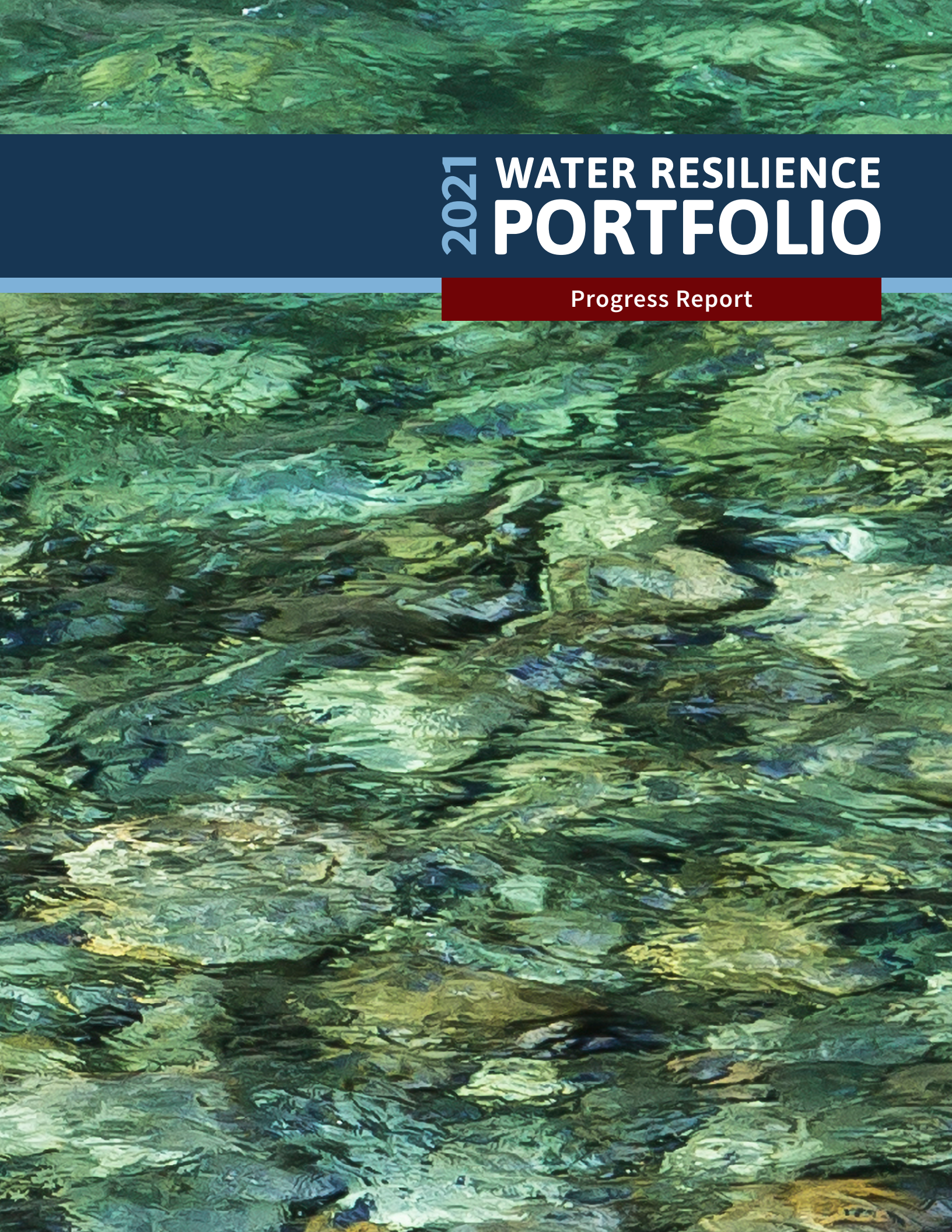

2021 WATER RESILIENCE PORTFOLIO

Progress Report

About the California Water Resilience Portfolio

In April 2019, Governor Gavin Newsom issued an Executive Order directing state agencies to develop recommendations to enable water security for all Californians. His Executive Order N-10-19 stated:

> "California's water challenges are daunting, from severely depleted groundwater basins to vulnerable infrastructure to unsafe drinking water in far too many communities. Climate change magnifies the risk. To meet these challenges, we need to harness the best in science, engineering, and innovation to prepare for what's ahead and ensure long-term water resilience and health. We'll need an all-of-the-above approach to get there."

In the Executive Order, the Governor called on the California Natural Resources Agency, California Environmental Protection Agency, and California Department of Food and Agriculture to develop a "water resilience portfolio," described as a set of actions to meet California's water needs through the 21st century. The Governor emphasized the need for actions that provide multiple benefits, utilize natural infrastructure such as forests and floodplains, embrace new technologies, encourage regional approaches, and build integration across state government and partnerships across diverse interests.

Following the Governor's direction, state agencies developed the Newsom Administration's Water Resilience Portfolio with extensive stakeholder input. The agencies released a final strategy in July 2020. The document includes 142 separate action to be taken by state agencies, as resources allow. Taken together, the actions strengthen state support for local efforts to withstand drought and flood, provide safe and reliable water supplies to all communities, and protect natural systems.

The portfolio recognizes that in California, water is largely managed at the local and regional level. Water supplies and needs vary tremendously by location, and so resilience will be achieved region by region, based on unique challenges and opportunities. The portfolio focuses on the state's role as a funder, operator of inter-regional infrastructure, maker of laws and policies, gatherer and sharer of data, conductor of research, setter of standards, catalyzer for coordination, emergency responder, and partner in addressing problems beyond the capacity of any single region to address. Our progress toward regional water resilience varies by location, but the Water Resilience Portfolio unites state government in fostering that progress.

On the cover: North Fork, American River.
Photo by Bob Wick, BLM.

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EXECUTIVE SUMMARY

State agencies immediately began implementing the Water Resilience Portfolio once it was finalized in July 2020. The 142 specific tasks in the portfolio channel state resources to support local work, all with the aim of maintaining and diversifying water supplies, protecting and enhancing natural systems, building connections, and being prepared. Eighteen months after issuing the portfolio, we mark significant progress implementing its actions: Key areas of progress since July 2020 include (but are not limited to):

- Since the start of the Safe and Affordable Fund for Equity and Resilience program in July 2019 through September 2021, the program has provided 141 communities and 364 households with interim drinking water solutions, 185 communities with planning assistance, and 126 communities with long-term solutions to safe drinking water problems.
- In the five months since August 2021, the Department of Water Resources and the State Water Resources Control Board have invested $92 million in state funds to assist 48 separate small communities across the state with drought-related drinking water supply problems. The funded projects include refurbished wells, new wells and storage tanks, replacement of leaking distribution pipes, and connections to larger, more reliable systems that should leave communities better able to handle the next drought.
- The local water agencies pursuing six new water storage projects eligible for $2.7 billion in state water bond funding advanced their projects in 2021; all projects were deemed feasible by the California Water Commission after completing draft environmental documents and arranging non-state financing, among other requirements. If completed, those six projects together would expand storage capacity in the state by nearly 2.8 million acre-feet of water.
- The state has aligned planning, technical, and financial assistance to support local agencies implementing groundwater sustainability plans. In April 2021, the state awarded $26 million for the construction of local projects. An additional $300 million will be disbursed for planning and projects in coming months. A new $50 million grant program will support local reuse of farmland where more acres are currently irrigated than groundwater aquifers can support.
- In August 2021, DWR began the first flights of statewide airborne electromagnetic geophysical surveys in groundwater basins along the Central Coast. Conducted statewide over the next few years, these surveys will provide near-continuous data describing the geology of the subsurface that controls the flow of groundwater in the high- and medium-priority groundwater basins, where feasible. The data will inform groundwater sustainability agencies and counties seeking to manage their groundwater sustainably and support land use planning efforts, such as protecting and maximizing recharge areas.
- The decades-long effort to remove four obsolete dams from the Klamath River achieved an important milestone in June 2021, when the Federal Energy Regulatory Commission approved an order transferring ownership of four Klamath River dams from the private utility PacifiCorp to the states of California, Oregon, and the Klamath River Renewal Corporation, a non-profit entity established to remove the dams. FERC is now preparing an environmental impact statement for the dam removal project. Dam deconstruction may begin as early as 2023.

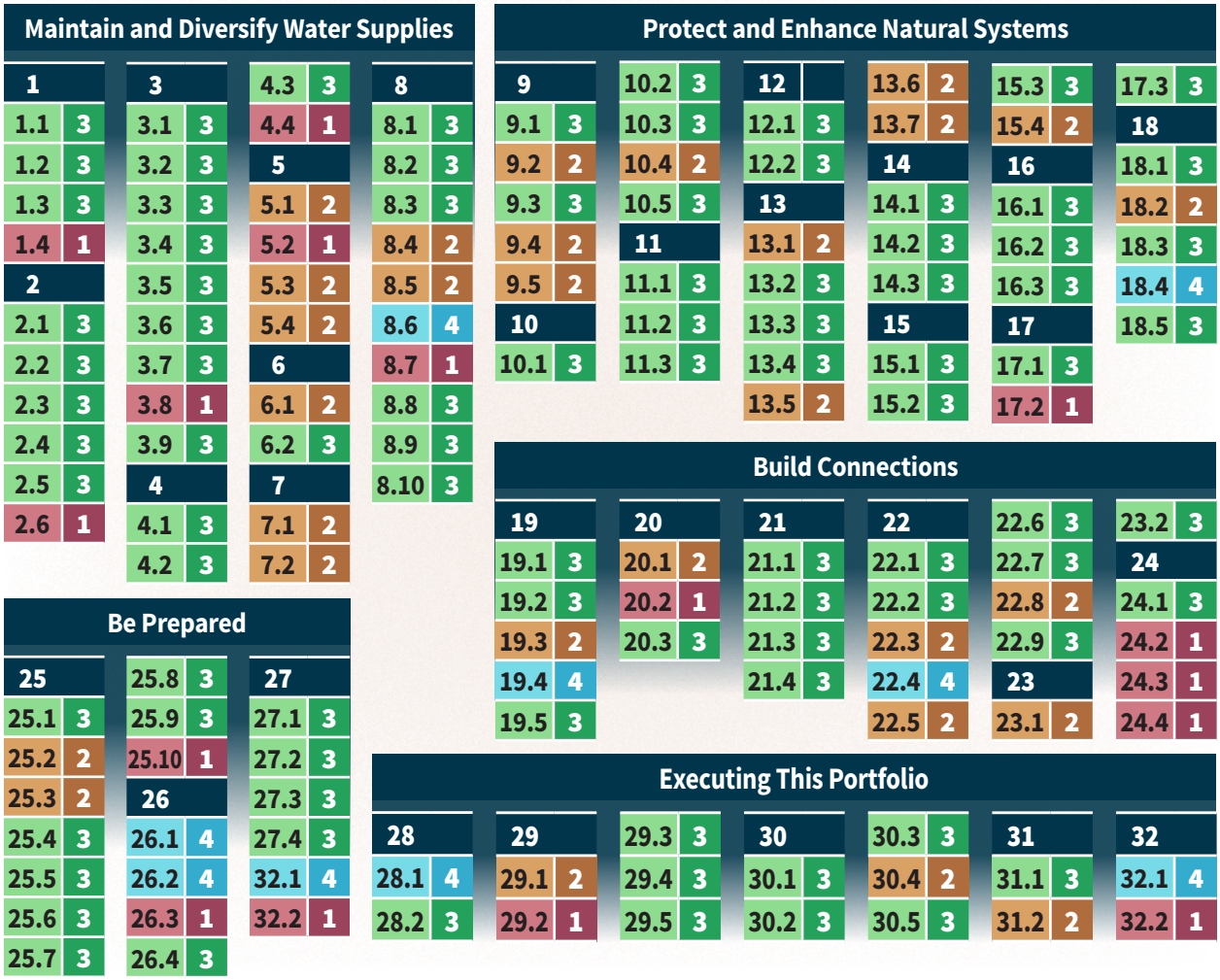
Momentum will continue to build over the next three years, propelled by a robust state funding package in the 2021-22 state budget for drought relief and long-term water resilience. That funding package reflects portfolio priorities. It includes meaningful investments in getting safe drinking water to all communities, recycling wastewater, managing groundwater, repairing water

conveyance structures, restoring habitat, making agriculture more wildlife friendly, responding to and preparing for drought, anticipating flood, improving water data and forecasting, and upgrading the state's water right data system, among other actions.

Climate-driven extremes are testing California water systems. The two years following July 2020 rank among the hottest and driest in California's history. In October 2021, an atmospheric river punctuated the drought with such heavy precipitation that it set new records in some cities. The record-breaking deluge did not, however, end drought – a parched landscape soaked up the rain, and major reservoir storage remains below average. While we recalibrate our expectations of extreme precipitation, long-standing challenges also demand solutions. Major pieces of water infrastructure are aging. Many communities lack unsafe and unreliable water supplies. Fish and wildlife struggle to survive in rivers, streams, and estuaries altered by dams, diversions, and pollution. The portfolio aligns state agencies to respond to old and new risks.

The following pages provide updates on all 142 actions in the portfolio and detail collaboration and coordination underway across California to address water challenges.

BY THE NUMBERS: Action progress reduced to numbers, colors and bars



THE PROGRESS REPORT

The pages that follow list each of the 142 separate actions in the final Water Resilience Portfolio, with a description of progress made since the Portfolio was released in July 2020. State agencies will continue to track progress and issue periodic reports.

The Progress Report Key

The state agencies assigned one of four numbers to each action in the Portfolio to try to capture the current stage of progress:

1 Scoping, organizing, defining actions and project goals and outcomes in progress.

2 Securing funding, logistics, support materials; groundbreaking; beginning project work.

3 Work, documentation and reporting in progress.

4 Work nearly complete or completed; assessment or integration into ongoing efforts continues.

Agency Acronyms Explained

CDFW ..... California Department of Fish and Wildlife
CalEPA ..... California Environmental Protection Agency
CDFA ..... California Department of Food and Agriculture
CNRA ..... California Natural Resources Agency
Cal OES ..... California Office of Emergency Services
CPUC ..... California Public Utilities Commission
DWR ..... California Department of Water Resources
Flood Board ..... Central Valley Flood Protection Board
Water Boards ..... Regional Water Quality Control Boards
Water Board ..... State Water Resources Control Board

The Water Resilience Portfolio (July 2020) final document

Find the document at https://waterresilience.ca.gov/wp-content/uploads/2020/07/Final_California-Water-Resilience-Portfolio-2020_ADA3_v2_ay11-opt.pdf.

Maintain and Diversify Water Supplies

Drought tests water supply systems, and recent and current droughts show that large, urban water districts with multiple sources of supply fare better than communities dependent upon a single stream or shallow aquifer that drops in dry conditions. Since 2019, the state has helped more than 100 small communities with interim or long-term solutions to water supply problems at the same time it is helping suppliers of all sizes recycle wastewater, capture stormwater, protect water quality, improve efficiency, expand storage, desalinate water where economically and environmentally appropriate, and bring overdrawn groundwater basins into sustainable conditions. Reducing reliance on any one source should help regions cope with a future of reduced snowpack and more punishing droughts.

The State Water Resources Control Board has provided more than $92 million to support expansion of the Orange County Water District's Groundwater Replenishment System, which already is the world's largest purification system for indirect potable reuse. The system takes highly treated wastewater that otherwise would have been discharged to the Pacific Ocean and purifies it to meet or exceed all state and federal drinking water standards. The bird's eye photo, taken in March 2021, shows construction of the expanded microfiltration area. The expansion project will increase treatment capacity from 100 million to 130 million gallons per day, enough water for 1 million people, using wastewater from an Orange County Sanitation District treatment plant 3.5 miles away in Huntington Beach. The expanded plant is scheduled for completion in 2023.

Help local water agencies achieve reliable access to safe and affordable water.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
1.1	Implement the Safe and Affordable Drinking Water Act of 2019, with provision of interim water to 75 drinking water systems or schools, planning assistance for 100 systems, and permanent solutions for 100 systems by the end of 2020. Map drinking water-source aquifers at high risk of contamination and shortages and identify water systems and private wells that consistently fail to provide safe drinking water.	**Water Board**	**3**	From July 1, 2020 through May 1, 2021, more than $260 million was committed to 140 projects in the Safe and Affordable Fund for Equity and Resilience program ($115 million from the Safe and Affordable Drinking Water Fund). During this same period, 287 households received interim drinking water solutions, consolidation efforts were initiated for 132 systems, and long-term solutions were implemented for 32 systems. The SAFER Needs Assessment was released in April 2021, detailing drinking water systems with violations, those at risk of having violations, and the costs to addresses all the identified issues. The Aquifer Risk Map was released in January 2021. In all, since the start of the SAFER program in July 2019, the program has provided 141 communities and 364 households with interim drinking water solutions, 185 communities with planning assistance, and 126 communities with long-term solutions.
1.2	Increase financial capacity to support drinking water projects through the Drinking Water State Revolving Fund and other state and local funding mechanisms.	**Water Board**	**3**	The 2021-22 state budget includes $1.3 billion for drinking water and wastewater infrastructure ($650 million each). The additional funds will allow the state to accelerate drinking water project funding for disadvantaged communities that cannot afford a loan and address the human right to water. The Water Board continues to accept, review, and approve applications for drinking water state revolving fund (DWRSRF) loan financing for ready- to-proceed projects and does not anticipate turning away projects that have submitted a complete application, met all DWSRF loan eligibility requirements and address the human right to water. The federal infrastructure package signed by the President in November includes $11.7 billion for states' Drinking Water State Revolving Funds.
1.3	Work with the Legislature and stakeholder to explore feasible low-income water rate assistance options.	**Administration**	**3**	The Water Board is collaborating with state and federal agencies to explore the feasibility of a low-income household water rate assistance program using federal funds, as appropriated under the federal Consolidated Appropriations Act of 2021 and the American Rescue Plan Act of 2021. The Water Board continues to work with the Legislature and the Department of Community Services Development on legislative proposals that will provide low-income households with water affordability assistance for drinking water and wastewater services.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
1.4	Evaluate the feasibility of requiring a water quality test at the point of sale when selling a property supplied by a private well and disclosure of the test results to prospective buyers.	**Administration**	**1**	No progress to report.

Drive greater efficiency of water use in all sectors.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
2.1	Implement existing "Make Conservation A Way of Life" laws (SB 606 and AB 1668, 2018), which create new efficiency standards for residential use and reporting requirements for agricultural use.	**DWR, Water Board**	**3**	In May 2021, DWR in coordination with the Water Board released a Public Review Draft Report to the Legislature on the Results of Indoor Residential Water Use Studies. The Draft Report includes study methodologies, data used, analysis of the results, and recommended indoor residential water use efficiency standards. The recommended standards will only become effective if approved by the Legislature and enacted into law. Public comments on the draft recommendations and draft report are being processed, and a final report should be issued in fall 2021. Cal Rural, as DWR's contractor, is providing leak detection support to communities, and DWR is hosting monthly webinars on water loss and leak detection. The Water Board plans to initiate its water loss (leakage from distribution system) rulemaking soon. In conjunction with stakeholders and the Water Board, DWR is developing recommendations regarding outdoor residential water use and commercial, industrial, and institutional outdoor water use, which were due to the Water Board in October 2021. Of the 52 agricultural water suppliers subject to a requirement to submit to DWR agricultural water management plans every five years, 23 have done so. If the suppliers do not submit completed plans by August 2021, DWR may hire a consultant to develop a plan at the cost of the delinquent agencies. Urban water management plans were due to DWR on July 1, 2021; DWR is developing guidance for annual shortage and water demand assessment reports due next year per the new plan requirements. Of the 450 urban water management plans due, 352 have been received.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
2.2	Simplify the Model Water Efficient Landscape Ordinance, which sets efficiency standards for landscaping of new and retrofitted developments. Support training for local government planners to ensure compliance with this law.	**DWR**	**3**	In January 2021, DWR released a draft Model Water Efficient Landscape Ordinance guidebook for public comment. DWR is hosting a web tool (a reporting platform called WUEdata portal) that went online in 2020 for local agencies to submit annual reports on landscape ordinance implementation, as well as water loss and urban and agricultural water management plans. DWR intends to investigate compliance issues and incorporate possible changes based on improving compliance. DWR is pursuing funding for 2022-23 to provide local government training on the ordinance and portal.
2.3	Fund the State Water Efficiency and Enhancement Program (SWEEP) and prioritize grants for water-saving irrigation system improvements to socially disadvantaged farmers and ranchers in basins considered high priority under the Sustainable Groundwater Management Act (SGMA).	**CDFA**	**3**	The 2021-22 state budget includes $100 million over two years in additional funding for SWEEP, which already has helped to improve water use efficiency on 134,000 acres of irrigated farmland. An estimated 115,000 acre-feet of water are saved each year through the funded projects. CDFA funds technical assistance providers to help growers with grant applications and project implementation. A minimum of 25 percent of the technical assistance grant funds must be used to provide outreach and technical assistance to socially disadvantaged farmers and ranchers. In the last round of farmer incentive grants, 49 percent of grants went to Socially Disadvantaged Farmers and Ranchers. The 2021-22 state budget also included $5 million for technical assistance to assist farmers and ranchers with on-farm water efficiency. This funding will be used to administer grants to Resource Conservation Districts (RCDs), universities, nonprofits and tribes to provide technical assistance for on-farm water use efficiency, including, but not limited to irrigation and nutrient management training, and mobile irrigation labs to perform on-site pump and irrigation efficiency tests and training. Local and experienced RCD technical assistance providers partner with growers to identify and implement efficiency improvements in existing irrigation systems.
2.4	With public and stakeholder input, update the assumptions and methodologies of the Water Energy Cost Effectiveness Calculator, which helps investor-owned utilities determine the energy savings associated with water conservation.	**CPUC**	**3**	Based on a literature review and interviews with 22 stakeholders, the CPUC identified revisions needed to the calculator. Under a workplan released in February 2021, the CPUC will develop solutions and beta test the revised calculator, revise as necessary, and finalize the Water Energy Calculator 2.0 and guidance manual by winter 2022.

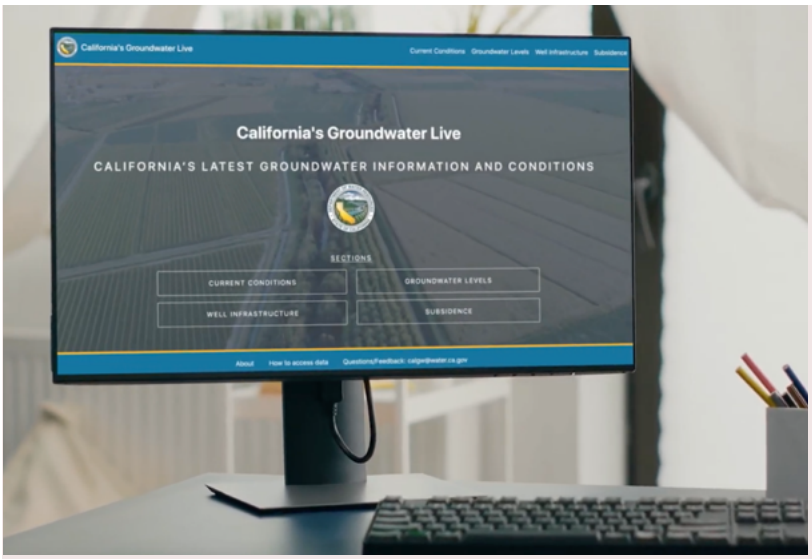
ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
2.5	Promote consistent and effective conservation messaging in partnership with local water districts.	**Administration**	**3**	The 2021-22 state budget includes $8 million for the Save Our Water public awareness campaign managed by DWR. The campaign includes a website and radio spots in English and Spanish, traffic and weather report sponsorships, digital ads, and social media posts. Following the Governor's drought emergency order in April 2021, DWR provided financial and technical support for drought messaging in Sonoma and Mendocino counties. Efforts are coordinated with the Water Board and the Association of California Water Agencies.
2.6	Evaluate proposals for an exemption from state income tax any rebates, vouchers, or other financial incentives issued by a local water agency for participation in water efficiency or stormwater runoff improvement programs.	**CNRA, CalEPA**	**1**	No legislative proposals submitted to review.

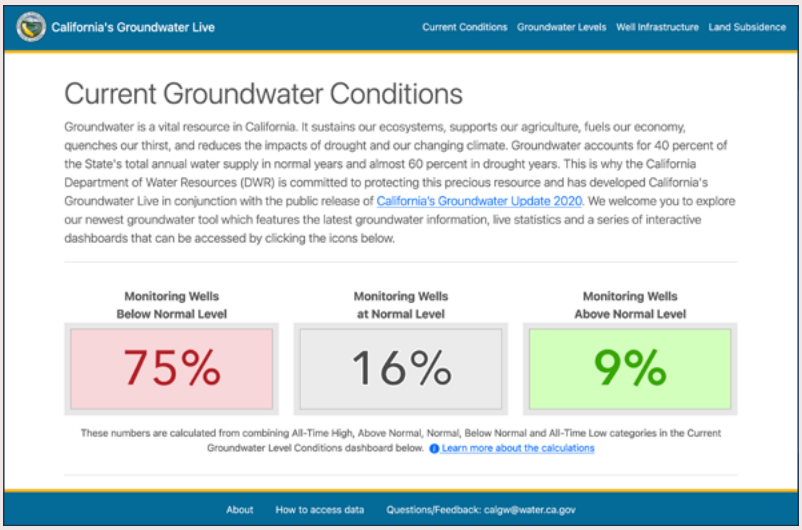
Help regions secure groundwater supplies by supporting the transition to sustainable use.

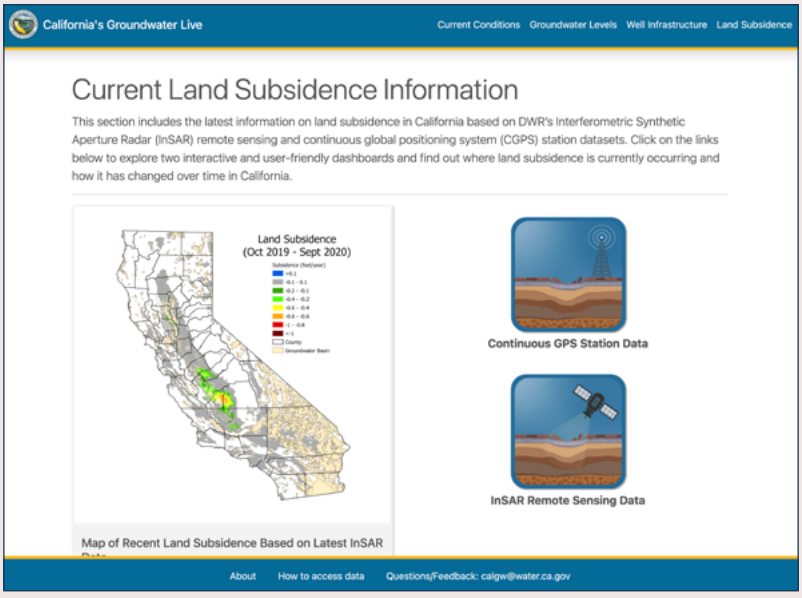
ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
3.1	Continue implementation of the Sustainable Groundwater Management Act (SGMA), including reviewing Groundwater Sustainability Plans submitted in January 2020 and 2022 and assuring basin-wide alignment across the state's more than 250 new groundwater sustainability agencies. Support local implementation however possible, and where basin managers are unable or unwilling to implement the law, exercise appropriate enforcement.	**DWR, Water Board, CDFW**	**3**	On June 3, 2021, DWR released its first reviews of groundwater sustainability plans (GSPs), with additional releases expected in the fall and the remaining by January 2022. DWR continues to support local groundwater sustainability agencies by providing planning, technical, and financial assistance. Planning: DWR shared groundwater educational videos in various languages and released press releases, webinars, and educational materials on GSP decisions. DWR also provided educational toolkits for the public and engagement toolkits and guidance for GSAs. DWR continues providing facilitation and written translation services to support Groundwater Sustainability Agencies (GSAs) outreach to non-English speaking communities. Technical: DWR staff installed 15 stream gauges and 33 monitoring wells. DWR enhanced the MyDryWaterSupply (now MyDryWell) webpage to report dry wells. In November 2021, DWR released California's Groundwater (B-118) Update 2020 and its complementary CalGW Live website and dashboard tools – a powerful new interactive, easy-to-use tool that allows people to customize dashboards conveying information about wells, groundwater levels, and subsidence. The C2VSimFG model, Groundwater Conditions Update Report and Maps, and Statewide Subsidence dataset were updated. DWR launched the first statewide Airborne Electromagnetic (AEM) surveys, initiating this three-year program and providing extensive outreach to the public and tribes. The 2021-2022 state budget includes $18 million for enhanced groundwater monitoring, a groundwater accounting tool and data standards, and enhanced surveys to better manage drinking water, groundwater recharge, and groundwater-dependent ecosystems. In addition, the Wildlife Conservation Board awarded a grant to Audubon California to review and provide comments on draft GSPs and to provide technical assistance to GSAs. Financial: DWR's Sustainable Groundwater Management (SGM) Planning Grant Program provides funds to develop and implement sustainable groundwater planning and projects. Approximately $150 million has been awarded to date through three rounds of solicitations. The SGMA Implementation Grant Program was designed to fund projects and programs that will assist local agencies as they implement groundwater sustainability plans. DWR awarded $26 million in Proposition 68 *(… continued)*

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
				(3.1 continued) funding during the spring 2021 as part of its first round of the Implementation Grant Program. The 2021-22 state budget includes $180 million for grants to support local planning and implementation of groundwater sustainability plans across critically over-drafted basins, with another $60 million to be invested in each of the following two budget years. This funding will help local agencies address known data gaps, plan and implement projects, and address deficiencies in sustainability plans. This funding will be combined with the remaining Proposition 68 funds and awarded over at least two grant rounds. The first round will begin in fall 2021.
3.2	Create a state interagency team to work with stakeholders to identify tools and strategies to address the economic, environmental, and social effects of changing land use and agricultural production as local groundwater managers implement sustainable groundwater management.	**Administration**	**3**	In June 2020, the Administration created three separate internal interagency teams to support local agency implementation of groundwater sustainability plans focused on enabling recharge, supporting local agencies as they plan for different uses of land, and supporting disadvantaged communities. The team focused on recharge is using data from the Tuolumne River watershed to work through whether DWR's watershed studies that include climate change effects can be used to facilitate the water availability analyses required by the Water Board for water right decisions. The goal is to find ways to ease permitting of groundwater recharge projects. The second team, focused on economic impacts, has integrated the state's regional economic development specialists with the state's sustainable groundwater managers and is developing a toolkit of state resources available to support communities facing land-use changes. The third team, focused on disadvantaged communities, provided input to help shape the public outreach requirements of DWR SGMA grant programs and development of groundwater management principles and strategies to monitor, analyze, and minimize impacts to drinking water wells. Inter-agency support of SGMA implementation is wide-ranging and varies by issue.
3.3	Provide targeted support to local planning efforts to address potential land-use changes in regions implementing SGMA.	**Administration**	**3**	The 2021-22 state budget creates a new, $50 million local grant program at the Department of Conservation to support land repurposing through local planning and collaboration. The aim is to guide reuse of farmland where more acres are currently irrigated than groundwater aquifers can support. The Department of Conservation grants will support regions in their efforts to reduce irrigated crops in ways that protect ecosystems. The Department of Conservation plans extensive stakeholder engagement in the development of the program.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
3.4	Explore ways to further streamline groundwater recharge and banking efforts that do not exacerbate water quality issues, and provide technical assistance to facilitate the redirection of water during periods of extended high flows to allow water to sink into aquifers, including on agricultural land. Ensure diversions are protective of native fish and wildlife.	**Water Board, DWR, CDFW, CDFA**	**3**	The 2021-22 state budget includes $300 million to DWR over three budget years, starting in 2021-22, to support local SGMA implementation, including infrastructure projects to improve water supply security, water quality, and/or the reliability of drinking water wells. A DWR-Water Board technical team is using data from the Tuolumne River watershed to work through whether DWR's watershed studies that include climate change effects can be used to facilitate the water availability analyses required by the Water Board for water right decisions. The aim of the work is to ease the burden on local agencies of applying for rights to flood flows for groundwater recharge. In June 2021, the Water Commission, at the request of the Secretaries of the Natural Resources Agency, CalEPA, and Department of Food and Agriculture, began a public process to discuss groundwater trading that recognizes the work that many groundwater sustainability agencies have already undertaken and covers how governance, oversight, stakeholder engagement, and protections could be structured to advance well-designed water trading programs that ensure the interests and needs of all stakeholders. The Commission's work will result in a guidance document for consideration by other state agencies.
3.5	Make funding available for groundwater recharge and storage projects with multiple benefits.	**DWR, Water Board**	**3**	The 2021-22 state budget includes $300 million over three years for grants to support local planning and implementation of Groundwater Sustainability Plans across critically over-drafted basins. This funding will help local agencies address known data gaps, plan and implement projects, and address deficiencies in sustainability plans. The Legislature and Administration also agreed to invest another $60 million each year for the following two fiscal years for local grants to support SGMA implementation.
3.6	Create flexibility for groundwater sustainability agencies to trade water within basins by enabling and incentivizing transactional approaches, including groundwater markets, with rules that safeguard natural resources, small- and medium-size farms, and water supply and quality for disadvantaged communities.	**DWR, Water Board, CDFW, CDFA**	**3**	The 2021-22 state budget includes funding for DWR to support an open-source groundwater accounting tool, guidance, and data standards that can help groundwater sustainability agencies, landowners, environmental interests, and communities manage the transition to sustainable groundwater use and support efficient and equitable water markets. Separately, at the request of the secretaries for CNRA, CalEPA, and Food and Agriculture, the Water Commission is holding public workshops and hosting expert panels to inform preparation of a white paper on groundwater accounting and groundwater trading rules that can protect natural resources, small- and medium-size farms, and disadvantaged communities. The white paper should be available for public review by the end of 2021.







In November 2021, DWR released a powerful new tool called California's Groundwater Live for users to view and analyze the latest groundwater information. With interactive dashboards, the platform allows users to customize data regarding irrigation wells, domestic wells, public water system wells, subsidence, and overall groundwater levels. Users can filter the data by address, county, groundwater basin, well depth and time period to see unique data summaries. The platform was designed for groundwater managers, governmental agencies, well owners, non-governmental organizations, water policy makers and members of the public. DWR will continue to improve the tool based upon user feedback and new data. In normal years, groundwater accounts for about 40 percent of the state's water supply, but in drought years it can be as much as 60 percent or more. Some communities in California are entirely reliant on groundwater supplies.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
3.7		**DWR, Water Board, CDFA**	**3**	In August 2021, DWR began the first flights of statewide airborne electromagnetic geophysical surveys in groundwater basins along the Central Coast. Conducted over the next few years, these surveys will provide near-continuous data describing the geology of the subsurface that controls the flow of groundwater in the high- and medium-priority groundwater basins, where feasible. The data will inform groundwater sustainability agencies and counties seeking to manage their groundwater sustainably and support land use planning efforts, such as protecting and maximizing recharge areas. The surveys have been launched with $12 million in Proposition 68 funding. The 2021-22 state budget includes $18 million for enhanced groundwater monitoring, a groundwater accounting tool and data standards, and enhanced surveys to better manage drinking water, groundwater recharge, and groundwater-dependent ecosystems. A portion of this funding will be used for enhanced AEM surveys.
3.8	Explore streamlined permitting for low-hazard dams that are not across a stream channel or watercourse and are used principally for agricultural and groundwater recharge purposes.	**DWR**	**1**	The DWR Division of Safety of Dams and deputy director of legislative affairs worked with Assemblymember Heath Flora on legislation that would streamline permitting of some dams from state oversight for dam safety. The legislation, AB 1164, failed in the 2021-22 legislative session.
3.9	Help regions prevent contamination of groundwater basins, including through seawater intrusion, and remediate contaminated groundwater basins that will enable large-scale water recycling and conjunctive use.	**DWR, Water Board**	**3**	The 2021-22 state budget includes $400 million over three years to the State Water Board to support local water recycling projects and cleanup of groundwater to augment water supplies. It also includes $100 million over three years to help public water suppliers address groundwater contaminated by polyfluoroalkyl substances (PFAS).

Support local and regional agencies to recycle or reuse at least 2.5 million acre-feet a year in the next decade.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
4.1	Increase financial capacity to support recycling, reuse, and wastewater projects through the Clean Water State Revolving Fund and other state and local funding mechanisms.	**Water Board**	**3**	The 2021-22 state budget includes $1.3 billion to augment the Clean Water and Drinking Water state revolving funds and provide assistance to local agencies for drinking water and wastewater projects. The Water Board has provided over $560 million in loan and grant funding from Propositions 1 and 68 to water recycling projects that will increase reuse of wastewater by approximately 220,000 acre-feet per year; the state bond funds were used in conjunction with an additional $1.375 billion in clean water state revolving fund loans to fund 56 projects. The Water Board continues to evaluate options to increase funding for recycling projects through use of the Water Infrastructure Financing and Innovation Act loan program administered by U.S. Environmental Protection Act. The federal infrastructure legislation signed by the President in November 2021 includes $11.7 billion for states' Clean Water State Revolving Funds.
4.2	Continue work on raw water augmentation regulations and treated drinking water augmentation regulations to allow purified recycled water to be moved directly into drinking water distribution systems. Following the steps outlined in AB 574 of 2017, continue research underway that is identified in the direct potable reuse criteria feasibility report to the Legislature and convene an expert panel to review the proposed criteria to assure they are adequately protective of health.	**Water Board**	**3**	The State Water Board granted $1.4 million to The Water Research Foundation to manage five direct potable reuse (DPR) research projects, one of which was completed in summer 2020. The remaining four projects were completed in February 2021. An additional grant to The Water Research Foundation funds 13 research projects related to various aspects of potable and non-potable reuse of recycled water. Five of those projects will be completed in 2021 and the remaining eight will be completed in 2022. The previous expert panel posed research questions that need to be answered to aid in the development of the regulations can proceed. The contracting process for convening the new expert panel is completed and the panel was formed in the summer of 2021.
4.3	Implement 2018 legislation (SB 966) that requires creation of risk-based water quality standards for onsite collection and non-potable reuse of water in apartment, commercial, and mixed-use building.	**Water Board**	**2**	The regulations are due December 1, 2022. The Water Board has been drafting and scheduling workshops. The Board is on track to adopt the new regulations next year before the deadline.
4.4	Update 20-year-old "purple pipe" regulations to eliminate outdated and overly prescriptive requirements in order to expand use of non-potable recycled water while protecting food safety and the environment.	**Water Board**	**1**	Resources were redirected to direct potable reuse, another Water Resilience Portfolio priority. Permitting requests related to the drought have taken precedence.

Support cities and counties to make stormwater capture a growing share of their supply.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
5.1	To address inconsistent approaches in how municipalities estimate the cost of stormwater programs, develop a framework to identify cost of compliance with stormwater permit requirements.	**Water Board**	**2**	The Water Board identified cost of stormwater compliance as a priority for 2021. This project will create a standard accounting and allocation method to estimate stormwater program costs to inform the State and Regional Boards' permit requirements and municipalities' stormwater asset management. This project implements the Water Boards' Strategy to Optimize Resource Management of Stormwater (STORMS) Phase II. Staff have developed and vetted a project charter with stakeholders. The State Water Board will further develop existing cost of municipal stormwater permit compliance guidance documents to create a standard accounting and allocation method to estimate stormwater program costs including costs for personnel, operation and maintenance, and capital improvements. Case studies using permittees of various sizes from different regions will be conducted to evaluate the applicability and level of detail necessary for successful implementation. This project will also explore the need for permits to require specific reporting methods. Staff will be holding a public workshop in late 2021.
5.2	Pilot stormwater capture and use projects through the Drinking Water State Revolving Fund to identify impediments to address and to provide a framework for additional future projects.	**Water Board**	**1**	The Board awarded its final round of Proposition 1 Stormwater funding in February 2021. During the solicitation, no projects were submitted that fit this description and proposed use of state revolving funds.
5.3	Develop best management practices and standards for the design and construction of recharge wells used to capture urban stormwater.	**DWR**	**2**	The Water Boards' stormwater program strategy (STORMS) includes a project for staff to work with DWR to develop standards for dry well construction and use to ensure protection of water quality. The Water Board is developing a policy for infiltration of urban runoff. Urban runoff can contain pollutants and contaminants of emerging concern at concentrations exceeding water quality objectives. If left untreated, infiltration of urban runoff has the potential to degrade groundwater quality. The Water Board is working closely with DWR to update *Bulletin 71–Well Construction Specifications*. Further regulatory approaches for permitting dry wells and/or other urban infiltration systems are still begin evaluated. Staff are developing the project workplan that will be presented to stakeholders at the STORMS Implementation Committee.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
5.4	Provide statewide authority for wastewater facilities to accept stormwater and incentivized stormwater permittees to divert their captured stormwater at times when wastewater facilities have the capacity to accept such diversions.	**Water Board**	**2**	Water Board staff are participating in a working group comprised of wastewater and stormwater utilities to identify barriers to greater collaboration to improve stormwater quality and treatment opportunities. To date the working group is gathering information to identify potential pilot projects.

Consider use of desalination technology where it is cost effective and environmentally appropriate.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
6.1	Consider new desalination projects according to existing state criteria including the Water Board's Ocean Plan and the Coastal Act.	**Administration**	**3**	There are 12 existing seawater desalination plants permitted in California. Four seawater desalination projects have been proposed to the Water Boards: **Huntington Beach Desalination Project:** In April 2021, The Santa Ana Regional Water Quality Control Board conditionally renewed Poseidon Water's National Pollutant Discharge Elimination System (NPDES) permit governing the seawater intake and waste discharges from its proposed desalination facility in Huntington Beach, which is projected to produce 50 million gallons per day of potable water. On July 9, 2021, Poseidon Water submitted its Coastal Development Permit application to the California Coastal Commission for the construction of the proposed Huntington Beach Desalination Project. **Doheny Desalination Project:** South Coast Water District proposes to construct and operate the Doheny Desalination Plant designed to produce up to five million gallons a day of potable drinking water. The San Diego Regional Quality Control Board and the State Water Board staff reviewed the project's Report of Waste Discharge and application and provided comments in 2021. Staff anticipate bringing the Doheny Desalination Project to the San Diego Water Board for consideration by December 2021. **West Basin Ocean Water Desalination Project:** West Basin Municipal Water District's proposed Ocean Water Desalination Project would produce 20 million gallons per day of potable water supply, with potential expansion up to 60 million gallons per day. The final Environmental Impact Report was completed in October 2019. Currently, West Basin Water District is conducting analyses to fulfill the Ocean Plan requirements. West Basin Water District has not submitted a request for a Water Code section 13142.5(b) determination or NPDES permit application to the Los Angeles Regional Water Quality Control Board. (… *continued)*

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
				(6.1 continued) **Monterey Peninsula Water Supply Project:** California American Water's proposed Monterey Peninsula Water Supply Project includes a desalination plant to provide for long-term water needs of the Monterey Peninsula community. In September 2020, Cal-Am withdrew its application to the California Coastal Commission for a Coastal Development Permit to construct the slant wells for the Monterey Peninsula Water Supply Project to allow for more time to work with stakeholders on social and environmental justice concerns. Cal-Am submitted a revised application in November 2020. In December 2020, Coastal Commission staff notified Cal-Am that its application was incomplete and requested more information. In January 2021, a Monterey County Superior Court judge required the county to rescind its permit approval for the desalination facility so that the county can comply with California Environmental Quality Act (CEQA) requirements, and then reconsider the permit. Cal-Am is currently working to resubmit their application to Coastal Commission.
6.2	Team with federal and academic partners to develop desalination technologies that treat a variety of water types for various uses, with a goal of enabling manufacturing of energy-efficient desalination technologies in the U.S. at a lower cost, same or better quality, and reduced environmental impact than non-traditional source.	**DWR, Water Board, California Energy Commission, CDFA, Ocean Protection Council**	**3**	The 2021-22 state budget includes $13 million to complete the state's $25 million cost share commitment for the $100 million, five-year U.S. Department of Energy research hub called the National Alliance for Water Innovation (NAWI). NAWI will generate research, inventions, and pilot projects that allow the state to make better use of inland brackish groundwater, agricultural runoff, mine runoff, municipal waste waters, industrial waste waters, and water produced in connection with oil and gas drilling. NAWI research will support safe and economic disposal of brine, either by reducing liquid waste streams to more compact form or by transforming the "waste" into valuable industrial chemicals. The hub, headquartered in Berkeley, also aims to bring down the cost and energy consumption of desalination by approximately 75 percent, lower the environmental footprint of desalination, and foster small, modular desalination technologies that can be deployed in disadvantaged communities where connection to larger water supply systems is difficult. NAWI is the largest federal investment in water treatment research since the 1960s.

Expand smart surface water storage where it can benefit water supply and the environment.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
7.1	Accelerate state permitting of projects that protect and enhance fish and wildlife and water supply reliability – such as Sites, Pacheco Reservoir Expansion, and the Chino Basin Conjunctive Use Environmental Water Storage/ Exchange Program – that were selected under the Water Storage Investment Program (Proposition 1).	**CNRA, CalEPA**	**2**	By December 15, 2021, all seven projects in the Water Storage Investment Program (WSIP) had met the statutory deadline of January 1, 2022 to ensure progress and remain eligible for WSIP funding. The Water Commission and Water Board have executed an interagency agreement to support sufficient water right staff to handle WSIP permit applications, once received. The Department of Fish and Wildlife has entered into a reimbursable agreement with Sites Joint Powers Authority and the Contra Costa Water District to provide dedicated staff to work on permits for the Sites reservoir and Los Vaqueros expansion projects. The Water Commission is supporting DWR staff costs to analyze the effects of the seven proposed storage projects on State Water Project operations, including Sacramento River flows, south-of-Delta exports, and water availability at various times of the year. DWR will be the lead agency under the California Environmental Protection Act (CEQA) for an initial study to determine the level of further CEQA work for state agency actions not covered by local agency CEQA documents. The study is underway and expected to be completed by November 2021. DWR is coordinating with the Water Board on the timing and submittal of the State Water Project water rights changes required to implement the WSIP projects associated with SWP operations. The earliest any of the seven projects is expected to begin operation is 2024.
7.2	Acquire through contract a portion of storage, dedicated for environmental purposes, for the life of the water storage projects the Water Commission selected under the Water Storage Investment Program funded by Proposition 1.	**CDFW**	**2**	CDFW continues to meet with WSIP applicants to develop components of the public benefit contracts required by the WSIP regulations in order to receive Proposition 1 funding. Applicants need to provide CDFW additional information to further develop contracts. DWR also is working with project applicants and CDFW on the operational and contractual agreements required to implement the projects.

Protect and restore water quality by driving pollution reduction from a range of sources.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
8.1	Implement AB 834, the 2019 legislation that requires the Water Board to establish and maintain a comprehensive harmful algal bloom program that includes incident response, monitoring, and website postings.	**CalEPA, CNRA, Department of Public Health**	**3**	The State and two Regional Water Boards in June 2021 completed filling five positions dedicated to carrying out AB 834. An annual report was posted on the Water Boards' website in July 2021. The Water Board has procured substantial new services, equipment, and capacity for data for the program this season. Progress on a new data platform capable of integrating community-collected data is ongoing.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
8.2	Support statewide source control programs that use incentives, innovation, public education, and where necessary, enforcement to reduce nutrient, pesticide, erosion, and sediment discharge.	**Water Board**	**3**	The Water Boards lead the state's Non-Point Source Program, which focuses on providing funding and support for projects to address non-point sources of pollution such as pesticides, sediment, and nutrients. Funding is made available annually and is largely directed to addressing impaired waters.
8.3	Support statewide source control programs for emerging contaminants of concern that are hardest to treat.	**Water Board**	**3**	Progress has been made to date on PFAS source investigations at airports, landfills, chrome plating facilities, wastewater treatment plants, bulk fuel terminals, and refineries. Approximately 950 source investigations are being conducted statewide along with the sampling of over 1,000 drinking water wells in the vicinity of these source areas. Data collected from wastewater treatment plant influent is expected to identify other potential industrial sources of PFAS for additional investigation. Once identified, the Regional Water Boards will work with those identified industrial facilities to identify safer alternatives and/or treatment options to mitigate the discharge of PFAS into wastewater. The 2021-22 state budget includes $30 million to support local agency treatment of PFAS contamination, with another $50 million in the 2022-23 budget and an additional $20 million in the 2023-24 budget. The $4.2 million reimbursement authority allocated in the 2021-2022 State Budget to oversee cleanup of contaminants, including PFAS, can be directly used to investigate and remediate these types of PFAS sources.
8.4	Explore ways to expand the scope and capacity of existing multi-agency post-fire assessment teams to evaluate anticipated impacts to aquatic life and drinking water sources.	**CAL FIRE, Water Board**	**2**	The Water Board Emergency Management Program is leading a group related to three priorities outlined in the Governor's Wildfire and Forest Resilience Action Plan: the establishment of emergency forest restoration teams, the development of a restoration strategy for state lands, and the development of a restoration strategy for federal lands. The Water Boards' role is to identify and prioritize water quality concerns to ensure they are captured in these efforts.
8.5	Support mercury control programs to reduce human and wildlife exposure to mercury-contaminated fish.	**Water Board**	**2**	AB 762 (2019) authorized the Water Boards to make grants to local entities to fund posting of fish advisories in priority locations statewide. Water Board staff expect to execute a grant agreement with local public health officers through the California Conference of Directors of Environmental Health by October 2021. Implementation of total maximum daily loads (calculations of the maximum amount of a pollutant allowed to enter a water body) adopted across the state continues to address waters impaired by mercury. These water quality control plans will take decades or longer to achieve water quality objectives, so a focus on controlling exposure is necessary in the immediate term.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
8.6	Develop and implement statewide water quality objectives for aquatic life. Assess biological communities to determine stream health and condition future projects to protect high-quality, high-functioning systems.	**Water Board**	**4**	The State Water Board adopted the Toxicity Provisions in December 2020. Staff are working on assembling the administrative record for submission to the Office of Administrative Law and U.S. Environmental Protection Agency Region 9 for approval. Staff is developing the technical foundation and policy options for a statewide water quality objective and implementation program for nutrients and other biostimulatory substances for wadeable streams. Water Board staff are developing the draft project goals and scope and expect to discuss the outline with stakeholders by the end of 2021.
8.7	Support research, technical assistance, and grower training within the Fertilizer Research and Education Program to better manage nutrient application and irrigation practices to protect water quality.	**CDFA**	**1**	University of California Cooperative Extension has been awarded $3 million to hire six extension personnel whose work will be devoted to administering on-farm demonstrations and interactive trainings and workshops in nitrogen and irrigation management. These extension personnel will collaborate with local grower coalitions to focus resources on high-priority areas, crops, and growers, as determined by nitrogen reporting data. Personnel will work with growers to address their irrigation and nutrient needs.
8.8	Enhance dairy and livestock manure management programs to protect water quality, including activities that improve nutrient use efficiency and enable development of manure-based products, including bioenergy.	**CDFA**	**3**	The 2021-22 state budget includes $80 million over two years to CDFA to reduce livestock methane emissions. These funds will be used to incentivize dairy and livestock operators to develop dairy digesters to capture methane gas or change their existing liquid phase manure management process to a dry phase manure management process. The Dairy Digester Research and Development Program at CDFA has funded 118 projects that have an annual greenhouse gas reduction of 2.1 million metric tons of carbon dioxide equivalent and provide dairies with double-lined lagoons to prevent nitrate leaching. The Alternative Manure Management Program (AMMP) funds non-digester technologies on dairy operations and provide methane reduction benefits as well as other nutrient-related benefits. AMMP has funded 116 projects.

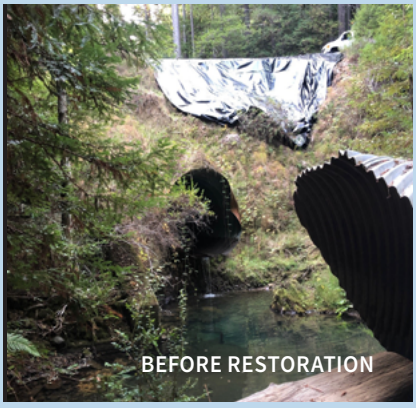
ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
8.9	Support regionally-based salinity and brine management programs to improve water quality and supply reliability.	**Water Board, DWR**	**3**	Elevated salinity and nitrates in surface water and groundwater are increasing problems affecting much of California, other western states, and arid regions throughout the world. In California, as surface and groundwater supplies become scarcer, and as wastewater streams become more concentrated, salinity and nitrate impairments are occurring with greater frequency and magnitude. In 2006, the Central Valley Water Board, the State Water Board, and stakeholders began a joint effort to address the issues and initiated Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS). In 2017, the Central Valley Water Board accepted a Central Valley-wide Salt and Nitrate Management Plan that was submitted by CV-SALTS. In 2019, the State Water Board approved the plan and continues to support the Regional Boards' work with stakeholders to develop and implement salt and nutrient management plans and to permit recycled water projects as required by the Recycled Water Policy, which was first adopted in 2009 and subsequently amended in 2013 and 2018. The Prioritization and Optimization Study workplan is under way. Board staff are resuming work on the Basin Plan Amendment to encourage recycled water projects in agriculture-dominated waterways in fiscal year 2021-22.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
8.10	Support efforts to address transboundary flows of contaminated water, trash, and sediment at our border with Mexico.	**CalEPA, CNRA**	**3**	The 2021-22 state budget includes $20 million to the State Water Board to address Tijuana and New river water quality issues. In 2021, CalEPA and DWR worked with the City of Calexico to prepare permits for a $28 million investment in the construction of the New River Improvement Project, which will divert transboundary wastewater flows originating in Mexicali away from downtown Calexico. The State Coastal Conservancy awarded $10 million to the County of San Diego to address trash and sedimentation in a cross-border canyon. CalEPA and the San Diego Regional Water Board continue to provide input to federal agencies on priority projects in the Tijuana River for $300 million in federal funding. The Regional Water Board coordinates with state and local agencies to develop and implement projects through the Tijuana River Valley Recovery Team. In 2021, this has resulted in interagency support for the development of the Nelson Sloan Quarry Reclamation Project, Proposition 68 funding for two grants funding a sediment management plan, and a monitoring and assessment project in the Tijuana River Valley. The Regional Water Board also is finalizing two Total Maximum Daily Load regulations for sewage and solid waste for adoption in early 2022 and continues to pursue short-term control of transboundary flows of sewage through legal negotiations with federal agencies. Colorado River Basin Regional Water Board staff participate in the Binational Technical Committee (BTC), which facilitates communication between the U.S. and Mexico over pollution problems and binational sanitation projects.

Protect and Enhance Natural Systems

The state's rich assemblages of plants and animals depend upon healthy water-dependent habitats. But those habitats have been drastically altered by 200 years of human engineering, and climate change exacerbates the stress. At the same time, water managers increasingly appreciate the flood management, water filtration, groundwater recharge, and other benefits that forests, wetlands, floodplains, and other "green infrastructure" provide. The state and partners are pursuing restoration in many places, such as the 1,100 acres of former cattle grazing lands returning to freshwater tidal marsh along Dutch Slough in Contra Costa County. Efforts are underway to restore wetlands in the estuary of the Sacramento and San Joaquin rivers and return natural functions to Sierra meadows and urban streams. With input from stakeholders, state regulators are embracing accelerated permitting of restoration projects and removing or replacing dams and culverts that fragment aquatic habitat. State funding incentivizes farmers to foster soil to help retain water and carbon.

A $2.6 million grant from the Wildlife Conservation Board to Trout Unlimited helped fund restoration of nearly one mile of habitat for coho and chinook salmon and steelhead and reduction in sediment downstream of where the California Western Railroad crosses the upper Noyo River in Mendocino County. The culvert at this crossing had become a fish passage barrier due to scouring. The project installed a new 165-foot open-bottom arch culvert designed to allow fish passage at a range of flow levels. Photo above: Ross Taylor and Associates; at right: Wildlife Conservation Board.



Help regions better protect fish and wildlife by quantifying the timing, quality, and volume of flows they need.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
9.1	Develop rapid methodologies to establish regional instream flow metrics through the multi-partner California Environmental Flows Framework. Provide regional training on the environmental flow methods and tools to support local and statewide resource managers. Develop a series of case studies around the state to refine the tools.	**Water Board, CDFW, DWR**	**3**	The draft California Environmental Flow Framework (CEFF) was released to the public in November 2020. Comments were received and edits made to the report to reflect those comments, where helpful or applicable. Multiple case studies are currently being finalized by members of the CEFF technical team, including several funded by Wildlife Conservation Board grants. CDFW is actively participating in the development of these case studies and in a process for implementing functional flows in partnership with the CEFF technical team.
9.2	Conduct and utilize instream flow analyses to further develop instream flow recommendations for ecologically important streams to protect public trust values.	**Water Board, CDFW**	**2**	Additional work related to CEFF is paused within the Water Board due to staff redirection to work on drought issues. Progress continues where dedicated funding sources are available for streams delineated for instream flow analyses in the 2014 California Water Action Plan, including the Ventura River, Shasta River, and Eel River. Interagency coordination on other important streams, such as the Scott River, is underway. CDFW is using the rapid instream flow analyses to develop flow criteria, which can be used to develop formal CDFW flow recommendations, on seven additional streams statewide (Mattole River, West Fork San Gabriel River, Santa Ana River, Santa Margarita River, Mojave River, Dos Pueblos Creek, Carpinteria Creek). The Wildlife Conservation Board (WCB) awarded $278,000 in grants to develop ecological flow recommendations using California Environmental Flows Framework (CEFF), implement a Community Water Management planning process, conduct monitoring, and develop designs for several projects on forested Trinity County sites. The WCB also awarded a $441,000 grant to develop stream flow recommendations for tributaries to Middle and North Fork of Eel River on Round Valley Indian Tribes' tribal lands and help evaluate instream flow methods for broader application across California. The WCB also funded planning activities to support future implementation of a diverse array of stream flow enhancement actions in the Navarro River and Outlet Creek watersheds.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
9.3	Bring together regulators, tribes, water users, public water agencies, non-governmental organizations, and other stakeholders to develop innovative, voluntary solutions to water supply, water quality, and ecosystem protection.	**CNRA, CalEPA, CDFA**	**3**	In 2020 and 2021, the Wildlife Conservation Board awarded $9.2 million in grants to 10 separate projects in Sonoma, Humboldt, Tehama, Siskiyou, and San Mateo counties to improve environmental conditions through landowner actions such as moving diversions from summer to winter, creating an alternative source of water for golf course irrigation, and reducing spillage at water diversions. In summer 2021, CDFW executed three emergency contracts with Scott River basin alfalfa growers to forego pumping of groundwater to augment Scott River flows for coho and chinook salmon. The emergency contracts last from August 1 through December 31, 2021, and the Scott River Water Trust will monitor the effectiveness of the augmented stream flows. In order to improve conditions for migratory waterfowl and shorebirds in a second consecutive dry years, DWR is entering into an interagency agreement with the California Rice Commission (supported by The Nature Conservancy) to help fund projects through the Bid4Birds Program. This is a program that compensates rice farmers to flood their fields after harvest for the benefit of shorebirds, waterfowl, and other waterbirds. Under the agreement, the Bid4Birds Program also will be expanded to include compensation for flooding of private managed wetlands in the Sacramento Valley. Similarly, CDFW is contracting with The Nature Conservancy to implement their BirdReturns habitat incentive program on wildlife-friendly agricultural lands and wetlands in the Delta and San Joaquin Valley. Additionally, CDFW is contracting with the Grasslands Water District to repair infrastructure that will result in thousands of additional acre-feet of water annually, improving the long-term resilience of managed wetlands to drought. CDFW also will be partnering with the California Waterfowl Association and Ducks Unlimited to implement projects on CDFW-owned lands that will improve conditions for wildlife in future droughts. Finally, CDFW and the National Marine Fisheries Service in August 2021 announced a Voluntary Drought Initiative designed to protect populations of salmon, steelhead, and sturgeon from the effects of the current unprecedented drought. The initiative provides a framework for water users to enter into individual agreements with the two agencies to maintain enough water for fish spawning and survival, and implement other collaborative actions like fish rescue, relocation, monitoring, and habitat restoration. In return, landowners and water users will benefit from a simplified permitting process under the federal and state endangered species laws and may receive incidental take authorizations for California Endangered Species Act-listed fish in case a participant unintentionally takes a listed fish species.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
9.4	Work with universities, tribes, public water agencies, and non-governmental organizations to develop new tools for identifying functional ecosystem flows.	**CDFW, Water Board**	**2**	Work related to functional ecosystem flows, in particular the California Environmental Flow Framework (CEFF) is paused within the Water Board due to staff redirection to work on drought issues. CDFW recently executed a new contract under Proposition 84 to fund continued development of functional flows tools over the next few years with researchers at UC Davis and UC Berkeley. This collaboration between UC and CDFW uses fish monitoring data to develop tools to identify functional ecosystem flows. The team is currently working to identify appropriate fish datasets and train new research staff. Multiple efforts are also underway to develop regional applications of the functional flows. For example, staff at UC Davis and the Southern California Coastal Water Research Project are completing an analysis that assesses relationships of invertebrates to functional flows.
9.5	Develop analytical modeling tools that can be used to rapidly assess streamflow depletion tied to groundwater pumping.	**CDFW, DWR, Water Board**	**2**	DWR is advancing the development of an analytical solution to assess streamflow depletion to support groundwater managers with sustainability planning efforts. Staff are reviewing available research documenting analytical methods for assessing streamflow depletion and coordinating with other state agencies. The purpose of this effort is to identify the key assumptions and limitations of analytical approaches and provide guidance on the conditions most applicable. Following completion of researching available analytical solutions, staff will develop a public tool to enable rapid assessment of potential stream depletion associated with groundwater pumping.

Reconnect aquatic habitat to help fish and wildlife endure drought and adapt to climate change.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
10.1	Support the revival of salmon, steelhead, lamprey, and other native fisheries and ecosystems central to several Native American tribes on California's second-largest river through the bi-state effort to remove four Klamath River hydroelectric dams and related river restoration activities.	**CNRA**	**3**	In June 2021, the Federal Energy Regulatory Commission (FERC) approved an order transferring ownership of four Klamath River dams from the private utility PacifiCorp to the states of California, Oregon, and the Klamath River Renewal Corporation (KRRC), a non-profit entity established to remove the dams. FERC held public scoping sessions starting in July 2021 to begin preparing an environmental impact statement for the dam removal project under the National Environmental Protection Act (NEPA). In September 2021, PacifiCorp, Karuk Tribe, Yurok Tribe, the states of Oregon and California and the KRRC urged FERC to swiftly process the Amended License Surrender Application that KRRC and PacifiCorp had filed in November 2020 so that the project could move forward to reservoir drawdown and deconstruction in 2023. The effort is being funded through Proposition 1, the 2014 California water bond, and surcharges on PacifiCorp customers in California and Oregon.
10.2	Support a comprehensive culvert and fish passage improvement program, including along transportation corridors, using the strategy generated by the public-private California Fish Passage Forum and by piloting new approaches with state and federal agencies in coordination with the six regional California Fish Passage Advisory Committees.	**CDFW, Caltrans, California Transportation Commission, Fish and Game Commission**	**3**	The California Fish Passage Forum is an association of public, private, and governmental organizations. Projects undertaken by the Forum in 2021: • Opening up seven miles of stream for salmon and steelhead by addressing barriers at the mouths of up to 40 tributaries to the Klamath River. • Removing an abandoned sewer line encased in concrete resting on bed of Ross Creek in Marin County to allow passage of juvenile steelhead. • Restoring access to off-channel ponds and side-channel habitat along Lawrence Creek in Humboldt County. • Replacing a failed fish passage facility to restore more than a mile of creek and reconnect Wildcat Creek to San Francisco Bay. Separately, the Wildlife Conservation Board (WCB) awarded $5 million to the Ventura County Watershed Protection District to complete final design plans for removal of Matilija Dam on a tributary to the Ventura River and for three downstream levee construction/ rehabilitation projects as essential components of the Matilija Dam Ecosystem Restoration Project. In 2020 and 2021, the WCB awarded another $3.8 million in grants for fish passage projects in Sonoma, Mendocino, and San Mateo counties.
10.3	Develop priorities and a process for removal or reconfiguration of aging or obsolete dams with collaborative partners.	**CDFW**	**3**	CDFW developed a Priority Barrier removal list, which is used annually for granting programs. The updated document of all priorities defined by CDFW's Region Offices will be finalized and released in November 2021.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
10.4	Evaluate, plan for, and respond to environmental stressors due to climate change, including development of regional contingency plans for fish and wildlife and ecosystems and promotion of climate change adaptation projects to prevent species decline.	**CDFW**	**2**	CDFW continues to coordinate closely with other agencies and conservation partners to plan and better prepare for the impacts of climate change on wildlife, utilizing Department-managed lands to prevent species decline. CDFW continues to evaluate impacts of climate change and identify management strategies for threatened, endangered, and other sensitive species in species reviews, status reviews, and conservation plans and through collaboration on conservation actions with partners.
10.5	Support urban stream restoration projects, including but not limited to multi-benefit erosion and flood management improvements that provide community access to clean water, daylight streams to create shaded corridors, remediate river-adjacent brownfields, and restore natural infrastructure.	**CNRA, CalEPA**	**3**	In 2020 and 2021, the Wildlife Conservation Board awarded $4 million in five separate grants around the state to help restore urban streams, including removal of concrete creek channel in San Diego County and daylighting of a culverted stream in Moraga. The 2021-22 state budget includes $10 million for the Santa Monica Mountains Conservancy for projects that improve the climate resiliency or the protection of the Los Angeles River watershed or are a part of the revitalization plan developed by the Upper Los Angeles River and Tributaries Working Group. The 2021-22 budget also includes $10 million to the San Gabriel and Lower Los Angeles Rivers Conservancy for projects that improve the climate resiliency or the protection of the Los Angeles River watershed or are consistent with the Lower Los Angeles River Revitalization Master Plan. And the budget includes $10 million to DWR for "urban streams restoration projects, including, but not limited to, multi-benefit erosion and flood control improvements that provide community access to clean water, daylighting streams, creation of shaded corridors, and restoration natural infrastructure." In addition, the state budget includes $20 million split evenly across these three Southern California conservancies in 2022-23 for the same purposes.

Support the expansion of wetlands, including mountain meadows, to create habitat, filter runoff, buffer floods, and recharge groundwater.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
11.1	Work with federal agencies to meet the water needs of wildlife refuges, which function together as a vital network for migratory shorebirds and waterfowl, including expediting transfer of water supplies to Central Valley Project Improvement Act refuges.	**CDFW**	**3**	In 2020 and 2021, the Wildlife Conservation Board awarded a total of $1.8 million to five separate projects that enhance water delivery at Gray Lodge, Los Banos, and North Grasslands Wildlife Areas and the Sacramento National Wildlife Refuge. Through Proposition 1, the Natural Resources Agency (CNRA) has funded the North Grassland Water Conservation and Water Quality Project and the Biggs-West Gridley Water Conveyance Project, which will bring additional water to North Grasslands and the Gray Lodge Wildlife Areas, respectively. CNRA also helped to fund the North Valley Regional Recycling Project, which conveys tertiary-treated wastewater from Modesto through the Delta-Mendota Canal to farmers served by the Del Puerto Water District and to federal wildlife refuges in wet years.
11.2	Implement the new adopted State Wetlands Policy to make regulation of wetlands more protective, predictable, and consistent, and provide training to state and local water managers on those regulations.	**Water Board**	**3**	State Water Board staff have delivered training to Regional Water Boards and the regulated community on implementation of the 2019 Dredge and Fill Procedures. Staff implement the Procedures through issuance of water quality certification permits for dredge and fill projects.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
11.3	Support expansion of multi-benefit floodplain projects across the Central Valley and coastal regions, including projects that reduce flood risk and restore or mimic historical river and floodplain processes, such as the Yolo Bypass and Cache Slough Partnership program.	**DWR, CDFW, CDFA, Flood Board**	**3**	In 2020 and 2021, the Wildlife Conservation Board (WCB) awarded $10.5 million in grants to 18 separate mountain meadow restoration projects. The WCB also awarded $1.4 million to Ducks Unlimited to enhance water delivery infrastructure and wetlands at Yolo Bypass Wildlife Area and nearly $2 million to improve floodplain connectivity and fish rearing habitat on the lower Yuba River. In fiscal year 2020-21, DWR advanced several multi-benefit floodplain projects across the Central Valley, including: • DWR broke ground and has made substantial progress constructing the Lower Elkhorn Basin Levee Setback project, which is setting back seven miles of the eastern levee in the Yolo Bypass to expand the floodway by as much as 1,500 feet. The project will increase capacity of the system and provide greater protection for Sacramento and the region. The project also will restore 900 acres of floodplain habitat in the Yolo Bypass along Tule Canal. • DWR and Flood Board staff played a lead role in developing a "vision" document for the Yolo Bypass-Cache-Slough Partnership that describes how the program intends to benefit regional stakeholders. The Flood Board, as lead, with DWR also advanced the Programmatic 408 permit with the U.S. Army Corps of Engineers and developed a first draft of the Masterplan for the Partnership. In partnership with DWR, the Flood Board leads several related working groups to address barriers including ecosystem baseline and accounting, hydraulics and hydrology, permitting, and operations and maintenance. • DWR helped in the formation of Little Egbert Tract (LET) Joint Powers Authority (LET JPA) as a prerequisite to providing funding to advance the LET project, which will restore more than 3,400 acres of intertidal and floodplain wetland and riparian habitat. DWR is finalizing an agreement to provide the LET JPA more than $4million to initiate the CEQA process and refine project designs. • DWR is leading an effort with Central Valley Flood Protection Board staff and San Joaquin River stakeholders to identify priority multi-benefit projects in that region to include in the 2022 Update of the Central Valley Flood Protection Plan. • DWR and the Flood Board are working with local landowners and flood control agencies in the Paradise Cut area of the San Joaquin River to identify a local agency to lead the Paradise Cut *(… continued)*

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
				(11.3 continued) Expansion Project, a multi-benefit project that would provide more than two feet of flood water level reductions in Stockton and other riparian cities, as well as reactivating more than 1,000 acres of floodplain habitat. Once the lead agency is identified, DWR will provide more than $3 million to support planning and design work that will lead to a CEQA document. • DWR is working with trustees and landowners in Reclamation District 1600, known as Upper Elkhorn Basin, in the northeast corner of the Yolo Bypass area, to advance a multi-benefit project. DWR is developing a funding agreement with RD 1600 to support an analysis of project alternatives. This project would modify the Fremont Weir and surrounding levees so that the district would flood on a more frequently, thereby providing additional flood protection to Sacramento and surrounding agricultural areas, as well as provide floodplain habitat. CFDW has permitted floodplain projects such as the Willow Bend project on the Sacramento River and the Lower Elkhorn Levee Setback Project, and is in the process of completing permits for the Fremont Weir Big Notch Project, which supports flood management and habitat restoration in the Yolo Bypass. CDFW funded the Lower Sutter Bypass Anadromous Fish Habitat Management Planning Project and has invested significant staff time in multi-stakeholder processes to restore floodplain processes in the Central Valley. In addition, CDFW is reviewing the draft Southport Pilot Project Mitigation Credit Agreement, which expands the floodway in the Sacramento River in West Sacramento. CDFW's Proposition 1-funded Watershed Restoration Grant Program prioritizes floodplain restoration and enhancement projects. The program also supports scientific studies to monitor and assess the impact of restoration of seasonal floodplains on fish and wildlife habitat and ecological function specifically within the Sacramento-San Joaquin Delta. Since 2015, CDFW has awarded approximately $11 million towards multi-benefit floodplain projects, including restoration and scientific studies.

Curb invasive species altering California waterways.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
12.1	Work to eradicate nutria, large rodents introduced to the Central Valley from South America, which jeopardize wetlands and levees by eating aquatic plants and burrowing.	**CDFW, CDFA, Delta Conservancy**	**3**	As of October 2021, the state nutria eradication program had assessed 1.52 million acres for habitat suitability and/or nutria presence, deployed more than 4,600 camera stations, detected nutria in 572 sites, set over 6,000 traps, and removed 2,720 nutria. CDFW's Nutria Eradication Program received 17 permanent positions in the 2021-22 budget to replace the temporary positions used to establish and expand its field operations. CDFW is currently working with State Parks' Division of Boating and Waterways to develop a strategy to control invasive water hyacinth in three nutria-infested sloughs where the hyacinth precludes nutria eradication efforts.
12.2	Support programs that prevent, detect, and manage invasive species and pests; develop California-specific invasive species risk assessments; and evaluate and improve weed management efforts.	**CNRA, CalEPA, CDFA**	**3**	The 2021-22 budget includes $10 million over two years to the Invasive Species Council, an inter-agency group charged by law with coordinating and ensuring complementary, cost-efficient, environmentally sound and effective state activities regarding invasive species. CDFA and CNRA are finalizing the appointments to an advisory committee that provides input to the Invasive Species Council. The advisory committee will work with stakeholders through a public process to scope and develop recommendations on how to implement the funds. State agencies invest millions of dollars a year managing nuisance water species that can clog and damage waterways, including Brazilian waterweed, water hyacinth, and quagga and zebra mussels. In 2020, the Wildlife Conservation Board awarded $2.2 million in bond funds to the Yolo County Resource Conservation District to treat 64 acres of giant reed distributed across Putah Creek and its tributaries.

Align and improve permitting to help launch and incentivize more restoration, multi-benefit, and multi-partner projects.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
13.1	Coordinate grant and loan programs across state agencies to make funding for multi-benefit projects, including restoration, easier to arrange and leverage.	**CalEPA, CNRA, CDFA**	**2**	Within weeks of enactment of the 2021-22 state budget, DWR, in coordination with the Water Board, began distributing funds from $200 million in the budget for small community water system drought relief projects. By November, DWR and the Water Board had directed approximately $65 million to 37 small water systems in 16 counties to support emergency water system repairs, new wells and water storage tanks, and improvements to intakes and distribution systems. The budget also included $300 million for urban and multi-benefit drought relief projects. DWR, in coordination with the Water Board, expects to release the first round of this funding in 2021. DWR chairs the California Financing Coordinating Committee, which hosted two virtual funding fairs in May 2021 with the federal government, other state agencies and regional entities. More than 100 people, mostly from cities and counties, attended each session. State agencies also provides regular updates to the California State Library's California State Grants Consolidated Web Portal, which can be accessed at www.grants.ca.gov.
13.2	Support the development of expedited and cost-effective permitting mechanisms for common types of restoration and enhancement projects.	**CNRA, CalEPA**	**3**	CDFW continues to explore and advance options for permitting large-scale restoration projects by means of a combined approach to a Section 2081(a) take authorization under the California Endangered Species Act and a lake and streambed alteration agreement authorization pursuant to Section 1600, et seq and look for opportunities to ensure consistency with the Water Board's General Order. The Water Board's 401 General Order and Waste Discharge Requirement for large aquatic restoration projects and accompanying Programmatic Environmental Impact Report was released for public comment in June 2021 and a hearing was held before the Water Board in August 2021. The public comment period ended on August 13, 2021. Staff are reviewing and responding to comments and will be proposing changes to the order based on comments. Staff estimate bringing the order before the Water Board for consideration of adoption in early 2022.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
13.3	Expand the Regional Conservation Investment Strategies approach established in 2017 under AB 2087 to guide mitigation needs for water-related projects.	**CDFW, CNRA**	**3**	CDFW has approved four Regional Conservation Investment Strategies and amended a fifth. (Five total have been finalized.) Four more are currently under review, with two more seeking funding. Water-related species and habitat are included in most. The first pilot Mitigation Credit Agreement is expanding a floodway along the Sacramento River in West Sacramento. In 2020 and 2021, the Wildlife Conservation Board awarded a total of $1.3 million in grants to help foster Regional Conservation Investment Strategies, including for the Kaweah groundwater sub-basin in Kings and Tulare counties and the San Pablo Bay shoreline.
13.4	Incorporate strategically designed conservation planning (e.g., Natural Community Conservation Planning, Habitat Conservation Plans, Regional Conservation Investment Strategies) and other resource protection and recovery plans into mitigation approaches for levee modifications, operations, and maintenance.	**CNRA, CalEPA, CDFW**	**3**	DWR worked with local landowners and reclamation districts in the San Joaquin River basin to support an effort to secure approval of a Regional Conservation Investment Strategy by CDFW. The application has been submitted and is under review by CDFW. DWR also is working with the Three Rivers Levee Improvement Agency to establish a mitigation bank on the waterside of a new setback levee along the Feather River, which, when established, would provide mitigation credits for flood risk reduction-related improvements and operations and maintenance. The mitigation bank would be the first of its kind established by flood management agencies on the waterside of the levee along the Sacramento River.
13.5	Support the alignment of state permitting fees with level needed to properly fund state permitting agencies to deliver timely projects.	**CalEPA, CNRA**	**2**	The Water Board re-evaluates permitting fees on an annual basis and adjusts them accordingly to support the staff resources provided by the Legislature. In July 2020, DWR's Division of Safety of Dams began using a new fee formula for dam owners that includes an additional surcharge on critical appurtenant structures such as spillways, which redistributes annual fees to more closely align a dam's annual fee with the additional regulatory oversight required for dams with such structures. CDFW is required to adjust the environmental document filing fees annually to account for the effects of inflation.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
13.6	Pilot a project to evaluate the effectiveness of simplified environmental permitting processes and monitor whether such processes are achieving desired environmental outcomes.	**CDFW**	**2**	In fiscal year 2020-21, CDFW received a one-time allocation of funding to support its pilot "Cutting the Green Tape" initiative, with teams focused on developing tools to accelerate granting and permitting processes for restoration projects. Through this one-year pilot, CDFW made significant progress in streamlining its own permitting processes within the regulatory framework of both the California Endangered Species Act (CESA) and Fish and Game Code. The product of this effort was a new template for consolidating and streamlining the process for CESA and Lake and Streambed Alteration (LSA) permits, called the Restoration Management Permit (RMP) template. The RMP template consolidates two or more different "take" authorizations that a restoration project may need into a single streamlined permit. CDFW worked with stakeholders in these permitting efficiency efforts and presented the RMP template to the public at a series of workshops in spring 2021. The RMP template was finalized in summer 2021 and was piloted in five restoration projects in a variety of circumstances. In summer 2021, CDFW released a grant solicitation focusing on North Coast Coho Salmon recovery, which includes implementation of new permitting efficiencies to simplify and streamline the process for securing environmental permits for grant funded projects. CDFW is currently reviewing applications and is incorporating permitting into the grant administration process to assess the needs of each project and ensure early coordination. CDFW is also assessing options for programmatic permitting, including CEQA and Water Board 401 Certification. The 2021-22 budget included sustained CDFW funding to support the Cutting the Green Tape Program with 18 new positions in its granting and permitting programs. These staff will continue current and new efficiency efforts and will assess the outcomes of the summer 2021 pilot solicitation and implement the California Environmental Quality Act (CEQA) statutory exemption provided under SBB 155, approved in September 2021.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
13.7	Identify opportunities to meet legal standards in creative, collaborative ways, such as through voluntary agreements that enhance flows and habitat.	**CNRA, CalEPA**	**2**	Since 2015, state agencies have been negotiating with local water agencies and federal agencies to improve habitat and water flows in the Sacramento-San Joaquin Delta and its major rivers. The Delta and its rivers supply 35 million people and nearly three million acres of farmland with water, and support hundreds of species of native fish and wildlife, many of which are in peril due to degraded environmental conditions. Since they released a framework document in February 2020, state agencies have worked with local water agencies to refine a voluntary but enforceable agreement that would require adaptive, holistic management of enhanced water flows and habitats. Current discussions are focused now on an eight-year agreement with Sacramento Valley water users and the customers of the State Water Project and Central Valley Project that would allow for rapid investments in habitat restoration and provision of additional river and Delta flows at times of year when science shows that indicator species benefit most. Under the agreement, water districts would provide flows and habitat as an alternative to flow-only regulation by the State Water Board, which by law must establish water quality objectives needed to provide reasonable protection of beneficial uses in the Sacramento-San Joaquin Delta watershed. All parties are working under the premise that a voluntary agreement will improve ecological conditions more rapidly than could be attained under a strictly regulatory approach, and that a new, collaborative-yet-enforceable approach that includes both flow and habitat gives California its best opportunity to protect natural resources with the speed that climate change demands.

Upgrade and maintain state wildlife refuges, hatcheries, and restoration areas.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
14.1	Support research, monitoring, maintenance, and management of state habitat restoration projects, hatcheries, and wildlife refuges.	**CNRA, CDFW**	**3**	The 2021-22 state budget includes $49 million to CDFW to modernize fish hatcheries, provide support and equipment to bolster the capacity to rescue fish and monitor at-risk species, and improve water use efficiency on state-owned habitat lands. In 2021, DWR completed a needs assessment analysis of all DWR monitoring, maintenance, and management obligations on habitat restoration sites both for DWR-owned lands or lands where DWR has responsibilities. This needs assessment will inform future staffing and resources needs, as well enable better tracking and reporting of current and future responsibilities. CDFW has conducted research and monitoring of Chinook salmon and steelhead for thiamine deficiency in Central Valley hatcheries; continued evaluation of Chinook salmon release practices through coded wire tag recovery and monitoring; monitored contribution of natural and hatchery origin fish to hatchery broodstock for Hatchery Genetic Management Plan Reporting; and conducted genetic evaluations of hatchery salmon and trout species. Maintenance of hatchery facilities has been ongoing through the support of Proposition 68 funds.
14.2	Upgrade water and energy delivery systems on state-owned and managed land and in state hatcheries.	**CNRA, CDFW**	**3**	With the support of the Wildlife Conservation Board, U.S. Fish and Wildlife Service, and other conservation partners, CDFW continues to upgrade water and energy delivery systems on CDFW-managed lands. The 2021-22 state budget includes $49 million to modernize fish hatcheries, provide support and equipment to bolster the capacity to rescue fish and monitor at-risk species, and improve water use efficiency on state-owned habitat lands.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
14.3	Develop and implement scientifically sound hatchery and genetic management plans in coordination with tribal governments to reduce risks to listed fish species.	**CDFW**	**3**	CDFW, in coordination with Department of Water Resources and U.S. Army Corps of Engineers, have signed and submitted Hatchery Genetic Management Plans (HGMP) for the Feather River Hatchery Spring Chinook and Warm Springs Hatchery Steelhead programs to the National Marine Fisheries Service. The Feather River Hatchery HGMP has been deemed sufficient by NMFS but was returned to CDFW and DWR to address several comments. The U.S. Bureau of Reclamation is in the process of developing a contract for a consultant to draft a fall-run Chinook Hatchery Genetic Management Plan at the Nimbus Fish Hatchery. CDFW and Reclamation coordinated with National Marine Fisheries Service and tribes in the Klamath Basin to delay release of approximately 1 million fall-run chinook from Iron Gate hatchery due to high projected mortality to juvenile fish due to elevated C. Shasta, a fish parasite. Fish were transferred to Trinity River Hatchery for rearing through the summer, then transferred back to Irongate Hatchery in October for imprinting prior to release.

Encourage investment in upper watersheds to protect water quality and supply.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
15.1	Encourage enhancement of both forest and water management through watershed coordinator programs, resource conservation districts, and other groups coordinating regionally.	**Department of Conservation, CNRA, CalEPA**	**3**	In 2020, the Department of Conservation awarded a total of $1.5 million through five Sustainable Groundwater Watershed Coordinator grants that will build broad coalitions of government, stakeholders, and communities to develop plans and projects to improve watershed health and meet California's groundwater sustainability goals. The Department also funded five additional watershed coordinators to support the development of watershed plans and technical decision support tools for the upper watersheds of the Sacramento River. The 2021-22 state budget includes $110 million over two years to fund the Regional Forest and Fire Capacity Program to provide continued funding for forest health watershed coordinator activities.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
15.2	Work toward accomplishing the goals of the California Forest Carbon Plan, which recommends actions to achieve healthy and resilient forests that help the state meet greenhouse gas reduction goals.	**CNRA, CalEPA**	**3**	California has increased the funding for forest health and wildfire resilience activities requested in the Forest Carbon Plan from $75 million in 2020 to $1.5 billion in the 2021-22 state budget. These resources will enable the state to reach its target of 500,000 acres of forest and wildlands thinned or restored annually by 2023 – two years earlier than the target set in the Forest Carbon Plan. In 2020 and 2021, the Wildlife Conservation Board awarded more than $5 million in grants to three separate projects to develop a forest restoration plan in the North Yuba River watershed and to conduct research and monitoring to better understand the impact of thinning and other forest management actions on evapotranspiration and streamflow.
15.3	Encourage landscape-scale management efforts, modeled after approaches such as the Sierra Nevada Conservancy's Watershed Improvement Program and the Tahoe-Central Sierra Initiative, to restore the health of watersheds and improve community resilience.	**State Conservancies, CNRA, CalEPA**	**3**	In April 2021, the Legislature passed and the Governor signed an early action package totaling $536 million for a broad set of investments that support a statewide strategy on forest health and fire prevention. This funding was designed to start critical projects before the upcoming fire season and launch several new programs. To date, over 85 percent of this funding has been awarded. An additional $988 million is also allocated for fiscal year 2021-22 in additional wildfire and forest resilience projects and programs. This includes, but is not limited to, funding to create resilient wildlands, support wildfire fuel breaks, advance science-based management and streamlined permitting, and support community hardening. Inspired by the Sierra Nevada Conservancy's Watershed Improvement Program, the Natural Resources Agency in 2019 launched the Regional Forest and Fire Capacity Program to support forest health by increasing regional capacity to prioritize, develop, and implement landscape-level forest health and wildfire resiliency. The Department of Conservation awarded $20 million in grants in March 2019. Regional entities including resource conservation districts are using the grants to conduct regional planning, develop projects, conduct outreach, and implement landscape-level health projects. The grantees partner heavily with state, federal, tribal, and local governments as well as water agencies, fire safe councils, and other nonprofits. The 2021-22 state budget includes $110 million over two years for the Regional Forest and Fire Capacity program.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
15.4	Complete plans for watershed restoration investments in the drainages that supply the Oroville, Shasta, and Trinity reservoirs, consistent with 2018 legislation (AB 2551).	**CNRA, CalEPA**	**2**	California is combining efforts and resources with the U.S. Forest Service and partners at NASA and U.S. Geological Survey to deliver a coordinated forest ecosystems assessment and planning tool that will help identify ecosystem risks and equities across a watershed including wildfire, habitat, biodiversity, and watershed quality and yield. The project is coordinated across state agencies and federal partners and builds on existing tools and incorporates technical input from potential end users. Completion of the project is expected in 2023.

The state helps farmers save water and reduce greenhouse gas emissions with grants to fund improvements like this solar-powered in-field soil moisture meter for a center pivot-irrigated hay crop near El Centro in Imperial County. The moisture meter informs the farmer when the soil is dry and needs irrigation and when the irrigation water is being lost below the crop root zone. The 2021-22 state budget includes $100 million over two years in additional funding for SWEEP, the California Department of Food and Agriculture's State Water Efficiency and Enhancement Program. SWEEP projects already have helped to save an estimated 115,000 acre-feet of water each year. CREDIT: Ronald C. Leimgruber Farms

Improve soil health and conservation practices on California farms and ranches.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
16.1	Fund the Healthy Soils program, which supports on-farm practices that enhance water retention and provide other environmental benefits, through incentives, demonstrations, and technical assistance.	**CDFA**	**3**	The 2021-22 state budget includes $160 million over two years for CDFA's Healthy Soils program. To date, the program has funded 66 demonstration projects and 591 direct farmer incentive projects of which 27 percent were administered to socially disadvantaged farmers and ranchers.
16.2	Enhance agricultural lands for biodiversity, resilience, and habitat benefits through incentives for on-farm conservation practices and innovative partnerships,	**CDFA, CDFW, Wildlife Conservation Board**	**3**	The 2021-22 state budget appropriates $1.1 billion over two years in sustainable agriculture investments to support programs that include healthy soils, transition to safer sustainable pest management, alternatives to agricultural burning, and technical assistance for underserved farmers. In particular, the budget includes $39 million over two years for CDFA to provide technical assistance and support development of grower conservation management plans and $30 million over two years for pollinator habitat. Separately, CDFW has completed two solicitations for its California Winter Rice Habitat Incentive Program, enrolling more than 40,000 acres of agricultural lands in the program. The program incentivizes the winter flooding of harvested rice fields and provides habitat for thousands of wintering waterfowl and migrating shorebirds.
16.3	Support research and technical assistance, such as through the UC Cooperative Extension Climate Smart Agriculture Advisors program and resource conservation districts, to support farmers and ranchers with education about healthy soils, manure management, water and nutrient efficiency practices, on-farm recharge, drought adaptation, and land management changes.	**CDFA**	**3**	Approximately five percent of the funds allocated to CDFA's Climate Smart Agriculture (CSA) programs are made available for technical assistance. To date, 69 organizations have been funded, with awards totaling $4.8 million. An additional $1.2 million has been provided to the University of California Cooperative Extension to fund community education specialists to provide CSA technical assistance throughout the state to farmers and ranchers.

Minimize air pollution and restore habitat at the Salton Sea.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
17.1	Support achievement of milestones within the 10-year Salton Sea Management Plan to minimize air pollution and preserve fish and wildlife habitat.	**CNRA**	**3**	Work continues by the Natural Resources Agency to implement the Salton Sea Management Program's (SSMP) Phase 1: 10-Year Plan, which calls for construction of nearly 30,000 acres of habitat and dust suppression projects on exposed lakebed by 2028. The 2021-22 state budget includes $220 million over three years to support this work. Construction is now underway on a major 4,100-acre habitat project at the southern end of the Sea. The state awarded a contract to Kiewit Infrastructure West Co. in September 2020. Construction began in January 2021 and is to be completed by end of 2023. About 750 acres of interim dust suppression projects were completed in 2020. Since the state is not a significant landowner at the Sea, collaboration with landowners is critical to enable project delivery. The SSMP team is currently seeking land access agreements with the U.S. Bureau of Reclamation, U.S. Bureau of Land Management, and the Imperial Irrigation District. The SSMP team expects to finalize an environmental assessment in fall 2021 that will facilitate permitting for future dust suppression and habitat projects. In addition, the SSMP is currently advancing native vegetation enhancement projects on the exposed Salton Sea lakebed to benefit habitat and to reduce dust emissions. These projects are planned at three sites, for a total of about 1,700 acres to be constructed on land owned by Reclamation. The SSMP team is working on design, permitting, and securing land access with work anticipated to begin in late 2021. This will be the first phase of a multi-year project and will continue through 2023. Once completed, the projects are expected to achieve native, halophytic species coverage across the entirety of the project sites minus some exclusion areas that are already wet or covered by salt crusts. Once established, these vegetated landscapes are expected to be sustained by natural water flows and precipitation. The SSMP team is working with the U.S. Army Corps of Engineers, as federal lead agency, and several federal Cooperating Agencies to prepare an environmental assessment (EA) for the 10 -Year Plan. The EA will provide NEPA compliance for up to 30,000 acres of Habitat and Dust suppression projects as well as coverage for a Watershed Plan. Inclusion of this Watershed Plan will allow future SSMP projects to qualify for $25 million of federal funding. The SSMP team expects to finalize the environmental assessment in spring of 2022, enabling streamlined permitting from federal regulatory *(… continued)*

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
				(17.1 continued) agencies and access to federal lands, thereby increasing the pace and scale of project delivery. In September 2021, the Agency hired a public affairs officer and a deputy assistant secretary stationed in the Imperial Valley to enhance community engagement.
17.2	Develop criteria and a monitoring plan to evaluate Salton Sea improvements to local air quality and environmental habitat.	**CNRA**	**1**	Staff continue to work towards the criteria for habitat and air quality through the development of a Monitoring and Implementation Plan.
17.3	Building upon previous work, complete an independent feasibility analysis of water importation options for the Salton Sea.	**CNRA**	**3**	In spring 2021, UC Santa Cruz began an independent analysis of the feasibility of importing water to the Salton Sea. The analysis is schedule for completion by summer 2022. UC Santa Cruz will convene an independent expert panel to review 11 water importation concepts submitted to the state in 2018, assess their technical and economic feasibility, and evaluate the overall viability of water importation as a long-term strategy for restoration of the Salton Sea.

Help protect the economic and ecological vitality of the Sacramento-San Joaquin Delta.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
18.1	Continue to support local levee operations and maintenance in the Delta.	**DWR**	**3**	Proposition 1 funds in the 2021-22 budget provide for at least two years of continued support for local agency levee maintenance in the Delta. DWR continues to process payments and develop new annual agreements for this ongoing work. The Central Valley Flood Protection Board has approved work and funding plans for fiscal year 2021-22, allowing DWR to enter into funding agreements with more than 70 local levee maintaining agencies. In the 2021-22 state budget, DWR was appropriated $31.4 million in Proposition 1 funding for direct levee operation and maintenance expenses in the Delta (Delta Levees Maintenance Subventions Program). An additional $70.9 million from Proposition 1 and Proposition 68 was appropriated for levee improvements and to meet statutory requirements for habitat that is associated with the Delta Levees Program (Delta Levees Special Flood Control Projects) including mitigation for levee maintenance.
18.2	Complete the update to the Bay-Delta Water Quality Control Plan for San Francisco Bay and the Delta, as required by law, and implement the Plan, potentially through voluntary agreements.	**Water Board, CalEPA, CNRA**	**2**	The Water Board staff continue to work on implementation of the 2018 update to the Bay-Delta Water Quality Control Plan, including development of biological objectives, coordinated operation plans, and south Delta salinity. Progress on the Sacramento-Delta tributaries is currently focused on completion of a staff substitute environmental document that incorporates potential voluntary agreements.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
18.3	Complete a climate change vulnerability assessment and adaptation strategy for the Delta to protect people, with a particular focus on disadvantaged communities, habitat, water quality, and supply.	**DWR, Delta Stewardship Council**	**3**	The Council in January 2021 released a public review draft of a Vulnerability Assessment that evaluates the vulnerability of the Delta and Suisun Marsh to climate impacts through end of century. A final version was released in June 2021. The findings of this assessment will inform an Adaptation Strategy currently in progress, which will help state agencies prioritize actions and investments, provide climate information for local governments, and create a framework for future work both within and beyond the Council.
18.4	Add an element to water management plans, which urban and agricultural suppliers submit to the state every five years, to ensure that districts that receive water from Delta-based projects demonstrate how they are reducing reliance on those supplies.	**Delta Stewardship Council, DWR, CDFA**	**4**	In March 2021, DWR updated the Agricultural and Urban Water Management Plan guidebooks to include an appendix with suggestions on how water suppliers can address reducing reliance on the Delta.
18.5	Provide incentives and technical advice to Delta landowners for creating managed wetlands or cultivating rice to reverse land subsidence and reduce carbon emissions. Eliminate subsidence-inducing practices on state-owned lands and pursue alternative sources of revenue to support long-term land management.	**Delta Conservancy, DWR, CDFA**	**3**	The Delta Conservancy continues to provide technical support to private and public Delta landowners for conversion to managed wetlands and rice cultivation. In 2020-21, approximately 2,000 acres have been converted to managed wetlands and several thousand more acres are in planning stage. There is a significant increase in interest in rice cultivation in the Delta from both rice growing associations and Delta farmers. In 2020-21, approximately 1,500 acres were converted to rice and over 6,000 acres are expected to be converted in the coming growing seasons. Additionally, there are several planning efforts looking at whole-island mosaic approaches where rice, managed wetlands, habitat and high-value crops can be incorporated to address subsidence and carbon emissions and ensure long-term resilience and economic viability of the islands. To date, 1,850 acres of wetland and 600 acres of rice have been developed on DWR-owned land on Sherman and Twitchell islands. Another 1,000 acres of wetlands on Sherman Island are expected to be completed and operational during the summer of 2022.

Build Connections

Most water management in California happens at the local level, with thousands of separate districts handling different aspects of water management. Stronger connections of all kinds help mitigate fragmentation and improve water management. The state is now investing to help repair major aqueducts damaged by groundwater withdrawal, using technology to give local managers an unprecedented look at the geology of groundwater basins, and upgrading data systems to make information about water rights easier to obtain and understand. State work must continue to encourage cooperation across watersheds, reduce hurdles to state funding for projects that offer multiple benefits, and evaluate the costs and benefits of phasing in real-time water use monitoring.

In July 2021, with $3.1 million in Proposition 1 funds from the State Water Resources Control Board, the Placer County Water Agency connected the Castle City Mobile Home Park in Newcastle to its Foothill Water Treatment Plant. The 282 mobile home park residents had been dealing with low water pressure and "boil water" notices as its half-century-old private water treatment plant aged. The State Water Board has advocated for consolidations like this as a timely and cost-effective solution for many ailing water systems.

Modernize inter-regional conveyance to help regions capture, store and move water.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
19.1	Plan, permit, and build new diversion and conveyance facilities (such as a tunnel) in the Sacramento-San Joaquin Delta to safeguard State Water Project deliveries drawn from the Sacramento and San Joaquin river systems. New conveyance should complement existing and improved through-Delta conveyance to promote operational flexibility, protect water quality, and improve aquatic habitat conditions while limiting local impacts.	**DWR**	**3**	Preliminary engineering for several alternative approaches to modernizing Delta conveyance for the State Water Project is almost complete. Work on a Draft Environmental Impact Report is underway and scheduled for completion in mid-2022. Work is underway to develop a Community Benefits Program, through collaboration with community members, that will identify and implement commitments to help protect and enhance the cultural, recreational, natural resource and agricultural values of the Delta. DWR conducted the "Your Delta, Your Voice" survey to gather input from disadvantaged community members who live or work in the Delta; results have been published on the Delta Conveyance website.
19.2	Continue studies of subsidence effects on water infrastructure, including state flood facilities, and support strategies to minimize damage from ongoing subsidence, halt subsidence, and rehabilitate infrastructure.	**DWR**	**3**	After subsidence studies in 2017 and 2019, DWR initiated the California Aqueduct Subsidence Program to remediate subsidence of the California Aqueduct and the San Luis Canal. Five projects are in various stages of planning, design, environmental documentation preparation, and other pre-construction activities necessary to remediate existing subsidence impacts. These activities include liner and embankment raises and rehabilitation of certain sections of the canals. The Recovery Project, with a planning horizon of 2075, includes the development of the long-term subsidence remediation plan, including an alternatives evaluation, to determine the optimal approach to remediating the adverse impacts of subsidence on the California Aqueduct and San Luis Canal. A number of interim deliverables are in process, including a hydraulics and hydrology study and a consequences-of-no-action report. In accordance with the state-federal Joint Use Facilities Agreement, the costs of addressing subsidence remediation on the San Luis Canal are to be apportioned on a 45 percent federal/55 percent state basis. The Federal "Canal Conveyance Capacity Restoration Act" is in development for inclusion in the federal 2022 budget to support remediation of subsidence impacts to the Friant-Kern Canal, the Delta-Mendota Canal, the San Luis Canal, and the California Aqueduct. The bill requires non-federal funding equaling the federal contribution as a condition for federal funding. The 2021-22 state budget includes $200 million for repair of conveyance facilities damaged by subsidence. As directed by the legislation, DWR is now developing criteria by which to allocate the funds.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
19.3	Conduct a feasibility analysis for improved and expanded capacity of federal, state, and local conveyance facilities to enhance water transfers and water markets. The analysis must incorporate climate change projections of hydrologic conditions.	**DWR**	**2**	The 2021-22 state budget includes $29 million for DWR to conduct watershed-scale studies for the San Joaquin River watershed and its tributaries, develop integrated analytical models, identify vulnerabilities in the flood and water supply systems due to climate change and SGMA implementation, and identify adaptation strategies. In addition, DWR will evaluate the conveyance facilities in the San Joaquin River watershed to improve water system flexibility, reliability, and resilience. The analyses will be conducted with local partners using newly-developed analytical models covering headwater to groundwater for each tributary watershed.
19.4	Assess a state role in financing conveyance projects that could help meet needs in a changing climate.	**Water Commission, DWR**	**4**	Through a months-long process that involved several regional, public workshops and expert panels, the Water Commission developed guidance for policymakers on a state role in financing water conveyance improvements. The Commission adopted a final white paper in June 2021.
19.5	Ensure effective long-term State Water Project management by completing risk-informed asset management plans for critical infrastructure that account for seismic, flood, and aging risks, among others.	**DWR**	**3**	In spring 2021, DWR began developing two new asset management plans that will define operations, maintenance, and asset renewal strategies, performance metrics, and long-term financial requirements for the State Water Project power transformers and the South Bay Aqueduct. Both plans are scheduled for completion in early 2022 and will be followed by the preparation of asset management plans for additional asset portfolios in 2022-2024.

Support groups and leaders in each of the state's regions to develop and execute integrated water resilience strategies.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
20.1	Build on the Integrated Regional Water Management Program and other regional efforts to align climate scenarios and expand watershed-scale coordination and investments that contribute to water resilience. Emphasize integrated, multi-sector, and outcome-based planning, action, and monitoring.	**CNRA, CalEPA**	**2**	The California Water Plan update for 2023 under development by DWR and other agencies will focus on how to build watershed-scale coordination, with an emphasis on assessing climate vulnerabilities, adaptation strategies, equity, and measurement of progress. Extensive inter-agency and stakeholder coordination on Water Plan Update 2023 begins in early 2022.
20.2	Structure funding sources to reduce the hurdles for water projects that reflect integrated solutions, produce multiple benefits, and improve watershed function.	**CNRA, CalEPA, CDFA**	**1**	No progress to report.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
20.3	Support the capacity, participation, and full integration of tribal governments and under-represented communities in regional planning processes.	**CNRA, CalEPA, CDFA**	**3**	In 2019, DWR covered travel and per diem expenses for the tribal advisory group members who helped, through a year-long stakeholder process, to develop recommendations and guidance for small water suppliers and rural communities on planning for the drought, wildfire, or other natural disaster that may cause water shortages. The report recommended that because tribes are sovereign governments with data and regulatory systems that are not structured within the state or counties, the federal Indian Health Service agency should promote a water shortage contingency plan developed during the last drought. In May 2020, DWR hosted a three-part webinar series on tribal regional water management to discuss improving and strengthening regional water funding coordination, identifying regional needs, and effective tribal guidance of integrated regional water management. In June 2021, DWR and SWRCB co-hosted three Tribal Drinking Water Workshops on the Safe and Affordable Funding for Equity and Resilience Drinking Water Program. DWR provided information on how to small water systems at risk to drought and water shortages can access a drought assessment tool. The tribal discussion confirmed that confidentiality of data is a major concern of tribes. In May 2021, DWR convened two tribal caucus listening sessions to outline the formation of a Tribal Caucus adjunct to the Integrated Regional Water Management Roundtable of Regions (ROR). A result of the listening sessions was the creation of a tribal representative seat on the ROR steering committee. DWR also developed and launched a tribal water needs survey to inform the San Diego Integrated Regional Water Management region. This survey was a pilot project and a tribal water survey is being developed for statewide implementation. DWR plans to continue meeting tribal water system managers regarding drought response and planning.

Ease movement of water across the state by simplifying water transfers.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
21.1	Substantially reduce approval time for transfers while providing protections for the environment and communities.	**CNRA, Water Board**	**3**	As of the end of June 2021, using the online ledger system, DWR approved four transfer proposals. The two proposals that do not require petition to the Water Board were reviewed within eight and 15 business days, respectively. One proposal that required petition to the Water Board was processed in 25 business days, and, DWR approved it immediately upon issuance of a Water Board order. The seller of the other proposal took 10 business days to re-submit for DWR final approval after the order was issued. Review time can be further reduced if sellers use the monitoring and mitigation plan templates as described in Action 21.3. The Governor's May 10, 2021 drought proclamation reduced the Water Board's noticing requirements and allowed for all electronic notices, which helped expedite permitting. Protection of the environment and other water users is an explicit statutory requirement.
21.2	Develop an open and transparent ledger system to allow for improved local and regional participation in the water transfer market.	**DWR**	**3**	In February 2021, DWR released the Intent-To-Transfer (ITT) form for public use. ITT is a new function of WTIMS, an online transfer proposal submittal/review platform that DWR originally developed in 2018 to inform DWR and the U.S. Bureau of Reclamation of the possible transfer opportunities and to enhance upfront coordination. Approximately 40 ITT forms were submitted after February 2021. Agencies coordinated with the potential sellers and used that information to inform 2021 State Water Project and Central Valley Project operational planning. After upgrading WTIMS 1.0 to WTIMS 2.0 with substantial enhancement in database/GIS capability, DWR released WTIMS 2.0 for public use in mid-March 2021. DWR developed 14 tutorial and demonstration videos for the public to better understand the new functionality of WTIMS 2.0 (links posted on DWR Water Transfer webpage). The DWR transfer team also is providing hands-on support and training to both proposal preparers and Reclamation's reviewers. As of late June 2021, DWR has spent more than $300,000 to assist Reclamation's review of their Central Valley Project transfer proposals.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
21.3	Develop best practices for inter- and intra-basin groundwater trading programs that protect communities, including standards for measuring, reporting, accounting, and monitoring groundwater use and trading.	**DWR, Water Board, CDFW, CDFA**	**3**	The Water Commission in June 2021 began hosting expert panels and public workshops to inform a white paper on groundwater accounting and trading practices that protect the environment, disadvantaged communities, and small farmers. At the same time, the Water Board, DWR, and the Water Data Consortium are working together with the Environmental Defense Fund to make an open source groundwater accounting platform available without charge to groundwater users and sustainability agencies. During the Water Trading Information Management System improvement process, the DWR transfer review team reviewed the best management practices for all types of transfers, including groundwater substitution transfers. The groundwater-related best management practices provide standard methodology for measuring, reporting, accounting, mitigating, and monitoring groundwater use and trading. DWR incorporated these best management practices into mitigation and monitoring plan templates for download and use from the DWR WTIMS website in April 2021 for use by transfer sellers as they develop their transfer proposals.
21.4	Explore an expedited process to facilitate transfers between Central Valley Project and State Water Project contractors.	**CNRA, Water Board**	**3**	The 2020 Water Board order to approve the temporary consolidation of State Water Project and Central Valley Project place of use expired on July 15, 2021. In anticipation, DWR and the U.S. Bureau of Reclamation solicited project contractors for potential 2021 exchange actions in February 2021 using a new template to standardize required information. After internal review to validate these exchanges, DWR and Reclamation filed the 2021 petition of change with the Water Board in May 2021. With the Governor's April 21, 2021 Drought Proclamation, the publication notice requirement was waived, and the public comment period was shortened from 30 to 15 days. The petition package provides detailed and comprehensive information, and the Water Board received limited public comments for DWR and Reclamation to address.

Modernize water data systems to inform real-time water management decisions and long-term planning.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
22.1	Develop data management training for state agencies that aligns protocols for water data access and management under the Open and Transparent Water Data Act of 2016 (AB 1755).	**DWR, Water Board, CDFW**	3	The College of Water Informatics at the Water Board is delivering data literacy and data science-related courses to Water Board employees. The Water Board's Office of Information Management and Analysis shares this content with partners and is participating in CalData, an initiative of the state's Chief Data Officer. DWR is developing curriculum for training of state employees and supporting publication, quality, and completeness of state-held water and ecological datasets on open data platforms.
22.2	Support state water data compliance with AB 1755.	**Administration**	3	The Open and Transparent Water Data Partnership is developing new communications tools and constantly improving accessibility to the data. Additional data resources are regularly added to the portals. A 2021 project to explore making open water data accessible to Spanish-speaking communities is being led by the Water Board College of Water Informatics.
22.3	Streamline data submission and reporting to the state to avoid duplication and improve accuracy and consistency.	**Administration**	2	Water Board staff are working with the Water Data Consortium to better understand and optimize projects to streamline data reporting around high-priority water use case needs. The Consortium is managing two pilot projects specifically focused on streamlining data reporting related to urban water and groundwater data reporting.
22.4	Align water diversion reporting by water users to a single date to simplify reporting.	**Administration**	4	Senate Bill 155, signed into law in September 2021, revises current water right reporting requirements to shift to a water year accounting (Oct. 1 through Sept. 30) and aligns all water right reporting dates to a single date. The legislation was proposed by Water Board.
22.5	Assess and integrate state and federal surface and groundwater models. Using an agreed-upon approach, establish the assumptions, data inputs, modeling parameters, and other requirements to develop water mass balances that may be used by regions.	**Water Board, DWR**	2	DWR established regular coordination with the U.S. Geological Survey on a biweekly basis to compare and align the surface and groundwater models of the Central Valley. The aim is to develop an online public application documenting the detailed comparison of the different input data sources and assumptions used in each model. DWR expects to start posting model dataset comparisons for public feedback starting in early 2022.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
22.6	Build upon implementation of SB 19 of 2019, which requires an assessment of the state's stream gage network. Convene state, local, and federal agencies and assess and prioritize monitoring instrumentation needed (flow meters, remote sensing, weather stations, data logging, wireless transmission, etc.) to support regional resilience.	**DWR, Department of Conservation, Water Board, CDFW, Flood Board**	**3**	DWR, the Water Board, the Department of Conservation, and CDFW are coordinating with a technical advisory team that includes a wide range of stakeholders to prepare a plan for prioritizing upgrades to the California stream gage network to support management of water supply, ecosystems, water quality, and floods. (Almost 75 percent of watersheds do not have a state or federally operated stream gage.) The plan, due in June 2022, will include funding needs. After publication of the stream gage report, the interagency team intends to assess and prioritize other types of water monitoring instrumentation. The 2021-22 state budget includes $12.5 million to upgrade the state's hydrometeorological monitoring network.
22.7	Explore ways to make water rights information easily available to the public by rebuilding the state's water right data base to include digital place of use, diversion, and case history information, made available on an easy-to-use geospatial platform.	**Water Board**	**3**	The 2021-22 state budget includes a one-time investment of $31 million for rebuilding the state's water right data system, including funding for digitizing existing records and updating the state's water right database. Permanent positions are also included as part of the budget to help implement this project.
22.8	Evaluate existing requirements for telemetered diversion data (real-time water use), including potential streamlining opportunities with existing monitoring and reporting requirements. Analyze the costs and benefits of phasing in requirements for telemetered diversion data to diversions of 500 acre-feet or more per year, down from diversions of 10,000 acre-feet a year, to evaluate the potential to help water users coordinate projects, transfers, environmental protection, and other management activities.	**Water Board**	**2**	The Water Board is evaluating its current metering and measurement regulations to determine whether changes are needed to 1) make telemetered data easier to report and collect and 2) help integrate telemetered data with the rebuild of the state's water right data system identified in Portfolio Action 22.7. The Division of Water Rights anticipates making recommendations to the Board in 2022.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
22.9	In support of sustainable water management and conservation innovation, enable the use of OpenET—a transparent, credible, and open-source web platform for quantifying field-scale evapotranspiration (a measure of consumptive water use) using publicly available satellite and weather data.	**DWR, CDFA, Water Board**	**3**	The Landsat 9 satellite was successfully launched from Vandenberg Space Force Base on September 27; it is now combining with Landsat 8 to improve data access and reliability for OpenET. OpenET is functioning in California as a method for estimating crop evapotranspiration (ET) and provides users with field-scale estimates of ET across large landscapes over time. OpenET is expected to support the Delta Alternative Compliance Plan, the Fresno River adjudication, and monitoring of performance of local groundwater sustainability plans, among other initiatives. OpenET is being led by Environmental Defense Fund, NASA, the Desert Research Institute and web developer Habitat Seven, with in-kind support from Google Earth Engine. The project has received funding from NASA, philanthropic foundations, Delta water agencies, and partners in the agricultural and water management communities.

Working in a section of the Ventura River which routinely runs dry, Abiodun Aderonmu, a Senior Engineer with the Department of Water Resources, left, and DWR Engineer Technician Richard Holley, install a stream gauge that will be used to monitor and report the water level of the river in Ventura County. Photo taken April 8, 2021.

Coordinate science crucial to water management.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
23.1	Using the Delta Science Action Agenda and work of the Delta Science Program as a model, establish an inter-agency and public-private task force that includes diverse stakeholders and scientists with relevant expertise to prioritize key scientific questions statewide that must be answered to better inform water manages about how to best manage water supplies, water quality, and flood risk.	**CNRA, CalEPA, CDFA, Delta Stewardship Council**	**2**	Water UCI, a program within the social ecology department of the University of California, Irvine, has recruited a group of students to commence work on prioritizing key scientific questions for water managers. The team has met with the Delta Stewardship Council staff to glean lessons of their work relevant to Water UCI's proposed workshops. They learned, among other things, what the challenges will be in recruiting workshop participants, ensuring representation of diverse stakeholder groups, encouraging inclusive discussions where everyone participates, and the need to poll potential participants through an issues-ranking survey on science priorities as elements of an effective process. The team now is poised to move ahead to surveying potential participants and gaining insight into their priorities to convene a series of meetings in 2022.
23.2	Improve Delta monitoring efforts based upon Delta Independent Science Board recommendations.	**Delta Stewardship Council**	**3**	The Delta Independent Science Board has released a draft of its Monitoring Enterprise Review; the window for public comment closed in November 2021. The full report and recommendations will be finalized in spring 2022. The draft report provides a conceptual framework and best practices for evaluating and updating long-term environmental monitoring programs to meet management needs. In anticipation of the final report, the Delta Science Program has engaged with the Collaborative Adaptive Management Team (CAMT) and Policy Group to complete an assessment of how monitoring programs have been evaluated to date, the resources needed to undertake additional reviews, and to understand stakeholder and agency objectives in monitoring programs. This joint effort with CAMT, along with the ISB recommendations, will provide a foundation for implementation strategies for specific programs.

Foster innovation and technology adoption across all water sectors.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
24.1	Promote broadband deployment in unserved and underserved areas of the state to enable farmers and irrigation districts to use the latest water management technologies, including irrigation control.	**Administration**	**3**	In July 2021, the Governor enacted legislation to invest $6 billion over multiple years to enable access to broadband coverage with the construction of a state-owned open access middle-mile network and last-mile projects that connect unserved households and businesses with local networks. The Governor signed SB 156, which includes: • $3.25 billion to build, operate and maintain an open access, state-owned middle- mile network – high-capacity fiber lines that carry large amounts of data at higher speeds over longer distances between local networks. • $2 billion to set up last-mile broadband connections that will connect homes and businesses with local networks. The legislation expedites project deployment and enables Tribes and local governments to access this funding. • $750 million for a loan loss reserve fund to bolster the ability of local governments and nonprofits to secure financing for broadband infrastructure. • Creation of a broadband "czar" position at the California Department of Technology, and a broadband advisory committee with representatives from across state government and members appointed by the Legislature.
24.2	In order to enable application of promising new technologies, where needed, consider amending laws and regulations that restrict programs to certain technologies.	**Water Board, DWR**	**1**	The Bay Area Council and California Municipal Utilities Association co-sponsored legislation (SB 351) in 2021 that would have authorized the creation of a state Office of Water Innovation to work with stakeholders across the water sector to identify regulations that stifle innovation, among other actions. The bill was not passed by the Senate.
24.3	Establish a state-managed "water innovators" clearinghouse where new approaches and technologies can be posted online.	**CNRA, CalEPA, CDFA, Office of Planning and Research**	**1**	The Bay Area Council and California Municipal Utilities Association co-sponsored legislation (SB 351) in 2021 that would have authorized the creation of a state Office of Water Innovation, administered by the Water Commission to help local water users adopt innovative technologies. The bill was not passed by the Senate. In spring 2021, the Association of California Water Agencies launched an innovation webpage – www.acwa.com/innovation – to promote member agencies' innovative programs, practices, technologies and more. The page provides ACWA's 400-plus member water districts with a platform to share their unique innovations with other members and the broader water community.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
24.4	Establish Secretaries' Awards for early, ambitious, or successful adoption of innovation, given by the Secretaries for the Natural Resources Agency, California Environmental Protection Agency, and Department of Food and Agriculture.	**CNRA, CalEPA, CDFA**	**1**	No progress to report.

Be Prepared

Ever-warmer average temperatures driven by climate change exacerbate the big swings that have always marked California's climate. Acting on lessons learned in the 2012-16 drought, state agencies created a first-ever needs assessment of failing and at-risk water systems, analyzed the drought risk of thousands of water suppliers, and are ordering failing water systems to consolidate with better-run systems. Starting first with flood-prone Central Valley watersheds, the state is conducting detailed climate vulnerability studies that will help water managers better understand risks and find opportunities to cope. State, local, and federal partnerships – crucial in flood management – recently advanced projects to protect Central Valley cities and are piloting improved forecasts of atmospheric rivers, snowpack, and runoff.

In July 2021, the Department of Water Resources launched a three-year effort to survey high- and medium-priority groundwater basins statewide with electromagnetic technology that creates images of the subsurface to a depth of 1,000 feet. The resulting data will be available to help groundwater managers and the public better understand basins that must be managed to reach sustainable conditions within the next 20 years. The surveys are done with a low-flying helicopter towing a large hoop carrying scientific equipment. The equipment sends signals into the ground which bounce back. The data collected is used to create continuous images that are interpreted for underground geology. The resulting information will provide a standardized, statewide dataset that improves the understanding of aquifer structures including areas ideal for recharging groundwater.

Help regions prepare for new flood patterns.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
25.1	Support implementation of the Central Valley Flood Protection Plan and its "state systemwide investment approach" to protect urban areas, small communities, and rural areas; improve operations and maintenance of the flood system; better coordinate reservoir operations; improve flood emergency response system; and integrate natural systems into flood risk reduction projects.	**DWR, Flood Board**	**3**	DWR and its regional partners have started to design and construct several state systemwide investment framework improvements in the Central Valley, such as expansion of the Sacramento Bypass and the Lower Elkhorn Levee Setback Project, both of which protect the greater Sacramento region. DWR and the Flood Board and its local partners are purchasing land, easements, and right-of-way agreements to support the construction of flood risk reduction projects through the U.S. Army Corps of Engineers one-time supplemental funding. The Legislature also has approved approximately $120 million in funding for state and local agencies to address deferred maintenance (from 2016 and 2018 appropriations). Additionally, the State's fiscal year 2021-22 Budget includes $103 million to continue work being conducted by DWR to implement the Central Valley Flood Protection Plan. The Flood Board has completed an initial investigation of revitalizing the defunct Sacramento-San Joaquin Drainage District to address long-term funding needs for the State Plan of Flood Control. The study team has recently determined five potential service areas and is investigating beneficiary analysis. Based on input from the Flood Board, staff are preparing to incorporate further comments into the beneficiary analysis.
25.2	Review state, federal, and local permitting processes for flood risk reduction projects and operations and maintenance and recommend ways to improve permitting processes.	**DWR, Flood Board**	**2**	DWR and Flood Board staff continue working to identify the regulations and permits on which to focus improvement efforts and the regulatory agencies that should be included in these efforts. The Yolo Bypass Cache Slough Partnership and Program is developing a long-term operations and maintenance permitting strategy for the region. This strategy, upon approval of the resource agencies, can be used a pilot to advance streamlined permitting throughout the flood system.
25.3	Research and explore ways to provide flood insurance beyond the national program.	**DWR, Flood Board**	**2**	DWR is working with the UC Davis Natural Hazards Research and Mitigation Group to explore the effectiveness of the National Flood Insurance Program (NFIP), how California compares in NFIP claims against the rest of the nation, and alternative approaches. This research also looks at where California has repetitive loss properties, the depth-damage relationships due to flooding, and flood risk awareness, communication, and insurance penetration (policy enrollment). DWR also continues to work with the Federal Emergency Management Agency, which operates the NFIP, as it seeks to create more efficiency, transparency, and equity for all states and communities.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
25.4	Update and refine the regional flood management strategy in the Central Valley Flood Protection Plan to account for the projected impacts of climate change in order to protect vulnerable communities and infrastructure and restore floodplains along the San Joaquin River and its tributaries.	**DWR, Flood Board**	**3**	DWR and the Flood Board are working closely with the six regional flood management planning groups to incorporate new and standardized approaches to climate science. DWR and the Flood Board are pursuing a San Joaquin basin regional flood strategy based on cutting-edge climate science that will consider traditional and non-traditional flood management strategies suited to the unique flood risks of the San Joaquin basin. The draft plan will address how changing climate risks drive overall investment needs. A draft should be released for public feedback in early 2022. Through SB 5 of 2008, cities and counties within the Sacramento and San Joaquin valleys are required to make findings related to an urban level of flood protection before approving certain land use decisions. Local flood management agencies submit reports to the Flood Board detailing the construction of a flood protection system that will achieve a certain level of protection.
25.5	Facilitate inter-agency annual dam, flood, debris flow, and wildfire emergency table-top exercises with emergency responders and local communities, focusing on testing emergency notification protocols, sirens and warning systems, and evacuation route planning.	**DWR, CAL FIRE, California Highway Patrol, CDFW, CDFA, Cal OES, Water Board**	**3**	During October and November 2020, as part of annual pre-season flood coordination meetings, DWR staff conducted 10 tabletop exercises focused on flood preparedness and response in various regions across the state. Scenarios were tailored to each region and guided local, county, state, and federal partners in discussing roles, responsibilities, capabilities, and procedures during a flood emergency. In April 2021, DWR concluded a four-part tabletop exercise with a Delta Working Group of flood and emergency managers to discuss initial actions, pandemic-induced challenges, and necessary communications after a catastrophic earthquake in or near the Delta. DWR is planning future pre-season interagency flood response coordination to include dam emergency action plans and post-fire debris flows. DWR plans to facilitate a tabletop exercise later in 2021 for the local, state, and federal agencies responsible for flood emergency response in the Yuba River and Feather River regions. DWR conducted an interdivisional Delta Flood Emergency Management Plan tabletop exercise in May 2021 to support recovery efforts following a catastrophic flood event and to prevent loss of life and reduce property damage caused by floods. Additional facilitated exercises with Delta stakeholders will follow.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
25.6	Augment financial assistance and expand state technical assistance for communities to update their local hazard mitigation plans and general plans to meet state adaptation requirements at least once every five years by prioritizing disadvantaged and flood-vulnerable communities. Updates should account for climate change and forecasted population growth.	**DWR, CalOES, Office of Planning and Research**	**3**	In early 2021, DWR staff participated in and reviewed the update process of two local hazard mitigation plans for Sacramento County and Sutter County. In August 2021, DWR hosted a floodplain management technical and financial assistance workshop for disadvantaged communities. This workshop included speakers from Cal OES, FEMA, and DWR, and addressed using LiDAR data to identify and mitigate local flood hazards. Following the workshop, DWR will release the Project Solicitation Proposal for the $50 million Proposition 68 Floodplain Management Protection and Risk Awareness Program ($29 million of this amount was provided by the State's fiscal year 2021-22 Budget). Funding for communities to update their flood elements within their Hazard Mitigation Plans and General Plans will be eligible.
25.7	Provide hydraulic and economic modeling assistance to update the flood hazards within the California State Hazard Mitigation Plan, review the floodplain management elements of local hazard mitigation plans, and support flood loss avoidance studies following federally-declared disasters. These actions will maximize eligibility for federal financial assistance before and after disasters.	**DWR**	**3**	In June 2021, DWR launched a Statewide Advisory Mapping Project, with selection criteria for mapping California streams based on potential risk to property and disadvantaged communities in previously unmapped floodplains to enhance Local Hazard Mitigation Plans. DWR used LiDAR data to prioritize streams for a first round of floodplain mapping beginning in August 2021, followed by community outreach and more detailed mapping, as necessary. The floodplain mapping and risk assessment projects will provide local floodplain managers and communities greater understanding of their riverine flood hazard and vulnerability as identified in the State Hazard Mitigation Plan, Chapter 7. DWR has engaged with local dam owners to provide technical assistance on stream evaluation and floodplain mapping products that can be inserted into local hazard mitigation plans or emergency action plans. DWR has coordinated with Cal OES on sharing information regarding Federal Emergency Management Assistance hazard mitigation financial assistance to be used for flood loss avoidance studies.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
25.8	Partner with urban communities to improve existing and identify new flood risk reduction projects to meet or exceed state and federal requirements.	**DWR, Flood Board**	**3**	The Central Valley Urban Flood Risk Reduction (UFRR) Program is a cost-share program that partners with local agencies to implement flood risk reduction projects in urban areas of the Central Valley. Project costs total $1.6 billion, comprising both the state and local contributions. There are three projects in construction: the Three River Levee Improvement Authority's Goldfields project to protect Linda, Olivehurst, Arboga, and Plumas Lakes; the San Joaquin Area Flood Control Agency's Smith Canal Gate Project to protect approximately 8,000 properties in the Smith Canal area of Stockton; and the Sutter Butte Flood Control Agency's Feather River West Levee Repair Project to protect Biggs, Gridley, Live Oak, and most of Yuba City. Construction is complete on seven other UFRR projects. One UFRR feasibility study (Woodland) is complete, and another study (Mossdale Tract) is expected to finish in mid-2021. No additional funding is required for the current projects in the program. The U.S. Army Corps of Engineers (USACE) has seven other Central Valley urban flood risk reduction projects totaling $7.3 billion that are in design or construction, including those to protect Marysville, Yuba City, Natomas, Sacramento, West Sacramento, and Stockton. DWR conducts project implementation activities in support of these USACE-led projects. Construction on three projects is substantially complete (South Sacramento Streams, American River Common Features WRDA 96/99, and the Joint Federal Project Folsom Dam Auxiliary Spillway). In all, the state has expended $117.5 million for Central Valley flood risk reduction projects in fiscal year 2020-21, and the USACE has spent approximately $175 million in the same period. The 2022 Civil Works President's Budget includes $190 million for USACE Central Valley flood projects. Additionally, the State's fiscal year 2021-22 budget includes an additional $67 million to continue progress on these urban flood risk reduction projects. The State and local agencies partnered with USACE to complete $80 million of USACE Feasibility Studies to determine federal interest in the implementation of urban flood risk reduction projects in the Central Valley. Since 2014, five studies have been completed and authorized by Congress, one active study (Woodland) received approval of the USACE Chief's Report in June 2021, and three future studies (Mossdale Tract, Merced, and Cache Creek Settling Basin) need federal funding to begin.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
25.9	Partner with federal, tribal, and local agencies to support small community flood risk-reduction projects in vulnerable communities in the Central Valley and elsewhere.	**DWR**	**3**	DWR's Small Communities Flood Risk Reduction Program has completed feasibility studies for 14 of 35 communities to date. Five Sacramento County draft study reports were released in September 2021 for stakeholder review. A report for the City of Isleton is anticipated to be released in November 2021. Work is progressing on three implementation projects funded through Proposition 1E (2006) commitments. This grant program will be revised to align with DWR's Flood Management, Protection, and Risk Awareness Program funded through Proposition 68 (2018).
25.10	Make available to the public bathymetric analyses of channels in the Delta to help local flood control agencies, landowners, and habitat managers better understand levee conditions, habitat types, and channel siltation.	**DWR**	**1**	DWR is planning stakeholder meetings to solicit interest; define needs and funding; and prioritize mapping locations and data transfer methods. Work continues to improve habitat data collection through a pilot program with DWR Delta levees staff to map key areas in the Delta that would benefit from such data and the best ways to disseminate and share bathymetric data and resulting studies with public and private stakeholders. DWR added an engineering geologist to assist with substrate and bathymetric studies and data analysis and is coordinating internally to establish consistent standards and practices related to obtaining and archiving bathymetric data sets and related studies.

Help regions prepare for inevitable drought.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
26.1	Submit recommendations to the Governor and Legislature on how to improve drought planning for small suppliers and rural communities identified as vulnerable to drought, as required by AB 1668, the 2018 legislation.	**DWR, Water Board, CDFA**	**4**	In coordination with multiple state agencies and through an extensive stakeholder process, DWR developed recommendations that would allow small water suppliers and rural communities to meet their drought and water shortage planning needs. The report is available here. DWR also developed an online tool which enables small water suppliers and rural communities to explore their relative risk of drought and water shortage. The report and tool were submitted to the Legislature in April 2021. Recommendations from the report were adopted as a bill (SB 552), which was passed unanimously and signed by the Governor in September 2021. This new law requires small water systems of moderate size (1,000 to 2,999 connections) to develop abridged water shortage contingency plans and directs DWR to develop templates with the Water Board as guidance. Smaller public community water systems now have to consider drought in their emergency response plan. All small water systems (community and schools) must have resilience measures, such as an alternative water source, if feasible. The law requires DWR to continue periodic updates of the risk scoring and tools. The Water Board will oversee the technical assistance to small water systems for their new requirements. Under this law, counties must develop a water shortage plan for state systems with fewer than 15 service connections and households on domestic wells. In lieu of a new stand-alone plan, the required elements may be incorporated into updates of other required plans, such as the General Plan and Local Hazard Mitigation Plan. The law also directs DWR to establish a standing interagency drought and water shortage task force.
26.2	Review state actions during the 2012-2016 drought and use the lessons learned to inform response for future droughts.	**CNRA, CalEPA, CDFA, CAL FIRE**	**4**	In March 2021, CNRA submitted to the Legislature a report reviewing major state actions taken during the 2012-16 drought, challenges encountered, notable successes, efforts where the state needs to make improvements, and recommendations for improving future drought response. Multiple state agencies coordinated on preparation of the report. Lessons of the 2012-16 drought shaped the development of the Water Resilience Portfolio, the Governor's proposed budget in 2020-21 and 2021-22 and current drought response efforts across the Administration.
26.3	Develop strategies to protect communities and fish and wildlife in the event of drought lasting at least six years.	**CNRA, CalEPA**	**1**	In 2022, the Water Commission plans to host expert panels and stakeholder discussions to inform drafting of a white paper with guidance for state policymakers on strategies for managing a drought of six years or longer.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
26.4	Provide financial and technical assistance and training to reduce drought risk to tribal and under-represented communities with small water systems and households on private wells.	**DWR, Water Board**	**3**	The 2021-22 state budget includes $200 million for grants to support drought response projects and technical assistance for small, rural, and tribal water suppliers. By December 2021, DWR had distributed $92 million of those funds to 48 small water systems in Tulare, Siskiyou, Shasta, Lake, Kern, and other counties. The 2021-22 state budget also includes $10 million to DWR for technical assistance for actions to improve the drought resiliency of rural and small communities/small water systems, as described in the April 2021 DWR report to the Legislature, *Small Water Systems and Rural Communities Drought and Water Shortage Contingency Planning and Risk Assessment*. DWR's technical assistance includes system leak detection and financial assistance for repairs if major repair is needed.

Improve the ability of regions to anticipate weather and climate changes.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
27.1	Support regional decision making with watershed-scale climate vulnerability and adaptation assessments that include strategies to address risks to water supply, ecosystems, and water quality.	**DWR, Water Board**	**3**	The 2021-22 state budget includes $29 million for DWR to conduct watershed-scale studies for the San Joaquin River watershed and its tributaries, develop integrated analytical models, identify vulnerabilities in the flood and water supply systems due to climate change and SGMA implementation, and identify adaptation strategies. In addition, DWR will evaluate the conveyance facilities in the San Joaquin River watershed to improve water system flexibility, reliability, and resilience. The analyses will be conducted with local partners using newly-developed analytical models covering headwater to groundwater for each tributary watershed. Separately, in February 2021, the Water Board released an assessment of the role that climate change could play in evaluating and permitting new water right projects. The assessment includes recommendations to strengthen climate change adaptation and response.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
27.2	Support California Water Plan planning-area scale analysis of future flood risk, water demand, supply reliability, and water for the environment for a range of climate and growth scenarios. Incorporate climate change forecasts into permitting processes.	**DWR, Water Board, Office of Planning and Research, CDFA**	**3**	Preliminary runs of future scenarios have been completed and analyzed. Refinement of modeling and reporting continues to occur. Refinements will help ensure best available data and tools are used and maximize the relevance and utility of the technical information in making effective decisions. Separately, in February 2021, the State Water Board released an assessment of the role that climate change could play in evaluating and permitting new water right projects; the assessment includes potential recommendations to strengthen climate change adaptation and response and with the new General Fund investments provided for fiscal year 2021-22, DWR has amended its contract with the California Rural Water Association to expand the scope of technical assistance that can be provided.
27.3	In cooperation with the U.S. Army Corps of Engineers and reservoir owners, evaluate the potential for implementing forecast-informed reservoir operations in watersheds where improved weather forecasting capabilities would allow reservoir operators to improve flood control and surface and groundwater supply storage.	**DWR**	**3**	DWR continues to support (and co-lead in the case of Lake Oroville) forecast-informed reservoir operations (FIRO) assessments in California. FIRO is in use at Lake Mendocino on the Russian River. In 2020, FIRO increased Lake Mendocino water storage by nearly 20 percent, roughly equivalent to the water used by 22,000 households. DWR is working with the U.S. Army Corps of Engineers to assess the viability of adjusting reservoir operation manuals to incorporate FIRO at Prado Dam on the Santa Ana River, Lake Oroville on the Feather River, New Bullards Bar Reservoir on the Yuba River, and at federal facilities on the Truckee River. DWR and the Corps continue to seek state and federal funding to support FIRO; the 2021-22 state budget includes $10 million for FIRO.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
27.4	Support utilization of emerging technologies and partnerships to improve forecasts of precipitation seasonal snowpack, and runoff at all time scales to support more efficient water management now and to help estimate the impacts of climate change on future flood and drought conditions.	**DWR**	**3**	DWR continues to fund research partners at NASA, NOAA, and universities to prepare experimental seasonal precipitation forecasts and related climate diagnostic products to support drought preparedness and response. For fall 2021, three new research forecasts have been developed and one existing NOAA research forecast has been continued; these forecasts were presented at a November workshop for invited water agencies held in partnership with the Water Education Foundation. Related new climate diagnostics work will also be presented. These products will be served on the California Water Watch hydrological monitor when it goes live in late 2021 or early 2022. DWR continues to partner with Scripps' Center for Western Weather and Water Extremes and NOAA on research observations and short-term weather forecasts associated with atmospheric river storms; the state funding to Scripps also helps support work to advance forecast-informed reservoir operations pilot projects and a Bay Area pilot project for advanced quantitative precipitation information (a project initiated with DWR's integrated regional water management funding) to improve local urban flood forecasting. During winter and spring 2021, DWR utilized atmospheric river guidance from Scripps to help prepare for the late January/early February atmospheric rivers that resulted in most of California's snowpack and runoff from the Sierra Nevada. The guidance enabled DWR and other emergency managers to pre-deploy resources in burn-scar areas in anticipation of mud and debris flows. DWR continues to partner with the University of Colorado for production of satellite-based estimates of Sierra Nevada snowpack. These estimates, especially when coupled with aircraft-based observations, can vastly improve the understanding of how much water is contained in the Sierra Nevada snowpack. During winter and spring 2021, DWR utilized satellite technologies to help estimate Sierra Nevada snowpack to aid in preparing the traditional Bulletin 120 runoff forecasts. DWR has been developing a long-term effort (Aerial Remote Sensing of Snow program) to improve estimation of Sierra Nevada snowpack through aircraft-based remote sensing performed by Airborne Snow Observatory Inc. (ASO), building off initial efforts to apply this technology in selected San Joaquin River tributary watersheds. Partners in this effort include the U.S. Bureau of Reclamation and local water agencies. ASO flights were conducted in late 2020 and winter/spring 2021; *(continued …)*

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
				(27.4 continued) some of the flights were funded through a FEMA hazard mitigation grant to cover wildfire burn scar areas to assess wildfire impacts on future runoff and collect baseline data for understanding erosion and debris flow risks. ASO flew 11 flights over the central and southern Sierra Nevada to measure the snowpack in the Tuolumne, Merced, San Joaquin, Kings, Kaweah, and Mono Lakes basins. The flights cost approximately $1.36 million, with $500,000 coming from DWR general fund and $856,000 tied to Forecast Coordinated Operations (F-CO) grant programs. The FY 2021-22 state budget includes $6 million for continued flights in southern Sierra basins and to conduct bare ground (baseline) flights over other Sierra Nevada watersheds for future ARSS, including in the Feather River watershed. The SWP is providing an additional roughly $1.5million to fly the Feather River in spring 2022 to collect snowpack data. The Feather River gridded snowpack data will be the first data used in DWR's transition to physically-based watershed models for runoff forecasting. In response to the significant Bulletin 120 runoff forecast errors in spring 2021, DWR is beginning a transition to modern methodologies that can take the effects of climate change into account. The transition to physically-based watershed models will begin in the Sacramento River Basin, although the new model will not be operational until spring 2023. In the interim, DWR is implementing near-term measures to improve the traditional Bulletin 120 forecasts, including using guidance from a U.S. Geological Survey Basin Characterization Model and from machine learning statistical techniques being developed by Scripps for DWR.

Executing this Portfolio

The Portfolio aligns state agencies on common goals, and in the last couple of years, drought response has strengthened that alignment. The California Water Plan, updated once every five years, will help carry that coordination forward; multiple state agencies and myriad stakeholders will help the Department of Water Resources draft that update in 2022, with a focus on climate change, watershed resilience, and water equity. Congress passed an historic infrastructure spending package in late 2021, and Californians will need to work together to leverage federal support for state priorities including large-scale water recycling, dam and canal repairs, and habitat restoration. The Administration continues to knit these water resilience efforts into a larger climate adaptation strategy and initiatives to foster biodiversity, provide equitable access to the outdoors, protect climate-vulnerable communities, achieve carbon neutrality, improve public health and safety, and expand economic opportunity.

In 2016, California enacted a new law aimed at improving everyone's access to high-quality water and ecosystem data. The law led to the creation of the Water Data Consortium, a public-private partnership that includes the leaders of state agencies, community-based organizations, local water districts, and private enterprises. The Consortium has fulfilled all the requirements of the 2016 open water data law and become a valuable institution for ensuring that everyone can readily access the information necessary to manage water proactively for the benefit of all Californians. The Consortium's pilot projects include helping to manage a groundwater accounting platform, coordinating the collection of high-resolution LiDAR data, reducing the water use and supply reporting burden for local water districts, and providing technical guidance on software development to streamline water use reporting in the Sacramento-San Joaquin Delta. The Consortium collaborates with a diverse set of partners.

Institutionalize better coordination across state agencies.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
28.1	Regularly convene the leaders of state agencies with water-related responsibilities to implement the portfolio actions and coordinate programs and expenditures.	**Administration**	**4**	The water resilience portfolio working group meets regularly to discuss progress, as do staff of agencies implementing portfolio actions.
28.2	Broaden the impact of the California Water Plan, required every five years by law, by increasing alignment and coordination between contributing state agencies. Assess progress toward regional water resilience in Water Plan updates. Inventory recurring state-published water-related plans and assess whether each should be continued, modified, consolidated, or discontinued.	**DWR, Water Board, CDFW, CDFA, Flood Board, Delta Stewardship Council**	**3**	Scoping for Update 2023 has been completed. DWR is formulating a communication and engagement plan for Update 2023 that includes greater interaction with other state agencies, tribes, and stakeholders. DWR is conducting an inventory of recurring state-published water-related plans and developing a framework for collaboratively assessing whether each should be continued, modified, consolidated, or discontinued.

Partner with key non-state partners to improve coordination and alignment.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
29.1	Establish regular dialogue with local and regional water stakeholders to improve how the state and regions work together to improve water resilience.	**CNRA, CalEPA, CDFA**	**2**	DWR participates in bimonthly meetings of the Integrated Regional Water Management Program Roundtable of Regions, a consortium of IRWM representatives from around the state. DWR also participates in quarterly disadvantaged community and tribal involvement workgroup meetings. DWR plans to continue extensive stakeholder engagement as it develops its 2023 update to the California Water Plan, a comprehensive planning document required to be published every five years.
29.2	Work with local and regional stakeholders to explore organizing specific water resilience portfolios in each region and pilot innovations.	**CNRA, CalEPA, CDFA**	**1**	No progress to report.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
29.3	Consult and coordinate with California Native American tribes as directed under Executive Orders B-10-11 and N-15-19, which establish government-to-government consultation between the Administration and tribes.	**Administration**	**3**	State agencies have underway consultations with California Native American tribes on dozens of issues including pollution standards for specific streams, the proposed Delta conveyance project, disposition of lands associated with the Klamath River dams removal project, and a draft stormwater permit for the California Department of Transportation. In 2021, the Natural Resources Agency hired its first Assistant Secretary for Tribal Affairs to improve coordination and consultation. The state's nine regional water quality control boards are in different stages of amending their Basin Plans – master water quality control planning documents – to include tribal beneficial uses, such as tribal subsistence fishing, and engaging with tribes to identify waters that support tribal beneficial uses.
29.4	Engage tribes to share traditional ecological knowledge with state agencies and stakeholders.	**CNRA, CalEPA, CDFA**	**3**	In September 2020, the Governor released a Statement of Administration Policy on Native American Ancestral Lands to encourage State entities to seek opportunities to support California tribes' co-management of and access to natural lands that are within a California tribe's ancestral land and under the ownership or control of the State of California, and to work cooperatively with California tribes that are interested in acquiring natural lands in excess of State needs. This Policy comes shortly after the State Lands Commission's conveyance of 40 acres of state-owned land within the ancestral lands of the Lone Pine Paiute-Shoshone Tribe to the Tribe for the preservation of tribal cultural resources, and supports actions like the California Natural Resources Agency's 2019 award of Proposition 68 funds for the Esselen Tribe of Monterey County's acquisition of the 1,199-acre Adler Ranch to protect Native American cultural and natural resources. In February 2020, in coordination with the Tolowa Dee-Ni' Nation, the California Fish and Game Commission approved a vision statement and definition of co-management that involves jointly achieving shared management of a given territory, area, or set of natural resources.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
29.5	Work with local, regional, national, and binational partners to promote cross-border cooperation to explore and implement opportunities to improve water resilience.	**CNRA, CalEPA**	**3**	In 2020 and 2021, CalEPA led a working group on cross-border environmental challenges through the Commission of the Californias; convened a successful California-Mexico Border Relations Council meeting and published its annual report; and supported U.S. EPA's Border 2025 program development. The San Diego Regional Water Quality Control Board adopted a Master Recycling Permit for the City of San Diego South Bay Water Reclamation Plant to streamline permitting and reporting requirements, reduce program management costs for the City of San Diego, increase purveyance opportunities for recycled wastewater in South Bay communities, and protect groundwater quality in the Otay and Tijuana River watersheds. Led by the CalEPA secretary and including representatives of the state of Baja California, the California-Mexico Border Relations Council continues to serve as a centralized hub for cross-border programs, initiatives, projects and partnerships, including limiting trash and bacteria in the Tijuana River watershed and its canyons, recovering imperiled species such as the California red-legged frog, and improving air quality and wildlife habitat at the Salton Sea. The 2021-22 state budget includes $20 million to address border water quality problems. The funding must align with the work of the CalEPA Border Affairs Program to build collaboration with the U.S. government and the governments of Mexico, Baja California Norte, and the cities of Tijuana and Mexicali. The funding may be expended for actions in Baja California Norte, provided the actions provide water quality benefits to the portions of the rivers in California.

Unify to pursue federal funding and cooperation.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
30.1	Coordinate water resources priorities across state agencies and with local agencies and communities, as appropriate, to strengthen Congressional and federal agency support for California's water future.	**Administration**	**3**	The federal advisor in the Governor's Office coordinates regularly with state agency leaders to advance California water priorities in Congress and with federal agencies including the Bureau of Reclamation, Army Corps of Engineers, National Marine Fisheries Services, Fish and Wildlife Service, and Environmental Protection Agency. The Natural Resources Agency joined the leaders of five counties in the Sacramento-San Joaquin Delta in spring 2021 to send letters to Congress seeking additional funding for invasive species management and to rehabilitate Delta levees. In 2021, Agency staff also briefed Congressional staff on the Salton Sea, the Proposition 1 Water Storage Investment Program projects, drought, and voluntary agreement negotiations with Sacramento-San Joaquin Bay-Delta watershed diverters. In August 2021, Governor Newsom joined the governors of nine other western states to ask the Federal Emergency Management Agency to declare a federal drought disaster under the Stafford Act. The letter provided recommendations on immediate drought assistance the federal government could provide.
30.2	Pursue federal funding for priority single-purpose and multi-benefit projects that may include flood risk reduction and ecosystem benefits and are of inter-regional value.	**Administration**	**3**	The 2021-22 state budget includes $141 million to leverage more than $1 billion in federal funding for Central Valley urban flood projects, including those that will help protect Stockton and Sacramento. This builds upon the $46 million in the state budget in 2020-21 for similar projects.
30.3	Advocate to secure federal research that advances or improves California water management – for example, to meet California-specific forecasting needs.	**Administration**	**3**	Working through the Western States Water Council, federal appropriations requests were submitted to the House and Senate appropriations subcommittees in spring 2021 for a National Oceanic and Atmospheric Administration western regional pilot project for improving sub-seasonal-to-seasonal precipitation forecasting. The pilot project was not included in the President's budget request to Congress.
30.4	Pursue reforms of federal hazard-related programs to ensure adequate federal funding for California water infrastructure repair, maintenance, and improvements.	**Administration**	**2**	In June 2021, DWR submitted comments in response to the Federal Emergency Management Agency's Request for Information (FEMA-2021-0011) on the National Flood Insurance Program and Hazard Mitigation Assistance programs.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
30.5	Coordinate with federal land management agencies to improve forest resilience and watershed function on federal lands.	**Administration**	**3**	In August 2020, California signed a historic Shared Stewardship Agreement with the U.S. Forest Service that committed both parties to a comprehensive approach to forest and wildland resilience in the age of climate change. California and the Forest Service released the Forest and Wildfire Resilience Action Plan to outline the long-term vision of the Shared Stewardship Agreement and address obstacles to a coordinated approach. California also has dramatically increased its budget (from $75 million to $1.5 billion) to fully fund California's commitments within the Shared Stewardship Agreement. A dramatic increase in funding is required for Federal partners to meet the requirements of the joint strategy. The Forest Service owns 57 percent of the wildlands in California, and billions of federal dollars are needed to meet the joint goals.

Actively integrate water resilience portfolio actions into other Administration efforts to build climate resilience.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
31.1	Integrate the water resilience portfolio into the State Climate Action Plan that must be produced every three years.	**CNRA**	**3**	California Natural Resources Agency are working to incorporate water resilience portfolio goals, actions, and progress into the development of the 2021 State Climate Adaptation Strategy.
31.2	Include water actions that build economic resilience into the Administration's Regions Rise Together Initiative	**Administration**	**2**	The Office of Planning and Research (OPR), in partnership with the Labor and Workforce Development Agency (LWDA), leads the state's Just Transition work. Their forthcoming Just Transition Roadmap, called for in Governor's Executive Order N-79-20, lays out a high-road economic framework for an inclusive and sustainable transition to carbon neutrality. The Roadmap – and its preliminary implementation through the new Community Economic Resilience Fund -- will help diverse regions design equitable responses to macro-economic shifts in California's key industries, including the changes tied to implementation of the Sustainable Groundwater Management Act. The OPR and LWDA High Road Transition team are also partnering with key staff across the Administration to develop policy solutions for climate/resource resilience and related labor market impacts.

Track and report publicly on progress toward implementing this water resilience portfolio.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
32.1	Issue an annual status report regarding implementation of this water resilience portfolio.	**Administration**	**4**	This document is an annual update on the status of implementation of the 142 separate actions in the water resilience portfolio.

ACTION	DESCRIPTION	DIVISION/OFFICE	PHASE	ACTION STATUS
32.2	Gather stakeholders from across the state each year to discuss progress implementing this portfolio and more broadly achieving water resilience across the state.	**Administration**	**1**	The state has not yet organized a stakeholder gathering focused entirely on the Water Resilience Portfolio. State representatives involved in implementing the portfolio spoke in 2020 and 2021 to dozens of groups and hundreds of stakeholders about building water resilience in California. This includes the secretaries for Natural Resources, Environmental Protection, and Agriculture answering questions about portfolio implementation at a December 2020 conference of the Association of California Water Agencies (ACWA). Other groups that hosted state representatives in 2020 and 2021 to discuss portfolio implementation include the American Public Works Association, the California Urban Water Agencies, the California Stormwater Quality Association, the California Water Action, Collaborative, Water UCI at the University of California, Irvine, the California Board of Food and Agriculture, and the Central Valley Flood Protection Board. In September 2021, the Natural Resources Agency hosted a call for hundreds of stakeholders to answer questions about the 2021-22 state budget investments in climate resilience, including the $5.2 billion in funding to advance the Water Resilience Portfolio.

APPENDIX

Governor's Executive Order N-10-19

EXECUTIVE DEPARTMENT
STATE OF CALIFORNIA

Executive Order N-10-19

WHEREAS, water is a human right, and is central to California's strength and vitality; and

WHEREAS, we face a range of existing water challenges, including unsafe drinking water across the state, major flood risks that threaten public safety, severely depleted groundwater aquifers, agricultural communities coping with uncertain water supplies, and native fish populations threatened with extinction; and

WHEREAS, climate change is having a profound impact on water and other resources, making the climate warmer and more variable, which reduces mountain snowpack, intensifies drought and wildfires, and drives shorter, more intense wet seasons that worsen flooding; and

WHEREAS, California continues to grow, with our population projected to grow to 50 million over the next several decades and our economic activities expanding as the world's fifth largest economy; and

WHEREAS, the future prosperity of our communities and the health of our environment depend on tackling pressing current water challenges while positioning California to meet broad water needs through the 21st century; and

WHEREAS, many state programs, policies and investments are being implemented, such as the Sustainable Groundwater Management Act and new urban water efficiency standards, that can be built upon to meet these evolving challenges; and

WHEREAS, providing clean, dependable water supplies to communities, agriculture, and industry while restoring and maintaining the health of our watersheds is both necessary and possible; and

WHEREAS, achieving this goal requires a broad portfolio of collaborative strategies between government, sovereign tribes, local communities, water agencies, irrigation districts, environmental conservationists, academia, business and labor leaders, and other stakeholders.

NOW, THEREFORE, I, GAVIN NEWSOM, Governor of the State of California, by virtue of the power and authority vested in me by the Constitution and the statutes of the State of California, do hereby issue this Order to become effectively immediately.

IT IS HEREBY ORDERED THAT:

1. The California Natural Resources Agency, the California Environmental Protection Agency, the California Department of Food and Agriculture, in consultation with

the Department of Finance, shall together prepare a water resilience portfolio that meets the needs of California's communities, economy, and environment through the 21st century.

These agencies will reassess priorities contained within the 2016 California Water Action Plan, update projected climate change impacts to our water systems, identify key priorities for the administration's water portfolio moving forward, and identify how to improve integration across state agencies to implement these priorities.

2. These agencies shall first inventory and assess:

   a. Existing demand for water on a statewide and regional basis and available water supply to address this demand.

   b. Existing water quality of our aquifers, rivers, lakes and beaches.

   c. Projected water needs in coming decades for communities, economy and environment.

   d. Anticipated impacts of climate change to our water systems, including growing drought and flood risks, and other challenges to water supply reliability.

   e. Work underway to complete voluntary agreements for the Sacramento and San Joaquin river systems regarding flows and habitat.

   f. Current planning to modernize conveyance through the Bay Delta with a new single tunnel project.

   g. Expansion of the state's drinking water program to ensure all communities have access to clean, safe and affordable drinking water.

   h. Existing water policies, programs, and investments within state government.

3. This water resilience portfolio established by these agencies shall embody the following principles:

   a. Prioritize multi-benefit approaches that meet multiple needs at once.

   b. Utilize natural infrastructure such as forests and floodplains.

   c. Embrace innovation and new technologies.

   d. Encourage regional approaches among water users sharing watersheds.

   e. Incorporate successful approaches from other parts of the world.

f. Integrate investments, policies and programs across state government.

g. Strengthen partnerships with local, federal and tribal governments, water agencies and irrigation districts, and other stakeholders.

4. These agencies shall conduct extensive outreach to inform this process, including to other state agencies, sovereign tribes, federal and local government, local water agencies, agricultural groups, environmental justice and environmental conservation organizations, local and statewide business leaders, academic experts and other stakeholders.

IT IS FURTHER ORDERED that as soon as hereafter possible, this Order shall be filed with the Office of the Secretary of State and that widespread publicity and notice shall be given to this Order.

This Order is not intended to, and does not, create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its departments, agencies, or other entities, its officers or employees, or any other person.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 29th day of April 2019.

GOVERNOR OF CALIFORNIA

ATTEST:

SECRETARY OF STATE

CALIFORNIA natural resources AGENCY

CalEPA California Environmental Protection Agency

cdfa CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

STATE OF CALIFORNIA
Gavin Newsom, Governor

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE
Karen Ross, Secretary

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
Jared Blumenfeld, Secretary

CALIFORNIA NATURAL RESOURCES AGENCY
Wade Crowfoot, Secretary

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