

California Water Action Plan 2016 Update





Among all our uncertainties, weather is one of the most basic. We can't control it. We can only live with it, and now we have to live with a very serious drought of uncertain duration.

Right now, it is imperative that we do everything possible to mitigate the effects of the drought. I have convened an Interagency Drought Task Force and declared a State of Emergency. We need everyone in every part of the state to conserve water. We need regulators to rebalance water rules and enable voluntary transfers of water and we must prepare for forest fires. As the State Water Action Plan lays out, water recycling, expanded storage and serious groundwater management must all be part of the mix. So too must be investments in safe drinking water, particularly in disadvantaged communities. We also need wetlands and watershed restoration and further progress on the Bay Delta Conservation Plan.

It is a tall order.

But it is what we must do to get through this drought and prepare for the next.

Edmund G. Brown Jr.
State of the State Speech, January 22, 2014

We are finally grappling with the long-term sustainability of our water supply through the recently passed Proposition 1 and our California Water Action Plan.

Edmund G. Brown Jr.
Inaugural Address, January 5, 2015

Contents

Introduction	1
Challenges for Managing California’s Water Resources	1
Goals: Reliability, Restoration and Resilience	4
Working Together and Continued Collaboration is Essential	4
Actions	4
Make Conservation a California Way of Life	5
Increase Regional Self-Reliance and Integrated Water Management Across All Levels of Government	6
Achieve the Co-Equal Goals for the Delta	8
Protect and Restore Important Ecosystems	10
Manage and Prepare for Dry Periods	14
Expand Water Storage Capacity and Improve Groundwater Management	15
Provide Safe Water for All Communities	17
Increase Flood Protection	18
Increase Operational and Regulatory Efficiency	19
Identify Sustainable and Integrated Financing Opportunities	21
Conclusion	22
Implementation	22

California Water Action Plan: Actions for Reliability, Restoration and Resilience

Introduction

California is currently experiencing one of the worst droughts in memory. The 2016 water year is off to a good start, but with four consecutive dry years and the record low snowpack of 2015, drought conditions may continue for a fifth straight year.

Flooding in the midst of drought is likely, given strong El Niño conditions in the Pacific Ocean. Nothing focuses Californians' attention on our water resources like the extremes of flood and drought.

There is broad agreement that the state's water management system is currently unable to satisfactorily meet both ecological and human needs, too exposed to wet and dry climate cycles and natural disasters, and inadequate to handle the additional pressures of future population growth and climate change. Solutions are complex and expensive, and they require the cooperation and sustained commitment of all Californians working together. To be sustainable, solutions must strike a balance between the need to provide for public health and safety (*e.g.*, safe drinking water, clean rivers and beaches, flood protection), protect the environment, and support a stable California economy. This action plan lays out our challenges, our goals and decisive actions needed now to put California's water resources on a safer, more sustainable path. While this plan commits the state to moving forward, it also serves to recognize that state government cannot do this alone. Collaboration between federal, state, local and tribal governments, in coordination with our partners in a wide range of industry, government and nongovernmental organizations is not only important—it is essential. The input and contributions received from all of these partners throughout the drafting of this action plan have resulted in a comprehensive and inclusive plan.

This is the 2016 update to the Water Action Plan. The Brown Administration has used this Water Action Plan as the roadmap to put California on a path to sustainable water management. It provided the foundation for Proposition 1, the 2014 water bond, and the administration's legislative agenda. Voters overwhelmingly approved Proposition 1 in November 2014, and the \$7.545 billion is being applied to many of the goals articulated in this action plan. Already, the Legislature has passed several important bills—including historic and hard-fought groundwater legislation—contemplated in the Water Action Plan. This update contains revisions to keep the plan current.

Challenges for Managing California's Water Resources

Water has always been a scarce resource in California. Most of the precipitation falls on the west-facing slopes of Northern California mountain ranges, yet most of the population and irrigated farmland is located in the drier southern half of the state. Precipitation is highly variable year-to-year, but the long warm summers are always dry. In the mid-20th century, state, federal and local agencies vastly expanded the state's system of reservoirs, canals, pumps and pipelines to store water and deliver it to agricultural and urban users in dry areas. Also, in the late 20th century, significant investments were made in the state's flood protection system, including levees and bypasses. These changes to the physical infrastructure have resulted in unintended consequences to the natural world. In general, there is broad consensus about our challenges.

Uncertain water supplies – Reductions in water from major watersheds like the Colorado River watershed and the Sacramento-San Joaquin Delta (Delta) watershed—due to hydrologic and declining environmental conditions—have made these water supplies less reliable. Moreover, climate change impacts to these sources and the Cascade and Sierra headwaters will further strain supply reliability throughout the state. These sources are foundational supplies around which communities develop and manage local resources through strategies such as water use efficiency, recycled water, and groundwater recharge. The unreliable nature of these supplies threatens local, regional and statewide economies. **Collectively, the actions in this plan will contribute to more reliable water supplies.**

Water scarcity/drought – California’s hydrology has always included extended dry periods. Much of California’s water system was originally designed to withstand a seven-year dry period without severe damage to the economy and environment. Today some regions and many communities struggle to maintain adequate water supplies after only a year or two of dry conditions. Climate change makes this situation even more challenging. Less outflow of water coming from the Cascades and Sierras during periods of drought increases seawater intrusion into the Delta. Improving our ability to manage scarce water supplies and over-stressed groundwater basins and better coordination of major reservoir operations is essential to economic and environmental sustainability. Taking action to address drought is especially urgent for agriculture where crops wither without water, and the world’s growing population and food demand create food security concerns. In addition, as the current drought has demonstrated, the state sometimes lacks sufficient data and authority to enforce the water right priority system with the accuracy and efficiency that a drought crisis requires. **This action plan includes both immediate steps as well as actions that will better prepare California for future droughts.**

Declining groundwater supplies – Groundwater accounts for more than one-third of the water used by cities and farms – much more in dry years like those recently experienced, when other sources are reduced. Some of California’s groundwater basins are sustainably managed, but unfortunately, many are not. Historically, inconsistent and inadequate tools, resources and authorities have made managing groundwater difficult in California and have impeded our ability to address problems such as overdraft, seawater intrusion, land subsidence, and water quality degradation. Pumping more than is recharged lowers groundwater levels – which makes extracting water more expensive and energy intensive. Under certain conditions, excessive groundwater pumping could mobilize toxins that impair water quality and cause irreversible land subsidence which damages infrastructure and diminishes the capacity of aquifers to store water for the future. In September 2014, Governor Brown signed historic legislation to strengthen local management and monitoring of groundwater basins most critical to the state’s water needs. The Sustainable Groundwater Management Act (SGMA) empowers local agencies to adopt groundwater management plans that are tailored to the resources and needs of their communities. **The strategies identified in this action plan will move California toward successful implementation of SGMA and more sustainable management of our groundwater resources.**

Poor water quality – It is a fact that millions of Californians rely, at least in part, on contaminated groundwater for their drinking water. While most water purveyors blend or treat water to meet public health standards, many disadvantaged communities cannot afford to do so. In addition, domestic wells are drying up in many areas. All Californians have a right to safe, clean, affordable and accessible water adequate for human consumption, cooking and sanitary purposes. Safe

water is necessary for public health and community prosperity. **The methods set forth in this action plan will improve the organization of our water quality programs and create new tools to help ensure that every Californian has access to safe water.**

Declining native fish species and loss of wildlife habitat – California’s once robust native fish populations are at or near historic lows. Federal and state fish agencies now list many species of salmon and other fish as endangered and threatened. These last four years of drought have only made matters worse for the state’s most at-risk fish and wildlife. Wildlife habitat is also being lost at a rapid pace. Climate change further threatens the state’s natural biodiversity. Many do not understand that our fish and wildlife are part of the complex system that provides and protects California’s water resources. Tourism and fishing which provide economic benefits to local communities and to the state are also reliant on healthy ecosystems. Declining species and lost habitat disrupt the cultural, spiritual and ecological practices of California’s Native American tribes. Simply put, California’s diverse and unique ecosystems are irreplaceable and their loss threatens the sustainability of all of California’s communities. **The objectives in this action plan include aggressive ecosystem restoration and other steps that will restore fish populations and benefit wildlife.**

Floods – Over 7 million Californians live in a floodplain. Historically, flooding has occurred in all regions of the state. Our state’s capital, Sacramento, has one of the lowest levels of flood protection of any major city in the nation. Climate change will only exacerbate this problem. Climatologists predict that more precipitation will fall as rain rather than snow, snowmelt will occur earlier, and there will be more extreme weather events. **This action plan will serve to coordinate and streamline flood control efforts and result in multi-benefit flood and stormwater projects, helping to mitigate the significant investments needed to improve flood protection for existing communities and infrastructure.**

Supply disruptions – Many parts of California’s water system are vulnerable to earthquakes and flooding, particularly the Delta, which serves as the conveyance hub for a substantial percentage of all water supplies in the Bay Area, the San Joaquin Valley, and Southern California. A large earthquake along any of five major faults or a major storm-induced levee failure could render this water supply unreachable or unusable for urban and agricultural needs for months. **The combined benefits of many of the actions in this plan will better prepare us to manage through potential disruptions in the system.**

Population growth and climate change further increase the severity of these risks – The state’s population is projected to grow from 38 million to 50 million by 2049.¹ The effects of climate change are already being felt and will worsen. The Sierra snowpack is decreasing, reducing natural water storage and altering winter and spring runoff patterns. This is most likely the result of higher temperatures and may also be related to air pollution that deposits fine particulate on the surface of snow, changing its reflectivity and causing it to absorb more heat and melt faster. Higher river and ocean water temperatures will make it harder to maintain adequate habitat for

¹ <http://www.dof.ca.gov/research/demographic/reports/projections/view.php> California’s population will cross the 50 million mark in 2049 and grow to nearly 52.7 million by 2060.

native fish species. Higher ocean temperatures will alter the already changing weather patterns. Sea level rise threatens coastal communities and islands in the Delta. Sea level rise also amplifies the risk that the pumps that supply cities and farms with Delta water will be inundated with seawater in a large earthquake or storms that breach levees. **The strategies identified in this action plan will help manage these risks and sustain the health of our natural systems and our ability to meet our diverse water supply and water quality needs.**

Goals: Reliability, Restoration and Resilience

The California Water Action Plan has been developed to meet three broad objectives: more reliable water supplies, the restoration of important species and habitat, and a more resilient, sustainably managed water resources system (water supply, water quality, flood protection, and environment) that can better withstand inevitable and unforeseen pressures in the coming decades. Over the next five years (*i.e.*, 2014-2019), the actions discussed below will move California toward more sustainable water management by providing a more reliable water supply for our farms and communities, restoring important wildlife habitat and species, and helping the state's water systems and environment become more resilient.

Working Together and Continued Collaboration is Essential

Despite the many challenges for water management in California, there is good progress to report. There are thousands of important projects that are being planned or implemented by all levels of government as well as by non-governmental organizations, tribes, farmers, water agencies and others. State, regional and local agencies have increasingly been pursuing a strategy of making regions more self-reliant by reducing water demand and by developing new or underused water resources locally. In the future, most new water will come from a combination of improved conservation and water use efficiency, conjunctive water management (*i.e.*, coordinated management of surface and groundwater), recycled water, drinking water treatment, groundwater remediation, and brackish and seawater desalination. There is increased focus on projects with multiple benefits, such as stormwater capture and floodplain reconnection, that can help simultaneously improve the environment, flood management and water supplies. These diversified regional water portfolios will relieve pressure on foundational supplies and make communities more resilient against drought, flood, population growth and climate change.

This Water Action Plan does not replace these local efforts. It complements and leverages them. Collaboration is essential. Successful implementation of this plan will require increased collaboration between state, federal and local governments, regional agencies, tribal governments, and the public and the private sectors. The Legislature is also a key partner.

Water has shaped California's past, its present, and will help define its future. Water has always been among the state's most contentious issues. California is at its best when people come together in the face of adversity to solve difficult problems. Only by working together can we improve and sustain the state's water future for generations to come.

Actions

1. Make conservation a California way of life;
2. Increase regional self-reliance and integrated water management across all levels of government;
3. Achieve the co-equal goals for the Delta;
4. Protect and restore important ecosystems;
5. Manage and prepare for dry periods;
6. Expand water storage capacity and improve groundwater management;
7. Provide safe water for all communities;
8. Increase flood protection;
9. Increase operational and regulatory efficiency;
10. Identify sustainable and integrated financing opportunities.

Together, these actions address the most pressing water issues that California faces while laying the groundwork for a sustainable and resilient future and are critical to moving the state forward now. They reflect an integration of new ideas with the ongoing important work that the state and federal government, local agencies, and others are already engaged in and require coordination and collaboration across levels of government. They will not address all of our challenges. Some of these actions are new proposals. Some are currently being planned and should be completed more rapidly, implemented in a better way, or on a larger scale. Success will require the cooperation of many partners; the state's role is to lead, help others, and remove barriers to action.

1. MAKE CONSERVATION A CALIFORNIA WAY OF LIFE

Conservation must become a way of life for everyone in California. Much has changed in the past half century, and our technology, values and awareness of how we use water have helped to integrate conservation into our daily lives. There is more that can be done and all Californians must embrace this effort. In 2009, the state adopted the Water Conservation Act through the passage of Senate Bill X7 7 requiring that we achieve a 20 percent reduction in urban per capita water use by December 31, 2020, promoting expanded development of sustainable water supplies at the regional level, and requiring agricultural water management plans and efficient water management practices for agricultural water suppliers. Conservation and efficiency are also keys to reducing the energy needed to pump, transport, treat and deliver water – an important action included in the state's Climate Change Scoping Plan for reducing greenhouse gas emissions. On April 1, 2015 for the first time in state history, the Governor directed the State Water Resources Control Board to implement mandatory water reductions in cities and towns across California to reduce water usage statewide by 25 percent. Even after the current drought emergency recedes, we must continue to build on our efforts to conserve water and promote innovative strategies for increased water conservation.

- **Expand Agricultural and Urban Water Conservation and Efficiency to Exceed SBX7 7 Targets**
The administration will expand existing programs to provide technical assistance, shared data and information, and incentives to urban and agricultural local and regional water agencies, as well as local governmental agencies, to promote agricultural and urban water conservation in excess of the amounts envisioned by SBX7 7. We will work collaboratively with stakeholders to identify and remove impediments to achieving statewide conservation targets, recycling and stormwater goals; to evaluate and update targets for additional water use efficiency, such as SBX7-7 (20x2020), and to consider new strategies based on lessons learned from the current drought. California's hydrology is cyclical; we must continue to build upon water conservation efforts to ready the state for future droughts. The

administration will also work with local and regional entities to develop performance measures to evaluate agricultural water management. Through executive order, the Governor directed agricultural water districts that supply water to more than 25,000 acres to include in their required 2015 Agricultural Water Management Plans a detailed drought management plan that describes the actions and measures the supplier will take to manage water demand during drought. Additionally, all agricultural water districts that supply water to 10,000 to 25,000 acres of irrigated lands shall develop Agricultural Water Management Plans and submit the plans to the Department of Water Resources by July 1, 2016.

- **Provide Funding for Conservation and Efficiency**

The administration will work with the Legislature to expand funding for urban and agricultural water use efficiency research, and the development and implementation of efficiency standards through existing and new programs that save water and the energy associated with water use. Conservation programs must include numeric targets and be designed to achieve the state-developed targets and performance measures.

- **Increase Water Sector Energy Efficiency and Greenhouse Gas Reduction Capacity**

The administration will continue supporting the collection of regional data and development of efficiency standards that save water and energy associated with water use and will provide guidance on conservation rates and sustainable financing that achieve water and energy savings. The administration will also continue to collaborate with water and wastewater agencies and energy utilities to educate consumers on the water-energy nexus. The administration will work with the Legislature to eliminate barriers to co-funding projects with water and energy benefits and expand and prioritize funding and technical support for water and wastewater agencies that achieve energy efficiency co-benefits and greenhouse gas reductions.

- **Promote Local Urban Conservation Ordinances and Programs**

Local agencies are increasingly conserving water by prohibiting certain types of wasteful water use. Examples include: prohibiting watering hard surfaces such as sidewalks, walkways, driveways or parking areas; prohibiting outdoor watering during and after periods of rain; and not serving water to customers in restaurants unless specifically requested. Local agencies are also pioneering incentive programs, for example, converting lawns to drought tolerant landscapes—and programs to capture rainwater. In July 2015, the California Water Commission adopted a new statewide model water efficient landscape ordinance that will limit lawn in new residential and commercial developments and require efficient irrigation systems. Under the model ordinance, which local governments must meet or exceed, new development will use roughly a third less water on landscaping.

2. INCREASE REGIONAL SELF-RELIANCE AND INTEGRATED WATER MANAGEMENT ACROSS ALL LEVELS OF GOVERNMENT

While California has vast infrastructure to store and deliver water miles from its origin, the majority of infrastructure management and investment resides at the local and regional levels. Sometimes that management is done by agencies responsible for multiple functions such as flood management, water supply and water quality. Other times, individual agencies handle those functions separately. Over the past decade, the state has provided technical and financial assistance to regions to incentivize inter-agency/stakeholder cooperation in planning and implementing multi-objective actions that provide both regional and statewide benefits to water resources management and protection. Called “integrated water management,” this approach balances the objectives of improving public safety, fostering environmental stewardship, and supporting economic stability. Developing local

supplies can also save energy by reducing the distance that water must be transported. State grants are provided to both incentivize regional integration and leverage local financial investment.

Ensuring water security at the local level includes efforts to conserve and use water more efficiently, to protect or create habitat for local species, to ensure food security, to recycle water for reuse, to capture and treat stormwater for groundwater recharge and reuse, and to remove salts and contaminants from brackish or contaminated water or from seawater. But, mostly it requires integrating disparate or individual government efforts into one combined regional commitment where the sum becomes greater than any single piece.

- **Support and Expand Funding for Integrated Water Management Planning and Projects**
The administration will work with the Legislature to enhance the Integrated Water Management Planning program. Providing funding for regionally-driven, multi-benefit projects that prioritize protection of public health is critical. The administration will target funding to local regional projects that increase regional self-reliance and result in integrated, multi-benefit solutions for ensuring sustainable water resources.
- **Improve Land Use and Water Alignment**
The Governor’s Office of Planning and Research (OPR) continues to engage local land use authorities, California Native American tribes, water agencies and other stakeholders to develop recommendations to better align land use and water management. OPR will issue and incorporate recommendations as applicable into the general plan guidelines. OPR will give special consideration to improving consistency between local land use plans and decisions and local water management plans, including integrated regional water management plans.
- **Legislation for Local and Regional Self Reliance**
The administration will work with the Legislature to encourage local governments to adopt or amend local ordinances that enhance local and regional water supply reliability and conservation, such as ordinances that establish minimum requirements for infiltration or injection of water into the groundwater table, detection and prevention of utility system leaks, landscaping measures, and indoor/outdoor water use efficiency standards.
- **Provide Assistance to Disadvantaged Communities**
The administration will provide technical assistance, tools, and allocate dedicated funds for grant administration, project development, and stakeholder collaboration to under-represented and economically-disadvantaged communities to promote greater participation and success in regional grant programs.
- **Demonstrate State Leadership**
All state agencies should take a leadership role in designing new and retrofitted state owned and leased facilities to increase water efficiency, use recycled water, and incorporate stormwater runoff capture and low-impact development strategies. Through executive order, the Governor directed state agencies to implement water use reduction plans for all state facilities. These plans include immediate water conservation actions and a moratorium on new, non-essential landscaping projects at state facilities and on state highways and roads. The Department of General Services will continue to lead the overall implementation and ensure state agencies are accountable for water savings.
- **Encourage State Focus on Projects with Multiple Benefits**
The administration will direct agencies and departments to evaluate existing programs and propose modifications to incentivize and co-fund multi-benefit projects that promote integrated water

management, such as stormwater permits that emphasize stormwater capture and infiltration, which provide both flood protection and groundwater recharge benefits, and agricultural groundwater recharge projects that emphasize water quality and conjunctive use. The commitment to emphasize multiple benefit projects will be applied to most of the actions in this plan.

- **Increase the Use of Recycled Water**

California needs more high quality water, and recycling is one way of getting there. The state recently adopted uniform water recycling regulations for indirect potable reuse of recycled water for groundwater recharge. The state plans to adopt regulations for surface water augmentation and assess the feasibility of direct potable reuse by the end of 2016. Technical and financial assistance will be provided to recycled water projects that meet these requirements. The state extended hundreds of millions of dollars of low-cost financing for recycled water projects early in 2014 and will continue to provide financial assistance to make projects affordable for local agencies using low-interest loans and Proposition 1 funds in 2016.

- **Streamline Permitting for Local Water Reuse or Enhancement Projects**

The administration will review and propose measures to streamline permitting for local projects that make better use of local water supplies such as recycling, stormwater capture, and desalination of brackish and ocean water as well as projects that provide multiple benefits, such as enhancing local water supplies while improving wildlife habitat. Through executive order, the Governor in November 2015 directed the State Water Board to streamline the process for temporary permits to capture high flows from storm events to recharge declining aquifers. Statewide standards were adopted for desalination in 2015 along with incentives for enhanced urban watershed projects, and streamlining of recycled water permitting is ongoing.

3. ACHIEVE THE CO-EQUAL GOALS FOR THE DELTA

The Delta is California's major collection point for water, serving two-thirds of our state's population and providing irrigation water for millions of acres of farmland. The region supports farming, wetland and riparian habitats, as well as numerous fish and wildlife species. In recent years, important fish populations have declined dramatically, leading to historic restrictions on water supply deliveries. Moreover, the current system relies on water flowing through a network of fragile levees from the northern part of the Delta to the pumps in the south, where two out of three fish trapped near the pumps die. These levees were not designed to resist a significant seismic event, the probability of which is greater than 60 percent over the next 50 years. They are also vulnerable to major floods and rising sea levels, all of which puts unacceptable risk on the people who live in the Delta as well as the water supply for 25 million people and 3 million acres of farmland. Plans are underway to address these problems. The issues are contentious and have been for decades. But, the status quo in the Delta is unacceptable and it would be irresponsible to wait for further degradation or a natural disaster before taking action.

The Delta Stewardship Council was created in legislation to achieve the state-mandated co-equal goals of providing a more reliable water supply for California and to protect, restore and enhance the Delta ecosystem. Those two goals are to be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource and agricultural values of the Delta as an evolving place. The council recently adopted its Delta Plan and established a high-level interagency coordinating body to implement a suite of actions designed to achieve the co-equal goals. The Implementation Committee plays a strong role in moving forward on the actions included in this plan, which build on many of the priorities described in the council's Delta Plan.

- **Begin Implementation of the Delta Plan**
 The administration directs all of its relevant agencies to fully participate in the Implementation Committee established by the Delta Stewardship Council and to work with the Delta Science Program, the Interagency Ecological Program, and others to implement the Delta Science Plan to enhance water and natural resource policy and management decisions. The Delta Stewardship Council and the Delta Science Program will serve central roles in coordinating and supporting Delta science, with a primary focus on improving water management and ecosystem restoration efforts and informing adaptive management actions. The Delta Science Program will provide grants and direct assistance to support ongoing and emerging science actions.
- **Develop and Implement Comprehensive Plans to Help Recover Populations of Threatened and Endangered Species in the Delta and Improve Water Supply Reliability for Users of Delta Water**
 State and federal agencies will complete planning and implement California WaterFix and California EcoRestore to protect fish and wildlife in the Delta and improve the reliable operation of California's two largest water delivery projects.
- **Secure California's Water Supply with New Water Delivery Infrastructure**
 State and federal agencies will complete environmental review documents, secure permits for construction and operation from state and federal biological agencies, secure all necessary permits from other state and federal agencies, finalize a financing plan, and complete the design of California WaterFix facilities.
- **Accelerate and Implement Habitat Restoration**
 Through California EcoRestore, state agencies and multiple partners will undertake restoration of more than 30,000 acres of critical Delta habitat pursuant to pre-existing regulatory requirements and separate programs to enhance native species conditions in the Delta. The federal and state water contractors who benefit from the State Water Project and Central Valley Project will pay for most of this restoration. Utilizing landowner partnership agreements, state agencies have identified 15 restoration projects totaling 3,500 acres of managed wetlands; 9,000 acres of new tidal and sub-tidal habitat; 1,000 acres of aquatic, riparian and upland habitat; and 17,500 acres of enhanced floodplain habitat. Already California EcoRestore has fixed one of the longest running fish stranding problems at Knights Landing, where imperiled winter-run chinook historically strayed from their upstream migration on the Sacramento River into irrigation canals in the Colusa Basin.
- **Implement Near-Term Delta Ecosystem Improvement Projects**
 Near-term Yolo Bypass fish passage projects include reconstruction of the Wallace Weir, modifications to the existing Fremont Weir Fish Ladder, and modifications to several damaged road crossings. Together with several other efforts, these projects will effectively eliminate adult salmonid stranding in the Colusa Basin and will significantly improve fish passage within the Bypass and across the Fremont Weir. These, as well as longer-term Biological Opinion and flood-risk management projects in the Bypass, will be developed with input from a broad array of public agencies and landowners to ensure maximum public benefit outcomes, avoidance of conflicts, and efficient use of limited public dollars. The Yolo Bypass Partnership – a multi-objective collaborative effort between local, state, and federal agencies – will aid the accelerated development and implementation of these and other critical projects within the Yolo Bypass, including significant multi-benefit flood risk reduction projects.

- **Maintain Important Infrastructure**
The Department of Water Resources will continue implementation of the Delta Levees Subventions, Delta Special Projects, and Floodway Corridor Programs to provide financial assistance to local agencies for repair and improvement of levees and other multipurpose projects in the Delta.
- **Bay Delta Water Quality Control Plan**
The State Water Resources Control Board will complete its update of the Water Quality Control Plan for the Delta and its upstream watersheds. The plan establishes both regulatory requirements and recommended actions. New resources were allocated to this effort in the FY 2015-16 budget. The Board will complete planning activities in the San Joaquin Basin and the southern Delta in 2016. Delta outflow and other flow-related Delta standards will be updated by spring 2018. The Board and the Natural Resources Agency will work with stakeholders to encourage negotiated implementation of protective Delta standards. The Water Board's action will balance competing uses of water including municipal and agricultural supply, hydropower, fishery protection, recreation, and other uses.

4. PROTECT AND RESTORE IMPORTANT ECOSYSTEMS

Streams and rivers once ran freely from high in the mountains to downstream reaches, meandering naturally through lowland and floodplain habitats, connecting with coastal estuaries and the Pacific Ocean. The variability of natural water flows in this complex system created vibrant and resilient habitat for many species and functioned to store water, recharge groundwater, naturally purify water, and moderate flooding. Over 80 percent of the Central Valley's historical floodplain, riparian and seasonal wetland habitats have been lost in the last 150 years. This loss affects the physical and ecological processes of the Central Valley and beyond, contributes to the decline of salmon and steelhead, restricts habitat for waterfowl and other species, and impacts water supply, flood protection, and sediment control. In watersheds around the state, fish and wildlife no longer have access to habitat or enough cold, clean water at key times of the year. In response to these losses and ecological challenges, as well as in anticipation of the effects of climate change on the timing, volume and temperature of water flows, activities to protect and restore the resiliency of our ecosystems will help support fish and wildlife populations, improve water quality, and restore natural system functions. This effort will increase collaboration and transparency and ensure that management decisions are supported by the best available science.

The Department of Fish and Wildlife's drought response includes more than 300 fish rescues in approximately 25 of the most important watersheds in the state for imperiled fish, accounting for over 5,000 hours dedicated to saving the state's biodiversity during drought. Since January 2014, the Department has conducted stream monitoring, restoration projects and many other actions to protect native freshwater and anadromous fishes threatened and impacted by the statewide drought. The Department will continue these efforts, including working to keep as much water as possible in rivers for fish and wildlife.

- **Restore Key Mountain Meadow Habitat**
The Department of Fish and Wildlife, in coordination with other state resource agencies, will restore 10,000 acres of mountain meadow habitat in strategic locations in the Sierra Nevada and Cascade mountain ranges, which can increase groundwater storage and provide habitat for more than 100 native species, many of which are at risk as threatened or endangered. The department will also coordinate with federal agencies, local governments, conservation organizations, tribes, and others as necessary on this action to maximize efforts and avoid duplication.

- **Manage Headwaters for Multiple Benefits**

Watersheds in the Cascades, Sierra Nevada and other forested areas of the state are the places of origin for more than two-thirds of the state's developed water supply. Water originating in the Cascades and Sierra Nevada supplies all or part of the need for 23 million Californians and millions of acres of agricultural land. Up to one-half of the fresh water flowing into the Delta begins as snow and rain in these watersheds.

Many of these crucial watersheds are in poor health due to a number of factors. A changing climate of warmer temperatures will exacerbate the diseases and pests that create additional fire risk and, with more precipitation falling as rain instead of snow, create significant operational challenges for our reservoirs. Large, intense fires such as the recent Rim Fire will produce tons of sediment, much of which will end up in reservoirs, significantly reducing storage capacity and impacting water quality.

In order to reduce the significant risks posed to the water resources flowing from the Cascade, Sierra and other watersheds in the state, there is a critical need to address the following:

- Restore forest health through ecologically sound forest management. Overgrown forests not only pose a risk of catastrophic fire, but can significantly reduce water yield.
 - Protect and restore degraded stream and meadow ecosystems to assist in natural water management and improved habitat. Meadows provide a natural storage opportunity, critically important with a changing climate, while properly functioning stream systems reduce downstream sedimentation and enhance critical aquatic habitat.
 - Support and expand funding for protecting strategically important lands within watersheds to ensure that conversion of these lands does not have a negative impact on our water resources. By working with willing landowners, protection of key lands from conversion will result in a healthier watershed by reducing polluted runoff and maintaining a properly functioning ecosystem.
- **Bring Back Salmon to the San Joaquin River**
The Department of Fish and Wildlife and the Department of Water Resources will lead the state's effort to achieve the goals of restoring flows to the San Joaquin River from Friant Dam to the confluence of the Merced River, and bring back a naturally-reproducing, self-sustaining Chinook salmon fishery while reducing or avoiding adverse water supply impacts. Chinook will be reintroduced pursuant to the San Joaquin River Restoration Program, and the Department of Fish and Wildlife will complete construction of the conservation hatchery and research facility. The Department of Water Resources will perform activities that support the implementation of channel and structural improvements that result in restoring fish and flows. The administration will work with the Legislature and others to secure further funding as necessary to achieve these activities and the restoration goal.
 - **Protect Key Habitat of the Salton Sea Through Local Partnership**
Sustainable habitat and air quality management at the Salton Sea is critical for the protection of regional air quality, ecological health, and the management of a stable Colorado River supply for California. Convened by the Governor in May 2015, the Salton Sea Task Force directed state agencies to meet short and medium-term management milestones through a series of restoration and regulatory measures. The Natural Resources Agency, working in partnership with federal, state, and local stakeholders, leads the development of a comprehensive management plan for the Sea. This process will identify immediate investment needs, follow an accelerated timeline, and prioritize strategies that leverage resources while

maximizing public health and ecosystem benefits. The State Water Resources Control Board, working in coordination with the Air Resources Board, will oversee the state's response to air quality and ecological needs at the sea. The Colorado River Regional Water Quality Control Board is taking action to improve water quality in major tributaries to the Salton Sea. The California Energy Commission will work with the Public Utilities Commission and the Independent System Operator to consider renewable energy opportunities at and around the Salton Sea.

Concurrent with this effort, state, federal and local agencies are implementing first-phase projects to cover over 1,000 acres of playa currently exposed by the receding shoreline. Federal and local officials broke ground in late 2015 on the Red Hill Bay project that will provide 420 acres of shallow water habitat and dust suppression. The Department of Fish and Wildlife and the Department of Water Resources will construct 600 acres of near shore aquatic habitat to provide feeding, nesting and breeding habitat for birds. This project is permitted to increase to 3,600 acres and could be scaled even greater with additional resources.

- **Restore Coastal Watersheds**

The Department of Fish and Wildlife in coordination with other state resource agencies and other stakeholders, as appropriate, will develop at least 10 off-channel storage projects, modernize at least 50 stream crossings, and also implement at least 10 large-scale habitat projects along the California coast in strategic coastal estuaries to restore ecological health and natural system connectivity, which will benefit local water systems and help defend against sea level rise.

- **Continue Restoration Efforts in the Lake Tahoe Basin**

California, in partnership with the state of Nevada and the federal government, will continue its efforts to protect the beautiful and unique waters of Lake Tahoe. The Natural Resources Agency will maintain its role in leading the coordination of the state departments, the boards, and the conservancy involved in the bi-state efforts underway to restore, preserve and enhance the Lake Tahoe region. California's restoration efforts at Lake Tahoe include, among other things, support of the Tahoe Regional Planning Agency's implementation of its Regional Plan Update, putting into place the science provisions contained in the recently enacted SB 630, and support for projects contained in the region's Environmental Improvement Program.

- **Continue Restoration Efforts in the Klamath Basin**

The Department of Fish and Wildlife and the Natural Resources Agency will continue to work with diverse stakeholders to achieve the goals of the Klamath Basin restoration and settlement agreements. Those agreements include measures to improve water quality in the Klamath River, restore anadromous fish runs, including Chinook and Coho salmon, and improve water reliability for agricultural and other uses by providing a drought planning mechanism for low-water years. The administration will continue to work with tribes, irrigators, ranchers, farmers, the power company, commercial fishing communities, environmental groups, the state of Oregon, and federal agencies to restore the Klamath River, bring water stability to rural communities, resolve long-running disputes, and remove four hydroelectric dams on the Klamath River.

- **Water for Wetlands and Waterfowl**

The Department of Fish and Wildlife in coordination with other state resource agencies will develop and implement a water acquisition, management, and water use efficiency strategy in coordination with the U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, Central Valley Project Improvement Act refuge water program, and Central Valley Joint Venture to secure reliable and affordable water for managed

wetlands statewide. The administration will work with the Legislature, and others, to secure funding to acquire water and to replace or repair the most in need conveyances for delivering water for wetlands.

- **Eliminate Barriers to Fish Migration**

This action has three parts. First, in coordination with the Central Valley Project Improvement Act Anadromous Fish Screen Program, the Department of Fish and Wildlife will create and publish a Priority Unscreened Diversion List in the Central Valley area. Second, the administration will work with the Legislature and others to secure funding to install or repair the top 10 unscreened diversions on the priority list described above. Third, in smaller watersheds around the state, the Department of Fish and Wildlife will complete a comprehensive analysis, working with other state and federal agencies, to optimize barrier removal projects and river and stream priorities, and then complete culvert and bridge improvement and small dam removal projects to provide anadromous fish species access to historic spawning and rearing habitat. The Department of Fish and Wildlife created the priority list of unscreened diversions called for in this action, and used this list as part of its Proposition 1 grant solicitation package for 2015.

- **Assess Fish Passage at Large Dams**

The Department of Fish and Wildlife, in coordination with state and federal resource agencies, will develop an evaluation and feasibility process for addressing fish passage at California's rim dams and develop rim dam solution plans for the most feasible locations. Rim dams are the large dams at the base of most major river systems in California. They are too integral to California's water infrastructure to consider removing, but, where feasible, passage around the rim dams may be necessary to recover salmon and steelhead, because 95 percent of the historical habitat for these fish is above the dams. This action will require coordination with local water agencies and dam owners and operators, as well as other stakeholders.

- **Enhance Water Flows in Streams Statewide**

The State Water Board and the Department of Fish and Wildlife are implementing a suite of actions to enhance flows statewide in at least five stream systems that support critical habitat for anadromous fish. These actions include developing defensible, cost-effective, and time-sensitive approaches to establish instream flows using sound science and a transparent public process. When developing and implementing this action, the State Water Board and the Department of Fish and Wildlife will consider their public trust responsibility and existing statutory authorities such as maintaining fish populations in good condition. The Department of Fish and Wildlife and the State Water Board embarked on successful collaboration with rural landowners in the Russian River watershed and elsewhere during the last four years of drought to voluntarily enhance streamflows. In rural coastal watersheds, the Department of Fish and Wildlife and the Board launched a combined effort to expedite approvals for off-stream storage ponds to capture winter rains for rural residential water supply, thereby reducing the need to divert from small streams during dry summer months.

- **Achieve Ecological Goals through Integrated Regulatory and Voluntary Efforts**

The San Francisco Bay and Sacramento-San Joaquin River Delta are some of the most studied ecosystems in the nation. Similarly, there are many scientific and management plans about the decline of salmon and steelhead in California. A fundamental ecological principle is that aquatic species and estuarine ecosystems need enough cold, clean water at the right times of year to ensure species abundance and health and ecological function. Integration across and between all voluntary and regulatory efforts may be necessary to truly achieve basic ecological outcomes.

As a goal, the state must continue to consider how to provide water flows necessary to meet current state policy, such as significantly increasing salmon, steelhead and trout populations while also supporting viable, self-sustaining populations of a broad range of other native aquatic species, and ensure sustainable river and estuary habitat conditions for a healthy, functional Bay Delta ecosystem. The administration, with the involvement of stakeholders, will build on the work in tributaries to the Sacramento and San Joaquin rivers, analyze the many voluntary and regulatory proceedings underway related to flow criteria, and make recommendations on how to achieve the salmon and steelhead and ecological flow needs for the state's natural resources through an integrated, multi-pronged approach. The Natural Resources Agency will work with the Departments of Fish and Wildlife and Water Resources to lead voluntary, stakeholder-based negotiations on the Sacramento River and San Joaquin River tributary systems. Agreements will be designed to achieve place-based benefits for water users and fish and wildlife in specific tributaries, including monitoring efforts to ensure that best available science guides the on-the-ground implementation of measures that enhance native fisheries. Agreements would capitalize on local expertise in water management that can generate operational efficiencies and water infrastructure improvements that boost water supply reliability and sustainability.

5. MANAGE AND PREPARE FOR DRY PERIODS

Water supply reliability is critical to maintaining California's economy. Temporary shortages caused today by extended, severe dry periods will become more frequent with climate change. Effective management of water resources through all hydrologic conditions will reduce impacts of shortages and lessen costs of state response actions. Many actions will help to secure more reliable water supplies and consequently improve drought preparedness. The actions identified below are specifically designed to address drought conditions and make California's water system more resilient.

- **Revise Operations to Respond to Extreme Conditions**

State natural resources and water quality agencies, in collaboration with their federal counterparts, implemented a series of administrative actions through a transparent process to make water delivery decisions and propose options to address water quality and supply objectives in extreme conditions. These actions relied on administrative discretion and flexibility to address the current dry conditions. Especially in drought conditions, adaptive management can have substantial fishery, water quality, and water supply benefits. The identification of such opportunities requires continued improved water forecasting and prompt inter- and intra-agency coordination and communication. It also requires an effective coordination mechanism involving the Department of Water Resources, the U.S. Bureau of Reclamation, the State Water Project and the Central Valley Project contractors, the state and federal fishery agencies, and the State Water Resources Control Board, at a minimum.

- **Promote Safe and Effective Water Transfers**

The administration, in collaboration with its federal partners, will continue to streamline water transfer processes. Reforms may include improved data sharing; refining the schedule for the water transfer process, while considering cumulative, ground and surface water and third party impacts; ensuring transfers are based on measured water use; and legislation to remove barriers to water markets. The administration also will improve outreach in support of local water transfer programs.

- **Improve Enforcement of the Water Right Priority System**

The drought has required the state to enforce the water right priority system to a degree that it has not done in a generation, which has illuminated both strengths and weaknesses. Billions of dollars in investments rely on the water right priority system and its effective enforcement in times of water

scarcity. The state needs the authority and data to implement the priority system efficiently and fairly. Recently, the state has made important progress, including emergency drought authority and legislation to improve measuring and reporting of surface water diversions. The administration will consider further improvements and encourage transparency and more efficient implementation of the system. This information will in turn assist in the promotion of safe and effective water transfers, which are essential to this effort.

- **Encourage Healthy Soils**

Soil managed for higher organic matter has the potential to hold up to 20 times its weight in water. This is critical in times of extended dry periods. Soil management practices, such as reduced disturbance, managed grazing and conservation cover, not only increase drought resiliency, they can also sequester carbon and reduce greenhouse gas emissions, improve plant health and yields, reduce sediment erosion and dust, and improve biological diversity and habitat.

6. EXPAND WATER STORAGE CAPACITY AND IMPROVE GROUNDWATER MANAGEMENT

On average, the state receives about 200 million acre-feet of water per year in the form of rain and snow. In reality, the average rarely occurs, as California has the most variable weather conditions in the nation and climate change may increase the variability. Storage, whether surface storage or groundwater storage, can hold water when it flows heavily for use at times when it does not and create greater flexibility in the system. Above ground (surface storage) can be in the form of large on-stream dams and reservoirs, or smaller on stream and off stream reservoirs. Groundwater storage consists of replenishing groundwater basins either directly through injection, or by allowing water to percolate into the ground naturally or from constructed spreading basins and some forms of stormwater capture. Surface storage can be operated in conjunction with groundwater storage to increase opportunities for groundwater recharge during high flow periods and thereby increase comprehensive water management benefits. Constructing surface storage can be challenging for environmental or financial reasons. Developing groundwater storage can be challenging because many basins are contaminated and this method of storage also requires an ability to measure and withdraw water. Proposition 1 provides \$2.7 billion for the public benefits of surface and groundwater storage projects. The California Water Commission is working with stakeholders to draft regulations and guidelines to ensure that these funds are allocated in an open, transparent, and cost-efficient manner – and in a way that maximizes the investment of public dollars.

The bottom line is that we need to expand our state’s storage capacity, whether surface or groundwater, whether big or small. Today, we need more storage to deal with the effects of drought and climate change on water supplies for both human and ecosystem needs. Climate change will bring more frequent drought conditions and could reduce by half our largest natural storage system—the Sierra snowpack—as more precipitation falls as rain rather than snow, and as snow melts earlier and more rapidly. Moreover, we must better manage our groundwater basins to reverse alarming declines in groundwater levels. Continued declines in groundwater levels could lead to irreversible land subsidence, poor water quality, reduced surface flows, ecosystem impacts, and the permanent loss of capacity to store water as groundwater.

Demand for water goes well beyond water supply and flood management, the traditional purposes for which California’s major reservoirs were built. Today, water storage is also needed to help provide widespread public and environmental benefits, such as seasonal fish flows, improved water quality, water cool enough to sustain salmon, and increased flexibility to meet multiple demands, especially in increasingly dry years. The financing of additional water storage in California must reflect not just specific local benefits, but also these broader public benefits.

- **Provide Essential Data to Enable Sustainable Groundwater Management**

The administration will expand and fund the California Statewide Groundwater Elevation Monitoring Program, which provides essential data to characterize the state's groundwater basins, including identifying basins in decline. In coordination with federal, tribal, local and regional agencies, state agencies will conduct groundwater basin assessments and develop assessment reports.

- **Support Funding Partnerships for Storage Projects**

The administration will work with the Legislature to make funding available to share in the cost of storage projects if funding partners step forward. The state will facilitate among willing local partners and stakeholders the development of financeable, multi-benefit storage projects, including working with local partners to complete feasibility studies. For example, the Sites Project Joint Powers Agreement, formed by a group of local government entities in the Sacramento Valley, is a potential emerging partnership that can help federal and state government determine the viability of a proposed off stream storage project – Sites Reservoir.

- **Update Bulletin 118, California's Groundwater Plan**

The Department of Water Resources, in consultation with the U.S. Bureau of Reclamation, U.S. Geological Survey, the State Water Resources Control Board, and other agencies and stakeholders will update Bulletin 118 using field data, California Statewide Groundwater Elevation Monitoring, groundwater agency reports, satellite imagery, and other best available science, so that this information can be included in the next California Water Plan Update and be available for inclusion in future water management and land use plans. The Bulletin 118 update should include a systematic evaluation of major groundwater basins to determine sustainable yield and overdraft status; a projection of California's groundwater resources in 20 years if current groundwater management trends remain unchanged; anticipated impacts of climate change on surface water and groundwater resources; and recommendations for state, federal and local actions to improve groundwater management. In addition, the Bulletin 118 update should identify groundwater basins that are in a critical condition of overdraft.

- **Improve Sustainable Groundwater Management**

Groundwater is a critical buffer to the impacts of prolonged dry periods and climate change on our water systems. In September 2014, Governor Brown signed historic legislation to strengthen local management and monitoring of groundwater basins most critical to the state's water needs. For the first time in California history, the Sustainable Groundwater Management Act (SGMA) empowers local agencies to adopt groundwater management plans that are tailored to the resources and needs of their communities. SGMA defines the local and regional responsibilities and gives local and regional agencies the authority to manage groundwater sustainably and ensures no groundwater basin is in danger of being permanently damaged by overdrafting. When a basin is at risk of permanent damage, and local and regional entities have not made sufficient progress to correct the problem, the state will protect the basin and its users until an adequate local program is in place. In 2015, the Department of Water Resources drafted regulations that advanced the formation of Sustainable Groundwater Management Agencies. More work remains to facilitate the successful development and implementation of Sustainable Groundwater Management Plans. The administration will continue to work to ensure that SGMA is implemented effectively. By December 31, 2016, the Department will complete a report on the amount of water available for groundwater replenishment. This report will estimate water available to help bring groundwater basins into balance by 2040, as newly required by SGMA. It will evaluate the availability of

different sources of water such as surface water (including stormwater), water conservation, recycled water, desalination, and water transfers, including the challenges and uncertainties in their development. This report will demonstrate the interdependence of California's different water supply sources in achieving overall water security and sustainability for the state.

- **Support Distributed Groundwater Storage**

The administration will support a comprehensive approach to local and regional groundwater management by funding distributed groundwater storage projects that are identified in groundwater management plans and removing barriers to implementation.

- **Increase Statewide Groundwater Recharge**

The administration will work with the Legislature to discourage actions that cause groundwater basin overdraft and provide incentives that increase recharge. State agencies will work with tribes and federal, regional and local agencies on other actions related to promoting groundwater recharge and increasing storage, including improving interagency coordination, aligning land use planning with groundwater recharge, streamlining permitting for on-farm recharge, and identifying additional data and studies needed to evaluate opportunities, such as capturing and recharging stormwater flows.

- **Accelerate Clean-up of Contaminated Groundwater and Prevent Future Contamination**

Throughout the state, groundwater basins are contaminated by historic manufacturing, farming practices and other current uses. The State Water Resources Control Board and the Department of Toxic Substances Control will take action to prevent the spread of contamination, accelerate cleanup, and protect drinking water in urban areas. The State Water Resources Control Board will adopt guidelines to fund groundwater cleanup projects authorized by voter approved Proposition 1 and will continue to implement appropriate control measures to address these sources through its water quality permitting authority.

7. PROVIDE SAFE WATER FOR ALL COMMUNITIES

All Californians have a right to safe, clean, affordable and accessible water adequate for human consumption, cooking, and sanitary purposes. Disadvantaged communities, in particular, often struggle to provide an adequate supply of safe, affordable drinking water. The reasons for this are numerous: changes in drinking water quality standards, pollution, aging infrastructure, lack of funding for basic infrastructure, lack of funding for ongoing operation and maintenance, and unreliable supplies resulting in service interruptions are among the most common. Programs designed to protect the quality of our waters for drinking and other uses are housed in multiple agencies, reducing their effectiveness and ability to meet communities' needs.

- **Consolidate Water Quality Programs**

The administration consolidated the state's drinking water and surface and groundwater quality programs into a single agency to achieve efficiencies and synergies. This consolidation has resulted in immediate benefits as the drought emergency has unfolded, especially for disadvantaged communities. For example, the consolidation has enabled the State Water Board to draw upon a broader range of funding sources for new wells, interties, and emergency drinking water supplies for dozens of communities with failing water systems during the drought. Other benefits include improvements to the State Revolving Fund, closer cooperation with Regional Water Boards to control groundwater contaminant plumes that threaten drinking water, and consolidation of the state's water recycling programs into a single office.

- **Provide Funding Assistance for Vulnerable Communities**

The administration will work with the Legislature to establish a stable, long-term funding source for provision of safe drinking water and secure wastewater systems for disadvantaged communities. The funding will be made available through a framework of statutory authorities for the state, tribes, regional organizations, and county agencies that will assess alternatives for providing safe drinking water and wastewater, including regional consolidation, and to develop, design, implement, operate and manage these systems for small disadvantaged communities impacted by contaminated drinking water and lack of sanitary wastewater infrastructure. In 2015, the state adopted legislation that can complement or provide an alternative to funding assistance. The legislation allows the Water Board to require a public water system, under certain conditions, to consolidate a failing water system when it is the best solution for small, struggling water systems.

- **Manage the Supply Status of Community Water Systems**

The state will identify drought-vulnerable public water systems and monitor the status of these systems to help prevent or mitigate any anticipated shortfalls in supply and to secure alternative sources of water for the communities when needed. The state will also work with local governments and agencies to identify drought-vulnerable areas served by domestic wells and collaborate to prevent or mitigate any anticipated shortfalls.

8. INCREASE FLOOD PROTECTION

California's exposure to flood risk presents an unacceptable threat to public safety, infrastructure, and our economy. More than 7 million people and \$580 billion in assets are exposed to flood hazards in the state and the lack of sufficient and stable funding for flood management exacerbates the state's risk.

When California floods, public safety and health is endangered, critical infrastructure is damaged, vital services become isolated or interrupted, vast agricultural areas are rendered unproductive, and water supplies are threatened or impacted. The effects of climate change on the state's water runoff patterns will magnify these challenges. Actions by state, local, tribal and regional governments, however, can reduce flood risks and improve the state's preparedness and resiliency when flooding inevitably occurs. Flood projects done in an integrated, regionally-driven way can also achieve multiple benefits. It is possible through collaborative planning efforts to integrate our flood and water management systems, and implement flood projects that protect public safety, increase water supply reliability, conserve farmlands, and restore ecosystems.

- **Streamline and Consolidate Permitting**

The administration will convene a task force of federal, state and local permitting and flood management agencies, to develop a programmatic regulatory permitting process to replace current site-by-site mitigation requirements and expedite permitting of critical maintenance activities and flood system improvement projects. The effort to streamline and consolidate will also incorporate regional advanced mitigation as a means to expedite planning.

- **Create a Delta Levee Assessment District**

The administration, in consultation with the Delta Protection Commission and the Department of Water Resources, will sponsor legislation establishing a Sacramento-San Joaquin River Delta levee assessment district with authority to collect fees needed to repair and maintain more than 1,000 miles of Delta levees, many of them privately constructed before modern engineering standards were in place.

- **Improve Access to Emergency Funds**

The administration will sponsor legislation revising the California Disaster Assistance Act to enhance the Governor's Office of Emergency Services' ability to advance funds for flood response efforts in close coordination with the Department of Water Resources.

- **Better Coordinate Flood Response Operations**

The Governor's Office of Emergency Services, working in coordination with the Department of Water Resources, the U.S. Army Corp of Engineers, and others, will develop and implement a common interagency protocol that all jurisdictions and agencies at all levels of government operating in the Delta in an emergency will use to establish joint field incident commands for flood operations and other emergency response functions.

- **Prioritize Funding to Reduce Flood Risk and Improve Flood Response**

An estimated \$50 billion is needed to reduce flood risk statewide. The administration will focus on the highest risk areas and develop proposals to fund projects through a combination of financing options.

- **Identify State Funding Priorities for Delta Levees**

The Delta Stewardship Council, in consultation with the Department of Water Resources, the Central Valley Flood Protection Board, the Delta Protection Commission, local agencies, and the California Water Commission, should develop funding priorities for state investments in Delta levees. These priorities will be consistent with the provisions of the Delta Reform Act in promoting effective, prioritized strategic state investments in levee operations, maintenance, and improvements in the Delta for both levees that are a part of the State Plan of Flood Control and non-project levees.

- **Encourage Flood Projects That Plan for Climate Change and Achieve Multiple Benefits**

State agencies engaged in planning and implementing flood projects, such as those outlined in the Central Valley Flood Protection Plan, will factor in the effects of climate change as well as pursue projects that provide the greatest number of benefits in addition to flood and public safety. Projects should be developed in a manner that anticipates the extremes that are predicted to worsen due to climate change, and pursue multiple benefits as a climate adaptation strategy like increasing water supply reliability, giving rivers more room to move through widening floodways, conserving farmlands, and restoring ecosystems.

9. INCREASE OPERATIONAL AND REGULATORY EFFICIENCY

Efficiently operating the State Water Project and Central Valley Project, while complying with the requirements of state and federal endangered species acts and operating consistent with the conditions of water rights, contracts and other entitlements, is a delicate balancing act. Current coordination efforts, while longstanding and intended to cover a broad range of conditions, do not reflect the entire Delta watershed, nor do they effectively integrate all of the activities that other agencies and organizations are undertaking to improve the ecosystem.

- **Prepare for the Future Through Better Technology and Improved Procedures**

The administration will work with federal and regional counterparts to improve coordination of operations of all major water supply (storage facilities and direct diversions), flood control, hatchery facilities, and habitat restoration projects to improve water supply and fishery conditions. The goals are to improve water project near-term operational flexibility for the next water year and build upon those actions in subsequent years. Better technology can result in improved coordination and more accurate

data for decision making. Examples of better technology and improved coordination include but are not limited to the following:

- Improve data availability, communication procedures, and analytical methods used to monitor and communicate risks to listed fish species and to water supplies when making regulatory decisions associated with implementation of incidental take provisions in the existing biological opinions.
- Develop a pilot project to test if a new index for Old River and Middle River reverse flows enables compliance with biological opinion requirements.
- Develop and employ new turbidity models to improve real-time turbidity management in the south Delta.
- Analyze through the South Delta Science Collaborative associated operational approaches for minimizing loss of salmon in the area of the Old River barrier and effects of the operations on water supply.
- Develop a Delta smelt life cycle model to help manage operations to avoid entrainment of smelt at the water project's intakes.
- Implement a 3.5-year study to enhance and modernize Delta smelt monitoring (fish abundance and geographic distribution in the Delta), to improve the ability to protect fish populations while minimizing the impacts of fish protective measures on water project operations.
- Work with federal agencies to improve coordination of hatchery fish releases with hydrologic conditions and water project operations to improve fish survival.
- Improve state and federal interagency coordination and water contractor coordination on real-time forecasting and management associated with meeting water quality control objectives, to optimize project operations and avoid redirected fishery impacts.
- Fund and revive the National Hydrological Dataset for California to improve high-quality framework geospatial data and the precision and accuracy of mapping and scientific studies.

- **Improve and Clarify Coordination of State Bay Delta Actions**

The problems affecting the Delta need to be addressed on multiple fronts, including habitat loss, export conveyance, water projects operations, pollution control, and flows. The principal state entities charged with addressing these issues are the Delta Stewardship Council, Department of Water Resources, Department of Fish and Wildlife, and the State Water Resources Control Board. Several federal agencies exercise regulatory authority related to these issues. There are also multiple water districts, private parties, nongovernmental organizations and tribal communities with a profound stake in these issues.

A coordinated approach to managing the Delta is essential to serve the needs of California's residents. State agencies will commit to using collaborative processes to achieve water supply, water quality and ecosystem goals. This approach embraces enhanced sharing of data, consistent use of peer-reviewed science, coordinated review under the California Environmental Quality Act, improved integration of related processes, and encouragement of negotiated resolutions.

- The Delta Stewardship Council, Department of Water Resources, Department of Fish and Wildlife, and the State Water Resources Control Board will ensure all relevant information is shared and will assist each other, as appropriate, to complete respective efforts to improve Delta conditions.
- State entities will encourage negotiated agreements among interested parties to implement flow and non-flow actions to meet regulatory standards and support all beneficial uses of water. State staff will participate in these processes to the maximum extent possible when requested.
- The Delta Stewardship Council's Implementation Committee, which includes leaders from all the affected state entities, will meet regularly to review progress in coordination.
- The administration will direct relevant agencies and departments to work with the Delta Science Program, the Interagency Ecological Program, and others conducting science in the Delta to implement the Delta Science Plan, committing resources and funding for shared science to achieve integrated, collaborative and transparent science to enhance water and natural resource policy and management decisions.

10. IDENTIFY SUSTAINABLE AND INTEGRATED FINANCING OPPORTUNITIES

California has a long history of making sound financial investments in water resources. However, our current investments are not keeping pace with the need. Our infrastructure is aging, levees are in need of repair, communities are without safe water, and our environment, farms and economy are suffering from unreliable and degraded water supplies. The effects of climate change will only accelerate the challenges facing our water resources and infrastructure. This plan includes actions that will require multiple funding sources. We have access to a variety of funding sources including federal grants and loans, general obligation bonds, revenue bonds, rate payer dollars, local initiatives, user fees, beneficiary fees, local and statewide taxes, private investment, public-private partnerships, and more. A better understanding of the variety and types of funds and financing available for water investment will help us to make the best, most efficient and sustainable uses of the funding available.

- **Remove Barriers to Local and Regional Funding for Water Projects**
The administration will work to clarify the 1996 Right to Vote on Taxes Act's (Proposition 218) applicability to water related fees and taxes, including sponsoring legislation if necessary.
- **Develop Water Financing Strategy**
The administration will develop a water financing strategy that leverages various sources of water-related project funding and proposes options for eliminating funding barriers, including barriers to co-funding multi-benefit projects. The strategy will identify all potential funding sources for water-related projects including cap and trade auction revenue under AB 32, energy efficiency funds, user and beneficiary fees, polluter fees, local measures, and other sources and will establish principles to guide the use of these funding sources. The strategy will consider measures for energy efficiency and renewable energy to achieve greenhouse gas reductions that would be a co-benefit of water infrastructure investments.
- **Analyze User and Polluter Fees**
The administration will direct agencies to identify areas where user and/or polluter fees may be appropriate. The agencies will assess the following: areas where users may not be fully funding the costs or impacts associated with their use, instances where polluters are not able to diminish their pollution

and have not adequately accounted for the impacts of that pollution, and opportunities to use fees to incentivize positive behavior. The agencies will provide recommendations on fees, who would pay them, how they would be collected, and how they would be used.

Conclusion

All Californians have a stake in our water future. These actions set us on a path toward reliability, restoration, and resilience in California water. We must adapt to this “new normal” and recapture California’s resource management leadership and our economic and environmental resilience and reliability. There are no silver bullets or single projects that will “fix the problem.” We must have a portfolio of actions to comprehensively address the challenges this state faces. Some actions must be taken immediately to address current risks such as the looming drought and inadequate safe drinking water. Additionally, over the next five years, we must address fundamental changes in our approach to water resource management and be prepared for the changes the future holds.

Implementation

The Secretary for Natural Resources submitted to the Legislature in 2015 a report on the implementation of this plan.² Such a report will be issued annually to track the progress made on Water Action Plan goals. It will include a schedule of activities that the administration proposes for each of the next four budget years, the estimated costs of those activities, and the expected funding source.

² Water Action Plan Implementation Report: http://resources.ca.gov/california_water_action_plan/implementation_report/