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THIRSTING FOR PROGRESS: A REPORT CARD ON CALIFORNIA'S RESPONSE TO THE DROUGHT

As California bids farewell to a fourth, searing year of drought, we don't know what Mother Nature has in store for us next year. We may face torrential downpours associated with the strong El Niño in the Pacific Ocean. We may face another crippling year of drought. Or we could experience something in between. But we do know that California has experienced multi-year droughts in the past and will again. As a state, we must prepare for these inevitable droughts if we are to continue to support our growing population, thriving economy, and healthy environment.

WHAT IS DROUGHT?

The National Weather Service defines drought as "a deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people."[1]

While droughts are normal, recurrent features of climate, they are not purely a function of hydrology. There is a human component; as the National Weather Service explains, "[h]uman factors, such as water demand and water management, can exacerbate the impact that drought has on a region."[2]

The good news is that these same human factors can also reduce the drought's impact. If we become more efficient in our water use—demanding less water to perform the same task—we can reduce the frequency of water shortages, since shortages are simply a function of supply not meeting demand. If we improve our water management, we can create more resilient natural systems that can weather normal, recurrent periods of low precipitation, as most native water-dependent fish and wildlife evolved to do in the semi-arid west. This report card captures these and related advancements on the human side of the drought equation.

To help the state better prepare for future droughts, we took a look back at the State of California's response under Governor Brown's leadership to the current drought and assessed successes and shortcomings. We focused on five categories that we believe represent the highest priority strategies to achieve a sustainable and drought-resilient water future, one that better insulates the population and its natural resources from the vagaries of hydrology. NRDC and the Pacific Institute identified these five strategies in a report published in 2014 called *The Untapped Potential of California's Water Supply: Efficiency, Reuse, and Stormwater*. These strategies are:

URBAN WATER CONSERVATION AND EFFICIENCY

AGRICULTURAL WATER CONSERVATION AND EFFICIENCY

STORMWATER CAPTURE AND REUSE

WATER RECYCLING AND REUSE

RESTORING THE SAN FRANCISCO BAY-DELTA ESTUARY—THE HUB OF CALIFORNIA'S WATER SYSTEM

These five strategies are top priority for a host of reasons. First, California has considerable untapped potential to reduce demand and increase supply by improving efficiency in urban and agricultural water use, capturing local rainwater, and recycling and reusing water. The NRDC and Pacific Institute analysis concluded that these four tools could reduce withdrawals from rivers, streams, and groundwater aquifers by 10.8 to 13.7 million acre-feet of water annually.[3] That is more water, on average, than is used in all of California's urban centers per year.[4]

Second, the San Francisco Bay-Delta is the largest estuary on the west coast of the Americas and is California's primary hub for moving water from north to south. It is also in severe decline as populations of native salmon and other species plummet due, in part, to excessive water diversions.[5] Restoring the health of the Delta is critical to maintaining it as a future water supply; thriving agricultural and recreational center; and habitat for hundreds of species of native fish, birds and wildlife.[6]

Finally, the state has codified the importance of pursuing these strategies in the 2009 Delta Reform Act, in which the Legislature declared:

- "The policy of the State of California is to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. Each region that depends on water from the Delta watershed shall improve its regional self-reliance for water through investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts;"[7] and
- "The policy of the State of California is to achieve the following objectives that the Legislature declares are inherent in the coequal goals for management of the Delta:

  (a) Manage the Delta's water and environmental resources and the water resources of the state over the long term.

  (b) Protect and enhance the unique cultural, recreational, and agricultural values of the California Delta as an evolving place.

  (c) Restore the Delta ecosystem, including its fisheries and wildlife, as the heart of a healthy estuary and wetland ecosystem."[8]

Californians across the state have stepped up to meet the challenges of the drought—cutting water use by more than 25 percent in urban areas during the summer of 2015. The state has made significant advancements on other water strategies during the drought—most notably, securing passage of the first-ever statewide sustainable groundwater management act in 2014, and securing passage of a $7.5 billion water bond in 2014 to help pay for needed water improvements.[9] The Sustainable Groundwater Management Act represents an important milestone toward improving California's overall water management, but it also heightens the need for alternative water supply strategies and complementary surface water protections. In order to achieve groundwater sustainability, the state will need to reduce the demand for groundwater by accelerating improvements in agricultural water use efficiency, in particular, as well as increasing the use of recycled water and capture of stormwater to replenish depleted groundwater basins. Reduced groundwater availability (and excessive groundwater pumping) also threaten to heighten pressure on already-overtapped rivers, streams, and estuaries, increasing the need for firm and enforceable flow objectives in surface water resources. We have focused here on the tools needed to help achieve the goal of sustainable groundwater and surface water use over the long term.

To assess the state's performance over the course of the drought, we developed eight "yes" or "no" questions related to each strategy, and assigned one point for each "yes" answer, and zero points for each "no" answer. Points translate to a letter grade as follows:

8 points = A	5 points = B-	2 points = D
7 points = A-	4 points = C	1 point = D-
6 points = B	3 points = C-	0 points = F

FIGURE I. TOTAL POTENTIAL WATER SUPPLY AND DEMAND CHANGES WITH FOUR DROUGHT RESPONSE STRATEGIES, IN THOUSAND ACRE-FEET PER YEAR, BY HYDROLIC REGION

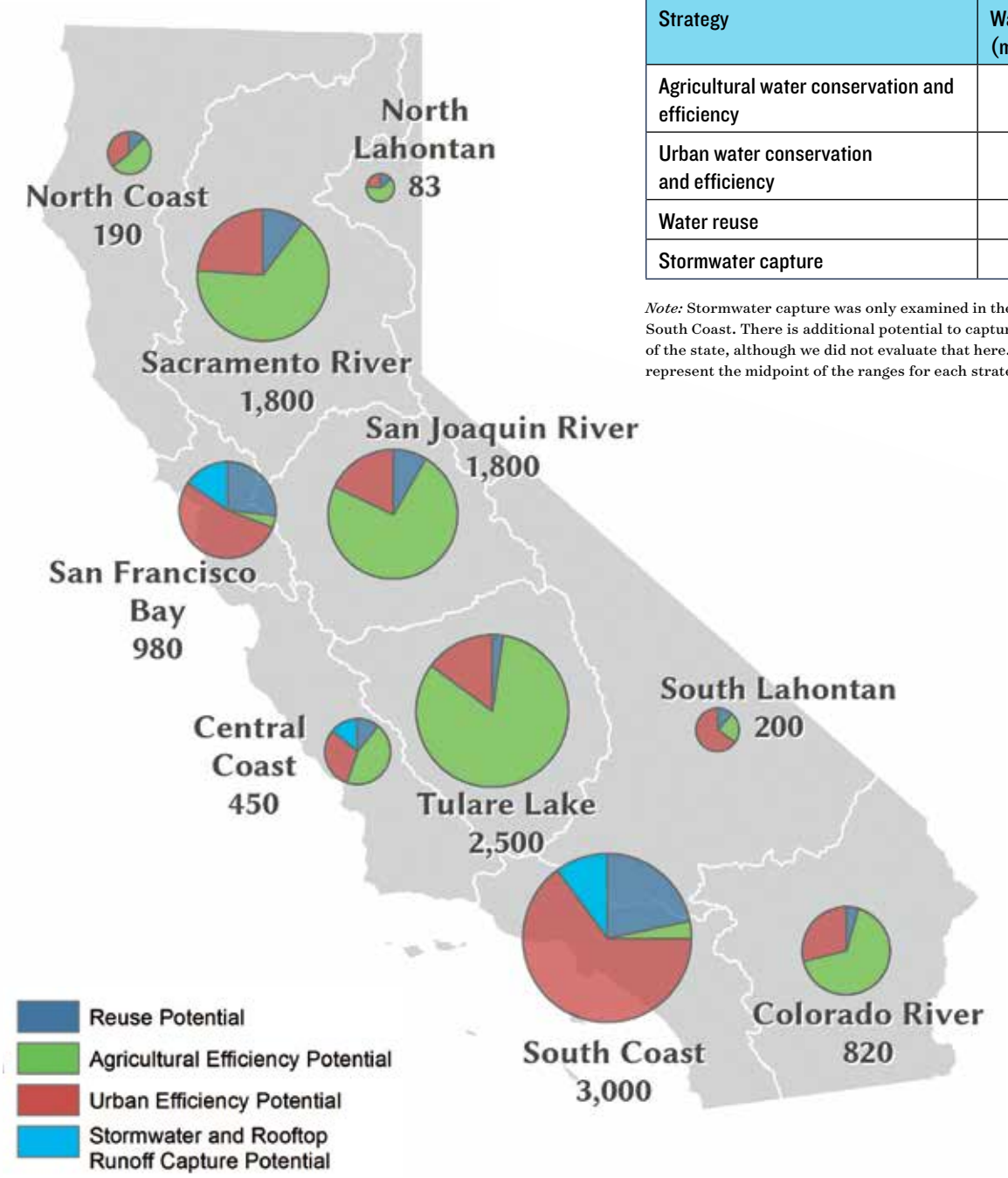


Table I. Statewide water supply and demand changes with four drought response strategies

Strategy	Water Savings (million acre-feet per year)
Agricultural water conservation and efficiency	5.6 – 6.6
Urban water conservation and efficiency	2.9 – 5.2
Water reuse	1.2 – 1.8
Stormwater capture	0.4 – 0.6

Note: Stormwater capture was only examined in the San Francisco Bay Area and the South Coast. There is additional potential to capture stormwater in other regions of the state, although we did not evaluate that here. The values shown in this figure represent the midpoint of the ranges for each strategy.

Source: "The Untapped Potential of California's Water Supply," NRDC and Pacific Institute (2014).

URBAN WATER CONSERVATION AND EFFICIENCY

GRADING CRITERIA

✓	1. Has the state set meaningful water conservation targets for urban users?
✓	2. Has the state enforced water conservation targets?
✓	3. Has the state achieved the targets?
✓	4. Has the state imposed monitoring and reporting requirements to measure urban water use?
✓	5. Has the state implemented an effective strategy to reduce landscape water use?
✓	6. Has the state implemented an effective strategy to improve plumbing fixture and appliance water use efficiency?
✗	7. Is the state enforcing the tools at its disposal to improve urban water use efficiency?
✗	8. Has the state utilized conservation-based pricing to improve efficiency?

POINTS: 6 GRADE: B

Urban water use accounts for about 20 percent of California's overall developed water supply. NRDC and Pacific Institute analysis shows that improved water conservation and efficiency could reduce urban water use by up to 5.2 million acre-feet annually through measures like replacing thirsty lawns with beautiful succulent gardens and other drought-tolerant landscapes, upgrading household appliances, and repairing leaks.[10] As the drought has lengthened and worsened, the Brown Administration has taken increasingly bold action toward capturing this urban efficiency potential and stretching California's strained water supplies, now and in the future.

ESTABLISHING, ENFORCING, ACHIEVING, AND MONITORING WATER CONSERVATION TARGETS

In January 2014, Governor Brown declared a drought emergency and called on Californians to voluntarily reduce their water use by 20 percent.[11] This call went largely unheeded, with urban water use declining by a mere 4 percent in June 2014,[12] until in April 2015, the governor converted this urban conservation request into a mandatory requirement for a 25 percent statewide reduction.[13] This laudatory action prompted results, with urban water use declining by 27 percent in June 2015,[14] by more than 31 percent in July 2015,[15] and close to 27 percent in August 2015.[16] That translates to 611,566 acre-feet of water saved in those three months—51 percent of the way toward the state's goal of saving 1.2 million acre-feet of water in the urban sector in 2015.[17] By comparison, the water saved in these three months is more than triple the highest estimated annual yield of new water supplies from two controversial, multi-billion dollar proposed surface storage projects: Temperance Flat Dam on the upper San Joaquin River (long-term yield estimated between 61 to 87 thousand acre-feet per year)[18] and raising Shasta Dam (long-term yield estimated between 47.3 and 113.5 thousand acre-feet per year).[19]

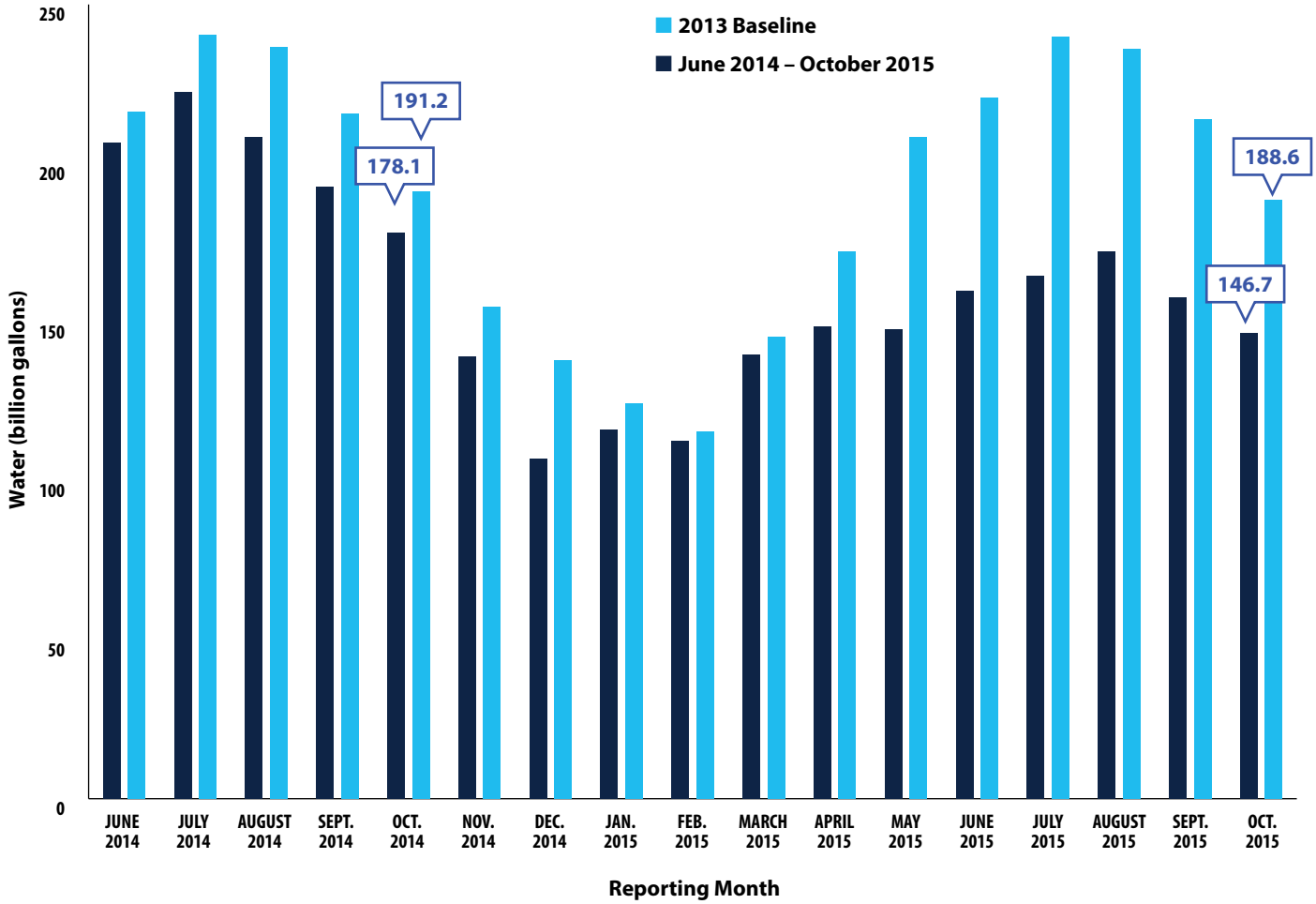
The State Water Resources Control Board (SWRCB)—which is responsible for implementing the Governor's conservation requirement—has imposed monthly monitoring and reporting requirements on urban water agencies that provide critical information for measuring and enforcing urban efficiency improvements,[20] and has pursued enforcement actions against water suppliers who fail to meet the state's mandates.[21] The SWRCB is widely expected to extend water conservation requirements in 2016.

REDUCING LANDSCAPE WATER USE

About half of California's urban water use—4.2 million acre-feet per year—is outdoors. The vast majority is used for watering landscapes, and some for washing cars or sidewalks and filling pools or spas.[22] Outdoor water conservation could yield big savings. Converting existing landscapes to water-efficient plants could save a total of 2.9 million acre-feet per year.[23]

The Brown Administration has made impressive strides toward reducing water use on ornamental, water-intensive landscapes. Governor Brown's Executive Order B-29-15, issued in April 2015, prohibited irrigation outside new buildings other than drip or microspray and required that the State's Model Water Efficient Landscaping Ordinance be updated to increase landscape water efficiency through irrigation, graywater use, onsite stormwater capture, and limitations on turf.[24] The Department of Water Resources (DWR) responded with a revised ordinance that includes strategies for better water and landscape stewardship in new construction, but falls short of several changes that would transform our turf-heavy outdoor spaces to

FIGURE 2. STATEWIDE CONSERVATION RESULTS, WATER PRODUCTION JUNE 2014 – OCTOBER 2015



October 2015 savings (41.9 billion gallons) are over three times greater than October 2014 savings (13 billion gallons)

Note: The fluctuation in baseline water production figures is due to a provision in the emergency regulation adopted by the SWRCB on May 5, 2015 that allows suppliers to subtract water delivered for commercial agriculture. Provided they have commercial agriculture certifications, suppliers are allowed to subtract this water use from both the reporting month and respective baseline month.
Data source: SWRCB (2015).

sustainable, pollution-reducing, climate-appropriate landscapes.[25] Further revisions of the model landscape ordinance should (1) prohibit turf as ornamental ground cover in new residential developments (rather than limiting it to 25 percent of landscape), (2) require onsite rainwater catchment and stormwater retention in new developments (rather than merely recommending it), and (3) require that meters be installed to measure water use for irrigation on all parcels covered by the ordinance (not just new commercial landscapes).[26]

The SWRCB should narrow its definition of "commercial agriculture" so that it does not exempt large suburban yards from water consumption reductions. Its current broad definition includes large-lot subdivisions planted with avocado and citrus trees. Thus, suburban hobby farms and ranchettes are able to subvert the 25 percent urban conservation requirement.

IMPROVING PLUMBING WATER USE EFFICIENCY

In April 2015, the California Energy Commission (CEC) took emergency action based on Executive Order B-29-15, and at NRDC's urging, to ensure that the toilets, urinals, and faucets sold in California be the most water-efficient in the country. According to the CEC, the new plumbing efficiency standards will reduce the state's water use by more than 100 billion gallons per year, once the current stock of products is turned over.[27] To put that into perspective, these standards will save about three times the annual water use of San Francisco. In the first year, the state expects to save 10 billion gallons of water.

Additionally, and again at NRDC's urging, the CEC adopted a rule that all new showerheads operate with a maximum flow of 2 gallons per minute (gpm) by July 2016, with a further reduction to 1.8 gpm by July 2018. These new standards put the state on track to save as much water as San Francisco's annual use (38 billion gallons) by 2028.

The CEC's standards surpass those set by the EPA's WaterSense program, which sets national voluntary standards for water-efficient products similar to ENERGY STAR for energy-efficient products.[28] California's standards for urinals, residential lavatory faucets, and showerheads are all more stringent than those set for the WaterSense program. No other state has stronger standards.

Executive Order B-29-15 also directed the CEC to establish a rebate program to replace inefficient appliances. The CEC proposed offering a $100 rebate to customers who replace an inefficient clothes washer with a new ENERGY STAR model. However, since funding has not been secured, the program has yet to launch. NRDC continues to work with energy utilities to offer appliance recycling programs for clothes washers so that inefficient machines that have been replaced are not reused.

ENFORCING TOOLS TO ENHANCE URBAN WATER USE EFFICIENCY

Water efficiency improvements will be delayed unless outdated plumbing fixtures are addressed. In 2009, California enacted legislation (SB 407) requiring that inefficient plumbing fixtures be replaced with efficient fixtures by 2017 in residential buildings and 2019 in commercial buildings. Few water suppliers or local jurisdictions have set out enforcement strategies. The state should do more to ensure effective enforcement of this requirement. NRDC has recommended that DWR prioritize SB 407 implementation in their Integrated Water Management Grant Program Guidelines, that the SWRCB declare that inefficient plumbing fixtures in pre-1994 buildings are a wasteful and unreasonable use of water, and that water suppliers are obligated to eliminate them. To date, the state has not moved to ensure enforcement of these requirements.

In addition, the California Department of Housing and Community Development (HCD) has ignored recommendations from the Green Code Advisory Committee, NRDC, and other stakeholders concerning improvements to the state residential green building code, CALGreen. By ignoring these recommendations, HCD is preventing the state from reaching Governor Brown's

water conservation targets. HCD should strengthen these requirements by removing unnecessarily high minimum flow requirements for faucets that prevent installing the most efficient faucets, reducing the water used by metered faucets (those that automatically dispense water) in residential buildings, permitting multiple options to achieve hot water on demand, and aligning the codes for shower mixing valves with new showerhead efficiency standards, among other strategies.

EXPEDITING PRICING WATER FOR CONSERVATION

Executive Order B-29-15 directed the SWRCB to adopt emergency regulations directing urban water suppliers to develop conservation pricing structures. The SWRCB has solicited comments on potential rate policies, but has not yet adopted a measure, nor released a plan of action or timetable for doing so.

AGRICULTURAL WATER CONSERVATION AND EFFICIENCY

GRADING CRITERIA

✗	1. Has the state set meaningful water conservation targets for agricultural users?
✗	2. Has the state enforced existing requirements?
✗	3. Is the state on track to achieve existing requirements?
✗	4. Is the state appropriately incentivizing improved agricultural water use efficiency?
✓	5. Has the state improved planning, monitoring and reporting requirements for agricultural water use?
✗	6. Has the state implemented an effective strategy to increase adoption of water efficient irrigation methods and technologies?
✓	7. Has the state provided funding to promote water efficient irrigation methods and technologies?
✗	8. Has the state utilized conservation-based pricing to improve efficiency?

POINTS: 2 GRADE: D

Any effort to conserve water and improve its management must include agriculture simply because of the sheer scale of its water footprint. Agriculture uses approximately 80 percent of California's developed water supplies. Although irrigation efficiency has improved recently with adoption of drip and other systems, approximately half of California's irrigated acreage still uses the outdated and inefficient methods of flood and furrow irrigation.[29] A recent NRDC and Pacific Institute analysis estimates that more efficient irrigation could reduce water use by 5.6 to 6.6 million acre-feet per year while maintaining current acreage levels and crop mix.[30] Part of these savings reflect reductions in consumptive use, ranging from 0.6 to 2 million acre-feet per year, which represents additional supply that can be allocated to other uses like meeting urban or environmental water needs.[31] The rest of the savings means less water being taken from rivers, streams, and groundwater with improved water quality, instream flow, and energy savings, among other benefits.

ESTABLISHING WATER CONSERVATION TARGETS FOR AGRICULTURE

Governor Brown has called for a 25 percent urban water use reduction—a challenge that urban agencies and residents have met in the summer of 2015. Although agricultural use is approximately four times urban water use, the state has not set goals or mandatory requirements for agricultural water conservation. Tellingly, the percentage of water saved in the agricultural sector is projected to be far less than in the urban sector. University of California researchers estimate that agricultural water users will reduce total water use by only 9 to 10 percent, or 2.5 million acre-feet, in 2015 (predicting a 8.7 million acre-feet reduction in surface water use, offset by 6.2 million acre-feet of additional, unsustainable groundwater withdrawals).[32]

The sector can and should aim for even greater savings to ensure a thriving, sustainable agricultural economy well into the future. At least one agricultural water district has cut its water use by almost one-third in the drought without fallowing large tracts of farmland by modernizing its water delivery system and allowing for pressurized on-demand delivery.[33] Similar to Australia's investments during its millennium drought, these mechanisms allow farmers to conserve water while maintaining production. A mandatory agricultural conservation requirement could significantly increase savings and help prevent unsustainable groundwater overdraft.

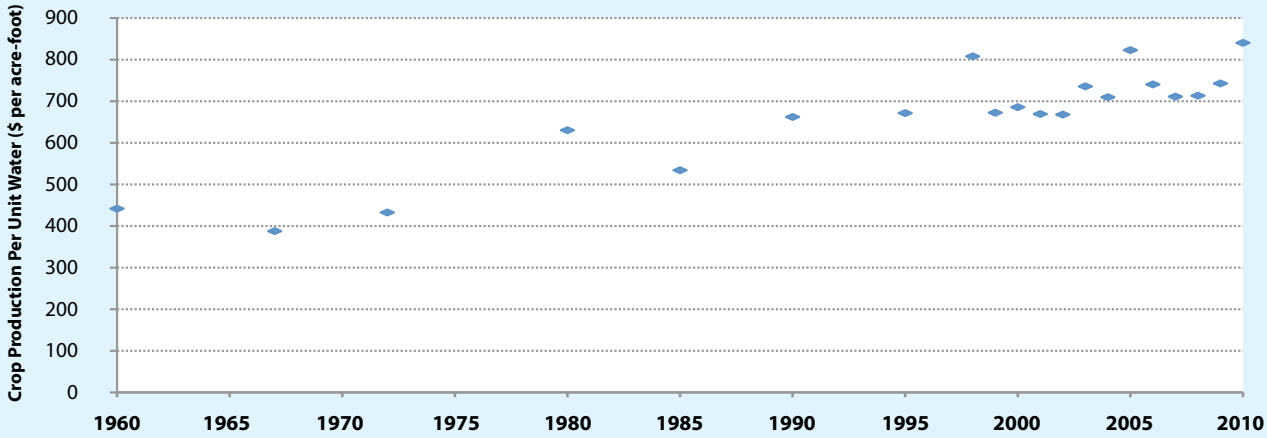
ENFORCING, INCENTIVIZING, AND ACHIEVING EXISTING AGRICULTURAL WATER USE AND EFFICIENCY REQUIREMENTS

While California's Water Action Plan strives to "make conservation a way of life" across the state, existing laws that could significantly improve agricultural water conservation remain underutilized and unenforced. The Water Action Plan recognizes that SB X7-7, passed in 2009, lays the foundation for agricultural water conservation by "requiring agricultural water management plans and efficient water management practices for agricultural water suppliers" and urges the adoption of stronger requirements.[34] Yet, the Brown Administration has failed to enforce existing requirements to improve agricultural water savings.

SB X7-7 requires that agricultural water suppliers submit water efficiency and water use plans to the Department of Water Resource (DWR). These plans require the

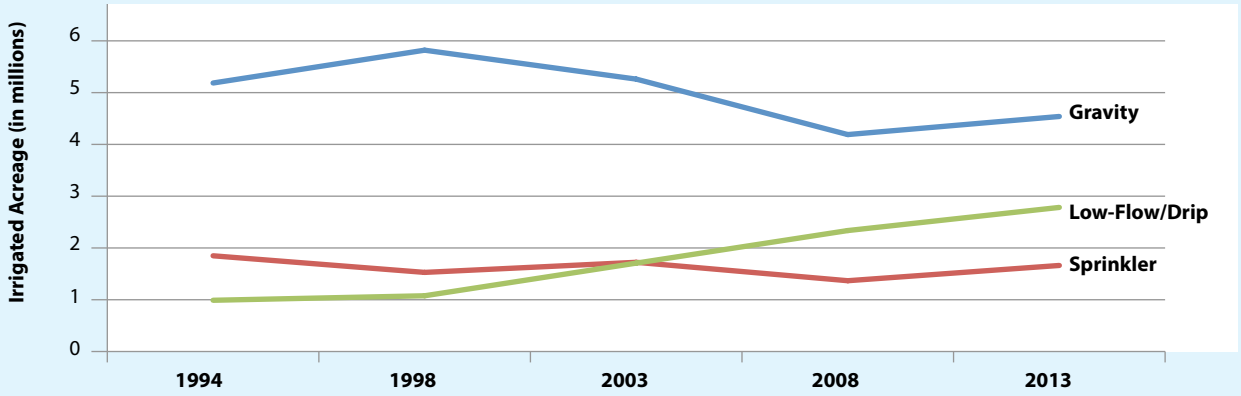
CALIFORNIA'S IRRIGATED AGRICULTURE HAS BECOME MORE EFFICIENT OVER THE LAST FEW DECADES, WHILE INCREASING REVENUES

FIGURE 3. ECONOMIC PRODUCTIVITY OF WATER IN CALIFORNIA AGRICULTURE, 1960–2010



Note: All values shown in year 2009 dollars.
Source: Crop production values are based on figures from U.S. Department of Agriculture (2014). Values for agricultural water use for 1960 – 1995 are based on estimates from DWR Bulletin 160 (DWR 1964, 1970, 1974, 1983, 1987, and 1993). Water use values for 1998 – 2010 are based on DWR Statewide Water Balances data (2014).

FIGURE 4. CALIFORNIA IRRIGATION METHODS, 1994-2013



Note: Gravity irrigation includes open-ditch conveyance, furrow, and flood systems to distribute water across a field without using pressurization. Sprinkler systems spray pressurized water over the field surface. Low-flow systems include drip systems, which use narrow tubes to emit water through small holes at the root zone, and mirco-sprinklers with heads located one foot above ground. Further explanation can be found at: http://www.ers.usda.gov/media/873628/irrigationwater.pdf.
Data Source: United States Department of Agriculture, National Agricultural Statistics Service, Censuses of Agriculture (2015).

implementation of efficient water management practices, measurement of water deliveries, and a pricing structure for water customers based on quantity delivered.[35] Plans were due by the end of 2012, but by August 2013, only 25 of at least 79 covered agricultural water suppliers had submitted them, a mere 30 percent compliance rate.[36]

By law, agricultural water suppliers that fail to submit these plans cannot qualify for grants from the DWR. Yet, the state has failed to limit grant funds for suppliers that violate the law. In fact, during the height of the drought, the DWR awarded millions of dollars to water suppliers that had not complied with mandatory water-conservation or planning measures. All suppliers should meet basic conservation requirements in light of the extreme drought. In late May 2015, NRDC sued the DWR to convince the agency to enforce existing laws to promote water savings.[37]

Many additional covered agricultural water districts not currently slated to receive DWR funds are not complying

with the requirements of SB X7-7. At least seven districts had not even submitted plans as of August 2015.[38] Many more have submitted plans that fail to meet SB X7-7 minimum requirements to accurately measure water deliveries at the farm gate and to implement volumetric pricing (i.e., charging customers based at least in part on the volume of water delivered). The state is unlikely to achieve meaningful improvements in agricultural water use efficiency without improved enforcement of SB X7-7.[39]

IMPROVING PLANNING, MONITORING, AND REPORTING REQUIREMENTS FOR AGRICULTURAL WATER USE

Executive Order B-29-15 expanded the reach of SB X7-7, extending agricultural water requirements from districts with 25,000 acres or more of irrigated acreage to districts with 10,000 acres or more of irrigated acreage. It also required that updated plans include drought management.[40] Plans for districts with irrigated acreage between 10,000 and 25,000 acres are due July 1, 2016. While this action was laudable, for these plans and requirements to be meaningful, the Administration must improve enforcement of both existing and expanded requirements, as noted above.

INCREASING ADOPTION OF WATER-EFFICIENT IRRIGATION METHODS AND TECHNOLOGIES

While the state has many tools to significantly increase and hasten the uptake of efficient irrigation techniques, it has failed to utilize many of them.

Water delivery infrastructure could be significantly modernized to improve on-farm irrigation methods and reduce evaporation, spillage, and seepage while water is in transit. Spills alone can account for up to 20 percent of a water district's total water use.[41] The state should set standards for irrigation delivery and the DWR should incorporate specific standards of water delivery service and a specific timeframe in its current list of required efficiency practices. Within 10 years, all districts should offer 24-hour arranged demand delivery or better and provide water service through pressurized or low-volume compatible delivery systems.

In addition, the state constitutional ban on wasteful and unreasonable uses of water should be clearly defined and enforced against users that have not adopted cost-effective, efficient irrigation measures, or that fail to utilize critical, efficient water management practices.

Since healthy soil is more resilient to dry weather, the state should also develop policies and requirements to improve soil health on California farms, as recommended by NRDC's 2015 report "Climate Ready Soil: How Cover Crops Can Make Farms More Resilient to Extreme Weather Risks". Each 1 percent increase in soil organic matter can store an additional 20,000 gallons of water per acre in the soil profile, reducing the need to irrigate as frequently.[42] Farmers can also improve soil health through practices such as no-till and cover cropping. No-till corn farmers, for example, use 30 percent less irrigation water than their conventional tilling peers, on average.[43] Cover-cropping can further reduce irrigation water requirements by up to 35 percent.[44]

HAS THE DROUGHT IMPACTED FOOD PRICES?

California provides about 70 percent of the nation's fruits and tree nuts and 55 percent of its vegetables, based on farm revenue.[47] But the drought has had little effect on national food prices, with retail food price inflation rates slightly lower than the 20-year historical average of 2.6 percent per year in 2014.[48] The USDA predicts even lower food inflation rates in 2015—with a slightly-lower-than-average food price inflation of 1.5 to 2.5 percent.

There are a number of reasons for this lack of impact on food prices, chief among them being that producers of irrigated agriculture have substituted groundwater for much of the reduction in surface water availability they've experienced during the drought.[49] Where fields have been fallowed, many producers have chosen to reduce acreage of lower value field crops such as rice, cotton, hay, and corn silage.[50]

FUNDING TO IMPROVE THE EFFICIENCY OF IRRIGATION SYSTEMS

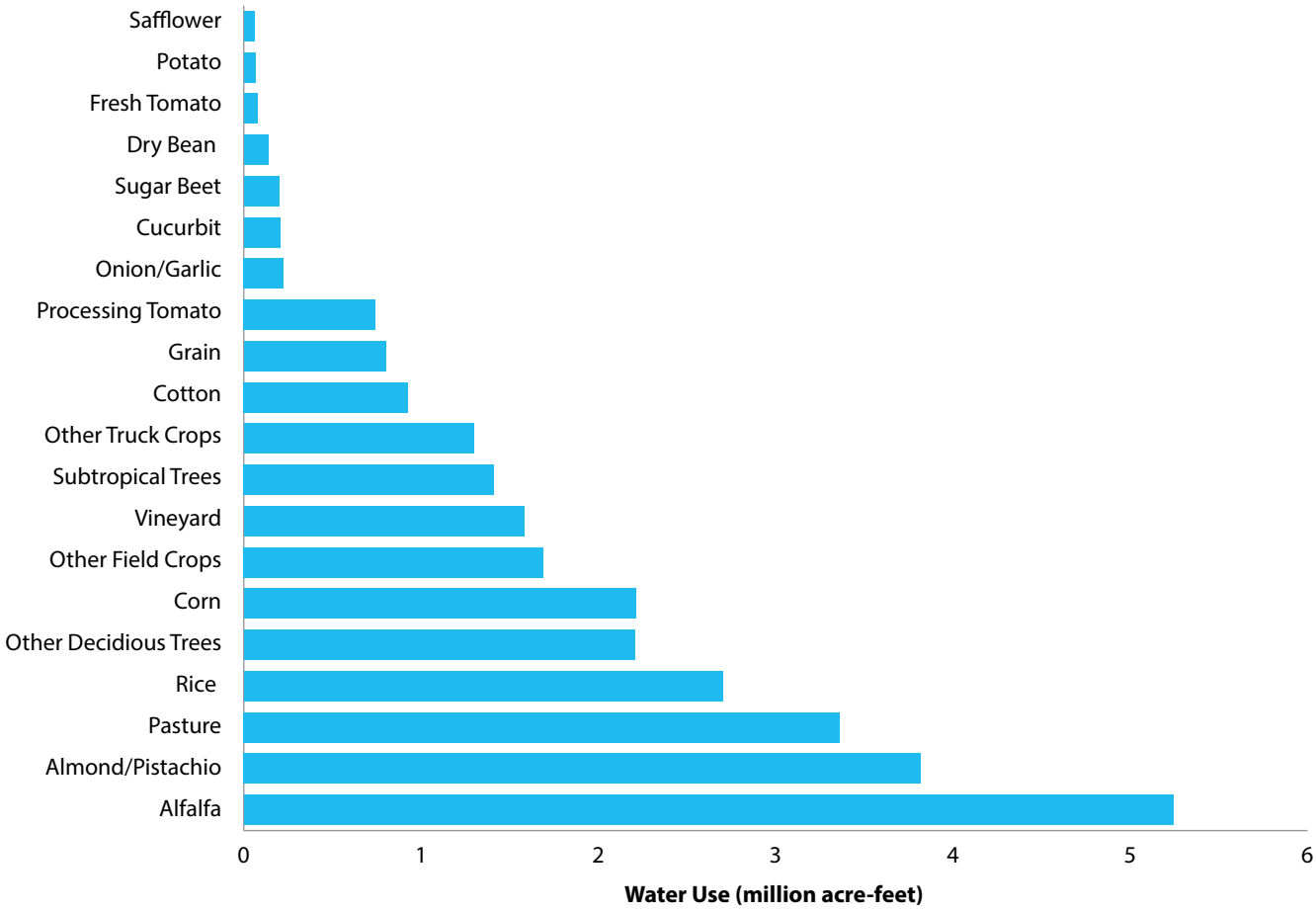
The state has provided funding to help agricultural water districts and individual growers upgrade the efficiency of their irrigation systems. In 2014, the California State Legislature authorized $687 million in emergency drought funding, much of which was eligible to support agricultural efficiency improvements.[45] In 2015, the state also provided at least $30 million to implement conservation measures to further maximize water savings and reduce greenhouse gas emissions.[46]

BROADENING ADOPTION OF CONSERVATION-BASED PRICING TO IMPROVE EFFICIENCY

The Water Conservation Act of 2009 requires that districts measure the amount of water delivered and charge, at least partially, based on the volume of water delivered. However, one third of districts reviewed in the fall of 2013 had no clear plan to measure water deliveries, and approximately one half of districts reviewed had no concrete plan to price water volumetrically.[51]

The state should also adopt volumetric, conservation-based pricing for the millions of acre-feet of water the DWR delivers annually under State Water Project (SWP) contracts. The DWR has announced that it is currently revising those contracts, originally signed several decades ago. The agency should revise contract quantity terms to reflect the amount of water that the SWP can reliably deliver to its contractors, water pricing that promotes efficiency, and water conservation requirements that reflect current state requirements and Critical Efficient Water Management Practices.

FIGURE 5. WATER APPLIED TO CALIFORNIA CROPS (2010)



Source: Department of Water Resources (2015).

STORMWATER CAPTURE AND REUSE

GRADING CRITERIA

✓	1. Has the state set targets for generating new water supplies from stormwater capture and reuse?
✗	2. Is the state on track to achieve existing targets for stormwater capture and reuse?
✓	3. Has the state recognized the multiple water quality and water supply benefits of expanding stormwater capture and reuse?
✗	4. Is the state acting with urgency to advance stormwater capture projects?
✗	5. Is the state developing a meaningful long-term vision for stormwater programs?
✗	6. Has the state developed and enforced meaningful regulations to advance stormwater capture and reuse?
✗	7. Has the state seized opportunities to incentivize stormwater capture?
✗	8. Has the state provided sufficient funding to advance stormwater capture and reuse?

POINTS: 2 GRADE: D

NRDC and the Pacific Institute estimate that capturing urban stormwater runoff in southern California and the San Francisco Bay Area can increase water supplies by as much as 630,000 acre-feet each year while reducing a leading cause of surface water pollution.[52] Cities and counties can direct stormwater runoff to open spaces, allowing it to infiltrate the ground to recharge groundwater supplies. They can also harvest the runoff, primarily from rooftops, in rain barrels and cisterns for direct non-potable uses. The Brown Administration has not aggressively pursued improved stormwater capture strategies, despite the multiple advantages of this approach to enhance local water supply, improve water quality, and expand green space in cities.[53]

SETTING AND ACHIEVING TARGETS FOR REALIZING THE MULTIPLE BENEFITS OF STORMWATER CAPTURE

California's Water Action Plan recognizes the value of capturing stormwater flows and using them to recharge groundwater and surface water supplies, and pledges that the SWRCB will "implement appropriate control measures to address these sources through its water quality permitting authority."[54] The SWRCB has established a goal to increase the use of stormwater by at least 500,000 acre-feet per year over 2007 levels by 2020 and by at least 1 million acre-feet per year by 2030.[55] Yet, in the most recent 2013 state water plan update, the Department of Water Resources (DWR) dismisses the potential water supply benefits of urban stormwater runoff management and flood management, describing them as "n/a."[56] While DWR's 2013 state water plan update identifies a set of municipal stormwater capture projects that are currently generating more than 330,000 acre-feet of water through improved stormwater management,[57] the agency identified an identical set of stormwater capture projects generating the same amount of water supply in its 2009 water plan update.[58] The lack of new projects or meaningful stormwater capture water supply estimates in the most recent water plan update indicates that the state is not on track to meet its stormwater capture goals.

ACTING URGENTLY TO ADVANCE STORMWATER CAPTURE AND DEVELOP A LONG-TERM VISION

Since 2013, the SWRCB has been developing a long-term vision for stormwater management called the Storm Water Strategic Initiative.[59] This process is still incomplete despite the state recognizing an "urgent need to take bigger strides in protecting water quality from storm water impacts," which "compels immediate action" when combined "with the severe impacts of drought and climate change on California water resources."[60] In addition to the delay in developing the Initiative, the process currently suffers from a lack of a concrete strategy or detailed plan to implement proposed projects, as well as firm targets for improving water quality and water supply. If the Initiative's next phase is developing a work plan, the SWRCB needs to consider all stakeholder input to ensure a successful implementation of the Initiative's top priority projects. For example, the SWRCB should develop comprehensive watershed-based analyses of stormwater capture's potential. Such analyses should include estimates of the water supply benefits generated by aggressive uses of infiltration and groundwater recharge, onsite capture for reuse, use of green streets and public space or public right of way, green infrastructure-based approaches, and other strategies at both distributed or site-specific and regional scales. Enforcement should be a guiding principle of the work plan and a focus of each project. Moreover, the SWRCB should ensure robust and even stakeholder engagement as each project is implemented, with a concerted effort to include the environmental justice community. Post-construction

requirements for watershed health should remain a high priority. Last, but not least, if the SWRCB is going to propose an alternative compliance approach for stormwater permits, that approach must be rigorous and enforceable, unlike the current approach. The SWRCB also needs to provide detailed, technical guidance on how to conduct a sufficient reasonable assurance analysis (RAA). Without listening to this stakeholder feedback, the state is unlikely to realize the full potential of stormwater capture programs.

REGULATING, ENFORCING, AND INCENTIVIZING STORMWATER PROGRAMS

The state has failed to strengthen and enforce existing stormwater capture programs. In 2012, NRDC, along with Los Angeles Waterkeeper and Heal the Bay, filed an administrative appeal with the SWRCB of the current Los Angeles County stormwater permit because it unlawfully provided safe harbor for municipal dischargers not required to implement stormwater capture projects. As a result, many cities can continue to discharge dirty stormwater for years without any sort of liability. On June 16, 2015, instead of seizing the opportunity to improve Los Angeles County's water quality and enhance local water supplies, the SWRCB upheld the current version of the 2012 permit, including its illegal safe harbor provisions.[61]

The SWRCB's decision could have provided much needed improvements to Los Angeles County's water supply and set a statewide precedent for municipalities to capture stormwater and use it to augment local water supplies. Instead, the SWRCB adopted a permitting approach that allows cities to meet watershed-based permit requirements without any requirement to capture stormwater. In Los Angeles County alone, the potential for stormwater capture to increase local water supplies is substantial. For example, a one-inch rain event in Los Angeles County can generate around 253,437 acre-feet of stormwater runoff. If all of that is captured, it can provide nearly 40 percent of the City of

THE QUEST TO IMPROVE STORMWATER MANAGEMENT IN LOS ANGELES COUNTY

NRDC has sought to improve stormwater capture in Los Angeles County for many years, in order to reduce harmful pollution and increase local water supplies. In March 2008, NRDC and Los Angeles Waterkeeper (LAW) sued the County of Los Angeles and its Flood Control District for violations of their stormwater permit. The County and District had been causing excessive amounts of stormwater and other urban runoff to flow into the region's waterways. This kind of runoff is the top source of coastal water pollution in California; it sickens thousands of people and fouls coastal ecosystems. In 2011, the Ninth Circuit Court of Appeals ruled largely in favor of NRDC and LAW. The County appealed that decision to the U.S. Supreme Court. In 2013, the Supreme Court remanded the case back to the Ninth Circuit, which again sided with NRDC and LAW, finding LA County and the Flood Control District liable for permit violations based on documented pollution exceedances. On further remand to the federal district court in Los Angeles, the parties began preparing for a remedy trial, which would determine the steps the County and District would need to take to address this massive pollution problem. But LA County moved the district court to dismiss the possibility of any on-the-ground-remedy, on the basis of its new, 2012 stormwater permit. The district court granted that motion, and NRDC and LAW are currently appealing this issue to the Ninth Circuit.

NRDC's current lawsuit in the LA County Superior Court challenges the adequacy of LA County's new 2012 stormwater permit. Because of its safe harbor provisions, the permit could allow permittees to continue to discharge highly polluted stormwater for years. NRDC will continue to fight to reduce stormwater pollution in Los Angeles waterways and work to ensure water quality improvement for the region.

Cistern.

Photo courtesy of the United States Environmental Protection Agency.

Bioretention area (i.e. rain garden).

Photo courtesy of Vermont Watershed Management Division.

Los Angeles' annual water use.[62] However, by upholding the current stormwater permit for Los Angeles County—which is full of loopholes and allows municipalities to circumvent water pollution standards even without a robust stormwater capture program—precious, reusable rainwater will continue to flow down storm drains and into the ocean.

In July 2015, NRDC and Los Angeles Waterkeeper filed a lawsuit against both the Los Angeles Regional Water Quality Control Board and the SWRCB to seek review of the SWRCB's decision to uphold the 2012 permit in California Superior Court.

FUNDING FOR STORMWATER CAPTURE PROGRAMS

Proposition 1 of 2014 authorizes $200 million in grants for multi-benefit stormwater management projects. While these funds signify a good start, California currently has a $500 million to $800 million annual funding deficit for stormwater management.[63] If the state wants to close this gap, it will need to secure additional funds to implement much-needed stormwater capture projects.

The SWRCB recently issued two sets of draft eligibility guidelines for these funds. One set is intended to ensure that funding only goes to agencies that have developed stormwater resource plans in accordance with California Water Code section 10562,[64] as required for any bond funds approved by voters after January 2014.[65] To date, the draft Storm Water Resource Plan Guidelines suffer from a litany of shortcomings, including:

1. The "non-binding" nature of the guidelines is inconsistent with the language of the statute, which states that stormwater resource plans shall adhere to any guidelines issued by the SWRCB.
2. The guidelines' narrow applicability solely to projects that capture and retain stormwater and runoff might hinder critical multi-benefit stormwater capture projects because stormwater resource plans can be avoided simply by relabeling all projects as "treatment."
3. The guidelines' objective metric and quantitative methods for performance evaluation and prioritization are complex, burdensome, and incomplete.
4. The public participation requirements are vague and under-inclusive.

The second set of guidelines establishes the process and criteria that the SWRCB will use to solicit applications, evaluate and select proposals, and award grants for multi-benefit stormwater management projects.[66] The SWRCB is currently requesting public input on both sets of guidelines and will consider them on December 15, 2015.

RECYCLED AND REUSED WATER

GRADING CRITERIA

✓	1. Has the state established targets for water recycling?
✓	2. Is the state on track to achieve the existing targets?
✓	3. Has the state established regulations to promote and advance the use of recycled water to recharge groundwater?
✓	4. Has the state provided funding to advance water recycling?
✓	5. Is the state on track to adopt regulations for indirect potable reuse of recycled water through surface storage augmentation?
✗	6. Has the state supported efforts to reduce the wasteful discharge of treated wastewater to the ocean?
✗	7. Has the state provided resources to assist local agencies and municipalities with advancing graywater use?
✗	8. Has the state protected the public's right to participate in decisions about water reuse and be informed of the potential impacts of recycling water?

POINTS: 5 GRADE: B–

Water reuse holds tremendous potential as a drought-resistant water supply for California. As of 2010, the state's water districts recycled approximately 670,000 acre-feet per year, with agriculture and outdoor landscaping accounting for nearly 60 percent of that use.[67] However, there is growing demand for industrial use of recycled water, groundwater recharge, and indirect potable reuse. For instance, Orange County's advanced treatment plant is expanding its current groundwater recharge facility to more than 100,000 acre-feet per year,[68] helping to provide drinking water for the community. Recent NRDC and Pacific Institute analysis estimates that an additional 1.2 to 1.8 million acre-feet of water per year could be recycled and reused.[69]

ESTABLISHING AND ACHIEVING WATER RECYCLING TARGETS

SWRCB has adopted a goal of increasing water recycling by 1 million acre-feet over 2002 levels by 2020 and by 2 million acre-feet by 2030.[70] In 2002, the state used approximately 550,000 acre-feet of recycled water.[71] By 2010, that number had risen to 670,000 acre-feet of reused municipal wastewater.[72] If the state continues to increase water recycling at its current rate of 120,000 acre-feet every eight years—an average of 15,000 acre-feet per year—it will not achieve the SWRCB's targets. But, in 2014, the SWRCB recognized the inadequacy of this pace and increased recycled water funding and related efforts in order to develop an additional 150 thousand acre-feet of recycled water annually.[73] If the state succeeds in adding 150 thousand acre-feet of new recycled water annually to the current estimated base of 800,000 acre-feet of recycled water, it is on target to meet recycled water goals.[74] Considerable untapped potential remains to increase water recycling and reuse. Approximately 5 million acre-feet of municipal wastewater is discharged to the ocean each year in California, a mere 13 percent of which is reused.[75]

ADOPTING REGULATIONS FOR GROUNDWATER RECHARGE USING RECYCLED WATER

In June 2014, the SWRCB adopted regulations for groundwater replenishment using recycled water.[76] The regulations specify advanced water treatment criteria, water quality monitoring and reporting, and other measures to protect public health and the environment. According to WateReuse California, nearly 200,000 acre-feet of recycled water is currently used to recharge groundwater each year. More than 200,000 acre-feet of additional projects are in the planning stages. By establishing a clear regulatory framework, the SWRCB's action should lead to increased groundwater recharge using recycled water in the future.

FUNDING FOR WATER RECYCLING PROJECTS

The state has dedicated substantial funding to advancing water recycling in the drought. The 2015 urgency drought legislation accelerated the appropriation of $131.7 million from Proposition 1 of 2014 for the SWRCB to expand the existing water recycling grant program. Eligible projects include feasibility studies, demonstration projects, and larger scale water recycling projects.[77] In total, Proposition 1 provides $625 million for grants and loans for water recycling across the state. In June 2015, the SWRCB adopted guidelines for these funds and is accepting

applications on a rolling basis.[78] The guidelines follow on the SWRCB's 2014 action to make $800 million[79] available for low interest loans (1 percent) for water recycling projects from the Clean Water State Revolving Fund. As of July 2015, applicants for these low-interest loans had proposed projects to recycle approximately 100,000 acre feet of water per year.[80]

DEVELOPING REGULATIONS FOR SURFACE WATER AUGMENTATION WITH RECYCLED WATER

Existing law requires that the SWRCB adopt regulations for augmenting surface water supplies (such as reservoirs) with recycled water by December 2016. The SWRCB must also report to the Legislature on the feasibility of developing uniform water recycling criteria for direct potable reuse.[81] In order to inform these processes, the SWRCB has convened expert panels to analyze potential public health and environmental impacts. In June 2014 the expert panel issued a report on the framework for scientific research for direct potable reuse.[82] They have since held additional meetings to review criteria for surface water augmentation and direct potable reuse and submitted more reports to the SWRCB. To date, the SWRCB has not released draft regulations for public review, but appears to be on track to finalize these important regulations by the end of 2016.

PROHIBITING OCEAN DISCHARGE OF TREATED WASTEWATER

Much of the state's untapped potential for expanded water reuse lies in coastal areas, where wastewater is discharged directly into the ocean. In these locations, expanding water reuse may provide both water supply and water quality benefits. Recent NRDC and Pacific Institute analysis estimated that water reuse could be expanded by 0.9 million to 1.1 million acre-feet per year in coastal areas. That's even after these municipalities reached a much higher degree of indoor water use efficiency than today, without accounting for population growth and assuming the water is reused only once.[83]

Prohibiting ocean discharge of treated wastewater by a date certain could expedite capture of this valuable resource and improve water quality. The State of Florida, for example, has prohibited south Florida wastewater treatment plants from discharging into the ocean by 2025, finding that "the discharge of domestic wastewater through ocean outfalls wastes valuable water supplies that should be reclaimed for beneficial purposes."[84] This could dramatically accelerate the adoption of water recycling and significantly increase the drought resilience of urban communities. California State Senator Hertzberg recently proposed SB 163, which aims to pursue this approach in California.[85] The state should support these efforts.

FIGURE 6. WASTEWATER DISCHARGES INTO THE OCEAN COULD BE RECYCLED

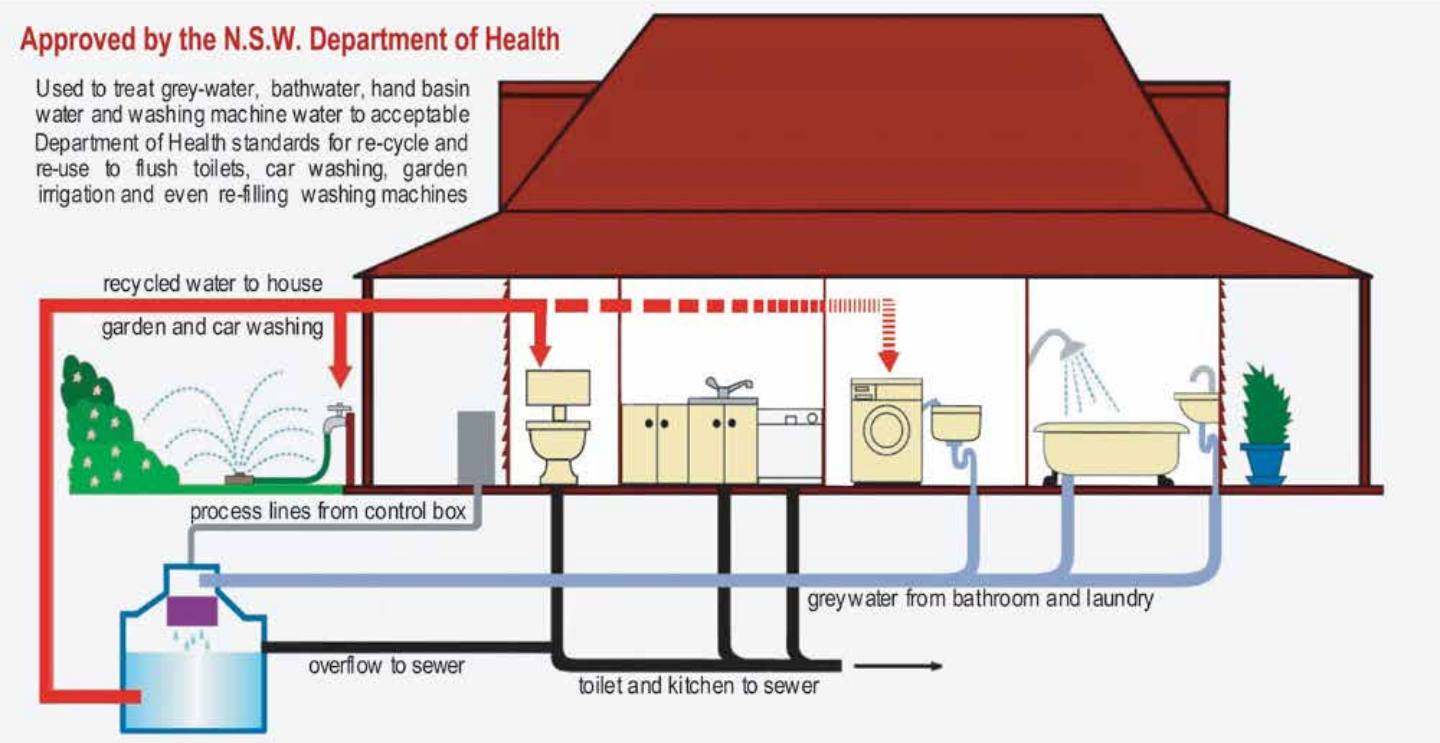
Source: California Association of Sanitation Agencies (2014).

PROMOTING GRAYWATER USE IN NEW BUILDINGS

Wastewater reuse is not solely a job for municipalities and sewage treatment agencies. Much of what we currently discharge as wastewater can be reused in a home or office building with little or no treatment. For example, a home may be equipped with a graywater system that collects wastewater from a clothes washer and uses it to irrigate a garden. Likewise, an office building may have a system that treats wastewater and reuses a portion for flushing toilets and other non-potable applications.

However, many municipalities lack effective standards or codes for graywater use in new buildings. The state could help promote strong graywater reuse by developing model standards to provide a consistent policy baseline, similar to the Model Water Efficiency Landscape Ordinance. Such standards should require dual plumbing in new homes to collect graywater separately from true wastewater as well as water reuse in new commercial and multi-family residences.

FIGURE 7. WASTEWATER RECYCLING SYSTEM IN NEW SOUTH WALES (N.S.W.)



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PROTECTING PUBLIC ENGAGEMENT AND TRUST IN THE USE OF RECYCLED WATER

Several misguided proposals in the California State Legislature, including some proposed by the Brown Administration, have suggested that efforts to expand water recycling be exempt from environmental protection and right-to-know laws like the California Environmental Quality Act (CEQA).[86] These proposals should be rejected. CEQA ensures that the public has a voice in important policy proposals, like expanding water reuse, and requires the analysis and disclosure of the site-specific environmental and public health impacts of such proposals. While water reuse can and should be expanded, it must be adequately protective of communities and the environment and avoid unintended consequences. The public review and analysis under CEQA ensures that all relevant information is considered and analyzed, and that the project can be completed with enough time to adequately plan and permit a recycling plant.

RESTORING THE DELTA ECOSYSTEM AND ITS WATER-DEPENDENT SPECIES

GRADING CRITERIA

X	1. Has the state established targets for protecting and restoring fish and wildlife in the Delta?
X	2. Is the state on track to protect and restore fish and wildlife in the Delta?
X	3. Has the state established regulations sufficient to protect fish and wildlife in the Delta?
X	4. Has the state adhered to the best available science in establishing and implementing fish and wildlife protections?
X	5. Is the state enforcing existing regulations to protect fish and wildlife in the Delta?
X	6. Has the state upheld the water quality standards protecting fish and wildlife?
X	7. Has the state upheld California and federal Endangered Species Act requirements protecting threatened and endangered fish and wildlife in the drought?
X	8. Has the state reduced reliance on the Delta as called for by state law?

POINTS: 0 GRADE: F

The San Francisco Bay-Delta Estuary (Bay-Delta)—the largest estuary on the west coast of the Americas—supplies water for more than 25 million Californians and is under unprecedented stress given the competing demands for water during this historic drought. It also provides essential habitat for over 700 species of fish and wildlife[87]—many of which are found nowhere else in the world—including several of the state's iconic Chinook Salmon runs.[88] The health of the Bay-Delta has drastically declined in recent years, and has worsened considerably during the drought. Populations of native fish have plummeted, as have most other markers of the estuary's health.

Rather than taking steps to ease the impacts of the drought on the estuary and its imperiled fisheries, the state has repeatedly implemented actions during the drought that have made conditions worse in the estuary. This has occurred despite the state's asserted commitment, enshrined in state law, to "restore the Delta ecosystem, including its fisheries and wildlife, as the heart of a healthy estuary and wetland ecosystem."[89] Harmful actions continued even though the Brown Administration acknowledged in January 2014 that "the status quo in the Delta is unacceptable and it would be irresponsible to wait for further degradation or a natural disaster before taking action."[90] The state must now heed its own warning and take immediate actions to stem the tide of decline in the Bay-Delta and put the estuary on a track to sustainability.

ESTABLISHING AND ENFORCING MEANINGFUL TARGETS FOR PROTECTING FISH AND WILDLIFE IN THE DELTA

The federal agencies charged with protecting fish and wildlife have repeatedly warned the state about the need to establish biological goals and objectives to drive and assess management of the Bay-Delta. For example, for the last several years, the state has avidly pursued authorization of two massive new water diversion tunnels under the Delta as part of its vision to restore the Delta ecosystem. In the context of this process—previously known as the Bay Delta Conservation Plan, now known as the California WaterFix—the U.S. Fish and Wildlife Services (FWS) and National Marine Fisheries Services (NMFS) explained that "[t]he Services will be challenged to make the findings required for permit issuance if the plan does not include clearly defined and scientifically supported biological goals and objectives, an adaptive management plan that tests alternative strategies for meeting those biological goals and objectives, and a framework for adjusting future conservation actions, if necessary, based on what is learned."[91] State law similarly requires the Bay Delta Conservation Plan (California WaterFix) to "include a transparent, real-time operational decision-making process in which fishery agencies ensure that applicable biological performance measures are achieved in a timely manner with respect to water system operations."[92]

Nevertheless, the Department of Water Resources recently declared that it will not include enforceable biological goals and objectives in the revised California WaterFix.[93] The currently proposed "fix" is environmentally harmful and fails to ensure that the proposed twin tunnels would provide adequate flows for fish and wildlife.[94] The state has even ignored decades-old requirements under state and federal law to double the natural production of salmon and steelhead populations; mandates that have become even more urgent in light of salmon and steelhead declines suffered during the drought.[95] Without a commitment to establish enforceable biological objectives for recovery of depleted fish and wildlife populations, the state's promises to protect and restore the Delta's public trust resources in any long-term "fix" for the estuary will continue to ring hollow.[96]

Delta Smelt.

Photo courtesy of the Delta Science Program.

Meanwhile, the estuary is continuing to decline and the state is not on course to achieve its stated goal of restoring the fish and wildlife of the Bay-Delta.

Delta Smelt is a key indicator species for the watershed's health. As California's preeminent fish biologist Dr. Peter Moyle recently explained, "If you're saving the smelt, you're saving the habitat for other species in the Delta as well."[97] In July 2015, a key index of Delta Smelt abundance hit zero for the first time since the survey began in 1959.[98] While an index value of "zero" does not mean that there are no Delta Smelt left in the wild, it does indicate that the species—one of the most abundant in the Bay-Delta as recently as the 1970s—is struggling for survival and on a precipitous downward slide. Despite these worrisome indicators, the state repeatedly waived or weakened water quality standards that protect Delta Smelt during the drought to increase water deliveries from the Delta.

A long list of other native fish species that depend on a healthy Bay-Delta ecosystem are suffering similar declines, including Chinook Salmon, Longfin Smelt, Green and White Sturgeon, Central Valley Steelhead, Splittail, and Tule Perch.[99] California's native winter-run Chinook Salmon has been listed as an endangered species since the last major drought (1987 to 1992), and exists today as a single population below Shasta Dam. Lethal water temperatures below the Dam effectively wiped out 2014's salmon run, and biologists estimate only a small percentage of these salmon are likely to survive in 2015.[100] California Department of Fish and Wildlife Director Charlton Bonham has explained that "winter-run Chinook Salmon may not survive losses in the Sacramento River similar to last year."[101] The NMFS has similarly recognized that winter-run Chinook Salmon are one of eight priority species nationwide that are most at risk for extinction.[102] Despite the precarious status of winter-run Chinook, in 2014 and again in 2015, the state permitted hundreds of thousands of acre-feet to be drained from Shasta Dam to deliver to agricultural water users—mainly growers of flood-irrigated rice—and failed to ensure that sufficient cold water would be retained behind the Dam to protect salmon spawning and rearing.

ESTABLISHING REGULATIONS, BASED ON THE BEST AVAILABLE SCIENCE, TO PROTECT FISH AND WILDLIFE IN THE BAY-DELTA

Under state and federal laws, the State Water Resources Control Board (SWRCB) is required to update water quality standards for the Bay-Delta every three years. However, the standards have not been meaningfully updated since 1996—and not at all since 2006. The SWRCB is many years past the deadline for updating the Bay-Delta Water Quality Control Plan. The SWRCB's own 2010 Public Trust Flows report shows the urgent need to update the Water Quality Control Plan, providing the scientific basis that California is diverting about 50 percent more of the Bay-Delta's flows annually for urban and agricultural uses than the recommended average.[103] Yet, the State continues to postpone this update, subjecting fish and wildlife to worsening conditions. The best available science warns that the Bay-Delta ecosystem is unlikely to recover until this fundamental lack of sufficient freshwater flow is corrected. Moreover, the SWRCB recently announced that it will permit the Bay-Delta Conservation Plan (California WaterFix), before completing the Bay Delta-Water Quality Control Plan update, further delaying adoption of adequate flows for fish and wildlife while fast-tracking this environmentally harmful proposal, which fails to ensure that the proposed twin tunnels would be operated to provide adequate flows for fish and wildlife.[104]

ENFORCING EXISTING REGULATIONS AND WATER QUALITY STANDARDS

The state has failed to enforce even the existing inadequate standards to protect fish and wildlife during the drought. First, the SWRCB has repeatedly waived minimal water quality standards and other fish protections over the last two years, causing adverse and avoidable impacts to the Bay-Delta. Water quality standards are already low in dry and critically dry years, but the SWRCB has further reduced or waived these standards, rendering species perched on the edge of extinction even more vulnerable.

Some of these waivers were justified on the grounds that more water needed to be retained in upstream reservoirs to provide cold water for salmon and steelhead later in the year. But those cold water temperature needs have also gone unmet, causing massive fish kills below dams due to inadequate cold water reserves in reservoirs. Meanwhile, the SWRCB has approved spring and summer deliveries to agricultural water users that drained those reservoirs, depleted the cold water pools, and undercut any claimed benefit from reduced water quality requirements for upstream salmon protection.[105] The state estimates that these waivers redirected more than 1 million acre-feet of water from the environment to urban and agricultural users in 2014 and 2015.[106] Not surprisingly, the waivers caused devastating impacts to native fish, and have increased populations of invasive species and harmful algae blooms.

Further, during the drought the California Department of Fish and Wildlife (CDFW) has repeatedly agreed to lessen crucial protections for threatened or endangered species. This has included allowing greater pumping from the State Water Project and Central Valley Project pumps than allowed under the California Endangered Species Act permit drafted by CDFW biologists and reducing cold-water temperature requirements below dams that allow salmon to successfully spawn and rear.[107] These decisions have contributed to the worsening condition of already-imperiled fish and wildlife during the drought.[108]

IMPLEMENTING POLICIES TO REDUCE WATER SUPPLY RELIANCE ON THE DELTA

In 2009, the California State Legislature passed the Delta Reform Act codifying that "The policy of the State of California is to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency."[109] This policy recognizes that California must divert less freshwater out of the Bay-Delta to restore this important estuary to health. This requires investing in other cost-effective sustainable regional water supplies. While the state has taken some steps to advance investment in sustainable regional supplies, it has not taken any steps to increase freshwater flows through the Delta by reducing diversions.

Instead, the state has proposed increasing average exports from the Bay-Delta, moving in direct opposition to state law. According to the Metropolitan Water District of Southern California, the state exports an average of 4.7 million acre-feet of water from the Bay-Delta per year, though it varies by year.[110] The state should plan to reduce diversions by at least 0.5 million acre-feet, as suggested by agency biologists.[111] But the latest California WaterFix plan proposes to increase exports over the long term up to an average 5.3 million acre-feet.[112] This approach contradicts state law and the nearly unanimous scientific consensus regarding Bay-Delta restoration.[113]

Suisun Marsh overlook.

Photo courtesy of Steve Martarano, Bay Delta Fish & Wildlife Office.

Pelicans on Prospect Island.

Photo courtesy of Steve Culberson, Bay Delta Fish & Wildlife Office.

Chinook Salmon on the lower Tuolumne River.

Photo courtesy of Dan Cox, Bay Delta Fish & Wildlife Office.

CALIFORNIA DROUGHT REPORT CARD

	POINTS	GRADE
Urban Water Conservation and Efficiency	6	B
Agricultural Water Conservation and Efficiency	2	D
Stormwater Capture and Reuse	2	D
Water Recycling and Reuse	5	B–
Restoring the San Francisco Bay-Delta Estuary	0	F

CONCLUSIONS AND RECOMMENDATIONS

Throughout this drought, California has made some strides toward improving its resiliency to inevitable future droughts, especially with regard to improving urban water conservation and efficiency and water recycling. In other sectors, however, including agricultural water use, and stormwater capture, much more can and should be done. And there is no doubt that the state's actions have worsened the condition of the San Francisco Bay-Delta Estuary's waterways, fisheries, and wildlife, which demand urgent, focused, and serious recovery efforts.

California has sufficient water to meet its needs, even in a prolonged drought, but much better planning, implementation, and enforcement is required to realize the untapped potential of agricultural efficency improvements, and stormwater capture, and to rededicate the flows needed to keep the Bay-Delta healthy. This report card describes specific ways the state should improve its target-setting, implementation, enforcement, and incentives in each of these sectors. The state has many other tools and actions at its disposal that could improve its ability to weather this and future droughts, many of which were described in a 2014 report, authored by NRDC and partner organizations, called "Wetter or Not—Actions to Ease the Current Drought and Prepare for the Next".

Governor Brown has endorsed restoring a healthy Bay-Delta and increasing investment in local, sustainable water supplies in the California Water Action Plan. But the state is making uneven progress toward achieving those goals, and is failing in some respects. We urge the state to renew its commitment to all of these goals and allowing its cities, farms, and environment to get better together.

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