local agencies, through the California Levees Roundtable to develop the Central Valley Flood System Improvement Framework (Framework) in 2009. The Framework provided interim guidance for levee maintenance while California's Central Valley Flood Protection Plan was developed, which continued federal rehabilitation assistance eligibility for levee systems sponsored by the board with five categories of deficiencies: channel capacity, seepage, erosion, encroachments, and vegetation. Following the Framework, USACE released national System-Wide Improvement Framework (SWIF) guidance. The SWIF process allows sponsors time to develop a long-term strategy for bringing board-sponsored levees into compliance with Corps levee maintenance standards while maintaining federal rehabilitation assistance eligibility for levee systems under Public Law 84-99.

Water quality actions: The U.S. Environmental Protection Agency (EPA) developed a Bay Delta Action Plan after assessing the effectiveness of current regulatory mechanisms designed to protect water quality in the Bay Delta Estuary and its tributaries. EPA's assessment concluded that Clean Water Act (CWA) programs are not adequately protecting aquatic resources of the Bay Delta Estuary. In the Action Plan, EPA recommended the following seven priorities to

restore water quality for aquatic life using existing EPA authorities and resources those of the State Water Resources Control Board (State Water Board):

- Strengthen estuarine habitat protection
- Advance regional water quality monitoring and assessment programs
- Accelerate water quality restoration through Total Maximum Daily Loads
- Strengthen selenium water quality criteria
- Prevent pesticide pollution
- Restore aquatic habitats while managing methyl mercury
- Support the Bay Delta Conservation Plan

Collectively, these activities will contribute to the restoration of the Bay Delta Estuary. Even if they are all successfully implemented, however, they are not sufficient to resolve the complex problems that have stressed the ecosystem to the point of collapse. Any solution to the ecological problems of the Bay Delta Estuary must be multi-faceted, including providing sufficient flows, physical habitat which is sufficiently large, connected, diverse, and self-sustaining, as well as a reduction of many types of stressors, such as contaminants, invasive species, and predation.

Restoring and maintaining healthy watersheds and habitats: Investment in recovery of threatened and endangered species and restoration and protection of important natural habitat will result in economic, societal and ecosystem benefits. Notably, the Forest Service manages the majority of the land in the upper watersheds that feed into the Bay-Delta system, supplying eighty percent of the water that finds its way into the Bay-Delta. The Forest Service, together with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (FWS), and USDA's Natural Resources Conservation Service (NRCS), Agriculture Research Service (ARS) and Farm Services Agency (FSA) are undertaking a number of actions that are designed to improve watershed-wide processes which will benefit many native species of plants and animals by restoring natural ecosystem functions. In addition, restoration of habitat in watersheds will provide substantial benefits for human communities. Some of these benefits are: improving and protecting the quality of important surface and ground water supplies; reducing damage from flooding resulting from floodplain development; and controlling invasive exotic animal and plant species which can threaten water supplies and increase flooding risk. Restoring and maintaining healthy watersheds also enhances important human uses of aquatic habitats, including outdoor recreation, ecological education, field based research, aesthetic benefits, and the preservation of tribal and cultural heritage.

These actions that restore and maintain healthy watersheds and habitats include:

- Reintroduction of species to historical habitats
- Reducing or minimizing natural and man-made stressors
- Protecting and restoring key spawning, rearing or foraging areas
- Improving survival rates of native species as they migrate through the Delta, and
- Mimicking natural hydrological conditions, when appropriate
- Engaging in fuels reduction, thinning and use of prescribed fire to restore watershed health
- Maintaining and/or decommissioning of roads and trails that contribute sediment to key watersheds

- Decreasing the impacts of invasive species through preventative practices, rapid response control, rehabilitation and restoration
- Assisting farmers and ranchers to conserve and improve soil, water and wildlife resources on working lands.

Coordinated state and federal Delta Science Planning: The recent National Research Council report (2012) concluded that "a synthetic, integrated, analytical approach to understanding the effects of suites of environmental factors on the ecosystem and its components is likely to provide important insights that can lead to enhancement of the delta and its species." An effective means of gathering and sharing information on the condition of the resources, and the lessons learned during implementation of actions, is essential for effective management. Adaptive management and monitoring will provide a framework to obtain the appropriate types and amounts of data to evaluate the effectiveness of management actions and progress toward the co-equal goals. An integrated federal and state approach to coordinating the numerous monitoring and research tasks in the Delta would facilitate a consistent framework for research, monitoring, and adaptive management that can directly inform water management objectives and goals.

III. Role of Federal Agencies:

This section documents federal contributions, roles, and commitments in the Bay-Delta that further the co-equal goals of supporting a sustainable and reliable water supply for future generations, and restoring ecosystem protections for the regions.

Department of Interior
DOI agencies are targeting their resources to help reduce water demand and increase supply, improve water quality, and preserve and protect fish, wildlife and habitat.

U.S. Bureau of Reclamation
On November 5, 2013, Reclamation released its draft Central Valley Project (CVP) Water Plan for 2014 (Plan). The draft Plan is the product of Reclamation's assessment of the current water supply situation in California, as well as the cumulative input from a series of meetings conducted with customers and stakeholders during the summer and fall of 2013. The goal of the Draft 2014 Water Plan is to identify actions to minimize the negative impacts to affected CVP customers and stakeholders associated with the dry 2014 water year. The Plan is composed of actions identified by stakeholders from the broad variety of CVP agricultural, municipal and industrial (M&I), power, tribal, fisheries, refuge and other environmental interests. The Plan contains actions and associated timelines that are anticipated to be implemented during the 2014 water year, absent changed conditions, unforeseen barriers, or unanticipated circumstances. As conditions continue to change in 2014, Reclamation will continuously evaluate planned actions and adjust accordingly.

Reclamation, supports activities that that improve the opportunity to provide immediate ecological and water supply benefits, serve as a pilot or test case to determine viability of certain approaches and/or complete planning and environmental requirements for future water resource

operations or development decisions. Particular attention will be focused on accelerating the activities identified in the Mid-Pacific Region's 2014 Plan. In FY 2014 Reclamation will focus on the following efforts:

- *Water Conservation and Water Use Efficiency:* Reclamation will pursue opportunities to test agricultural system or operations improvements with CVP contractors or their farm operators (particularly south of the Delta) to determine the potential for additional water conservation or operational efficiency allowing CVP water to be freed for other project purposes. This will assist in defining the level of interest, as well as the financial, operational, and institutional requirements to advance this activity on a programmatic scale. Opportunities to partner with other federal agencies (e.g., NRCS) will be evaluated as a priority in this effort.

- *East-West Conveyance South of Delta:* Reclamation will explore the opportunity to partner with local water districts to complete planning and environmental compliance analyzing the construction of additional east-west conveyance facilities south of the Delta. The current absence of such conveyance reduces the ability to effectively use water that originates from south of the Delta or is currently exported from the Delta for uses in the San Joaquin Valley.

- *Surface Storage Studies:* Reclamation will continue efforts for completion of the surface storage studies for the Shasta Lake Water Resources Investigation and Upper San Joaquin River Basin Storage Investigation. Reclamation will continue partnering with local interests to continue studies for new storage facilities generally referred to as Sites Reservoir (an off stream storage facility north of the Delta). Contra Costa Water District completed construction of a 60,000 acre-foot raise for Los Vaqueros Reservoir in 2012. Reclamation and Contra Costa Water District are assessing the potential for additional feasibility studies to analyze a 115,000 acre-foot expansion on top of the recently constructed raise for Los Vaqueros Reservoir.

  It is generally believed that new storage both north and south of the Delta will improve both water supply and environmental benefits of both the SWP and the CVP. In addition, Reclamation will continue efforts to complete the appraisal level study evaluating the federal interest in raising B.F. Sisk Dam (San Luis Reservoir) to add additional conservation storage capacity in conjunction with any necessary dam safety modifications required to address seismic risks associated with the B.F. Sisk Dam.

- *Ground Water Banking and Conjunctive Use:* Reclamation will identify opportunities to participate in existing water banks, and will identify potential for participation in new or expanded water banking efforts. These efforts will also include participation in integrated management of existing surface and groundwater supplies within various CVP service areas. This will be done on a cooperative basis with existing CVP contractors. Reclamation will also evaluate new authorities required to fully participate in water banking and conjunctive use projects within and outside of the CVP service area that potentially benefit both CVP and non-CVP water interests.

- *Integrated Operation of the CVP and SWP:* Reclamation will continue discussions with the DWR to identify and advance opportunities to enhance the operational effectiveness and efficiency of both the state and federal projects. This includes discussion of Reclamation's engagement in in the state's Integrated Water Resource Management Program.

- *Refuge Water Supply:* Reclamation is hosting technical discussions with stakeholders to develop near-term and long-term opportunities for refuge water supply and diversification initiatives. Reclamation will continue efforts to meet Interior's obligations under the Central Valley Project Improvement Act related to refuge water supply for federal, state, and private refuges in the Central Valley. This will be done in partnership with appropriate federal, state and non-governmental partners.

- *San Joaquin River Restoration Program*
  Salmon runs along the San Joaquin River upstream of the Merced River ended when the Friant Dam project diverted about 95 percent of the San Joaquin River's water, causing 60 miles of the river to become dry during most months of the year. After more than 18 years of litigation, a Stipulation of Settlement was reached by the Natural Resources Defense Council, Friant Water Users Authority, and the U.S. Departments of the Interior and Commerce, and approved by the Court in October 2006. The San Joaquin River Restoration Program (SJRRP) was authorized by Congress in 2009. Under the program, state and federal agencies are expected to spend approximately $890 million to remove barriers, modernize levees, increase water flows and restore habitat. Habitat restoration includes improving the river's fisheries and re-establishing a healthy salmon population.

  Reclamation, as the lead federal agency tasked with the implementation of the SJRRP along with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, continues to work with other state and federal partners on implementation of the SJRRP, including on the measures focused on:
  - Providing planning, compliance, and design for channel and habitat improvements
  - Constructing fish screens, fish passage, levee improvements, and other river channel structural modifications
  - Purchasing fee title and land easements to be used for seepage easements, flowage easements, structural improvements, floodplain creation, and levee construction.

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (Service) provides federal leadership on the conservation of aquatic, terrestrial, and avian species in the Central Valley. The Service leads or participates in a number of activities to advance the goals of improving water management and benefiting the ecosystem.

Central Valley Project Improvement Act (CVPIA)

The Service and Reclamation jointly administer implementation of the CVPIA, which was enacted to improve the operation of the Central Valley Project and facilitate restoration of anadromous fish populations in the Central Valley. The Service leads the Anadromous Fish

Restoration Program (AFRP), which is based on a statutorily defined goal to make all reasonable efforts to double anadromous fish populations. The AFRP includes several defined categories of habitat restoration and management activities throughout the range of anadromous fishes in the Central Valley. The AFRP Core Team meets regularly to ensure efficient management of the program and integration of new scientific findings into management. Based on a comprehensive recent review, the program is currently updating the management framework to improve performance assessment, resource allocation, and management decision-making.

San Joaquin River Restoration Program
(See above for background on SJRRP.)

The Service continues to work closely with Reclamation, NMFS and other partners on implementation of the SJRRP, including on the measures focused on:

- Reintroducing Central Valley spring-run and fall-run Chinook salmon
- Administering ESA 10(j) experimental population rule requirements
- Providing technical support for large-scale restoration projects

Central Valley Fish Screens
The Service has taken a lead role in screening of diversions in recent decades in order to conserve and restore populations of anadromous fishes in the Central Valley of California. The Service has partnered with water districts and state and federal agencies with a focus on screening the highest priority unscreened diversions in the Sacramento and San Joaquin rivers, their tributaries, the Sacramento-San Joaquin Delta, and Suisun Marsh. As a result of these partnerships, some of the key diversions that now have state-of-the-art fish screens include Sutter Mutual Water Company (Tisdale), Reclamation District 108 (Wilkins Slough), Princeton-Codora Glenn/ Provident Irrigation District on the Sacramento River, and Banta Carbona and Patterson Irrigation District on the San Joaquin River. Fish screens contribute to the overall restoration of anadromous fisheries by protecting juvenile fish from entrainment at these diversions. Protecting fish from entrainment enhances anadromous fish out-migrant success, thereby indirectly enhancing the sport and commercial harvest of these species and the number of returning fish to the rivers.

Federal Energy Regulatory Commission Dam Re-Licensing
The Federal Energy Regulatory Commission typically issues new licenses to private hydropower operators for a 30-50 year period. An unprecedented number of non-federal dams in California are undergoing relicensing under the Federal Power Act. Approximately 95% of salmonid spawning and rearing habitat in the Central Valley is blocked by dams, which is considered the biggest cause of salmonid declines in California. The Service's goal is to work with partners to achieve new license terms that will provide for protection, mitigation, and enhancement of valuable anadromous fish resources--addressing the stressors of global climate change and water delivery by providing access to cold water habitats. Important collaborative efforts include the Yuba River Fisheries Agreement, Yuba Salmon Forum, North Yuba River Initiative, and San Joaquin Tributaries Accord. Other important rivers that are undergoing FERC relicensing activities include the following: McCloud, Pit, Bear, Yuba, Tuolomne, Merced, and the North Fork American River.

The Service in coordination and partnership with the National Oceanic Atmospheric Administration (NOAA) played key roles in settlement agreements or decommissioning for the following:

- Battle Creek Salmon and Steelhead Restoration Project (which includes dam removal and fish access to 43 miles of river)
- Kilarc-Cow Creek Hydroelectric Project License Surrender (which will result in fish access to 97 miles of river)
- Oroville Settlement Agreement (calls for $90 million in habitat improvements)

Conservation Banking
A conservation bank is a parcel of land containing natural resource values that are conserved, restored, created and managed in perpetuity for federal and state protected species and used to offset unavoidable impacts to comparable resource values occurring elsewhere on non-bank lands. The resource values contained within the bank are translated into quantified credits that may be sold by the banker to parties that need to compensate for the adverse effects of their activities, or to contribute to the conservation of protected species and their habitat.

The Service has one approved conservation bank in the Delta, at Liberty Island, and several conservation banks outside the Delta that are intended to provide benefits to giant garter snake and terrestrial species that depend on waterways or riparian habitat that also occurs in the Delta. The Service is reviewing several other proposed terrestrial and aquatic banks for potential approval.

State Water Board Bay-Delta Water Quality Control Plan Update
The State Water Board is now in the midst of a four-phased process of developing and implementing updates to the Bay-Delta Plan and flow objectives for priority tributaries to the Delta to protect beneficial uses in the Bay-Delta watershed. Phase 1 of this work involves updating San Joaquin River flow and southern Delta water quality requirements included in the Bay-Delta Plan. Phase 2 involves other comprehensive changes to the Bay-Delta Plan to protect beneficial uses not addressed in Phase 1, including Delta inflow and outflow objectives. Phase 3 involves changes to water rights and other measures to implement changes to the Bay-Delta Plan from Phases 1 and 2. Phase 4 involves developing and implementing flow objectives for priority Delta tributaries outside of the Bay-Delta Plan updates. The Service has been heavily engaged in the Phase 1 and 2 efforts, including testifying and providing comments to the various workshops and meetings associated with the State Board's planning process.

Refuges
The Service operates a network of National Wildlife Refuges for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats for the benefit of present and future generations of Americans. Through these refuges, the Service provides leadership in improving and restoring healthy ecosystem functions in the Delta, the Central Valley as a whole, and the San Francisco Bay area. Refuge benefits complement the ecosystem benefits being pursued in the BDCP. The Service's refuge system provides habitat for migratory birds, threatened and endangered species, and improved ecosystem functions

within the focus area, and is in the midst of restoring thousands of acres of habitat in San Pablo Bay and South San Francisco Bay.

Refuges within or near the Delta include:

- Stone Lakes National Wildlife Refuge
- Antioch Dunes National Wildlife Refuge
- Sacramento National Wildlife Refuge
- Delevan National Wildlife Refuge
- Colusa National Wildlife Refuge
- Sacramento River National Wildlife Refuge
- San Joaquin River National Wildlife Refuge

Refuges in or near San Francisco Bay and nearby coastal ocean include:

- San Pablo Bay National Wildlife Refuge
- Marin Island National Wildlife Refuge
- Don Edwards San Francisco Bay National Wildlife Refuge
- Farallon National Wildlife Refuge

Hatcheries

Coleman National Fish Hatchery (CNFH): CNFH contributes to commercial and sport fisheries, annually producing approximately 12 million fall-run Chinook, 1 million late fall-run Chinook, and 600,000 steelhead. CNFH has made many improvements to minimize the impact of hatchery production on wild fish, including a multi-million dollar upgrade to the Battle Creek weir to prevent hatchery fish from accessing wild fish spawning habitat, implementing recommendations of the California Hatchery Scientific Review Final Report to reduce straying, screening the primary intake to prevent entrainment of wild fish, and participating in the development of an Adaptive Management Plan to minimize the impact of hatchery fish on the Battle Creek Restoration Project.

Livingston Stone National Fish Hatchery (LSNFH): LSNFH contributes to the recovery of winter-run Chinook salmon, annually producing 200,000 winter-run Chinook salmon to help supplement the wild population. Winter-run Chinook are listed as endangered under federal and state law. LSNFH also assists the University of California at Davis in maintaining a refugial population of delta smelt, listed as a threatened species under federal law and endangered under state law.

Rio Vista Fish Technology Center (RVFTC) (planned): The Service is working with the state of California to complete environmental planning for a fish technology center in the Delta capable of supporting genetic refuge populations of imperiled Delta fish species and applying the tools of captive propagation to restoration efforts.

U.S. Environmental Protection Agency

EPA is focused on implementation of its Bay Delta Action Plan priorities, as described above. In addition, EPA will explore opportunities to increase water reuse and recycling throughout California, consistent with the agency's 2012 Water Reuse Guidelines.

Areas already explored include, but are not limited to, the use of Green Infrastructure that not only reduces the flow and pollutant loads in receiving waters, and enhances groundwater recharge in appropriate areas. Municipal stormwater runoff should not be viewed merely as wastewater in need of disposal but also as a resource that can be captured and used. EPA Region 9 is actively engaging on this issue.

Furthermore, EPA is coordinating with the state and other federal partners on integrating approaches and programs with common goals such as the Total Maximum Daily Load (TMDL) program, section 319 nonpoint program, EPA source water protection programs, and interagency initiatives such as the National Water Quality Initiative. Integrating these approaches and programs optimizes the "on the ground" actions that lead to improved water quality and habitat protection.

Department of Commerce

National Oceanic and Atmospheric Administration

NOAA's National Marine Fisheries Service (NMFS) is the federal agency responsible for the stewardship of the nation's living marine resources and their habitat. Through NMFS, NOAA is contributing to the rebuilding of the Central Valley aquatic systems through the following programs and accomplishments:

San Joaquin River Restoration Program

(See above for background on SJRRP.)

NMFS has been heavily engaged on the implementation of the SJRRP, including on the measures focused on:

- Restoring fish to 153 miles of San Joaquin River
- Reintroducing Central Valley spring-run and fall-run Chinook salmon
- Administering ESA 10(j) experimental population rule requirements
- Providing technical assistance for large-scale restoration projects

New Sacramento River Fish Screens

Through the efforts of NMFS engineers, partnering with water districts and state and federal resource agencies, the largest water diversions in the Central Valley now have modern fish screens. New fish screening systems have recently been completed and placed in operation on the Sacramento River at Sutter Mutual Water Company, Reclamation District 108, and Reclamation District 999. These fish screens prevent major losses juvenile salmon due to entrainment in irrigation pumps during their ocean migration. NOAA/NMFS Engineers were instrumental in the design and implementation of these new fish protection systems.

In conjunction with the Service, NMFS has the following approved conservation banks in the Central Valley, including:

- Liberty Island
- Fremont Landing
- Cosumnes River Floodplain

Central Valley Project Improvement Act (CVPIA)
(See above for background on CVPIA).

NMFS participates as a member of the AFRP Core Team. In addition, areas of interagency program overlap described in related documents such as Interior's FRP, the Ecosystem Restoration Program's Conservation Strategy, and the NMFS Central Valley Chinook Salmon and Steelhead Recovery Plan are coordinated through this process.

San Francisco Bay
NOAA/NMFS occupies a leadership role in improving and restoring healthy ecosystem functions in San Francisco Bay. Major initiatives include: $2M eelgrass mitigation fund, California Eelgrass Mitigation Policy (draft), Implementing Living Shorelines, San Francisco Bay Subtidal Goals, San Francisco Bay Dredging Programmatic EFH Consultation, NOAA San Francisco Bay National Estuarine Research Reserve, NOAA/NOS San Francisco Bay Sentinel Site.

Lower Yuba River Accord
The Lower Yuba River Accord (Yuba Accord) concludes a 20-year California controversy, and enables the Yuba County Water Agency to successfully operate the Yuba River Development Project for hydropower, irrigation, flood control, recreation and fisheries benefits – all in an innovative manner that surpasses the project's original requirements. As a settlement agreement, the Yuba Accord is the final product of nearly three years of negotiations among 17 stakeholders, including local irrigation districts, state and federal resource agencies, and conservation groups. Based upon the success of two one-year pilot programs (2006/2007), the state approved the agreement in 2008, and it is now fully operational. The Yuba Accord is unprecedented in that it combines increased instream fisheries flows – for wild, native salmon and steelhead – with increased supplemental water supplies for California cities and farms, while preserving all of the project's clean, renewable hydropower generation capacity. The Yuba Accord also reaffirms the water rights of the Yuba County Water Agency and its member irrigation districts. The Yuba Accord represents a nexus of smart engineering, collaborative partnership and strategy development in the pursuit of a sustainable solution to a complex controversy.

U.S. Army Corps of Engineers
The USACE Delta Islands & Levees Feasibility Study (DILFS): The study is focusing on ecosystem restoration and flood risk reduction, and for the latter looking to reduce risk to property and life safety. The report will identify synergies with State plans with an emphasis on improving resiliency and safety of key infrastructure.

The Sacramento and San Joaquin Comprehensive Basin Study (Central Valley Integrated Flood Management Study): USACE is partnering with the State on their basin feasibility studies, looking for synergies. This will be a watershed study that addresses water supply, flood risk management, and environmental sustainability on a system-wide basis, looking at reservoir re-operations, urban versus non-urban levee standards, channel capacity, and O&M standards,

specifically for the Central Valley. Any USACE recommendations for specific projects inside the Bay-Delta boundary would fall under the DILFS study authority.

Lower San Joaquin River Feasibility Study: The study would provide improved flood risk management and environmental restoration to the Central Valley of California, and contributes to the attainment of the State of California's goals in their Central Valley Flood Protection Plan for the greater Stockton metropolitan area.

USACE South Pacific Division BDCP Delta Program FY 2013 and 2014: USACE continues to support a broad range of projects in the CALFED Crosscut Budget. This Program incorporates and links all types of Corps projects including coordination, analysis, recon-level study, feasibility studies, construction, and operations.

Department of Agriculture

USDA agencies are targeting their resources to help reduce water demand and increase supply, improve water quality, preserve and protect fish, wildlife and habitat, engage in research and mitigate flood risk.

Natural Resources Conservation Service

The Natural Resources Conservation Service (NRCS) provides technical and financial assistance to producers, ranchers, and non-industrial private forest landowners to resolve natural resources concerns such as water quantity, water quality, and ecosystem restoration including on-farm water use efficiency, integrated pest management, nutrient management planning, and restoration of habitat for beneficial pollinators and other species. In addition, water supply can be improved by willing landowners undertaking forest stand improvement projects such as thinning and also mountain meadow restoration.

NRCS offers financial assistance through the Environmental Quality Improvement Program (EQIP) that enables part of the cost of the conservation projects undertaken on private lands to be reimbursed. NRCS also offers the Wetland Reserve Program (WRP) which provides financial assistance for restoration of wetlands on private lands thru ten year, thirty year, or permanent easements.

NRCS has partnered successfully with Reclamation for three years to offer a joint request for proposals that allows irrigation or water districts to identify as part of their application for a Reclamation WaterSMART or CALFED grant the number of agriculture producers in the affected areas that would benefit from the project and the types of on-farm improvements that would be needed in order to make best use of the Reclamation funds should the irrigation or water district be successful. NRCS then works with the successful district to provide EQIP funds within the delineated area to agricultural producers who apply for assistance for agricultural water use efficiency. This same model could be used with the state of California Department of Water Resources Agricultural Water Use Efficiency grant funds given ample planning and development of the grant request for proposals.

A component of the NRCS agricultural water use efficiency strategy in the Bay-Delta is implementation of the nationwide Soil Health campaign to assist agricultural producers to take care of their soils so that the natural resiliency of the soils can be restored which improves infiltration reducing the need for applied water while increasing plant productivity, which reduces run-off while improving or maintaining surface water quality, and also reduces need for pesticides, and helps buffer against drought by maintaining more water in the soil profile. Some of the additional value-added benefits for producers are reduced pumping costs, reduced fuel costs with fewer field cultivations needed, and more opportunities for biodiversity on field edges and borders. NRCS feels that this approach to Soil Health will be well received and there are already partnerships forming with University of CA at Davis, CSU Fresno, and growers organizations to promote it.

NRCS is offering accelerated land treatment conservation within the Bay-Delta focused on ecosystem restoration for fish habitat restoration for Salmonid species, wetland habitat restoration for both increased habitat and for groundwater recharge, riparian restoration and mountain meadow restoration for increased water supply and for improved habitat.

NRCS is also working with NOAA NMFS, FWS, CA Department of Fish and Game (CDFG) and non-governmental organizations (NGOs) to identify opportunities with willing landowners or operators on private lands (including tribes) for Salmonid fisheries enhancement and wetlands and associated riparian areas enhancement and improvement in key watersheds.

NRCS has over twenty-five years of partnering for mountain meadow restoration in the Feather River system. With over 600 potential meadow sites needing restoration identified on private lands on over 185,000 acres in the Sierras and Coast Range that form the upper watersheds for the Sacramento Valley and San Joaquin Valley, the opportunity exists to partner with willing landowners by providing accelerated financial and technical assistance and in partnership with NGOs and USFS on intermingled public-private lands.

NRCS California envisions an accelerated focus of conservation technical assistance and program delivery to the private agricultural lands in the Bay-Delta that is voluntary, comprehensive and multi-disciplinary. NRCS has offered special signups within the Initiative area to help target assistance with local partners identifying where best to invest in achieving these goals to address water conservation and water supply, water quality, and ecosystem and landscape restoration. NRCS proposes continuing this focus with tools that the new Farm Bill provides so that accelerated conservation technical assistance and targeted Farm Bill financial assistance are provided to address resource concerns at the landscape level while maintaining agricultural productivity at the farm level.

NRCS Bay-Delta Initiative (BDI) will be implemented through existing NRCS conservation programs: Conservation Technical Assistance (CTA), the Environmental Quality Incentives Program (EQIP), and the Wetlands Reserve Program (WRP). Through ongoing partner collaboration and landscape scale planning, NRCS has designated priority areas to focus assistance. Sixteen focus areas are currently actively implementing conservation practices that meet the BDI resource goals. California NRCS funding request to support this is: $56 million financial assistance ($31 million EQIP, $25 million WRP) with associated technical assistance

budget of $15 million ($6 million supporting EQIP, $4 million supporting WRP, $5 million CTA). The CTA will be utilized to leverage partnerships for conservation implementation since focused conservation planning and technical assistance results in more effective program contracting and implementation.

U.S. Forest Service

The Forest Service manages more than fifty percent of the upper watersheds that feed water into the Bay-Delta system. These lands supply eighty percent of the water that finds its way to the Bay-Delta. The health of these public lands is a critical factor in meeting and supporting Bay Delta Conservation Plan objectives and goals.

The Forest Service has many programs that protect, restore and maintain watershed health and continued delivery of clean and reliable water while protecting fish and wildlife habitats. The Pacific Southwest Region of the Forest Service has committed through a Leadership Intent for Ecological Restoration, to double restoration work over the next 15-20 years to improve forest health and resilience and to mitigate impacts of climate change and population pressures. Specific programs under this commitment that will protect and restore the upper watersheds of the Bay Delta and assure continued delivery of clean water include:

- Fuels reduction, thinning and use of prescribed fire to reduce risk of high severity fires in the upper watersheds.
- Restoration of degraded meadows to improve habitat function and their ability to hold water longer into the summer and deliver clean water when most needed.
- Watershed improvement actions that include protection and restoration of riparian vegetation that improve habitat and protect water temperature.
- Maintenance and/or decommissioning of roads and trails that contribute sediment to key watersheds.
- Utilization of an "all lands" approach to watershed restoration by working collaboratively with partners and neighboring landowners to implement large-scale restoration programs on both public and private lands.
- Implementing restoration activities quickly after wildfires including actions focused on sediment containment.
- Decreasing the impacts of invasive species through preventative practices, rapid response control, management, rehabilitation and restoration.

Each year the Pacific Southwest Region of the Forest Service allocates approximately $50 million dollars of National Forest System appropriated funds to complete the work outlined in the bullets below. In addition, the 10 National Forests that manage the upper watersheds of the Bay Delta work with partners each year to bring new investment into the watersheds from a variety of sources to protect and restore these watersheds. Examples include funding from the California State Proposition 84 program, work with National Forest Foundation and National Fish and Wildlife Foundation, partnerships with local nonprofits and user groups, state and federal agencies and counties. Last year the Region received meadow restoration funding through Coca-Cola Corporation; currently it is actively outreaching to businesses in the East Bay of San Francisco (and other locations) that benefit from delivery of clean water from Bay Delta watersheds such as the Mokelumne River. The Region is also actively working with investor

owned utilities to look for opportunities for joint investment in these watersheds to not only protect utility assets from wildfire but also to assure continued delivery of water.

- The Forest Service State and Private Forestry program provides funding and technical assistance to the state and local communities for land stewardship and watershed protection activities. Grant funding awarded to the state and local communities in Bay Delta watersheds last year was approximately $1 million.
- In addition, funding is provided to the state and local communities through the National Fire Plan and other sources for work that helps protect watersheds and communities from severe and damaging wildfires, including the support of local community Fire Safe Councils. Grant funding awarded last year in Bay Delta watersheds was $1.75 million.

Many of California's National Forests are engaged in local Integrated Regional Watershed Management Groups to collaboratively protect and improve upper watersheds.

Farm Service Agency

The USDA Farm Service Agency (FSA) has over a dozen offices throughout the Bay-Delta watershed that offer a variety of programs designed to assist individual farmers and ranchers. FSA has made important investments toward conserving and improving soil, water, and wildlife resources in the watershed mainly through its Conservation Reserve Program (CRP), and Emergency Conservation Program (ECP). While CRP activity is a less useful tool for farmers in California because of higher local land values, there is some program activity in Siskiyou and Yolo counties, both of which are in the Bay-Delta watershed. Under current procedure there is some potential for CRP participation and payments in these two counties to increase.

ECP activity has provided limited funding and responds primarily to adverse conditions brought about by natural disasters (e.g., drought, wildfire, flooding). Both of these programs, as well as other programs administered by local FSA offices may be subject to legislative changes currently being considered by Congress. FSA also offers a robust credit program that provides farmers and ranchers financial support through Operating, Ownership, and Microloan programs. Both Yolo and Siskiyou County have niche type farming operations where the Microloan Program can be particularly useful and also serve as an entry to other FSA loan program opportunities as well as safety net farm programs such as the Non-Insured Crop Disaster Program (NAP).

Rural Development

USDA Rural Development offers financial assistance to rural cities and towns with a population of 10,000 or less and to Indian tribes to develop water and wastewater systems, including solid waste disposal and storm drainage. Financing is provided through the agency's Water and Wastewater loan and grant program.

Rural Development's emphasis is on restoring deteriorating water supplies, as well as improving inadequate water and waste facilities. Projects including replacing leaking water lines, adding water meters, modernizing wastewater facilities, and even facilitating the use of treated wastewater for irrigation can all have positive impacts on the Bay-Delta. To help ensure rates remain affordable, Rural Development may also provide grants.

Although Rural Development does not provide set-aside funds specific to the region, Bay-Delta communities are encouraged to contact one of the local Rural Development offices to discuss funding opportunities. Since fiscal year 2012, Rural Development has provided $57 million for 25 projects in the Bay-Delta region that will help protect and improve water supplies through a variety of upgrades and repairs to wastewater treatment plants and water system operations.

Agriculture Research Service

USDA's Agriculture Research Service (ARS) California research labs (located in Parlier and Riverside) conduct several Water Availability & Watershed Management projects focused on research that helps to 'stretch' agriculture's water budget including:

- Research on the use of subsurface drip irrigation to reduce water use by perennial corps (e.g., grapes); and finding ways to use Se-enriched soils common to the western side of the Central Valley to support agricultural production.
- Water reuse, and in particular salinity issues that are a consequence of irrigated agriculture, particularly in California, including finding crop species that tolerate higher levels of soil/water salinity, and understanding the details of soil and water salinization.
- Research with NOAA on remote sensing tools that improve drought early warning.

Beyond these specific examples, ARS has a broad range of research directed towards improving irrigation efficiency, developing a better understanding of drought periodicity and the impact of climate change, among other factors.

IV. Conclusion

The federal government agrees with the state of California that the current infrastructure and operational approach for managing water resources in the Bay-Delta is unsustainable. The continuing conflict between ecosystem health and water deliveries through the region has only been exacerbated by inevitable drought cycles, such as the one that is going on right now. In addition, preparing for future climate change impacts presents uncertainties and challenges on precipitation amounts, snowpack, stream flow, and rising sea level, which will affect not only salinity and riparian habitats in the Delta, but likely also will threaten the integrity of the extensive system of levees. The current system in place does not provide a sustainable or resilient infrastructure for future generations of Californian's.

Even as work continues on the BDCP, however, it is important to emphasize that the Federal government joins with the state of California in recognizing that additional steps are needed to secure California's water future. That is why the federal government is continuing its work on broader-based initiatives to conserve water, improve water quality, address invasive species issues (including predators), restore habitat, and improve levee integrity. Likewise, the federal government remains focused on short-term measures to improve water supplies and ecosystem health. Collectively, the Administration believes these efforts will help reduce long-term water demands, have ongoing benefits to species of concern, and offer flexibility in long-term implementation of changes to California's water supply system.

As demonstrated in the document, the water resource, delivery and conservation elements required for long-term management of California's water, requires action on multiple fronts. The federal government's actions, proposed actions, and existing and future investment in the Bay-Delta region clearly demonstrate the long-term support of the Bay-Delta for water and conservation resources. In coordination with state efforts, initiatives outlined here provide an understanding of the current federal efforts and potential actions to support California's improvements to the Bay-Delta ecosystem while providing a more reliable water supply, which, in turn, is the keystone for restoring and protecting the Bay-Delta ecosystem and California's water supply system for the long-term. As outlined, the importance of actions to achieve the dual goals of ecosystem protection and water supply reliability must be tailored to assure that the interests of the residents and communities of the Delta are considered and protected.