

December 28, 2018

**NOTICE OF REGULAR MEETING OF THE
COLORADO RIVER BOARD**


NOTICE IS HEREBY GIVEN pursuant to the call of the Chairperson, Peter Nelson, by the undersigned Executive Director of the Colorado River Board of California that a regular meeting of the Board Members is to be held as follows:

Date: Wednesday, January 9, 2019
Time: 10:00 a.m.
Place: Orchid Room Sheraton Ontario Airport Hotel 429 North Vineyard Avenue Ontario, CA 91764 Tel: 909-937-8000

The Colorado River Board of California welcomes any comments from members of the public pertaining to items included on this agenda and related topics. Oral comments can be provided at the beginning of each Board meeting; while written comments may be sent to Mr. Peter Nelson, Chairperson, Colorado River Board of California, 770 Fairmont Avenue, Suite 100, Glendale, California, 91203-1068.

Requests for additional information may be directed to: Mr. Christopher S. Harris, Executive Director, Colorado River Board of California, 770 Fairmont Avenue, Suite 100, Glendale, CA 91203-1068, or 818-500-1625. A copy of this Notice and Agenda may be found on the Colorado River Board's web page at www.crb.ca.gov.

A copy of the meeting agenda, showing the matters to be considered and transacted, is attached.


Christopher S. Harris
Executive Director

Regular Meeting
COLORADO RIVER BOARD OF CALIFORNIA
Wednesday, January 9, 2019
10:00 a.m.

At the discretion of the Board, all items appearing on this agenda, whether or not expressly listed for action, may be deliberated upon and may be subject to action by the Board. Items may not necessarily be taken up in the order shown.

1. Call to Order

2. Opportunity for the Public to Address the Board (Limited to 5 minutes)

In accordance with California Government Code, Section 54954.3(a)

3. Administration

- a. Consideration and approval of the Minutes of the meeting held December 12, 2018
(Action)

4. Water Supply and Operations Reports

- a. Colorado River Basin Report
- b. State and Local Reports

5. Staff reports regarding Colorado River Basin Programs

- a. Status of Drought Contingency Planning Process
- b. Status of the Glen Canyon Dam Adaptive Management Program
- c. Status of the Lower Colorado River Multi-Species Conservation Program
- d. General announcements

6. Executive Session

An Executive Session may be held by the Board pursuant to provisions of Article 9 (commencing with Section 11120) of Chapter 1 of Part 1 of Division 3 of Title 2 of the Government Code and Sections 12516 and 12519 of the Water Code to discuss matters concerning interstate claims to the use of Colorado River system waters in judicial proceedings, administrative proceedings, and/or negotiations with representatives from other states or the federal government.

7. Other Business

8. Future Agenda Items

Next Board Meeting: February 13, 2019
10:00 a.m.
Orchid Room
Sheraton Ontario Airport Hotel
429 North Vineyard Avenue
Ontario, CA 91764
909-937-8000

Minutes of Meeting
COLORADO RIVER BOARD OF CALIFORNIA
Wednesday, December 12, 2018

A meeting of the Colorado River Board (Board) of California was held on Wednesday, December 12, 2018.

Committee Members and Alternates Present

David De Jesus (MWD Alternate)	Glen D. Peterson (MWD)
Dana B. Fisher, Jr. (PVID)	David R. Pettijohn (LADWP)
James Hanks (IID)	John Powell, Jr. (CVWD Alternate)
Jeanine Jones (DWR Designee)	Jack Seiler (PVID Alternate)
Hank Kuiper (Public Member)	Mark Watton (SDCWA Alternate)
Nicole Neeman-Brady (Public Member)	Doug Wilson (SDCWA)
Peter Nelson, Chairman (CVWD)	

Committee Members and Alternates Absent

Evelyn Cortez-Davis (LADWP Alternate)	Norma Sierra Galindo (IID Alternate)
Christopher Hayes (DFW Designee)	David Vigil (DFW Alternate)

Others Present

Steve Abbott	Josh Dowell
Ronald Beaulieu	Tom DuBose
Anthony Bianco	Tom Eiserhauer
Steve Blois	Christopher Harris
Jerry Butkiewicz	Bill Hasencamp
Grant Chaffin	Kathleen Hedbera
Robert Cheng	Brad Hiltcher
Tod Chester	Joanna Hoff
Brad Coffey	Michael Hughes
Michael Cohen	Ned Hyduke
Alfonso Contreras	Tabitha Hyduke
Dan Denham	Lynda Ichicha
Kevin Donhoff	Ian James
Karen Donovan	Karly Jerla

Lisa Johansen
Kristen Johnson
Eric Kuhn
John Kai
Jeffrey Kightlinger
Wally Leimgruber
Lindia Liu
Kara Mathews
Jan Matusak
Brian McNeece
Jessica Neuwerth
Patrick G. O'Dowd
Cheryl Orr
Demetri Polyzos
Angela Rashid
Randy Record
Ivory Reyburn

Dave Reynolds
Kelly Rodgers
Joel Scalzitti
Brian Schmid
Marcia Scully
Jack Seiler
Tina Shields
Peter Silva
Ed Smith
Jim TiDumlap
Alina Tishchenko
Dale Tylon
Cherie Watte
John Weisheit
Meena Westford
Jerry Zimmerman

CALL TO ORDER

Chairman Nelson announced the presence of a quorum and called the meeting to order at 10:12 a.m.

OPPORTUNITY FOR THE PUBLIC TO ADDRESS THE BOARD

Chairman Nelson invited members of the audience to address the Board on items on the agenda or matters related to the Board.

Mr. Nelson recognized the retiring general manager of the Imperial Irrigation District, Mr. Kevin Kelley, as well as Mr. Jan Matusak, who has served thirty-six years with the Metropolitan Water District of Southern California, and the retiring Metropolitan Water District Board Chairman Randy Record. Mr. Randy Record will be succeeded by Ms. Gloria Gray of the West Basin Municipal Water District.

Chairman Nelson welcomed Mr. Terry Fulp, Lower Colorado Regional Director of the Bureau of Reclamation. Mr. Fulp noted that, although the Drought Contingency Plan (DCP) hadn't been finalized by the Colorado River Water Users Association (CRWUA) deadline, the plan was closer to completion than ever before. Mr. Fulp encouraged stakeholders to continue to work collaboratively to complete the plan. He described the successful intentionally created surplus (ICS) framework established by the 2007 Guidelines and how the DCP could act as an "overlay" to expand that program to the benefit of all parties. Mr. Fulp also noted that Reclamation would be contributing money to DCP implementation in Arizona, due to its obligation to purchase firming credits under the 2004 Arizona Water Settlement Act.

Chairman Nelson thanked Mr. Fulp and moved to the next item on the agenda.

ADMINISTRATION

Chairman Nelson asked for a motion to approve the November 14, 2018 meeting minutes. Mr. Fisher moved that the minutes be approved, seconded by Mr. Pettijohn. By roll-call vote the minutes were unanimously approved.

Mr. Harris indicated that on April 10th there might be a dedication ceremony for the new LCR MSCP habitat, the Dennis Underwood Conservation Area. Mr. Harris proposed to hold the April board meeting in Blythe in conjunction with the ceremony.

COLORADO RIVER BASIN WATER REPORTS

Ms. Rashid reported that as of December 10th, the water level at Lake Powell was 3,585.19

feet with 10.39 million-acre feet (MAF) of storage, or 43% of capacity. The water level at Lake Mead was 1,078.95 feet with 9.92 MAF of storage, or 38% of capacity. As of December 9th, the total system storage was 27.25 MAF, or 46% of capacity, which is about 5.0 MAF less than the system storage at this same time last year.

Ms. Rashid reported the Observed Water Year-2018 inflow into Lake Powell is 4.61 MAF, or 43% of normal. The Observed April to July 2018 inflow into Lake Powell is 2.6 MAF, or 36% of normal. For Water Year-2019, the November 2018 observed inflow and December 2018 inflow forecast into Lake Powell is 0.25 MAF (53% of normal) and 0.24 MAF (60% of normal). The WY-2019 precipitation to date is 110% and the current basin snowpack is 104% of average.

Ms. Rashid reported that precipitation conditions in October were above average throughout most of the Basin, while precipitation conditions in November were below average. She also reported that the current snow pack conditions in the Upper Basin were slightly above average.

Ms. Rashid reported that as of December 2nd, the Upper Colorado River basin reservoirs, excluding Lake Powell, ranged from 62% of capacity at Fontenelle Reservoir in Wyoming; 88% of capacity at Flaming Gorge Reservoir in Wyoming and Utah; 89% of capacity at Morrow Point and 30% of capacity at Blue Mesa Reservoirs in Colorado; and 52% of capacity at Navajo Reservoir in New Mexico. She noted that the reservoir level of continues to decline.

Ms. Rashid reported that as of December 7th, Brock and Senator Wash Reservoirs captured 158,463 AF and 65,145 AF, respectively. She also reported that excess deliveries to Mexico through December 9th were 7,217 AF. As of December 3rd, the total bypassed to the Cienega de Santa Clara in Mexico was 94,164 AF. Several Board members remarked on the improvements to water and salinity management in the Yuma area which has resulted in water savings to the system. Chairman Nelson remarked that operations at Brock reservoir have played an important part in managing water in the Lower Basin.

Annual Operating Plan

Mr. Harris reported that the final draft of the 2019 Annual Operating Plan has been posted to the Bureau of Reclamation's (Reclamation) website and it is anticipated that the U.S. Secretary of the Interior will approve the plan soon.

State and Local Report

Ms. Rashid reported that severe drought conditions continue to plague the Four Corner Region. Ms. Jones, representing the California Department of Water Resources (DWR), reported that the snow accumulation season has begun, noting, however, that it is too early in the season to anticipate how the season will turn out. Ms. Jones reported that to date, there has been one storm

that impacted the Clear Lake Basin but overall the state-wide snowpack was below average. She stated that storage in State Water Project reservoirs has been affected by previous dry years.

Ms. Jones reported that DWR recently held a winter season outlook workshop to discuss the prospects of the winter season. She noted that there is very little scientific skill in the ability to predict whether the winter precipitation conditions will be wet or dry. Ms. Jones also referenced the research done by the Western Regional Climate Center to improve the predictability of the Upper Colorado River Basin precipitation and snowpack. She noted that the research found that there are a relatively small number of large storms that bring precipitation to the Upper Basin and that it is difficult to forecast those storms because they are located so far inland. Ms. Jones added that the research also shows that high pressure ridges do not allow moisture to make its way up to the headwaters of the Upper Basin, noting that there is value in future research of this issue.

Mr. Peterson, representing the Metropolitan Water District of Southern California (MWD), reported that MWD put more water into its storage accounts in 2018 than in its history. He added that MWD is still continuing to conserve water.

Mr. Pettijohn, representing the Los Angeles Department of Water and Power (LADWP), reported that as of December 11th, the Eastern Sierra precipitation conditions were 91% of normal, noting that precipitation conditions were 107% of normal on December 6th, due to storm activity that occurred during the first week of December. Mr. Pettijohn reiterated that it is too early in the season to predict how much water the aqueduct will receive, but it has been a great start for the season.

Agency End-of-Year Reports

Mr. Pettijohn presented highlights of current and future LADWP local water supply projects. He reported that in 2015, the City of Los Angeles released the Sustainable City Plan which set goals for developing local water supplies going forward to 2040. Mr. Pettijohn reported that one of LADWP's initiatives to meet this goal is through remediation of its contaminated groundwater basins in San Fernando Valley. He reported that once LADWP has four remediation facilities in operation, it will be able to remediate 137,000 AF a year of contaminated water.

Mr. Pettijohn reported that water conservation continues to be a major initiative for the City of Los Angeles and there is a goal to reduce per capita water use to under 100 gallons per person per day by 2035. He noted that the current per capita water use is 112 gallons per person per day, adding that at the height of the drought per capita water use was 106 gallons per person per day.

Mr. Pettijohn reported that by 2040, LADWP will have added 75,000 AF of recycled water to the water supply. He noted that LADWP currently captures about 64,000 AF of stormwater annually and plans to increase that to 114,000 AF by 2035. Mr. Pettijohn noted that LADWP's goal is to locally source 50% of the City's water supply.

Mr. Pettijohn reported that LADWP is seeking an implementation grant for two of its four ground water remediation projects in the San Fernando Valley which includes a \$150 million grant for the North Hollywood Central and \$119 million for the Tujunga Central Remediation Projects. He added that these remediation and stormwater capture projects are critical as they will provide an important water source. He added that LADWP broke ground on a stormwater capture project that will infiltrate water into its main groundwater basin. He explained that LADWP's goal is to consolidate the groundwater basin by deepening and widening them to increase its capacity. By December 2018, about 1.6 million tons of material has been removed and it is anticipated that the project will be completed by Spring 2020.

Mr. Pettijohn reported that LADWP started its conservation efforts in the early 1980s and has reached a saturation point for some of their conservation initiatives. He reported that LADWP commissioned a conservation potential study to provide information about how to move its conservation efforts and investments forward. He remarked that the study won the Superior Achievement Award for Excellence in Environmental Engineering from the American Academy of Environmental Engineers, an honor that is only given out once a year.

Lastly, Mr. Pettijohn reported that LADWP has a goal of installing purple pipe, which transports recycled water, to 85% of city-owned golf courses. He added that LADWP's eventual goal is to infiltrate advance treated wastewater into the groundwater basin and use it as a source of drinking water.

Ms. Tina Shields, representing the Imperial Irrigation District (IID), reported that IID has transitioned from its traditional fallowing to on-farm efficiency to meet its QSA transfer obligations and conservation goals. She stated that IID has been working aggressively to upgrade its system to increase its efficiencies but to also facilitate its rural on-farm programs. Ms. Shields added that IID has been upgrading its system for over a decade. These upgrades also include integrating technology throughout their system, such as providing laptops to *zanjeros* to improve their access to information and decisions about field deliveries.

Ms. Shields reported that there has been a tremendous effort by growers to participate in the on-farm efficiency program. She added that in anticipation of ramping up the on-farm program to meet the requirements of the San Diego and Coachella transfers, IID expects the on-farm program to yield about 180,000 AF a year. She noted that IID plans to expand the program to growers of crops that have not participated in the past, adding that overall, the program has had a much higher participation rate than anticipated.

Ms. Shields reported that over the past four or five years, IID has conserved over 500,000 AF a year, noting this year the IID will conserve nearly 480,000 AF. She added that since the QSA, IID has conserved over 5 MAF through various programs and transfers. Finally, Ms. Shields reported IID has made an agreement with MWD to store its excess conservation water in MWD's system. She added that the agreement will allow IID to meet its DCP obligations, if implemented.

Mr. Peterson reported that MWD took a historic vote to fund its share of the California WaterFix and provide funding for the “Twin Tunnels”. He added that MWD has invested millions in various conservation and efficiency programs and projects to provide water for future generations. Mr. Peterson reported that MWD also conducted a Regional Recycling Water demonstration project in partnership with Sanitation District of LA County. Mr. Peterson stated that once the demonstration project is expanded, it will reuse more than 130,000 AF of water a year, making it the largest recycling program in the nation. Mr. Peterson reported that the chairman of MWD’s Board, Randy Record, will end his term and Ms. Gloria Gray, will serve as the new chairperson. He noted that Ms. Gray is the first African American woman to hold the post in MWD’s history. He also noted that Mr. Jan Matusak, who has been a great Colorado River resource, will be retiring.

Mr. Wilson, representing the San Diego County Water Authority (SDCWA), reported that over the last two decades, SDCWA has made billions of dollars of investments into its system and constructed projects such as the Carlsbad Desalination Plant. He stated that in 2018, SDCWA’s major projects have included re-lining two major pipelines and rehabilitation of the region’s First Aqueduct. Mr. Wilson also stated that SDCWA also launched an outreach campaign called “Brought to You by Water”, which reminded customers about the importance of the region’s water supply.

Mr. Wilson reported that QSA water transfers to the SDCWA will ramp up to 130,000 AF and will ultimately reach 200,000 AF in the future. He added that the QSA transfers, the water delivered from Carlsbad Desalinization Plant, and other local sources currently provide about 50% of the region’s water. Lastly, Mr. Wilson reported that the SDCWA supports the development of local water supplies by its member agencies, such as the Pure Water purification program and the Padre Dam Advanced Water Purification program.

Chairman Nelson, representing the Coachella Valley Water District (CVWD), reported that CVWD celebrated its 100th year anniversary in 2018. He reported that CVWD is continuing to make recycling and canal water connections for some its users. Mr. Nelson explained that CVWD has constructed various recharge facilities throughout the valley to protect the aquifer’s potable water supply. The new Mid-Valley Recharge Center joins the Whitewater and Tom Levy recharge facilities, allowing CVWD to expand its groundwater recharge capability.

Mr. Nelson reported that CVWD approved joining the Joint Powers Authority for the California Waterfix, adding that water supplies available from Northern California affect the use of Colorado River water supplies by CVWD and MWD. Finally, Mr. Nelson reported that CVWD continues its conservation efforts and has increased its rebate incentives.

Mr. Ned Hyduke, representing the Palo Verde Irrigation District (PVID), reported that studies are being conducted to research potential opportunities for hydropower generation at the

Palo Verde Diversion Dam. He added that PVID is also planning a water recycling project. Mr. Hyduke also reported that PVID has also received grants to improve its infrastructure.

Finally, Mr. Fisher added that PVID is making arrangements to host MWD and others for the ceremony celebrating the Dennis Underwood LCR MSCP project. He remarked that Mr. Underwood had a profound effect on the Palo Verde Valley, as the Reclamation's Commissioner and as General Manager with MWD.

STATUS OF COLORADO RIVER BASIN PROGRAMS

Lower Basin Drought Contingency Plan

Mr. Harris reported that the DCP negotiations are close to completion. He thanked all of the California agencies that contributed to the DCP efforts. He remarked that Ms. Shanti Rosset with MWD and Ms. Joanna Smith-Hoff with IID played an important role on the small group of Basin States legal representatives that led the development of the package of DCP agreements.

Mr. Harris reported that MWD approved the entire DCP package and authorized the general manager to execute the agreements when the DCP has been approved by the other California agencies. He added that the other agencies are in various stages of the approval process. Mr. Harris reported that it is anticipated that the final DCP agreements and documents will be completed in early January 2019.

Minute 323 Status

Mr. Harris reported that a Minute Oversight Group meeting was scheduled for December 13th but the meeting has been canceled because the Mexican delegation would not be able to attend. He added that Mexico is currently transitioning from one federal administration to another and is experiencing flux with respect to federal personnel. Mr. Harris stated that an Oversight Group meeting is scheduled for February or early March 2019 in Mexico City, Mexico.

Report from Executive Director of the Salinity Control Forum—Don Barnett

Mr. Harris introduced the executive director of the Colorado River Basin Salinity Control Forum, Mr. Don Barnett, to give an overview of the progress and activities of the Salinity Control Program in 2018 and a snapshot of 2019. Mr. Barnett expressed appreciation for the supporters of the Salinity Control Program. Mr. Barnett explained that the basis of the Salinity Control Program is to help irrigators improve their irrigation efficiency practices. Based on the 2017 Triennial Review of water quality standards, about 10.1 million dollars per year is needed to implement projects to keep on target. Mr. Barnett reported that Bureau of Reclamation received six million dollars in initial funding and two million dollars in supplemental funding. He explained the process of the funding opportunity announcement that the Bureau of Reclamation sends out once every three years. Mr. Barnett reported that two million dollars of funding for the Bureau of Land

Management is under a continuing resolution. On the NRCS side, Mr. Barnett explained that the Salinity Control Program was one of the four initial programs that started EQIP. And with the Farm Bill in the making, the expectation is that the program will continue under EQIP for the next five years. Under new EQIP rules, irrigation districts can participate in the control program. Another new provision in the EQIP is the opportunity to use EQIP for conservation activities for drought relief activities. It is yet to be seen whether this opportunity plays in with the Salinity Control Program.

Mr. Barnett provided an overview of the Paradox Valley Unit and explained that the injection-induced seismic activity has been a concern. Mr. Barnett presented a graph showing magnitudes and locations of the seismic activity relative to the injection well since the late 1990s. Bureau of Reclamation's seismologists keep track of the activities. For the Paradox Valley Unit EIS, Mr. Barnett explained that it has been a slow process looking at alternatives for the injection well but the EIS will be drafted in April next year and given to the cooperating agencies for their review and comment. The Bureau of Reclamation will then provide the public an opportunity to comment next summer. Mr. Barnett explained that the preferred alternative will be narrowed down after the public comment period and before the publication of the final EIS.

Mr. Barnett provided an update on the updating of the salinity damages economic model. He reported that Daniel B. Stevens and Associates consulting firm was awarded the contract to update the economic damages model. The contractor provided the first technical memorandum in November. The next phases include developing new functions that can be implemented in the model.

Mr. Barnett gave an update on the salinity trends study, which is looking at the amount of salt load coming from snowmelt runoff and coming from groundwater return flows. A study found that almost ninety percent of the salt load in the Colorado River system is coming from groundwater return flows. The study confirms that the basic premise of the Salinity Control Program is the correct approach: to stop the recharge of irrigation water into the groundwater system. Mr. Barnett reported that a new two-year study with the USGS started this summer to take the study deeper. The new study will cost half a million dollars, half of which will be coming from the program and cost-share dollars while the other half will be coming from BLM. The first part of the study will look at water quality trends and data, and the second part will investigate reasons for the trends. The preliminary data showed a flattening of the reduction of salt loading in the river or even a tick up despite the rigorous implementation of salinity control in the last decade. The USGS is working with other agencies to figure out the cause of this trend. Mr. Barnett added that he will report back to the Board on the study. Chairman Nelson thanked Mr. Barnett for presentation and his efforts in the Salinity Control Program.

ANNOUNCEMENTS

Mr. Harris reported that the debate on border wall funding had tied up certain federal budget appropriations. Congress passed a continuing resolution to fund these appropriations, and that would run out on December 21st. The Farm Bill was before the House.

Mr. Harris reported that House Committee on Natural Resources and the Senate's Natural Resources Committee are working on a lands package, which will include small land transfer bills, and other noncontroversial public land measures. It is intended to be a permanent reauthorization of the Land and Water Conservation Fund, but the mandatory funding for the program may not be included. California Senator Feinstein and House Republican Leader Kevin McCarthy are offering an amendment to an end-of-year spending package that would provide a seven-year extension of measures offered in the Water Infrastructure (WIN) program of 2016.

Mr. Harris reported that the Administration released the Fourth National Climate Assessment, which includes a 150-page summary and is available online.

Finally, Mr. Harris noted that the next meeting of the Colorado River Board would be January 9th. Also, Mr. Harris introduced Mr. Jim Madaffer, who is the new chairman for the San Diego County Water Authority.

ADJOURNMENT

With no further items to be brought before the Board, Chairman Nelson adjourned the meeting at 11:31 a.m.

12/31/2018

LOWER COLORADO WATER SUPPLY REPORT

River Operations
Bureau of Reclamation

Questions: BCOOWaterops@usbr.gov

(702) 293-8373

<http://www.usbr.gov/lc/region/g4000/weekly.pdf>

	PERCENT	Content 1000 ac-ft (kaf)	Elev. (Feet above mean sea level)	7-Day Release (CFS)
CURRENT STORAGE	FULL			
LAKE POWELL	42%	10,110	3,581.98	11,900
* LAKE MEAD	39%	10,122	1,081.34	7,200
LAKE MOHAVE	90%	1,635	640.64	5,700
LAKE HAVASU	90%	558	446.81	3,700
TOTAL SYSTEM CONTENTS **	45%	27,117		
As of 12/30/2018				
SYSTEM CONTENT LAST YEAR	54%	32,019		
* Percent based on capacity of 26,120 kaf or elevation 1,219.6 feet.				
** TOTAL SYSTEM CONTENTS includes Upper & Lower Colorado River Reservoirs, less Lake Mead exclusive flood control space.				
Salt/Verde System	47%	1,077		
Painted Rock Dam	0%	0	530.00	0
Alamo Dam	6%	64	1,093.23	10
Forecasted Water Use for Calendar Year 2018 (as of 12/31/2018) (values in kaf)				
NEVADA			242	
SOUTHERN NEVADA WATER SYSTEM				222
OTHERS				20
CALIFORNIA			4,258	
METROPOLITAN WATER DISTRICT OF CALIFORNIA				883
IRRIGATION DISTRICTS				3,359
OTHERS				16
ARIZONA			2,638	
CENTRAL ARIZONA PROJECT				1,521
OTHERS				1,116
TOTAL LOWER BASIN USE				7,137
DELIVERY TO MEXICO - 2018 (Mexico Scheduled Delivery + Preliminary Yearly Excess ¹)				1,507
OTHER SIGNIFICANT INFORMATION				
UNREGULATED INFLOW INTO LAKE POWELL - DECEMBER MID-MONTH FORECAST DATED 12/17/2018				
		MILLION ACRE-FEET	% of Normal	
OBSERVED WATER YEAR 2018		4.612	43%	
OBSERVED APRIL-JULY 2018		2.602	36%	
NOVEMBER OBSERVED INFLOW		0.253	53%	
DECEMBER INFLOW FORECAST		0.240	66%	
		Upper Colorado Basin	Salt/Verde Basin	
WATER YEAR 2019 PRECIP TO DATE ²		98% (8.3")	90% (6.5")	
CURRENT BASIN SNOWPACK ²		90% (5.8")	52% (1.2")	

¹ Delivery to Mexico forecasted yearly excess calculated using year-to-date observed and projected excess.

² Precipitation and snowpack values may vary significantly from week-to-week this early in the water year.

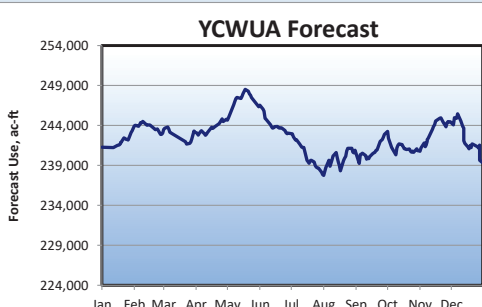
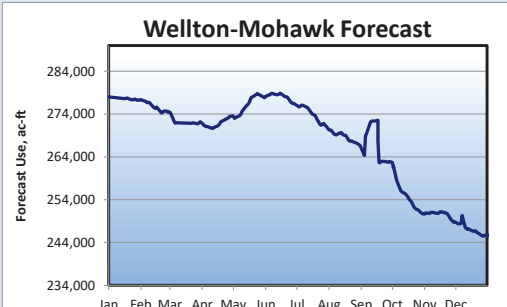
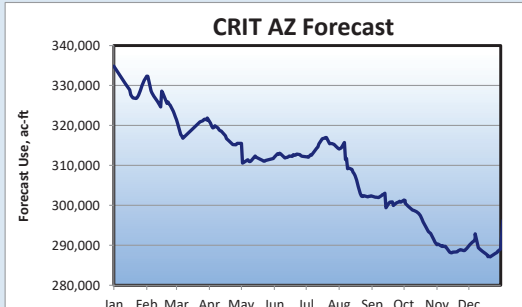
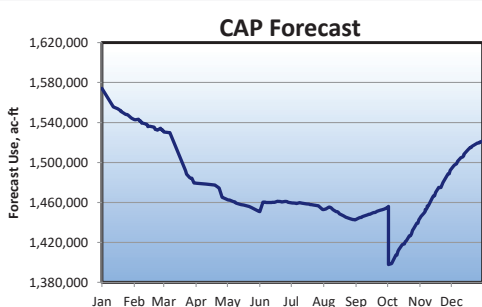
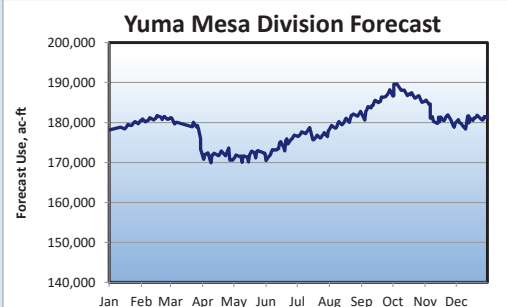
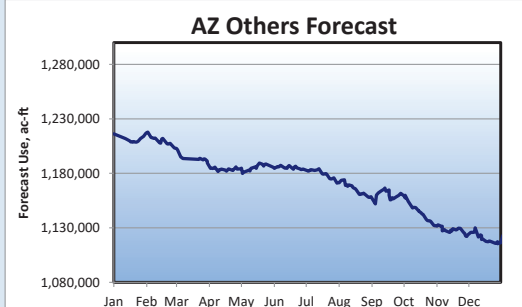
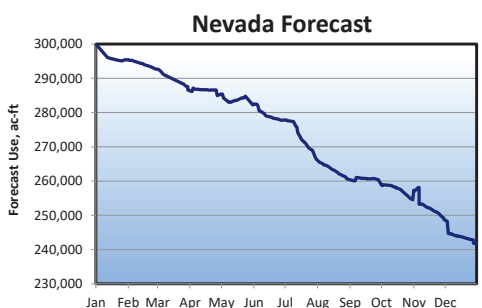
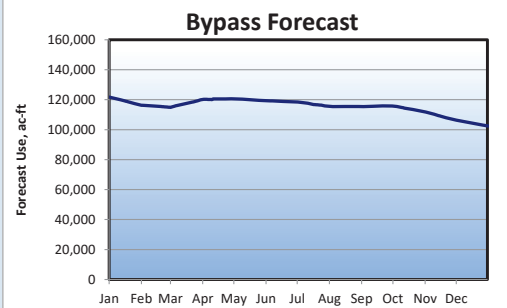
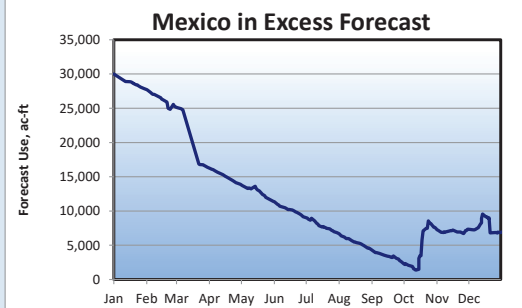
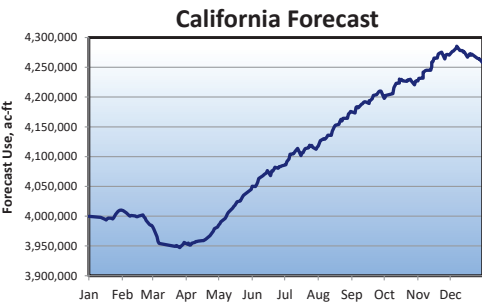
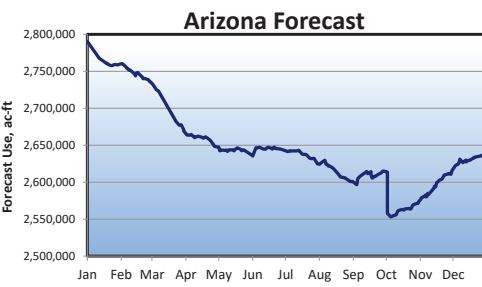
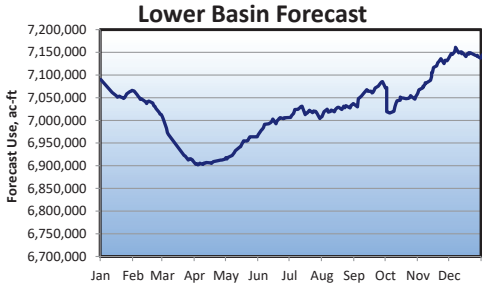
U.S. BUREAU OF RECLAMATION
LOWER COLORADO REGION
CY 2018

ARIZONA, CALIFORNIA, NEVADA, MEXICO
FORECAST OF END OF YEAR CONSUMPTIVE USE
FORECAST BASED ON USE TO DATE AND APPROVED ANNUAL WATER ORDERS ¹
(ACRE-FEET)

WATER USE SUMMARY

	Use To Date CY2018	Forecast Use CY2018	Approved Use ² CY2018	Excess to Approval CY2018
ARIZONA	2,639,862	2,644,450	2,632,386	12,064
CALIFORNIA	4,253,366	4,258,853	3,998,908	259,945
NEVADA	244,277	241,965	286,500	-44,535
STATES TOTAL ³	7,137,505	7,145,268	6,917,794	227,474
MEXICO IN SATISFACTION OF TREATY (Including downward delivery)	1,497,800	1,506,985	1,500,000	6,985
TO MEXICO AS SCHEDULED	1,490,831	1,500,000		
MEXICO IN EXCESS OF TREATY	6,969	6,985		
BYPASS PURSUANT TO MINUTE 242	102,089	102,497		
TOTAL LOWER BASIN & MEXICO	8,737,394	8,754,750		

- 1/ Incorporates USGS monthly data and 80 daily reporting stations which may be revised after provisional data reports are distributed by the USGS. Use to date estimated for users reporting monthly and annually.
- 2/ These values reflect adjusted apportionments. See Adjusted Apportionment calculation on each state page.
- 3/ Includes unmeasured returns based on estimated consumptive use/diversion ratios by user from studies provided by Arizona Department of Water Resources, Colorado River Board of California, and Reclamation.



Graph notes: Jan 1 forecast use is scheduled use in accordance with the Annual Operating Plan's state entitlements, available unused entitlements, and over-run paybacks. A downward sloping line indicates use at a lower rate than scheduled, upward sloping is above schedule, and a flat line indicates a use rate equal to schedule. Lower priority users such as CAP, MWD, and Robt.B.Griffith may adjust use rates to meet state entitlements as higher priority use deviates from schedule. Abrupt changes in the forecast use line may be due to a diversion schedule change or monthly updating of provisional realtime diversions.

**U.S. BUREAU OF RECLAMATION
LOWER COLORADO REGION
CY 2018**

NOTE:

- Diversions and uses that are pending approval are noted in *red italics*.
- Water users with a consumptive use entitlement - **Excess to Estimated Use** column indicates overrun/underrun of entitlement. Dash in this column indicates water user has a diversion entitlement.
- Water user with a diversion entitlement - **Excess to Approved Diversion** column indicates overrun/underrun of entitlement. Dash in this column indicates water user has a consumptive use entitlement.

ARIZONA WATER USERS
FORECAST OF END OF YEAR CONSUMPTIVE USE
FORECAST BASED ON USE TO DATE AND APPROVED ANNUAL WATER ORDERS

[Arizona Schedules and Approvals](#)

[Historic Use Records \(Water Accounting Reports\)](#)

	Use To Date CY2018	Forecast Use CY2018	Estimated Use CY2018	Excess to Estimated Use CY2018	Diversion To Date CY2018	Forecast Diversion CY2018	Approved Diversion CY2018	Excess to Approved Diversion CY2018
WATER USER								
ARIZONA PUMPERS	14,944	14,944	14,944	---	23,132	23,132	23,132	0
LAKE MEAD NRA, AZ - Diversions from Lake Mead	69	69	69	---	69	69	69	0
LAKE MEAD NRA, AZ - Diversions from Lake Mohave	212	212	212	---	212	212	212	0
DAVIS DAM PROJECT	2	2	2	---	24	24	24	0
BULLHEAD CITY	6,339	6,355	6,323	---	10,476	10,509	12,720	-2,211
MOHAVE WATER CONSERVATION DISTRICT	625	625	625	---	932	932	932	0
BROOKE WATER LLC	274	274	274	---	408	408	408	0
MOHAVE VALLEY IDD	20,892	20,931	21,161	---	38,688	38,759	39,187	-428
FORT MOJAVE INDIAN RESERVATION, AZ	34,378	34,378	42,390	---	63,663	63,663	78,500	-14,837
GOLDEN SHORES WATER CONSERVATION DISTRICT	276	276	276	---	415	415	415	0
HAVASU NATIONAL WILDLIFE REFUGE	3,918	3,921	3,563	---	32,285	32,314	41,820	-9,506
LAKE HAVASU CITY	7,830	7,849	9,145	---	12,627	12,658	14,750	-2,092
CENTRAL ARIZONA PROJECT	1,517,727	1,521,428	---	---	1,517,727	1,521,428	---	---
TOWN OF PARKER	386	387	419	---	827	829	930	-101
COLORADO RIVER INDIAN RESERVATION, AZ	296,229	296,229	340,969	---	597,690	597,690	646,406	-48,716
EHRENBURG IMPROVEMENT ASSOCIATION	228	228	228	---	319	319	319	0
CIBOLA VALLEY ¹	15,666	15,666	15,666	---	21,903	21,903	21,903	0
CIBOLA NATIONAL WILDLIFE REFUGE	10,731	10,736	12,741	-2,005	17,309	17,317	20,550	-3,233
IMPERIAL NATIONAL WILDLIFE REFUGE	2,541	2,549	3,019	-470	4,099	4,112	4,868	-756
BLM PERMITEES (PARKER DAM to IMPERIAL DAM)	1,085	1,085	1,085	---	1,670	1,670	1,670	---
CHA CHA, LLC	1,178	1,180	1,365	---	1,813	1,817	2,100	-283
BEATTIE FARMS	440	441	724	---	675	677	1,110	-433
YUMA PROVING GROUND	485	486	500	---	485	486	500	-14
GILA MONSTER FARMS	4,463	4,472	5,309	---	7,849	7,865	9,156	-1,291
WELLTON-MOHAWK IDD	245,274	245,517	278,000	-32,483	372,612	373,213	411,413	-38,200
BLM PERMITEES (BELOW IMPERIAL DAM)	96	96	96	0	146	146	146	0
CITY OF YUMA	14,142	14,183	15,756	-1,573	24,237	24,310	26,605	-2,295
MARINE CORPS AIR STATION	1,341	1,343	1,419	---	1,341	1,343	1,419	-76
UNION PACIFIC RAILROAD	24	24	24	---	48	48	48	0
UNIVERSITY OF ARIZONA	847	848	897	---	847	848	897	-49
YUMA UNION HIGH SCHOOL DISTRICT	137	137	150	---	186	186	200	-14
DESERT LAWN MEMORIAL	41	41	41	---	57	57	57	0
NORTH GILA VALLEY IRRIGATION DISTRICT	11,891	11,899	12,260	---	42,927	43,008	44,200	-1,192
YUMA IRRIGATION DISTRICT	34,843	34,903	39,715	---	65,222	65,345	72,100	-6,755
YUMA MESA IDD	134,630	134,797	139,206	---	228,942	229,310	237,550	-8,240
UNIT "B" IRRIGATION DISTRICT	14,616	14,632	21,046	---	23,846	23,878	29,200	-5,322
FORT YUMA INDIAN RESERVATION	1,378	1,378	1,378	---	2,120	2,120	2,120	0
YUMA COUNTY WATER USERS' ASSOCIATION	239,095	239,332	241,268	---	343,102	343,715	375,000	-31,285
COCOPA INDIAN RESERVATION	543	551	3,180	---	810	823	4,850	-4,027
RECLAMATION-YUMA AREA OFFICE	46	46	46	---	46	46	46	0
RETURN FROM SOUTH GILA WELLS								
TOTAL ARIZONA	2,639,862	2,644,450	2,632,346		3,461,786	3,467,604	3,524,387	
CAP	1,517,727	1,521,428				1,521,428		
ALL OTHERS	1,122,135	1,123,022	1,235,491			1,946,176	2,127,532	
YUMA MESA DIVISION, GILA PROJECT	181,364	181,599	191,181	-9,582		337,663		

ARIZONA ADJUSTED APPORTIONMENT CALCULATION

Arizona Basic Apportionment	2,800,000
State of Nevada Unused Apportionment to be Stored with AWBA	13,500
System Conservation Water - Pilot System Conservation Program ²	-27,151
Voluntary Contribution to Lake Mead - CAWCD	-153,963
Total State Adjusted Apportionment	2,632,386
Excess to Total State Adjusted Apportionment	12,064
Estimated Allowable Use for CAP	1,509,396

¹ Includes the following water users within the Cibola Valley: Cibola Valley IDD, Arizona Game and Fish Commission, GSC Farms, LLC, and the Hopi Tribe.

² System Conservation Water to be conserved by Bullhead City, CAWCD, the Tohono O'odham Nation, and the Colorado River Indian Tribes pursuant to System Conservation Implementation Agreements executed under the Pilot System Conservation Program. This water will remain in Lake Mead to benefit system storage.

NOTES: Click on Arizona Schedules and Approvals above for incoming diversion schedules and approvals.

**U.S. BUREAU OF RECLAMATION
LOWER COLORADO REGION
CY 2018**

NOTE:

- Diversions and uses that are pending approval are noted in *red italics*.
- Water users with a consumptive use entitlement - **Excess to Estimated Use** column indicates overrun/underrun of entitlement. Dash in this column indicates water user has a diversion entitlement.
- Water user with a diversion entitlement - **Excess to Approved Diversion** column indicates overrun/underrun of entitlement. Dash in this column indicates water user has a consumptive use entitlement.

**CALIFORNIA WATER USERS
FORECAST OF END OF YEAR CONSUMPTIVE USE
FORECAST BASED ON USE TO DATE AND APPROVED ANNUAL WATER ORDERS**

[California Schedules and Approvals](#)
[Historic Use Records \(Water Accounting Reports\)](#)

WATER USER	Use To Date CY2018	Forecast Use CY2018	Estimated Use CY2018	Excess to Estimated Use CY2018	Diversion To Date CY2018	Forecast Diversion CY2018	Approved Diversion CY2018	Excess to Approved Diversion CY2018
CALIFORNIA PUMPERS	2,197	2,197	2,197	---	3,973	3,973	3,973	0
FORT MOJAVE INDIAN RESERVATION, CA	7,739	7,739	8,996	---	14,299	14,299	16,720	-2,421
CITY OF NEEDLES (includes LCWSP use)	1,454	1,457	1,605	-148	1,840	1,844	2,261	-417
METROPOLITAN WATER DISTRICT	882,297	882,794		---	885,227	885,734		---
COLORADO RIVER INDIAN RESERVATION, CA	3,138	3,138	3,138	---	5,197	5,197	5,197	0
PALO VERDE IRRIGATION DISTRICT	354,480	354,938	<i>418,928</i>	---	771,390	772,874	<i>838,500</i>	-65,626
YUMA PROJECT RESERVATION DIVISION	43,576	43,648	52,051	---	85,451	85,635	99,540	-13,905
YUMA PROJECT RESERVATION DIVISION - INDIAN UNIT	---	---	---	---	42,614	42,695	47,842	-5,147
YUMA PROJECT RESERVATION DIVISION - BARD UNIT	---	---	---	---	42,837	42,940	51,698	-8,758
YUMA ISLAND PUMPERS	3,315	3,315	3,315	---	5,997	5,997	5,997	0
FORT YUMA INDIAN RESERVATION - RANCH 5	640	640	640	---	1,160	1,160	1,160	0
IMPERIAL IRRIGATION DISTRICT	2,615,341	2,619,334	2,687,800	-68,466	2,513,507	2,517,975	2,813,387	---
SALTON SEA SALINITY MANAGEMENT	149	0	0	0	150	0	0	---
COACHELLA VALLEY WATER DISTRICT	338,094	338,707	363,804	-25,097	345,408	346,094	381,829	---
OTHER LCWSP CONTRACTORS	751	751	751	---	1,178	1,178	1,178	0
CITY OF WINTERHAVEN	66	66	66	---	98	98	98	0
CHEMEHUEVI INDIAN RESERVATION	129	129	129	---	11,340	11,340	11,340	0
TOTAL CALIFORNIA	4,253,366	4,258,853	3,998,908		4,646,215	4,653,398	4,639,464	

CALIFORNIA ADJUSTED APPORTIONMENT CALCULATION

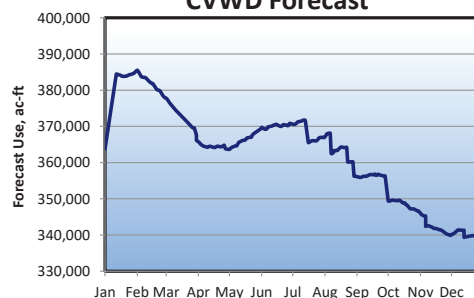
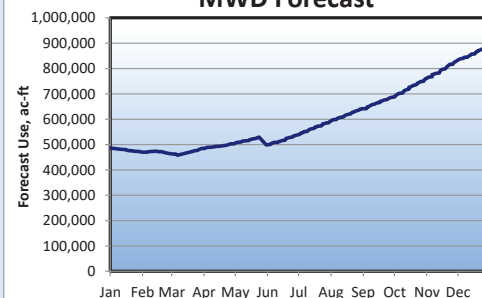
California Basic Apportionment	4,400,000
System Conservation Water - Pilot System Conservation ¹	-2,092
Creation of Extraordinary Conservation ICS (IID) ²	-25,000
Creation of Extraordinary Conservation ICS (MWD) ²	-374,000
Total State Adjusted Apportionment	3,998,908
Excess to Total State Adjusted Apportionment	259,945

Estimated Allowable Use for MWD**622,849**

NOTES: Click on California Schedules and Approvals above for incoming diversion schedules and approvals.

¹ System Conservation Water to be conserved by the City of Needles, Bard Water District, and Coachella Valley Water District pursuant to System Conservation Implementation Agreements executed under the Pilot System Conservation Program. This water will remain in Lake Mead to benefit system storage.

² Amount shown represents the amount of ICS creation that the water user has been approved to create in CY 2018. Actual amount of ICS created will be based on final accounting records.

IID Forecast**CVWD Forecast****MWD Forecast****CA Priorities 1, 2 & 3b Forecast****YPRD Forecast****PVID Forecast**

**U.S. BUREAU OF RECLAMATION
LOWER COLORADO REGION
CY 2018**

NOTE:

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- Water user with a diversion entitlement - **Excess to Approved Diversion** column indicates overrun/underrun of entitlement. Dash in this column indicates water user has a consumptive use entitlement.

NEVADA WATER USERS

FORECAST OF END OF YEAR CONSUMPTIVE USE

FORECAST BASED ON USE TO DATE AND APPROVED ANNUAL WATER ORDERS

[Nevada Schedules and Approvals](#)[Historic Use Records \(Water Accounting Reports\)](#)

WATER USER	Use To Date CY2018	Forecast Use CY2018	Estimated Use CY2018	Excess to Estimated Use CY2018	Diversion To Date CY2018	Forecast Diversion CY2018	Approved Diversion CY2018	Excess to Approved Diversion CY2018
ROBERT B. GRIFFITH WATER PROJECT (SNWS)	452,368	453,278	452,186	1,092	452,368	453,278	452,186	1,092
LAKE MEAD NRA, NV - Diversions from Lake Mead	382	287	1,500	---	382	287	1,500	-1,213
LAKE MEAD NRA, NV - Diversions from Lake Mohave	185	140	500	---	185	140	500	-360
BASIC MANAGEMENT INC.	5,162	4,515	8,208	---	5,162	4,515	8,208	-3,693
CITY OF HENDERSON (BMI DELIVERY)	10,707	9,269	15,878	---	10,707	9,269	15,878	-6,609
NEVADA DEPARTMENT OF WILDLIFE	8	7	12	-5	775	683	1,000	---
PACIFIC COAST BUILDING PRODUCTS INC.	904	821	928	---	904	821	928	-107
BOULDER CANYON PROJECT	172	172	172	---	300	300	300	0
BIG BEND WATER DISTRICT	2,151	1,790	4,884	---	4,412	3,634	10,000	-6,366
FORT MOJAVE INDIAN TRIBE	2,966	2,970	4,020	---	4,427	4,433	6,000	-1,567
LAS VEGAS WASH RETURN FLOWS	-230,728	-231,284	-201,788	---				
TOTAL NEVADA	244,277	241,965	286,500	1,087	479,622	477,360	496,500	-18,823
SOUTHERN NEVADA WATER SYSTEM (SNWS)	221,640	221,994				453,278		
ALL OTHERS	22,637	19,971				24,082		
NEVADA USES ABOVE HOOVER	239,160	237,205				469,293		
NEVADA USES BELOW HOOVER	5,117	4,760				8,067		

Tributary Conservation & Imported Intentionally Created Surplus

Total Requested Tributary Conservation Intentionally Created Surplus

42,000

Total Requested Imported Conservation Intentionally Created Surplus

0

5% System Cut for Creation of Intentionally Created Surplus

-2,100

Total Intentionally Created Surplus Left in Lake Mead

39,900

NEVADA ADJUSTED APPORTIONMENT CALCULATION

Nevada Basic Apportionment

300,000

State of Nevada Unused Apportionment to be Stored with AWBA

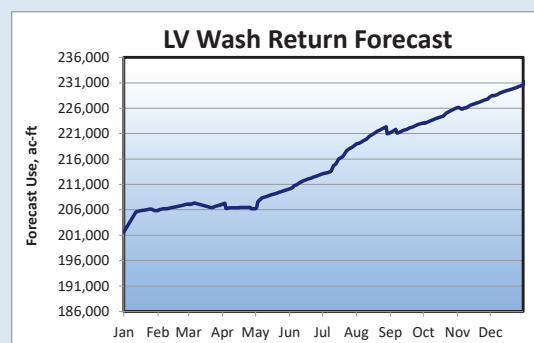
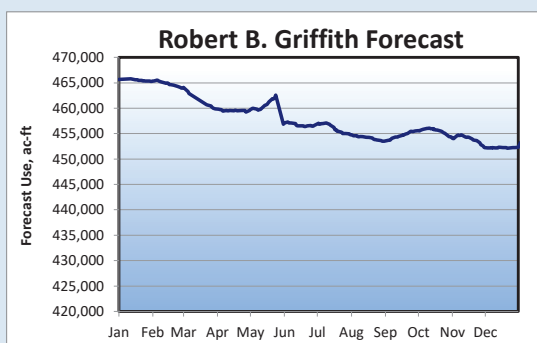
-13,500

Total State Adjusted Apportionment

286,500

Excess to Total State Adjusted Apportionment

-44,535



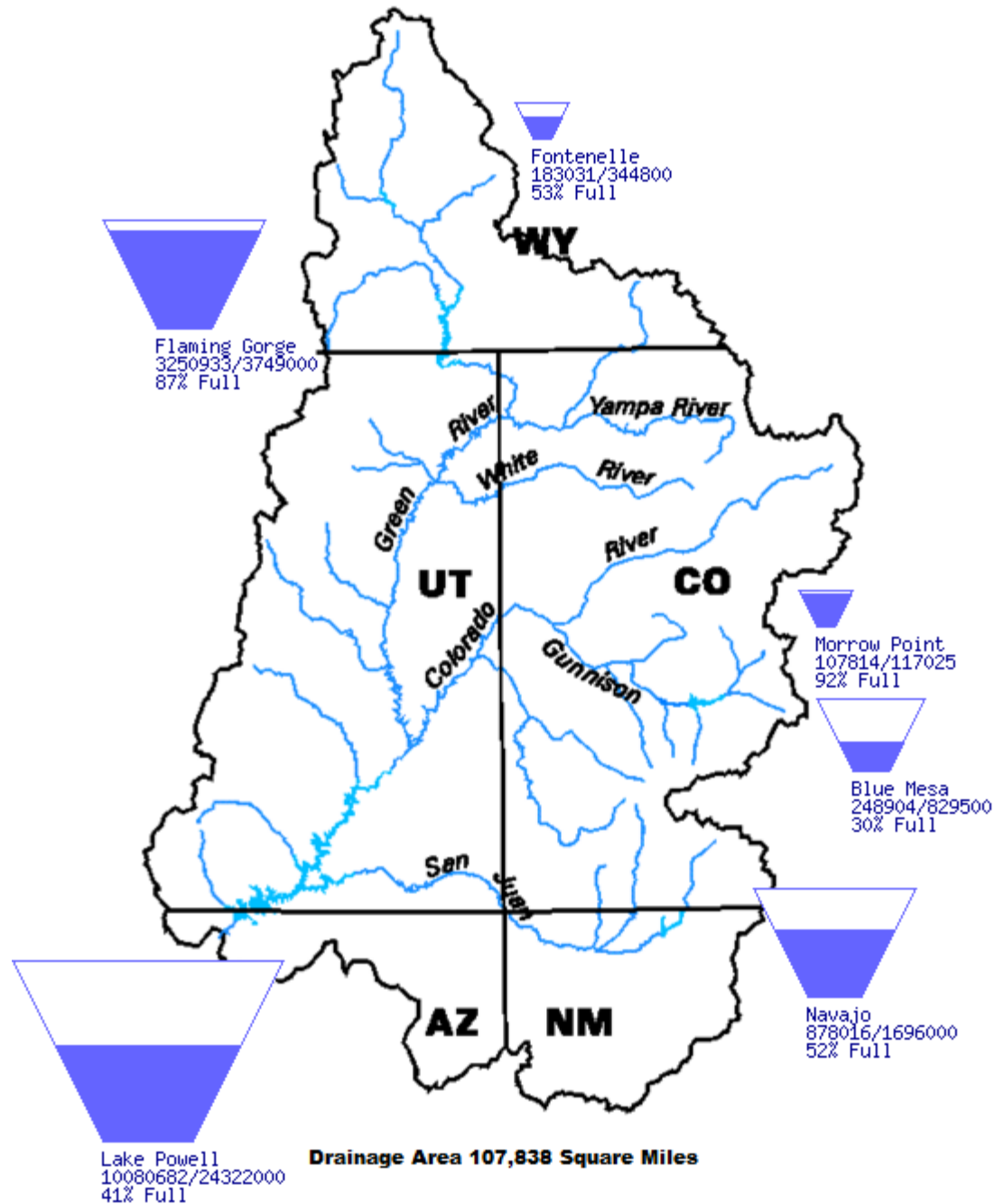
NOTES: Click on Nevada Schedules and Approvals above for incoming diversion schedules and approvals.

Upper Colorado Region Water Resources Group

River Basin Tea-Cup Diagrams

Data Current as of:
01/01/2019

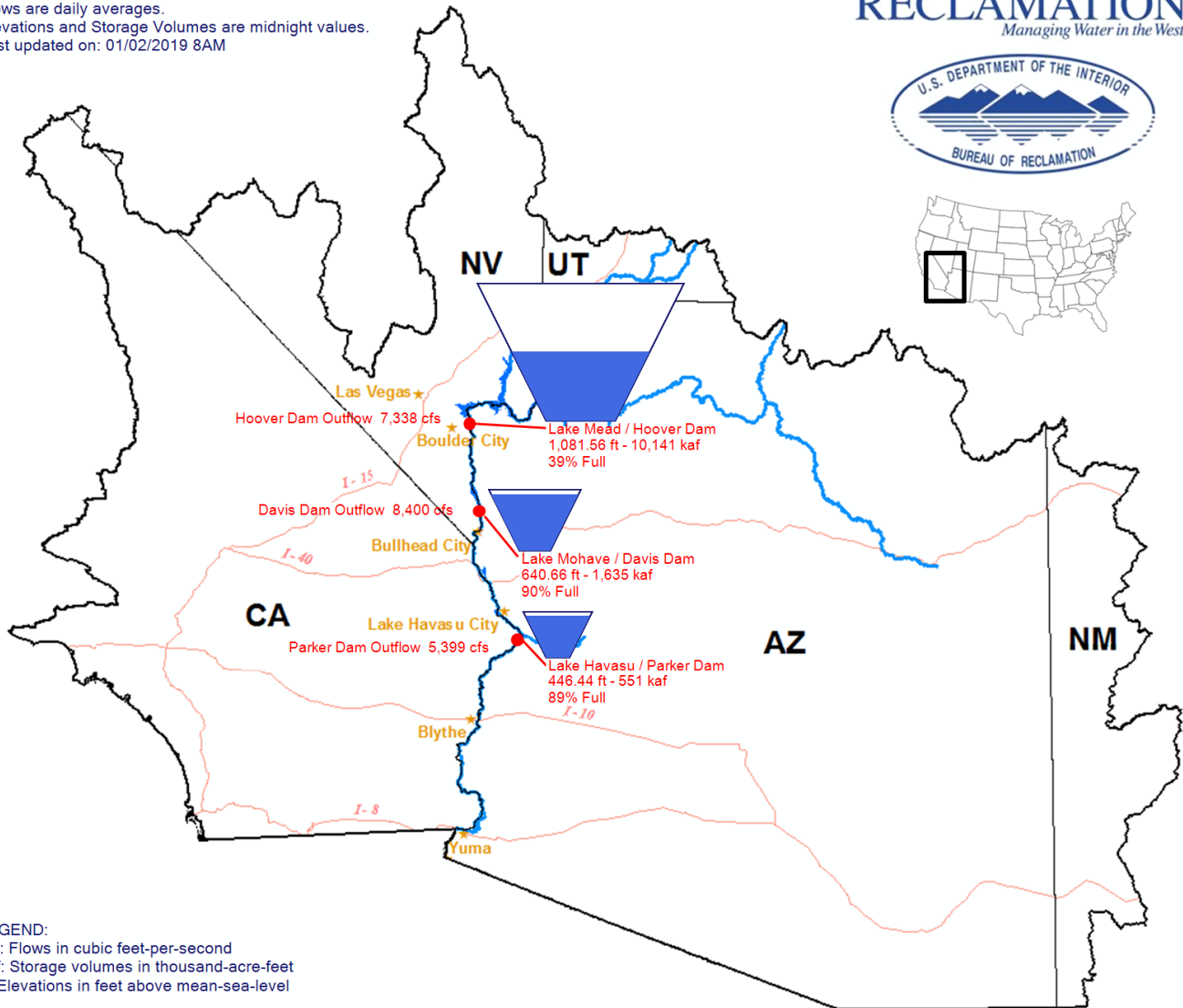
Upper Colorado River Drainage Basin



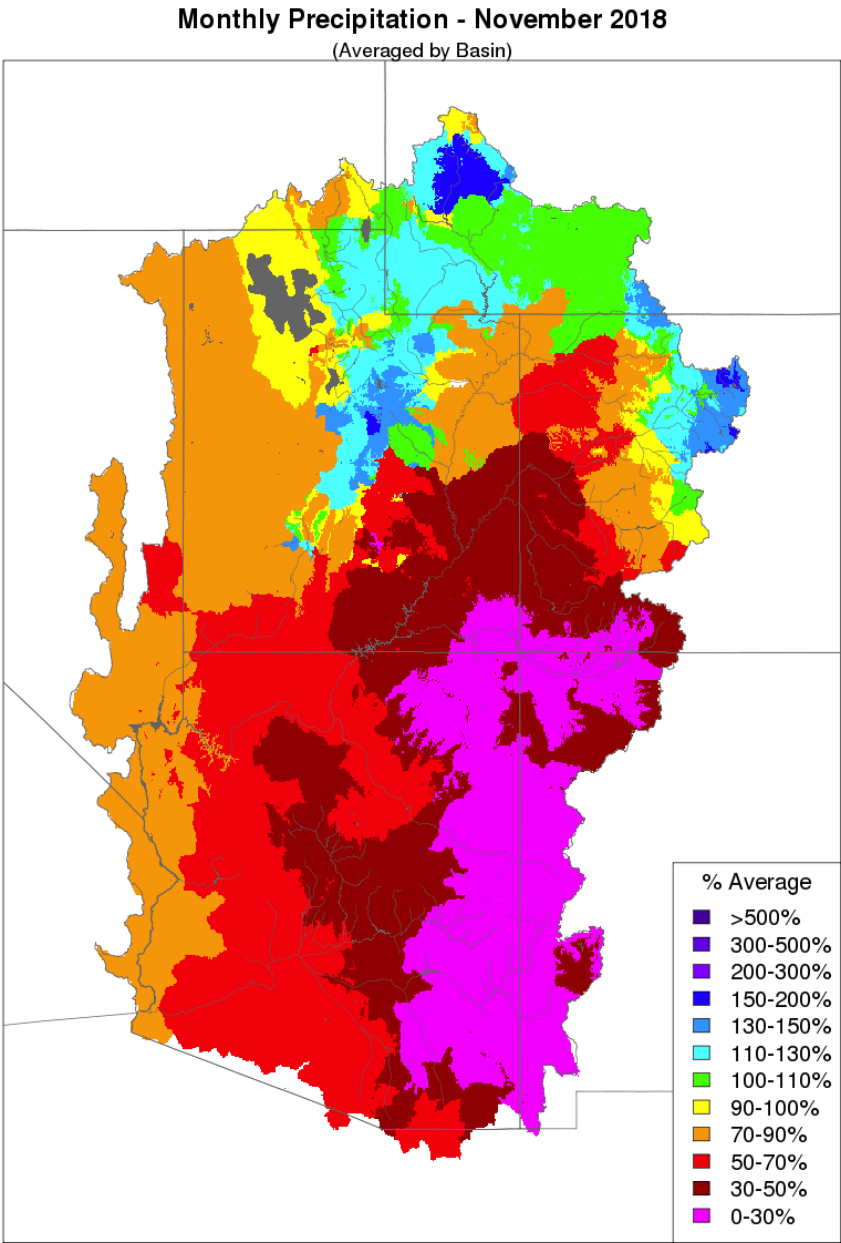
Lower Colorado River Teacup Diagram

Data for: 01/01/2019
Flows are daily averages.
Elevations and Storage Volumes are midnight values.
Last updated on: 01/02/2019 8AM

RECLAMATION
Managing Water in the West



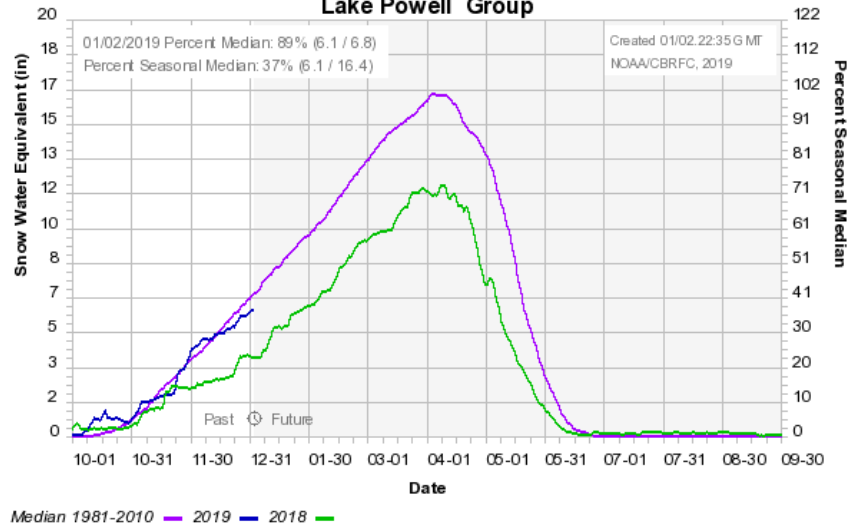
LEGEND:
cfs: Flows in cubic feet-per-second
kaf: Storage volumes in thousand-acre-feet
ft: Elevations in feet above mean-sea-level



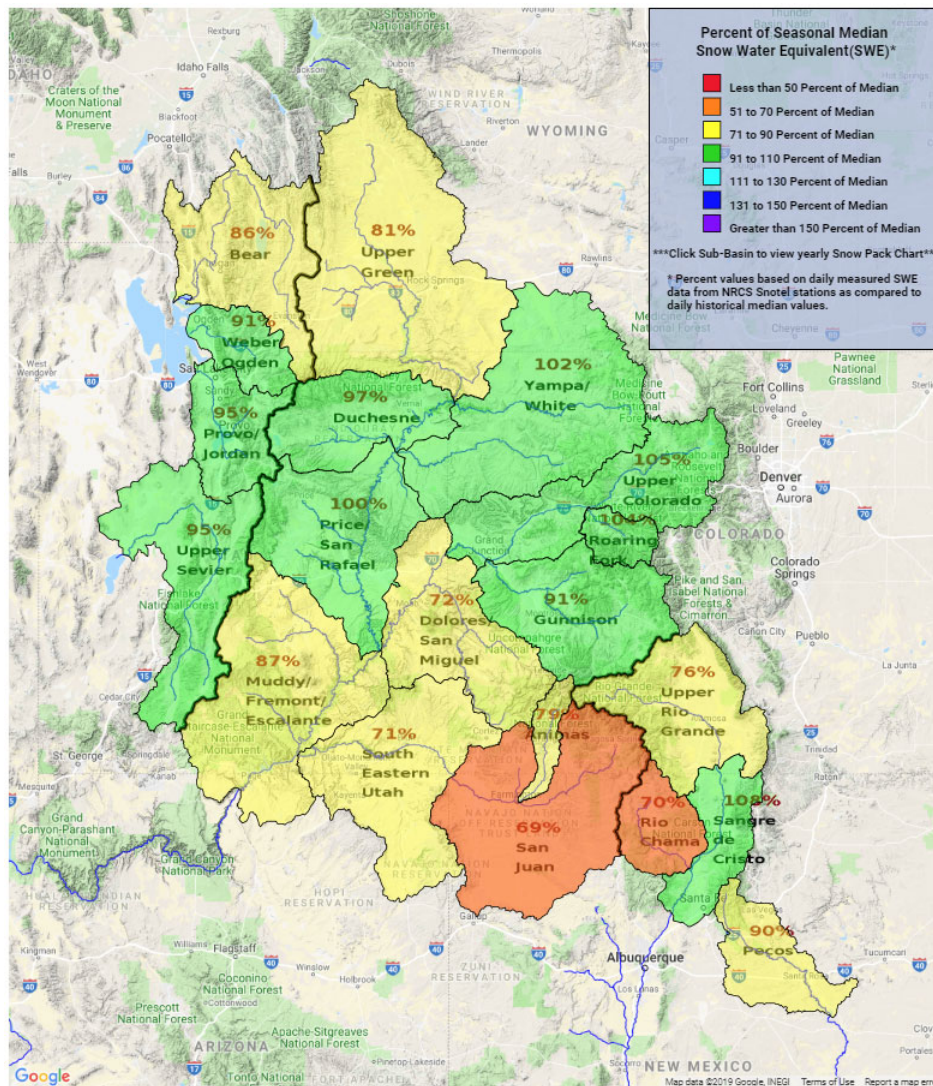
Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

Colorado Basin River Forecast Center

Lake Powell Group

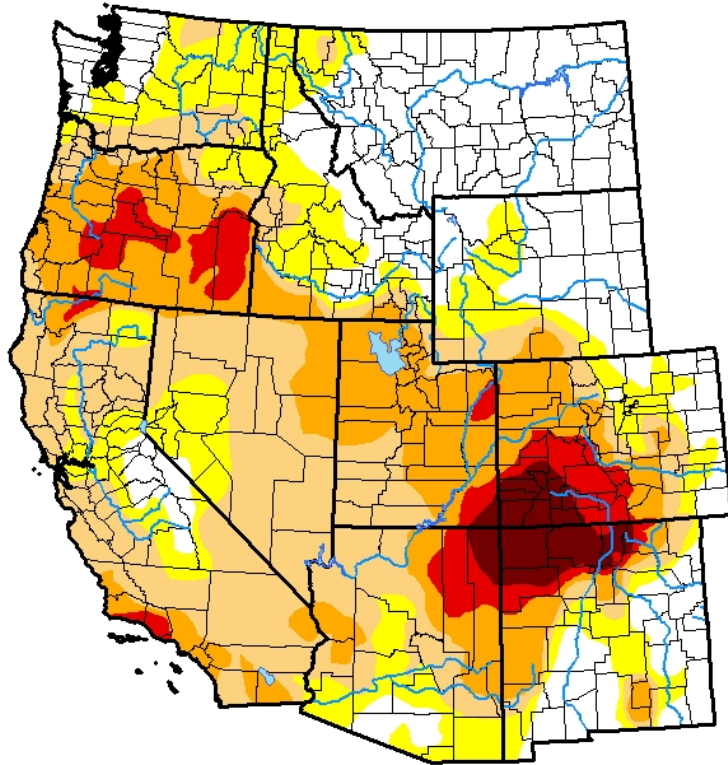


Snow Pack Conditions Map Upper Colorado Region



U.S. Drought Monitor West

January 1, 2019
(Released Thursday, Jan. 3, 2019)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	28.03	71.97	53.25	27.22	8.35	2.88
Last Week 12-25-2018	25.32	74.68	54.37	27.84	8.48	2.92
3 Months Ago 10-02-2018	14.15	85.85	59.29	38.88	17.58	4.36
Start of Calendar Year 01-01-2019	28.03	71.97	53.25	27.22	8.35	2.88
Start of Water Year 09-25-2018	13.91	86.09	59.57	39.68	18.15	4.36
One Year Ago 01-02-2018	48.76	51.24	29.03	8.60	1.52	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions.
Local conditions may vary. See accompanying text summary
for forecast statements.

Author:

David Miskus
NOAA/NWS/NCEP/CPC

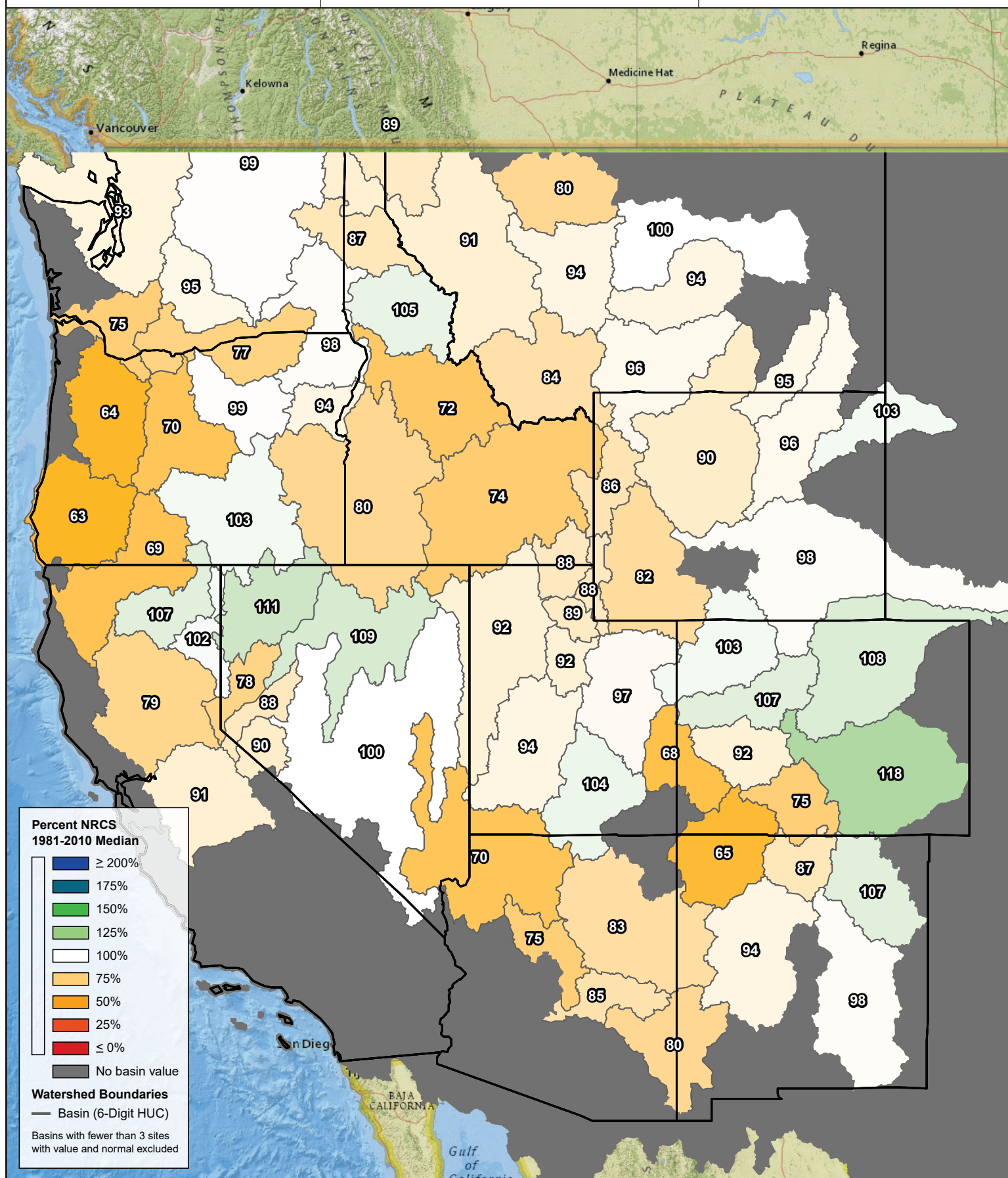


<http://droughtmonitor.unl.edu/>

Snow Water Equivalent

Percent NRCS 1981-2010 Median

January 1st, 2019



Natural Resources
Conservation Service
United States Department of Agriculture



0 50 100 200 300 400 500 Miles

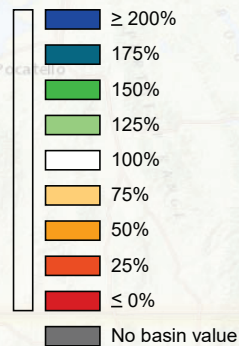
Created 1-02-2019

Snow Water Equivalent

Percent NRCS 1981-2010 Median

January 1st, 2019

**Percent NRCS
1981-2010 Median**



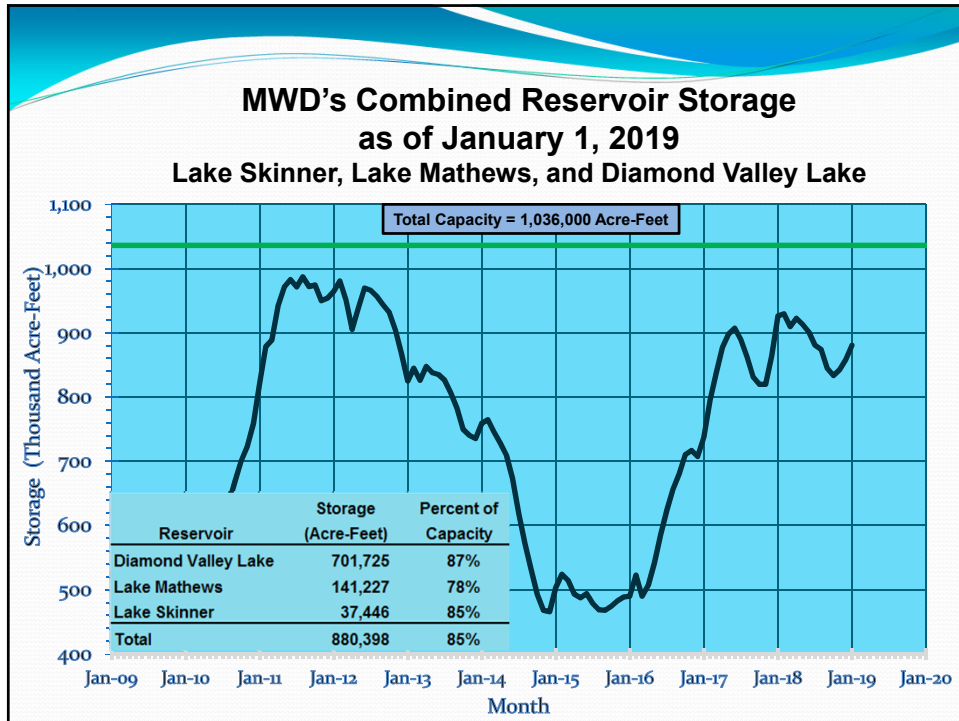
- ☐ Snow Course
- ☐ Automated Site
- ☐ No current value
- ☐ Median is zero
- ☐ No median

Watershed Boundaries

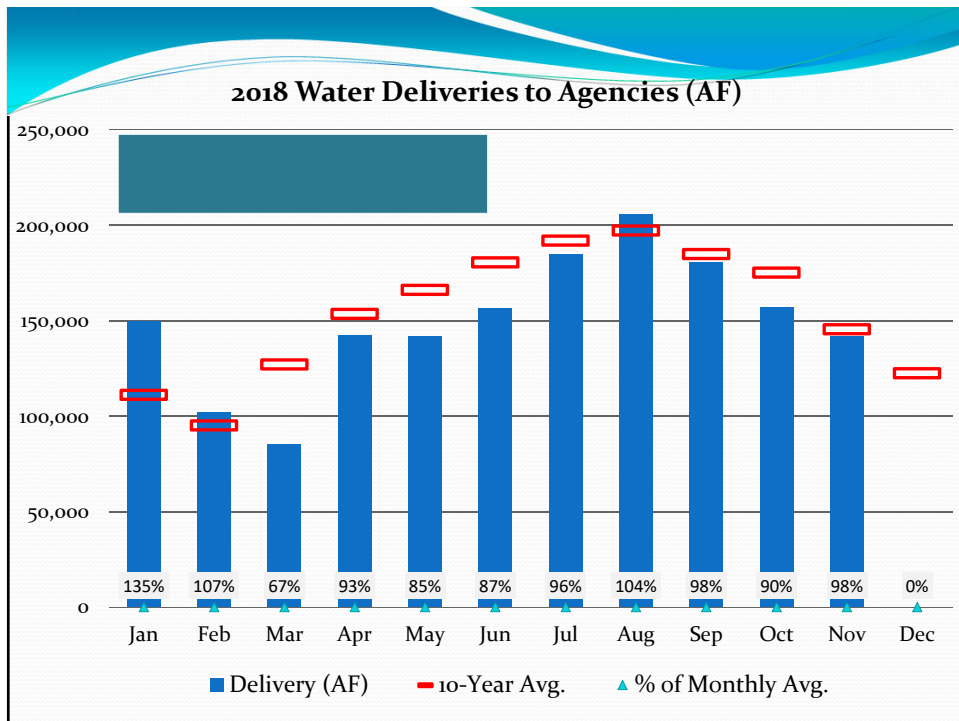
— State Watersheds

Basins with fewer than 3 sites
with value and normal excluded



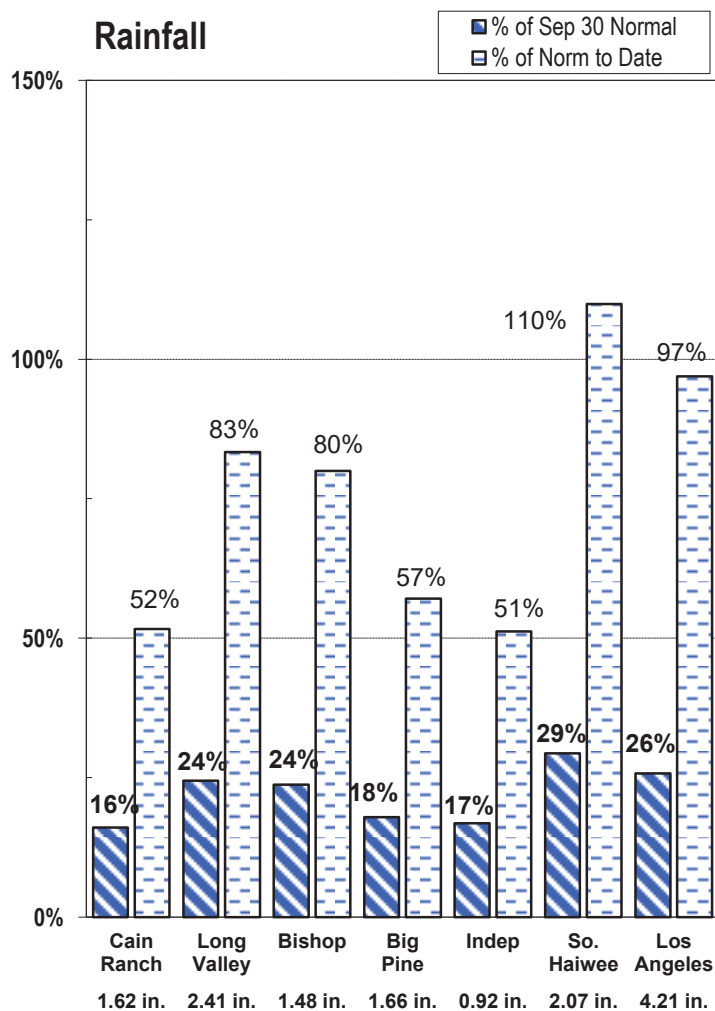
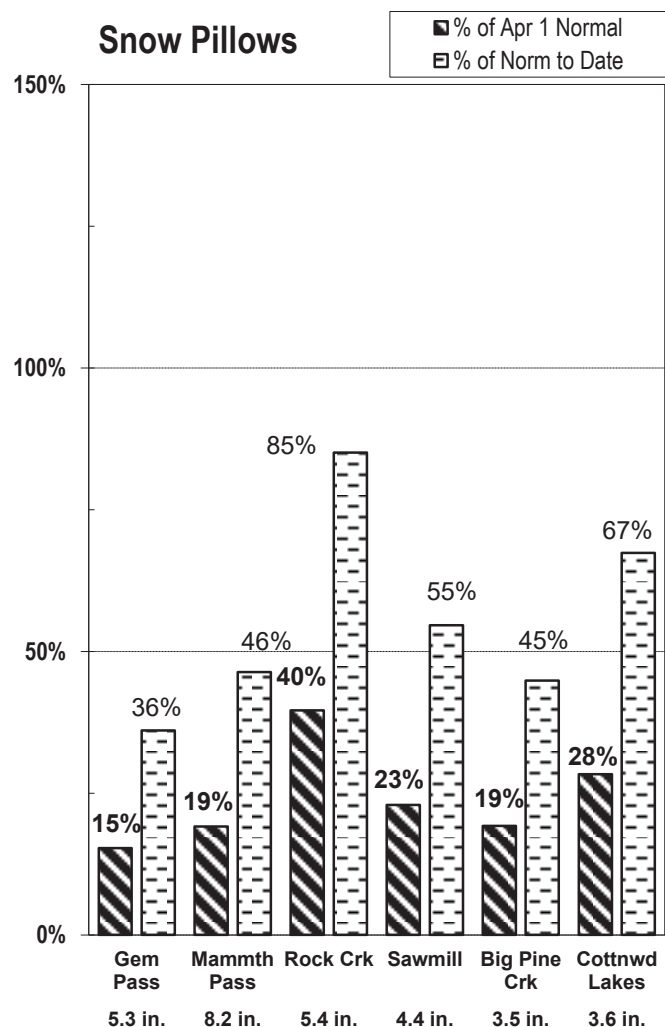
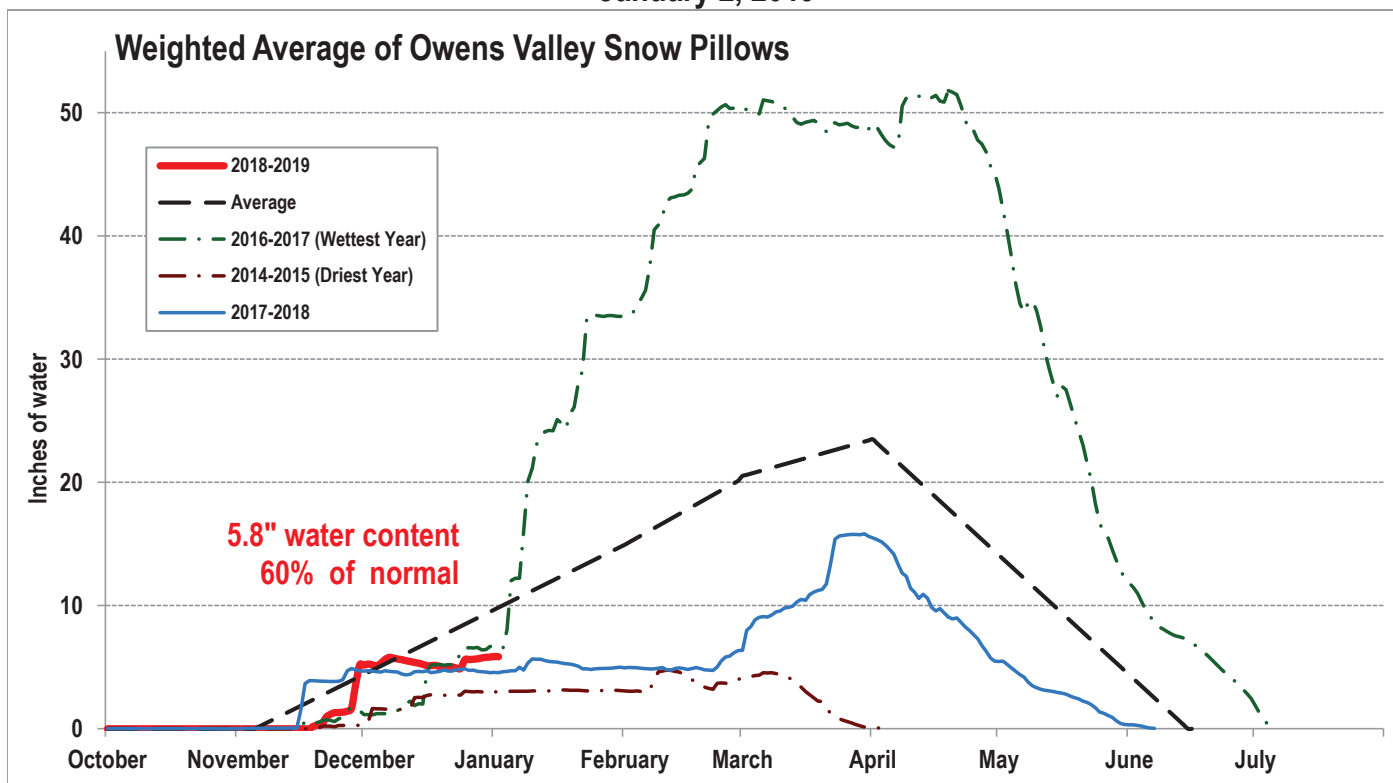


1



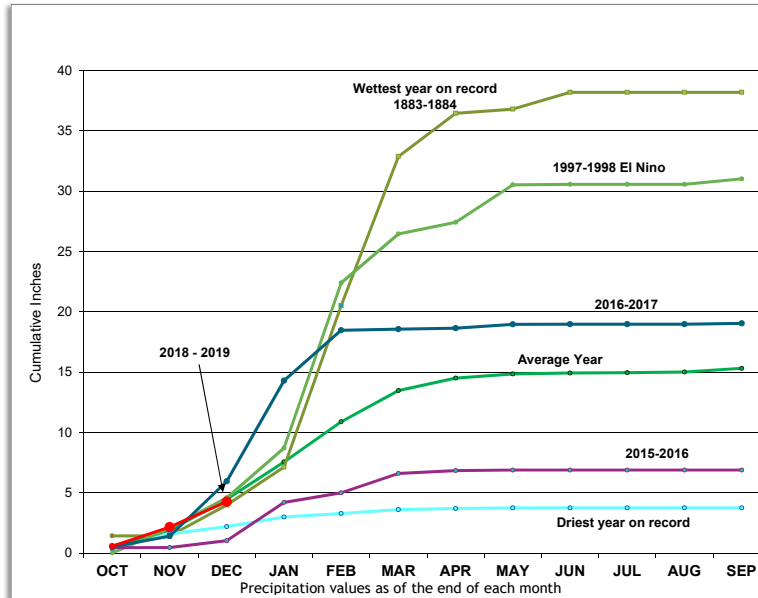
2

EASTERN SIERRA CURRENT PRECIPITATION CONDITIONS January 2, 2019



Measurement as Inches Water Content; Precipitation totals are cumulative for water year beginning Oct 1

Los Angeles Civic Center Precipitation



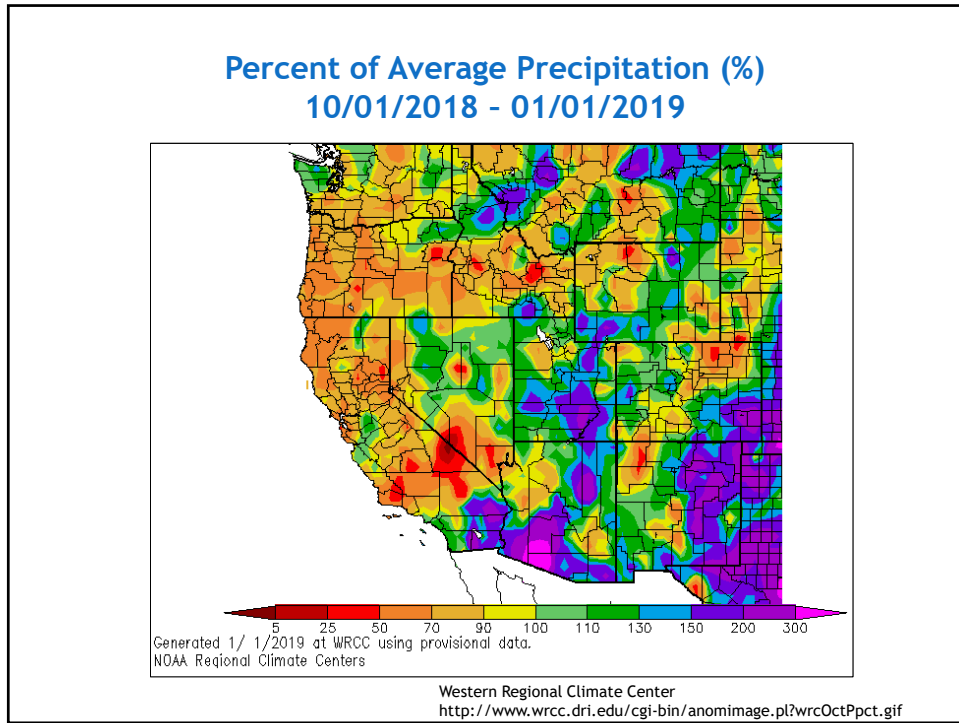
1

Precipitation at Six Major Stations in Southern California

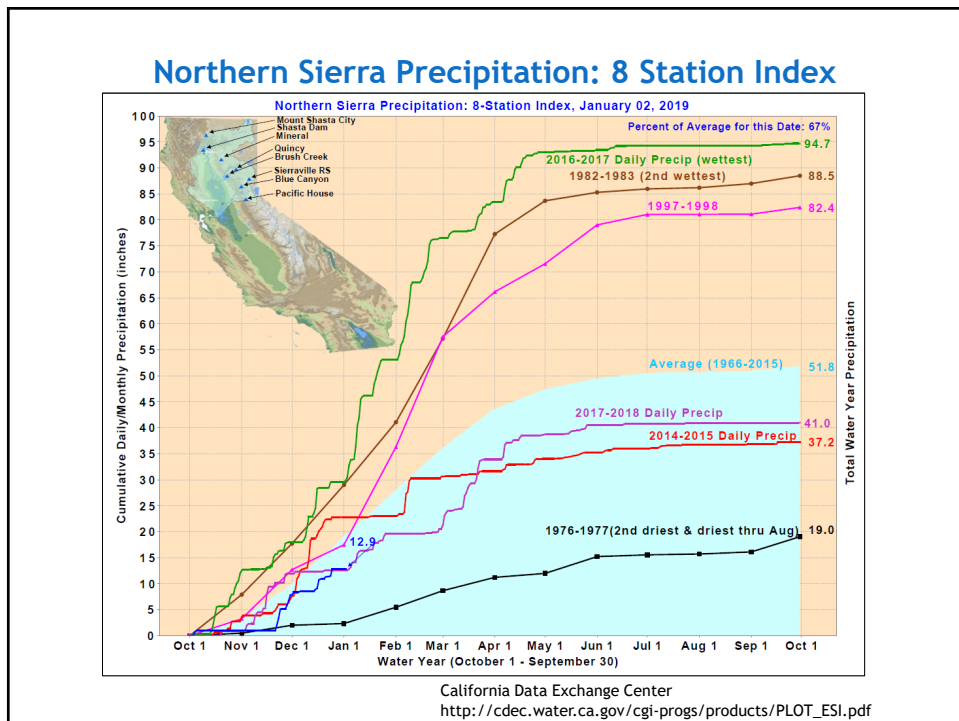
From October 1, 2018 to December 31, 2018

Station	Precipitation in inches		Average to Date	Percent of Average
	Dec	Oct 1 to Dec 31		
San Luis Obispo	0.84	3.78	7.06	54%
Santa Barbara	0.50	1.93	5.03	38%
Los Angeles	2.11	4.26	4.46	96%
San Diego	0.83	2.09	3.25	64%
Blythe	0.00	0.85	1.11	77%
Imperial	1.04	1.06	0.94	113%

2

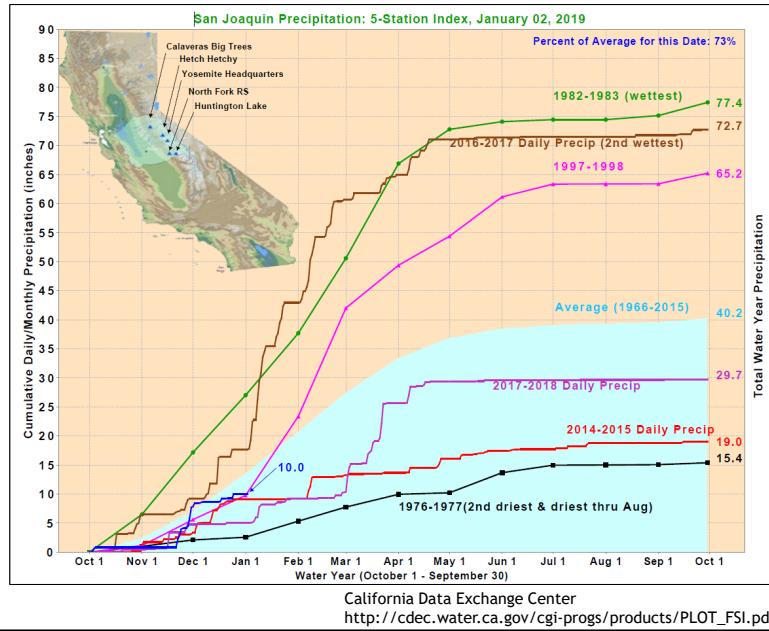


3



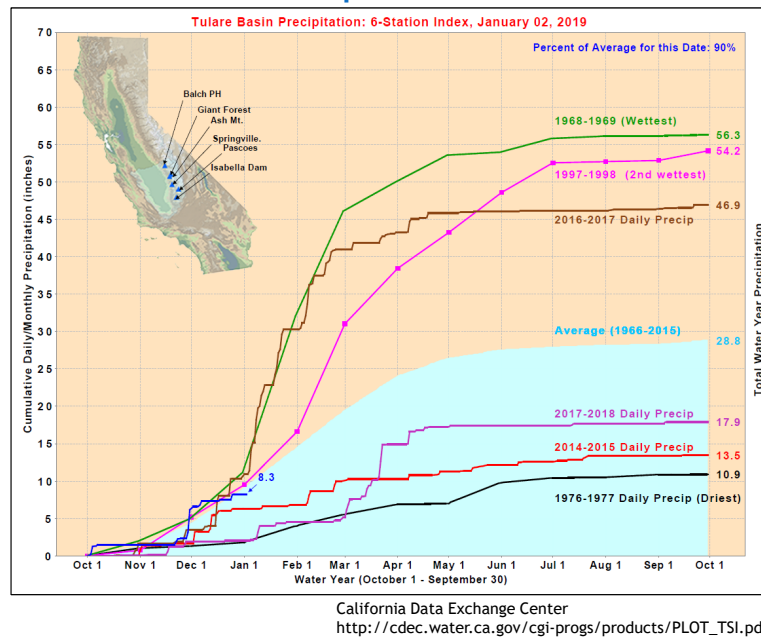
4

San Joaquin Precipitation: 5 Station Index



5

Tulare Basin Precipitation: 6 Station Index



6

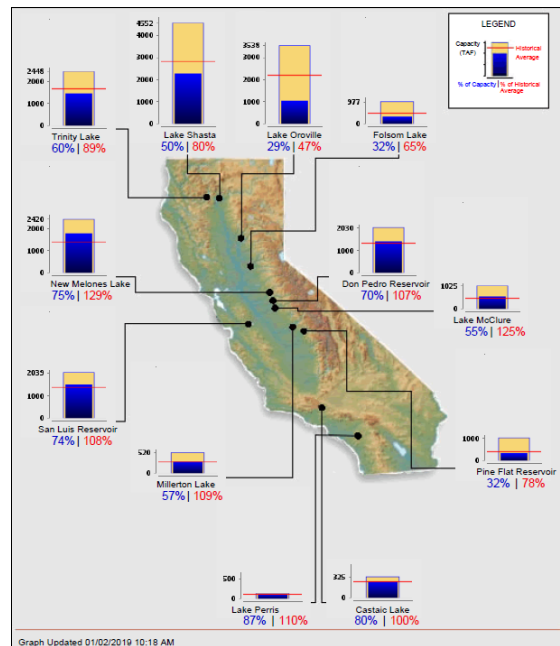
Comparison of SWP Water Storage

Reservoir	Capacity	2018 Storage (acre-feet)		2019 Storage (acre-feet)	
		As of Jan 1	% of Cap.	As of Jan 1	% of Cap.
Frenchman	55,475	43,008	78%	41,102	74%
Lake Davis	84,371	69,270	82%	62,266	74%
Antelope	22,564	16,849	75%	14,047	62%
Oroville	3,553,405	1,228,261	35%	1,032,393	29%
TOTAL North	3,715,815	1,357,388	37%	1,149,808	31%
Del Valle	39,914	25,381	64%	24,975	63%
San Luis	2,027,835	1,645,936	81%	1,509,517	74%
Pyramid	169,901	165,752	98%	155,050	91%
Castaic	319,247	258,023	81%	258,455	81%
Silverwood	74,970	67,567	90%	70,705	94%
Perris	126,841	59,049	47%	114,430	90%
TOTAL South	2,758,708	2,221,708	81%	2,133,132	77%
TOTAL SWP	6,474,523	3,579,096	55%	3,282,940	51%

As of November 30, 2018, the Table A allocations for SWP contractors is 10%.

7

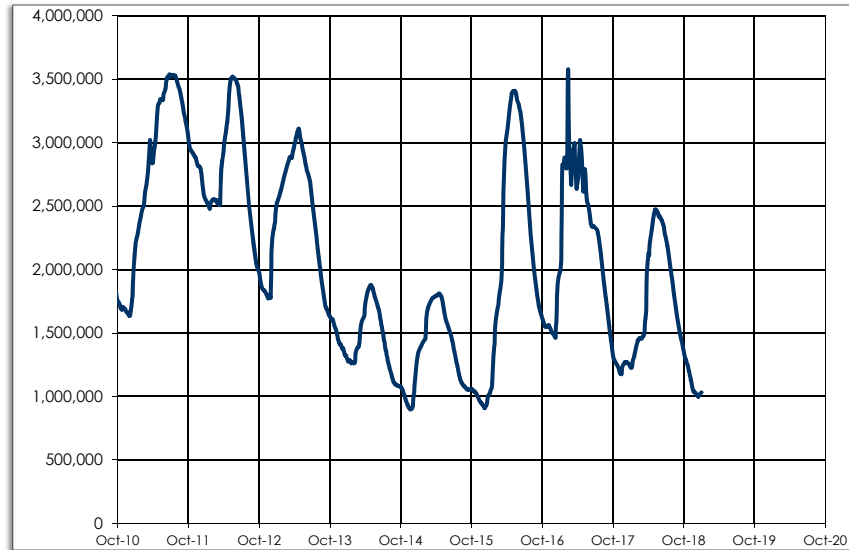
Reservoir Current Conditions



California Data Exchange Center
<https://cdec.water.ca.gov/reportapp/javareports?name=rescond.pdf>

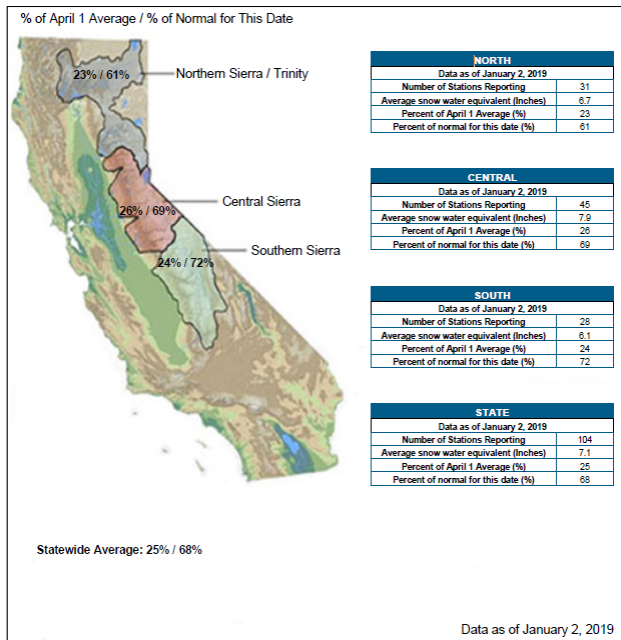
8

Oroville Storage (acre-feet) October 1, 2010 - January 1, 2019



9

Statewide Summary of Snow Water Content



10

BRIDGING THE GAP

[Event Details](#)
[Event Files](#)


Conference hosted by GRA in collaboration with the California Department of Water Resources and the Center for Western Weather and Water Extremes (CW3E)


EVENT DETAILS:

The Groundwater Resources Association (GRA), in collaboration with the California Department of Water Resources (DWR) and the Center for Western Weather and Water Extremes (CW3E) has created a unique event that will provide all involved in water resources management important information about the future of California water supplies. In recent years we have seen a shift in California precipitation, to more extreme events that occur over shorter durations. Many of these extreme events are in fact "atmospheric rivers" (ARs). The difference between a wet or dry year can be determined by the landfall of just a few strong ARs. Precipitation from ARs can provide water for storage in surface water reservoirs and provide flood flows that can be captured for managed aquifer recharge (Flood MAR). A lot of effort is going into better predicting when and where ARs will land so that those managing surface water reservoirs can make better operational decisions to maximize the capture of flood flows while not impacting flood risk management and environmental needs. This new approach is called Forecast Informed Reservoir Operations (FIRO) and shows promise in ushering in new, smarter way of managing surface water reservoirs. Complementing FIRO is the capture of flood flows for managed aquifer recharge, or Flood MAR, which is going to be an important tool for to achieve groundwater sustainability.

To connect the science of predicting ARs, surface water reservoir operations and Flood MAR, GRA has created a unique event called "Bridging the Gap", to be held in San Diego at the Dana on Mission Bay January 28-29, 2019. This event brings experts in weather, weather forecasting, reservoir operations and Flood MAR together to discuss how we can use all of these tools to manage California's water supplies more effectively.

WHEN?

Mon, Jan. 28 - Tue, Jan. 29, 2019

 [Add to Calendar \(/events/ics/217\)](#)

HOW MUCH?

Early Bird Member Registration -

\$375.00

(ends 01/13/2019)

Early Bird Non-Member

Registration - **\$510.00**

(ends 01/13/2019)

Early Bird Student/Retiree Member

Registration - **\$115.00**

(ends 01/13/2019)

Speaker Registration - **\$187.50**

(ends 01/20/2019)

Speaker Registration - **\$0.00**

(ends 01/20/2019)

[Register](#)

Become a member

(/memberships/referer-url/?

next=/memberships/applications/)

WHERE?

The Dana on Mission Bay

1710 W Mission Bay Drive
San Diego, CA 92109

The Dana on Mission Bay, BW Premier Collection is nestled along the shores of Mission Bay, one of San Diego's most popular aquatic parks, and offers spectacular bay and marina views. Guests of The Dana will enjoy the hotel's central location minutes from local attractions, as well as a host ...

[Full Description](#)



[View Larger Map](#)

(<https://maps.google.com/maps?>

[q=1710%20W%20Mission%20Bay%20Drive+San%20Diego,%20CA+92109&](https://maps.google.com/maps?q=1710%20W%20Mission%20Bay%20Drive+San%20Diego,%20CA+92109&)

This will be a great event for all water resource professionals, including staff and board members in GSAs, members of GSA advisory committees, consultants working with GSAs, and key members of the public engaging in the development of local groundwater sustainability plans. You will not want to miss this event!

SPONSOR AND EXHIBITOR OPPORTUNITIES

If you are interested in exhibiting your organization's services or products, or being an event sponsor, please click here (<https://www.grac.org/events/224/>) for more details and register online before December 21, 2018.

TENTATIVE AGENDA:

Monday January 28th

12:00 Registration

1:00 Welcome & Opening Remarks, **Adam Hutchinson**, Orange County Water District, Vice President of Groundwater Resources Association of California

1:15 California Department of Water Resources (DWR) Work to Improve Forecasting from Flood to Climate Change, **Mike Anderson**, California Department of Water Resources

1:45 New Technologies for Improving Snowmelt Runoff Forecasting (ASO & ModSCAG), **Kat Bormann**, NASA JPL Airborne Snow Observatory

2:15 Making Progress on the Missing Link, Seasonal to Sub-seasonal (S2S) Precipitation Forecasting, **Jeanine Jones**, California Department of Water Resources

2:45 Experimental Research in Sub-seasonal Forecasts for California Department of Water Resources, **Mike Deflorio**, NASA, JPL and UCSD, Scripps, Center for Western Weather and Water Extremes (CW3E)

3:15 Break

3:45 Folsom Dam Water Control Manual Update and Incorporating National Weather Service Operational Forecasts, **Joe Forbis**, US Army Corps of Engineers

4:15 Forecast Informed Reservoir Operations (FIRO) and Managed Aquifer Recharge (MAR) in American River Watershed/Folsom Dam Reoperations, **Jon Herman**, UC Davis

4:45 Paleo-Conditioned Climate Change Hydrologic Vulnerability Assessment, **Romain Maendly**, DWR/**John Kucharski**, US Army Corps of Engineers

5:15 Adjourn

6:00 Reception

7:00 San Diego Branch Meeting

Tuesday January 29th

8:30 Emerging directions in atmospheric river science, predictions and applications to water management, **Dr. Marty Ralph**, UCSD, Scripps, Center for Western Weather and Water Extremes (CW3E)

9:00 Lake Mendocino Forecast Informed Reservoir Operations (FIRO) Demonstration Project & Groundwater Recharge Opportunities, **Jay Jasperse**, Sonoma Water

9:30 Synoptic and Mesoscale Meteorological Influences on Precipitation in Southern California, **Dr. Forest Cannon**, UCSD, Scripps, Center for Western Weather and Water Extremes (CW3E)

10:00 Break

10:30 Forecast Informed Reservoir Operations (FIRO) for Groundwater Recharge – Prado Dam, **Greg Woodside**, Orange County Water District

11:00 Forecast Informed Reservoir Operations (FIRO) Opportunities in LA/San Gabriel River Watersheds for Recharge, **Keith Lilley**, Los Angeles County Department of Public Works

11:30 Merced River Flood Managed Aquifer Recharge (MR) Reconnaissance Study, **Hicham Eltal**, Merced Irrigation District

12:00 Lunch

1:00 Refined Statewide Land Suitability for Groundwater Recharge, **Mica Heilmann**, Land IQ

1:30 New Coachella Valley Water District (CVWD) Mid-Valley Recharge Project, **Ivory Reyburn** and **Zoe Rodriguez del Rey**, Coachella Valley Water District

2:00 Proposition 68 State Financial Assistance, **Carmel Brown**, Department of Water Resources

2:30 Adjourn

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(mailto:?
subject=&body=Good day! Check out our
event: <https://www.grac.org/events/217/>)



(</events/print-view/217/>)