California's Drought Update

May 29, 2009

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Introduction

This Drought Bulletin provides a monthly update to California's water conditions. Statewide reservoir storage, precipitation, and water supply conditions have improved somewhat in May; however, allocation estimates to state and federal water contractors are expected to be near record lows for 2009, and reliance on local groundwater has and will continue to be above average. Runoff for this water year is expected to be much lower than average for the third year in a row, and drought conditions remain serious across the state.

This report provides updated information on reservoir storage and water supply allocations. Information in this report is based on data compiled through the end of April. In early May there was a series of heavy rain storms. While these storms brought much needed rainfall, storage in Oroville and Shasta remain well below their historical averages for this time of year. The resulting data from these storms will be included in the June 2009 drought status report.

Hydrologic and Water Supply Conditions

Precipitation

Water year 2009 followed two consecutive dry years. After an average October, precipitation during November and December fell short of average in the north part of the state, raising the threat of a third dry year. Concern increased markedly in January 2009 as an unusually strong high pressure system limited precipitation to only one-third of the statewide average for the month. February and March saw above-average precipitation during a wet weather pattern. The month of April ended below average for precipitation statewide, due to a very dry start to the month, and only a brief wet pattern the final two days. Figure 1 shows precipitation as a percent of average for each of the state's hydrologic regions, through April 30.

What's New

California's drought information website, http://www.water.ca.gov/drought includes the latest information on supply conditions, local impacts of the drought, assistance programs, conservation efforts, and the 2009 Drought Water Bank. Recent additions to the site include a Groundwater map and information page, the statewide Save Our Water campaign, Emergency Declarations proclaimed by Fresno and Mendocino Counties, and linkage to numerous federal and state drought assistance programs.

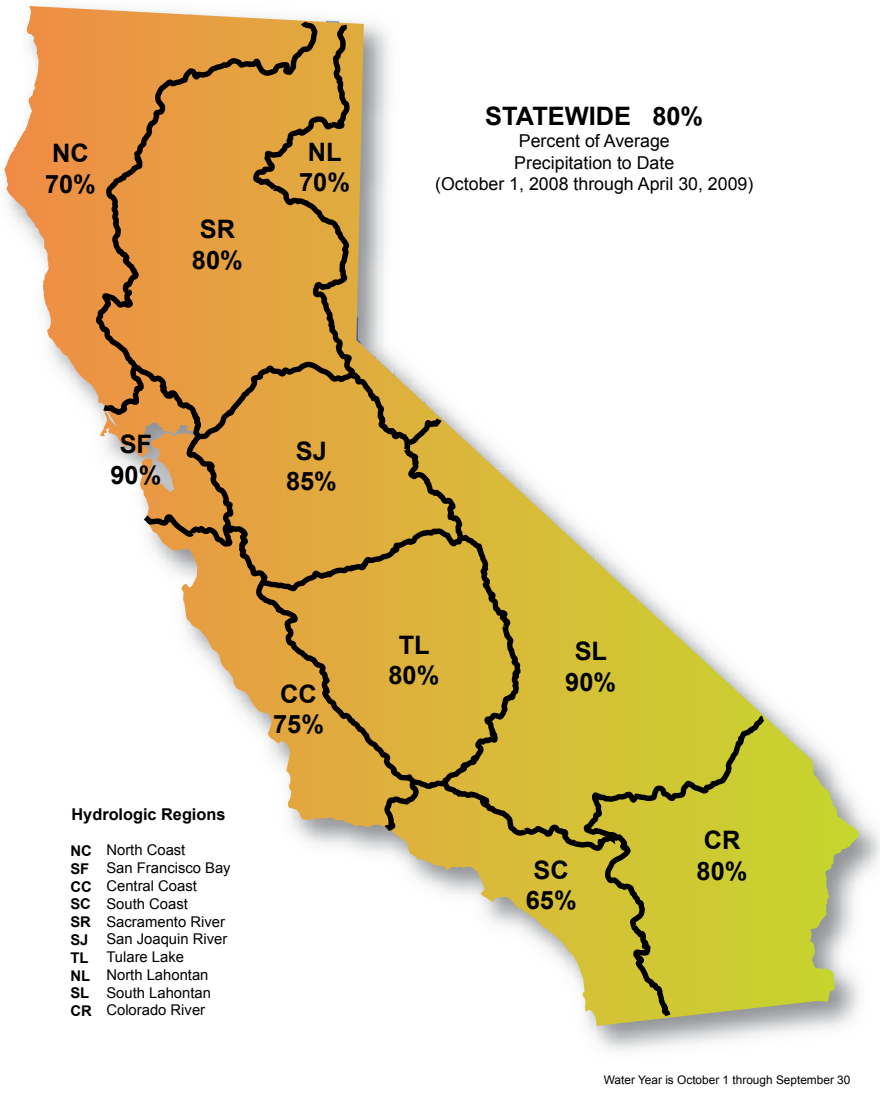

Figure 1. This season's precipitation through April 30, 2009 (percent of average)

Snowpack

Sierra snowpack represents one-third of California's water supply. April 1 is historically considered the peak of the snowpack development and the beginning of the snowmelt period. On April 1, 2009, statewide snowpack was 80 percent of average. Although stormy weather occurred for a one-week period in late April to early May, the storms were too warm to contribute significantly to statewide snowpack. The final snow survey of the season was conducted on May 1, with the statewide snowpack water content measured at 60 percent of average. As of May 27, 2009, the state's snowpack water content stands at 20 percent of average.

CURRENT RESERVOIR CONDITIONS

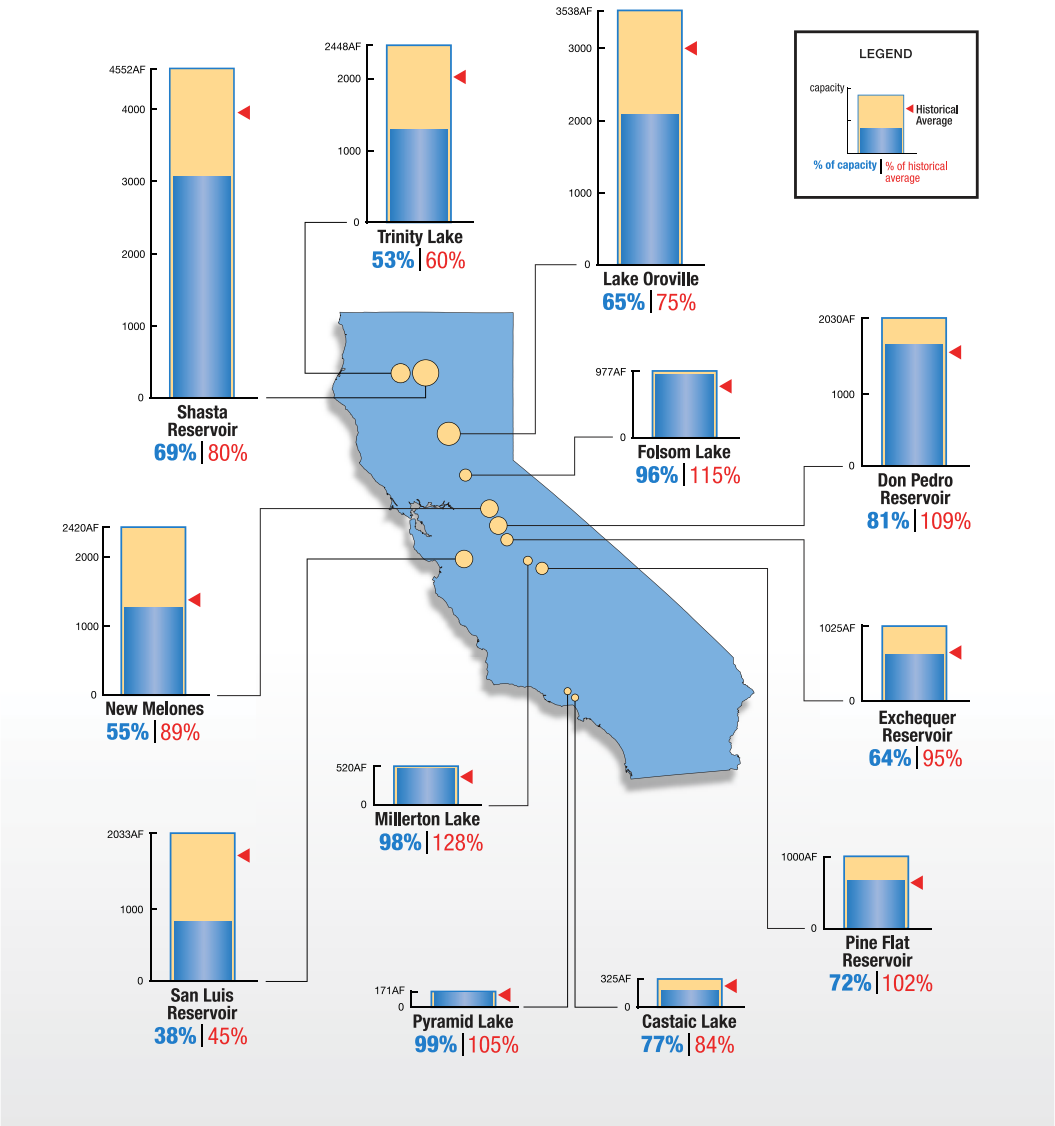

Figure 2. Selected reservoir storage for May 26, 2009.

Reservoir Storage

Reservoir storage conditions at the end of May vary across the state. The condition of the state's larger reservoirs as of May 26th is shown in Figure 2. Smaller reservoirs, such as Folsom and Friant, have refilled and are currently at or above average conditions for this time of year. Although the storms of 2009 increased storage in larger reservoirs like Shasta and Oroville, they still remain well below their average for this time of year. These reservoirs will require above normal conditions throughout an entire wet season to make up the existing storage deficits. Another reservoir lagging far behind its average storage is San Luis Reservoir which as of May 26th sits at 45% of average to date. This

reservoir, which stores water that has been transferred through the Delta for the State and federal water projects, did not benefit from this past winter's rains due to limits on water transfers through the Delta. As a result, its storage remains well below normal and is falling as water project deliveries increase. The increasing demands for water will begin to outpace reservoir inflows across California which will cause reservoirs to begin losing storage this summer.

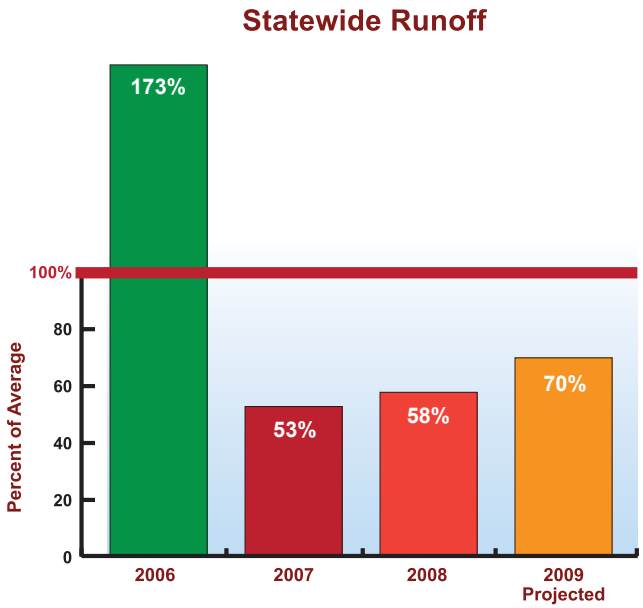

Figure 3. Statewide runoff for water years 2006, 2007, 2008, and projection as of May 1, 2009

Runoff Forecasts

Figure 3 shows a comparison of statewide runoff from 2006-09. Water year 2005-06 was the most recent wet year, with 173 percent of average statewide runoff. Water year 2006-07 was the first of three dry years, ending with 53 percent of average statewide runoff. Water year 2007-08 ended with 58 percent of average statewide runoff, and both the Sacramento and San Joaquin River regions were classified "Critical." Water year 2008-09 is expected to yield more runoff than 2007-08 with a forecast for 70 percent of average. The May 1 projection is that both river regions will end the water year "Dry." "Critical" is the lowest classification of five, with "Dry" being the second-lowest.

Table 1. State Water Project and Central Valley Project allocations

Year	Type	CVP Allocation*	SWP Allocation
2006	Wet	100% ag/100% M&I	100%
2007	Dry	50% ag/75% M&I	60%
2008	Critical	40% ag/75% M&I	35%
2009	Dry	10% ag/60% M&I	40%

Ag: Agriculture
M&I: Municipal and Industrial
*South of Delta

State Water Project and Central Valley Project Allocations

Despite the wetter conditions that occurred in early May, south-of-Delta water allocations for the State Water Project (SWP) and Central Valley Project (CVP) remain near record lows. Due to the dry conditions in January and early February, the water projects slowly filled San Luis Reservoir located south of the Delta. Despite improved Delta inflow, the newly imposed regulations to protect endangered species have limited exports. Since mid-February, the SWP has not been able to export about 200,000 acre-feet of water from the Delta due to flow restrictions. These issues will continue to limit the water supply for users south of the Delta.

Using the current water supply conditions and conservative projections of runoff for the remainder of the water year, the SWP estimates a delivery of 40 percent of the current Table A requests of the long-term water supply contracts. Increases to the allocation are possible should the hydrology become wetter. The U.S. Bureau of Reclamation CVP water deliveries officially remain at 10 percent and 60 percent for the agricultural, and municipal and industrial water users, respectively, south of the Delta (Table 1).

Groundwater Basin Conditions

Groundwater is an important water source for municipal drinking water, agriculture, and individual water users. Groundwater provides about 30 percent of the state's water supply in an average year. In some regions, groundwater provides 60 percent or more of the supply during dry years. Up to half of all Californians rely on groundwater for part of their water supply.

Figure 4 shows a map that compares the fall 2008 groundwater elevations with two recent drought water periods; 1977-1978 and 1991-1992. The map depicts a snapshot of how groundwater levels have changed over time and reflects how our reliance on this supply has increased during times of drought from historical levels.

The map is an overview of selected wells for the period of record and does not represent all groundwater basins or groundwater conditions in California. For more information concerning a detailed map explanation, groundwater levels shown in this map, and

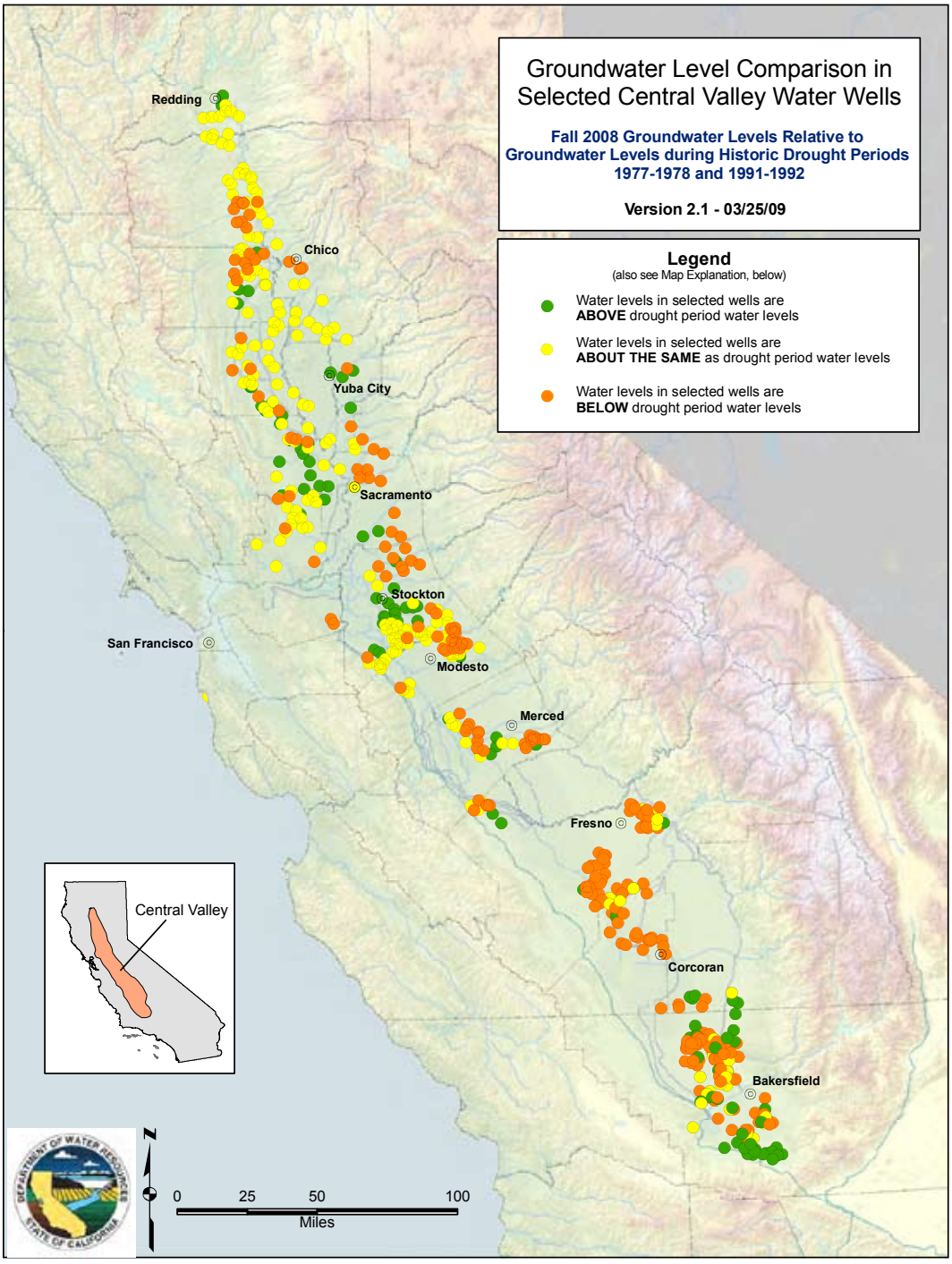

Figure 4. Groundwater Level Comparison in Selected Central Valley Water Wells

frequently asked questions, please see the Department of Water Resources (DWR) drought website at http://water.ca.gov/drought/conditions/.

Local Impacts and Responses to the Drought

It is estimated between 31,200 and 35,300 jobs will be lost in the San Joaquin Valley in 2009, with income loss to crop production and related business estimated between $848 and $959 million. These impacts include both direct, on-farm impacts and indirect, off-farm multiplied economic impacts. Also, groundwater pumping costs are estimated to increase between $139 and $147 million as farmers substitute groundwater for unavailable surface water supplies. The impact estimates were made using mid-April SWP and CVP delivery allocation forecasts. When compared to estimates released in the April 30, 2009 drought bulletin, the May estimates better reflect the limited availability of groundwater in some areas of the San Joaquin Valley due to additional data that allowed an improvement in the impact model. As with the April drought bulletin, these estimates exclude losses associated with drought-affected dryland range and pasture, unirrigated crops, livestock operations, and dairies.

A survey of Integrated Regional Water Management (IRWM) groups and local water agencies conducted by DWR, during the months of March and April, indicate expectations of a continued water shortage in many hydrologic regions of the state including the San Joaquin River, Tulare Lake, South Coast, and the Bay Area, which are significantly dependent on water supplied from the CVP and SWP. In other areas such as the Sacramento River Hydrologic Region and southern portion of the North Coast Hydrologic Region, the drought has also impacted communities that are dependent on local surface supplies as a major source of water supply.

DWR is working with local water agencies to improve the collection groundwater monitoring data. As drought conditions continue to reduce the availability of surface water supplies, reliance on groundwater supplies is expected to increase as more water is pumped from existing wells and new wells are constructed to meet water demands. In some areas, a temporary increase in groundwater pumping during dry periods is part of a long-term groundwater management strategy to help reduce water shortages. In other areas, where groundwater is the only source of supply, communities or individual well owners may need assistance in improving existing wells, drilling new wells, or securing temporary supplies.

San Joaquin River Hydrologic Region--- In the Madera area, groundwater level trends are downward and falling at a rate of approximately five feet per year. Many of the county water districts are experiencing water level declines earlier in the year compared to previous years. Other areas in the basin are reported to be stable. Well drilling activity has increased significantly in the Madera area and has increased slightly in the western portion of Stanislaus & Tuolumne Groundwater Basin. In the Madera Ranchos area, one well had to be disconnected from the water system due to degraded water quality.

Tulare Lake Hydrologic Region---In most areas the groundwater level trend is downward. Significant groundwater level drops were noted in parts of Kern County due to aggressive pumping from water banks. Increased well drilling activity was reported and there are reports of delays in getting drillers to complete additional well installations.

South Coast Hydrologic Region--- In response to the reduced SWP allocations, Metropolitan Water District (MWD) will reduce deliveries to the region by 10 percent on July 1st. As a result of cutbacks in SWP water, forty-nine percent of agencies surveyed in the hydrologic region expect a water shortage this year. Drought impacts are most evident in San Diego County where 69 percent of agencies expect a water shortage this year. Most agencies indicated they are preparing drought contingency plans and cutbacks will be accomplished through a combination of voluntary reductions, increased rates, tiered rate structures, conservation incentives, landscape irrigation schedules, and mandatory conservation.

Groundwater production in the region will likely increase because of reduced imported water supplies. Fifty percent of agencies indicated that groundwater is part of their supply. The effects of the drought have also become evident in regional agriculture; members of the Interim Agriculture Water Program, a MWD program which allows end users to receive surplus water at a discounted rate, were subject to a 30 percent reduction since January, 2008. Combined with penalties for exceeding allocations, this may make participation in the program infeasible and MWD is allowing participants to opt out of the program. The Agriculture Commissioners of Ventura, Riverside, and San Diego counties reported that of the 50,306 acres of productive avocado orchards in the South Coast Region, 7,100 acres have been taken out of production due to the drought. In San Diego County, 26,064 acres of avocados were reduced by as much as 5,000 acres.

Bay Area Hydrologic Region---In the San Francisco Bay hydrological region, as of April 14, 2009, eight agencies (retail and wholesale) are under mandatory rationing, with most of the remaining agencies under voluntary conservation. Agencies that rely on the SWP for a major portion of their water supply are relying on additional groundwater pumping to offset reductions in imported supplies.

Sacramento River Hydrologic Region---In the northern Sacramento Valley, groundwater level declines that exceeded previous drought levels as shown by Figure 4, Groundwater Level Comparison Map (orange dots) are a result of a combination of increased groundwater use since the previous drought period and decline associated with the current drought period. Groundwater level data for Tehama, Glenn, Butte, and Colusa counties indicates that groundwater levels have declined an average of about 7 feet from Fall 2006 to Fall 2008 as a result of current drought conditions. The large number of wells in the northern Sacramento Valley that show groundwater level declines the same as previous drought periods indicates that current groundwater conditions are very similar to conditions experienced during significant previous drought periods, and that if precipitation patterns don't improve the result will be widespread, historically low groundwater levels in the northern Sacramento Valley.

The Yolo County Flood Control and Water Conservation District will limit deliveries this year because of extremely low reservoir storage. Yolo County will only be allowed to draw approximately 21,000 acre feet from Clear Lake, as compared to 150,000 acre feet when the lake is considered full. The lake level at Indian Valley Reservoir is currently more than 100 feet below capacity. By the end of the summer Clear Lake is expected to be at one of the low points in its history.

Water Conservation Actions by Local Water Agencies

As of May 29, 2009, there are 35 local water agencies in California that have mandated water rationing and 61 water agencies urging voluntary conservation measures. A current update of the number of agencies mandating rationing and urging voluntary conservation measures can be found at the Association of California Water Agencies (ACWA) website, http://www.acwa.com/issues/cadrought/map.asp.

Fresno County Drought Emergency Proclamation

The April 30, 2009 Drought Update reported on the Fresno County Board of Supervisors' declaration of a local emergency on April 14 due to drought conditions. The proclamation requests the Governor proclaim a State of Emergency at the State level and requests a presidential declaration. In May, the Fresno County Office of Emergency Services continues to collect data from food banks and online surveys in order to document drought impacts. Areas surveyed include Firebaugh, Mendota, Huron, and San Joaquin City. Surveys are conducted on people receiving food assistance and preliminary numbers indicate that 80% are impacted by the drought. All food banks are currently showing food supplies sufficient for weeks to months. Online surveys were also conducted on more than 300 agricultural businesses and 94% reported that they are affected by the drought and 73% have reduced their work force. There is an average unemployment rate of 36.5% for the west side farming communities compared to 17% for the County as a whole. City of Mendota is currently highest at 41.6%. About 453,400 acres, or 24% of the entire farmland in Fresno County is projected to be fallowed or farmed in dry crops this year. Results from this survey and others will be refined as more data become available.

Mendocino County Drought Emergency Declaration

Mendocino County supervisors passed a resolution on March 14, 2009 declaring a local emergency due to drought conditions. They passed a resolution on April 7, 2009 amending and extending the original resolution and requesting technical and financial assistance, equipment, and regulatory relief from the State to mitigate drought impacts. The resolution also requested a federal declaration of emergency and federal assistance. The county supervisors and water agency managers from the Ukiah area met with DWR, California Emergency Management Agency (CalEMA), and other state agency executives on April 8, 2009 to request assistance with water shortages expected later this year. Mendocino County continues to work on a County Action Plan to submit to CalEMA. The California Department of Public Health is working with the county regarding the

availability of Proposition 84 funds for emergency actions under Public Resources Code Section 75021.

Sonoma County Water Agency (SCWA) submitted a petition to the State Water Resources Control Board (SWRCB) on April 6, 2009 to reduce the required in-stream flows in the Russian River below Lake Mendocino. The petition included a projection showing the potential dewatering of Lake Mendocino this September. The SWRCB approved the petition, held a workshop on May 6, 2009 to receive comments, and is considering amendments to the provisions in the order. These include a 25% reduction in SCWA diversions, prohibition of commercial turf irrigation, and a plan to reach a 50% water conservation goal for Russian River water users in Mendocino County.

The reduced releases from Lake Mendocino and rains in early May allowed storage to increase to 56,000 acre feet. Storage is now slightly above the level it was at during the drought of 1977. SCWA reported to the SWRCB that they project the storage to drop to about 30,000 acre feet in October. This is close to the level of Redwood Valley County Water District's intake. The Redwood Valley County Water District shut off all agricultural deliveries on May 15, 2009 and the Mendocino County Russian River Flood Control and Water Conservation Improvement District has reduced their allocation to all contractors to 50%. The county is considering further actions.

Water Conservation Awareness Campaign

Since it launched more than a month ago on April 21, 2009 the Save Our Water statewide water conservation program has continued to expand its outreach activities and build on its partnership between the DWR and ACWA. Consumer materials, such as bumper stickers, water-proof decals, brochures and fact sheets, are available on the Save Our Water website, which has been expanded to include interactive educational tools and games for kids. Save Our Water has also created Twitter and Facebook accounts. To date, the program has been featured in 28 newspaper articles, seven television news clips and four radio news clips. More than 60 web banners have been placed on partnering sites of organizations throughout the state, including 22 on ACWA member agency websites. The Save Our Water program is designed to educate Californians on the state's water challenges and encourage them to reduce the amount of water they use everyday. The statewide program offers consumer-oriented information and tools for understanding of the long-term issues facing the state's water system and practical tips for reducing water use indoors and outside. For more information, visit http://www.saveourh2o.org/

Summary

Reservoir storage conditions at the end of May vary across the state. Although the storms of 2009 increased storage in larger reservoirs like Shasta and Oroville, they still remain well below their average for this time of year. Limits on transfers through the Delta have impacted San Luis reservoir, which is also well below average. The increasing demands for water will begin to outpace reservoir inflows across California which will cause reservoirs to begin losing storage this summer.

In anticipation of the drought conditions continuing in 2010, activities are underway to expedite funding for water management projects, implement a comprehensive plan to reduce per capita water use 20 percent by 2020, finalizing standards for dual plumbing systems, completing upgrades to the California Irrigation Management Information System, conducting drought assistance workshops, and preparing a five year drought contingency plan.